

# US ALUMINUM®

## ARCHITECTURAL DESIGN MANUAL

Storefronts • Entrances • Window Walls • Windows • Hurricane Resistant Systems • Blast Mitigation Systems

CAT. NO. **USAL14**



**CRL**  
US ALUMINUM

# THE STOREFRONT STORE

SYSTEMS | SUPPLIES | SERVICE

[usalum.com](http://usalum.com)



**Don Friese**  
Chairman and C.E.O.  
C.R. Laurence Co., Inc.

**Lloyd Talbert**  
President and C.O.O.  
C.R. Laurence Co., Inc.

## Leading the New Union of C.R. Laurence and U.S. Aluminum

The executive management at C.R. Laurence believes that when opportunity knocks you must answer the door. Holding to this belief, when the opportunity was presented to expand our range of architectural products and to continue our effort to support America's workers and manufacturing base, we took it.

We are now pleased to offer for the first time a complete selection of aluminum architectural systems. These systems had been designed, marketed, and fabricated for years by United States Aluminum Company, a major force in the field. Their engineers and fabrication specialists had developed many architectural systems widely used in the construction of residential, commercial, and institutional buildings. Through precise engineering and testing in a variety of climate conditions, the company improved upon their designs, resulting in architectural systems known throughout the industry as being innovative, durable, and reliable.

Architects and designers who are familiar with the qualities found in U.S. Aluminum systems know that they can specify them with confidence to their clients. The company has invested the time and effort required to assure their systems are properly tested to meet the conditions required to pass local and national building codes; including some of the very strictest, such as the Miami/Dade County Protocols for impact resistance in hurricane-prone areas.

United States Aluminum had for a time struggled with its own viability in the current economy, and faced an uncertain future. The leadership at C.R. Laurence saw this as an opportunity to save hundreds of American jobs, and keep good American made products on the market.

Now renamed simply U.S. Aluminum in its new partnership with C.R. Laurence, the company will continue to make available the architectural systems that has made them a leader in the industry for so long. These systems' reputation for quality benefits not only those who specify and install them, but also the occupants of the buildings into which they have been installed.

C.R. Laurence is committed to providing both the financial resources and our more than 50 years of experience in the glazing industry to breathe new life into the U.S. Aluminum brand and make it a prominent force in the market once again. There are immediate enhancements we will make to U.S. Aluminum to raise the bar for service and product availability in the storefront/curtain wall market. Some of these include shortened lead times, stocking programs, and other programs that take full advantage of CRL's manufacturing and distribution systems. These last six months have been a great learning experience for both CRL and U.S. Aluminum. In 2012 we will put many improvement initiatives into action to make our plans a reality. As a market leader we understand the needs of our customers, both large and small. We know you'll see and appreciate the difference between the newly renovated U.S. Aluminum and our competitors.

Lloyd W. Talbert  
President and C.O.O.



# TABLE OF CONTENTS

## GENERAL INFORMATION

### ENTRANCES

- Series 250/400/550 Entrance Doors
- Series 800/850 Durafront Doors
- Platinum Series Doors
- Balanced Doors
- Thermal Entrances
- Series 900 Terrace Doors
- Series 2000 Sliding Doors

### STOREFRONTS

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

### WINDOW WALLS

- BG Systems
- Top Notch Systems
- OS-2 Systems

### WINDOWS

- Series 7200/7300
- Series 7400
- Series 7500/7600
- Series 8000/8100/8200

### HURRICANE RESISTANT

- Series DH-350 Entrance Doors
- Series DHS-500 Storefront
- Storm Front™ IG500/IG600
- Storm Front™ IT600
- Series BAL-350 Terrace Doors
- IW7500/IW7600/IW8000/IW8100/IW8200 Windows

### BLAST MITIGATION

- BR604/BR606/BT601 Storefront
- BR7500/BW7600/BW8000/BW8100/BW8200 Windows

### ARCHITECTURAL SYSTEMS

- 'All-Glass' Door Systems
- Patch Hardware
- Laguna Series Door Hardware
- Heavy Glass Sliding Door Systems
- SPS Stacking Partition System
- Interior Office Partition Systems
- Architectural Railing Systems
- Architectural Metals
- Frameless Shower Hardware

ENTRANCES

A

STOREFRONTS

B

WINDOW WALLS

C

WINDOWS

D

HURRICANE RESISTANT

E

BLAST MITIGATION

F

ARCHITECTURAL SYSTEMS

G



## WELCOME TO THE U.S. ALUMINUM STOREFRONT STORE

For assistance with selecting and specifying any storefront system, contact your local U.S. Aluminum Service Center, or use our toll free service number (800) 262-5151 from anywhere in North America. You can also go online to see more at [usalum.com](http://usalum.com).

## Introducing The

# STOREFRONT STORE



**SYSTEMS • SUPPLIES • SERVICE**

*The Complete Source for Storefronts, From Design to Delivery*

## Systems

- Entrances
- Storefronts
- Window Walls
- Windows
- Hurricane Resistant
- Blast Resistant

U.S. Aluminum has designed and engineered a number of proven and attractive storefront systems with long-lasting quality, reliability, and durability. Whatever the climate and environment, our storefront systems are known performers that deliver value on a daily basis. There's no need to compromise on selection or price, because the Technical Specialists at U.S. Aluminum are trained to serve your needs, from design to delivery, and every step in between. Our new union with C.R. Laurence Company has given us a better ability to be your premier source for all things storefront.

## Supplies

- Hardware
- Accessories
- Sealants
- Fasteners
- Tools
- Safety Gear

U.S. Aluminum can now serve you with more than just the storefront metals and accessories. Our union with C.R. Laurence Company gives you complete access to their many thousands of hardware and installation accessories, along with the sealants, fasteners, tools, and safety gear you'll need on the job site. Selecting these items is made simple through the C.R. Laurence web site, [crlaurence.com](http://crlaurence.com), where their Online Catalog provides you with an organized method for selecting and ordering your supplies.

## Service

- Service Centers Throughout North America From Coast to Coast
- Expanded Distribution Through the C.R. Laurence Network

The Storefront Store at U.S. Aluminum has the backing of our Service Centers and the distribution network of C.R. Laurence Company. Locations span from coast to coast across the United States and Canada. Each is interconnected by the C.R. Laurence Interbranch Transfer System, bringing your orders closer to you, which saves you time and the expense of cross-country shipping. Plans are also underway to add U.S. Aluminum Service Centers in the New York Metro area, the San Francisco Bay area, and other major urban centers in the near future.

## You Can Do It! The Storefront Store Can Show You How

- **There's No Mystery Behind Selling and Installing Quality U.S. Aluminum Storefronts**
- **We Share Our Experience With You to Help You Expand Into This Profitable Business**

The Storefront Store employs designers, technicians, and service representatives who are invested in making the storefront business a profitable venture for U.S. Aluminum and our customers. Our years of experience in the field have given us the confidence to promote your entry into the sale and installation of attractive and quality-built storefronts.

Every community has businesses large and small that depend upon welcoming and reliable storefronts to attract customers. As time passes these storefronts can become worn or dated, in need of repair or outright replacement.

You can be your community's source for storefront repairs and replacement. It's not difficult when you have the backing of the Storefront Store. From design to delivery, the Storefront Store has the personnel and assets to get your storefront materials to you on time and without hassle.

We can do it and so can you. So if you would like more information on the products and services provided by the Storefront Store just contact us toll free at (800) 262-5151 from anywhere in the United States and Canada. You can also contact us through our web site at [usalum.com](http://usalum.com).

**CALL US TOLL FREE FROM  
ANYWHERE IN THE UNITED  
STATES AND CANADA  
(800) 262-5151**



# CRL/U.S. ALUMINUM



## Our Service Centers are the Home of the Storefront Store



U.S. Aluminum Service Centers provide quality architectural systems that you can sell and install with confidence. Each is home to the Storefront Store, providing you with the systems, supplies, and service you need to make storefronts a part of your successful business. Our product lines include storefronts, entrance doors, window walls, curtain walls, sun control, and other systems that are known by the architectural community for their quality, performance, and aesthetic beauty.



U.S. Aluminum Service Centers provide dependable quality systems to meet specifications. Thousands of examples of U.S. Aluminum products are installed in buildings nationwide. Builders know that our systems are subjected to rigorous testing to assure quality and reliability through many years of service in all environmental conditions. Many U.S. Aluminum products now qualify for LEED® ratings as the requirement for "green" building products increases.

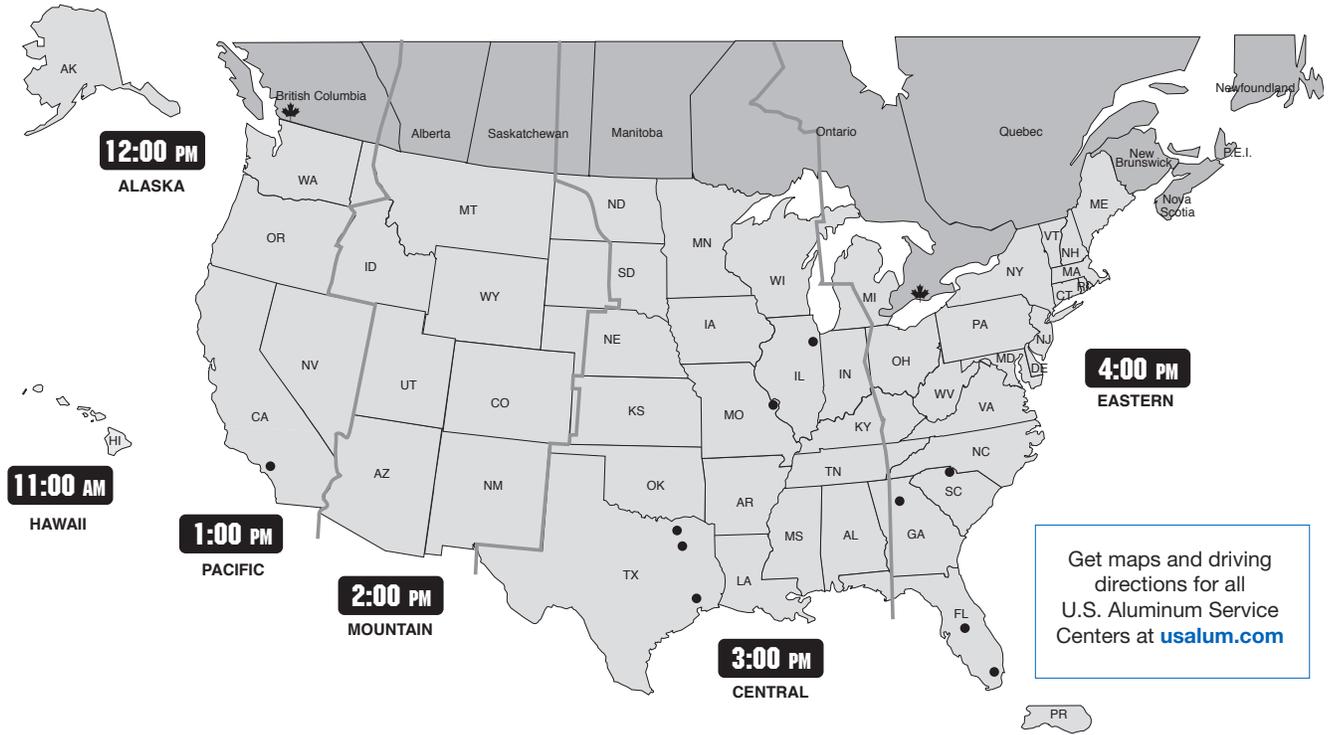


Experienced U.S. Aluminum employees operate our Service Centers, and have developed long-lasting relationships with our suppliers and customers. Their familiarity with the product line and regional environmental conditions are a big plus when it comes to recommending just the right U.S. Aluminum system to complete your project. We invite you to contact your local U.S. Aluminum Service Center for information and pricing on any of our systems and product lines. Locations are shown on the opposite page.



U.S. Aluminum's 62,000 sq. ft. Service Center in Los Angeles, California is Our Newest Storefront Store

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



SERVICE CENTERS ARE PLANNED TO OPEN IN SEVERAL AREAS IN THE NEAR FUTURE. PLEASE CALL US OR VISIT [USALUM.COM](http://usalum.com) FOR A CURRENT LIST OF LOCATIONS.

### LOS ANGELES, CALIFORNIA

2450 E. VERNON AVE.  
LOS ANGELES, CA 90058-1802  
PHONE: (323) 268-4230  
FAX: (866) 262-3299

### WAXAHACHIE, TEXAS

(DALLAS AREA)  
200 SINGLETON RD.  
WAXAHACHIE, TX 75165-5012  
PHONE: (972) 937-9651  
FAX: (972) 937-0405

### ST. LOUIS, MISSOURI

11621 FAIRGROVE INDUSTRIAL BL.  
MARYLAND HEIGHTS, MO 63043-3437  
PHONE: (314) 997-5112  
FAX: (314) 997-7504

### ROCK HILL, SOUTH CAROLINA

(CHARLOTTE AREA)  
720 CELRIVER ROAD  
ROCK HILL, SC 29730-7419  
PHONE: (803) 366-8326  
FAX: (803) 366-5776

### CANADA

(VANCOUVER AREA)  
5377 272ND ST.  
LANGLEY, BC V4W 1P1  
PHONE: (604) 857-7766  
FAX: (604) 857-1377

### DALLAS, TEXAS

4841 LAKAWANA ST.  
DALLAS, TX 75247-6713  
PHONE: (214) 638-8722  
FAX: (214) 638-3299

### CHICAGO, ILLINOIS

6969 W. 73RD ST.  
CHICAGO, IL 60638-6025  
PHONE: (708) 458-9070  
FAX: (708) 458-7364

### ATLANTA, GEORGIA

5530 WESTPARK DRIVE SW  
ATLANTA, GA 30336-2645  
PHONE: (404) 344-3468  
FAX: (404) 344-3412

### CANADA

(TORONTO AREA)  
65 TIGI COURT  
CONCORD, ON L4K 5E4  
PHONE: (905) 303-7966  
FAX: (905) 303-7965

### HOUSTON, TEXAS

5910 WEST BY NORTHWEST BL.  
SUITE 300  
HOUSTON, TX 77040-4949  
PHONE: (713) 462-1766  
FAX: (713) 462-1680

### MIAMI, FLORIDA

7500 N.W. 69TH AVE.  
MIAMI, FL 33166-2543  
PHONE: (305) 888-0077  
FAX: (305) 884-3111

### DAVENPORT, FLORIDA

(ORLANDO AREA)  
45150 US HIGHWAY 27 NORTH  
SUITE D  
DAVENPORT, FL 33897-4512  
PHONE: (863) 424-4700  
FAX: (863) 424-4646

## CRL/U.S. ALUMINUM

# C.R. Laurence Company Partners With U.S. Aluminum for Improved Service Plus a Bigger and Better Product Selection

The union of U.S. Aluminum with C.R. Laurence Company combines the strengths of both companies to provide architects, designers, and installers with a single resource for storefront and entrance projects. CRL has served all facets of the glazing industry for decades, from the local glass shop to global glass manufacturers. CRL's Manufacturing Division produces thousands of products for the industry, and holds patents for some of the most innovative of systems used in the glazing and building trades. We invite you to get to know C.R. Laurence through our web site, [crlaurence.com](http://crlaurence.com). You can also contact us directly through our local Service Centers or through our headquarters by calling (800) 421-6144 from anywhere in the United States and Canada.

## C.R. Laurence Hardware and Supplies to Help You Finish the Job

C.R. Laurence Company has the most complete selection of glazing supplies and builder's hardware in the entire industry. Installation and measuring tools, sealants, gaskets, fasteners, setting blocks, shims, plus safety gear for your protection.



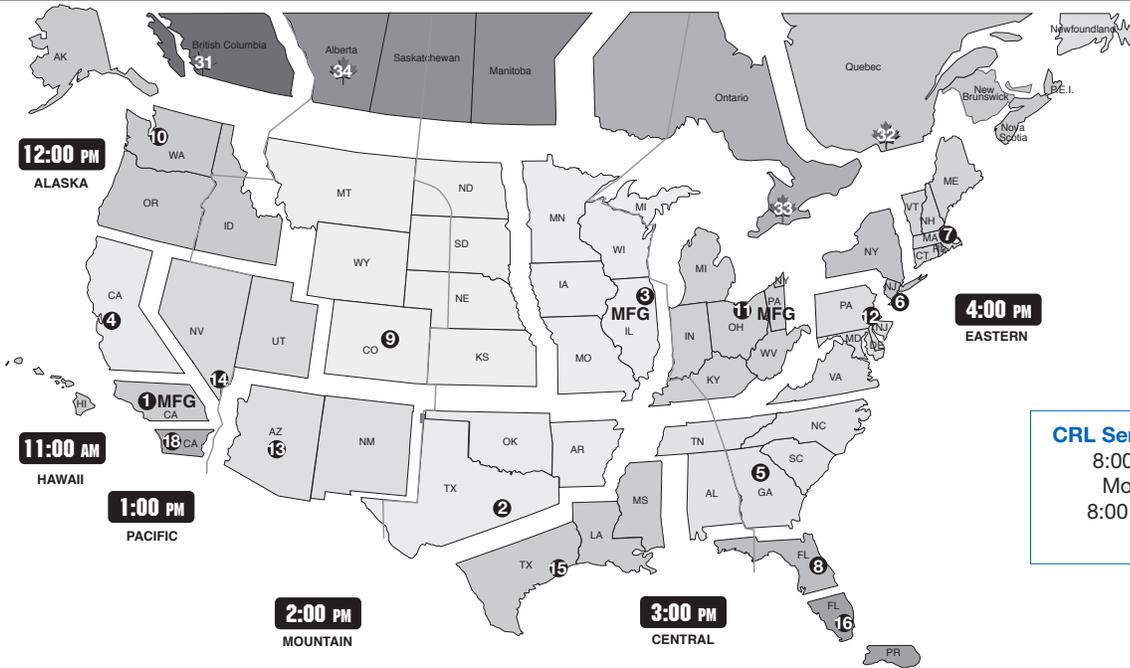
- Everything You Need to Prepare for and Complete a Successful Installation Can Be Sent Along With Your U.S. Aluminum Storefront Package

## C.R. Laurence Catalogs are Online at [crlaurence.com](http://crlaurence.com)

C.R. Laurence Company publishes a complete selection of Master and Specialty Catalogs to showcase a product line that runs into tens of thousands of items. All of them are available for viewing, download or order in the Catalog Library at [crlaurence.com](http://crlaurence.com).



Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



**CRL Service Center Hours**  
 8:00 am to 5:00 pm  
 Monday to Friday  
 8:00 am to 12:00 pm  
 Saturday

## CRL U.S.A.

### CORPORATE HEADQUARTERS

- |  |  |  |   |
|--|--|--|---|
| <p><b>1 LOS ANGELES, CALIFORNIA</b><br/>                 2503 E. VERNON AVE.<br/>                 LOS ANGELES, CA 90058-1897<br/>                 PHONE: (323) 588-1281<br/>                 FAX: (323) 581-6522</p> | <p><b>5 ATLANTA, GEORGIA</b><br/>                 600 WHARTON DR.<br/>                 ATLANTA, GA 30336-4040<br/>                 PHONE: (404) 696-3445<br/>                 FAX: (404) 696-3386</p>      | <p><b>9 DENVER, COLORADO</b><br/>                 4770 JOLIET ST.<br/>                 DENVER, CO 80239-2513<br/>                 PHONE: (303) 373-9988<br/>                 FAX: (303) 373-0884</p>       | <p><b>13 PHOENIX, ARIZONA</b><br/>                 640 S. 54TH AVE.<br/>                 PHOENIX, AZ 85043-4731<br/>                 PHONE: (602) 269-7500<br/>                 FAX: (602) 269-7600</p>             |
| <p><b>2 DALLAS, TEXAS</b><br/>                 2080 LONE STAR DR.<br/>                 DALLAS, TX 75212-6390<br/>                 PHONE: (214) 634-7305<br/>                 FAX: (214) 631-6519</p>                 | <p><b>6 NEW YORK CITY AREA</b><br/>                 211 COUNTY AVE.<br/>                 SECAUCUS, NJ 07094-2006<br/>                 PHONE: (201) 770-1077<br/>                 FAX: (201) 770-1599</p>   | <p><b>10 SEATTLE AREA</b><br/>                 23000 64TH AVE. S.<br/>                 KENT, WA 98032-1838<br/>                 PHONE: (253) 850-5800<br/>                 FAX: (253) 813-1818</p>         | <p><b>14 LAS VEGAS, NEVADA</b><br/>                 4120 SOBB AVE.<br/>                 LAS VEGAS, NV 89118-6857<br/>                 PHONE: (702) 253-0211<br/>                 FAX: (702) 253-0311</p>            |
| <p><b>3 CHICAGO AREA</b><br/>                 2765 SPECTRUM DR.<br/>                 ELGIN, IL 60124-7841<br/>                 PHONE: (847) 426-3800<br/>                 FAX: (847) 426-0111</p>                    | <p><b>7 BOSTON AREA</b><br/>                 97 ROBERT TREAT PAINE DR.<br/>                 TAUNTON, MA 02780-1267<br/>                 PHONE: (508) 880-5600<br/>                 FAX: (508) 880-5775</p> | <p><b>11 CLEVELAND AREA</b><br/>                 31600 CARTER ST.<br/>                 SOLON, OH 44139-3551<br/>                 PHONE: (440) 248-0003<br/>                 FAX: (440) 248-0120</p>        | <p><b>15 HOUSTON, TEXAS</b><br/>                 4420 WINDFERN RD.<br/>                 HOUSTON, TX 77041-8918<br/>                 PHONE: (713) 462-6300<br/>                 FAX: (713) 462-6306</p>              |
| <p><b>4 SAN FRANCISCO/OAKLAND AREA</b><br/>                 33200 DOWE AVE.<br/>                 UNION CITY, CA 94587-2013<br/>                 PHONE: (510) 475-1000<br/>                 FAX: (510) 475-1404</p>   | <p><b>8 ORLANDO, FLORIDA</b><br/>                 6950 PRESIDENTS DR.<br/>                 ORLANDO, FL 32809-5668<br/>                 PHONE: (407) 857-7900<br/>                 FAX: (407) 857-7766</p>  | <p><b>12 PHILADELPHIA AREA</b><br/>                 1511 LANCER DR.<br/>                 MOORESTOWN, NJ 08057-4232<br/>                 PHONE: (856) 727-1022<br/>                 FAX: (856) 727-3299</p> | <p><b>16 MIAMI AREA</b><br/>                 14290 N.W. 4TH ST.<br/>                 SUNRISE, FL 33325-6226<br/>                 PHONE: (954) 846-9233<br/>                 FAX: (954) 846-9277</p>                 |
|  |  |  | <p><b>18 SAN DIEGO, CALIFORNIA</b><br/>                 10280 CAMINO SANTA FE<br/>                 SAN DIEGO, CA 92121-3105<br/>                 PHONE: (858) 678-8984<br/>                 FAX: (858) 678-0486</p> |

## CRL Canada

- |  |   |   |  |
|--|---|---|--|
| <p><b>31 VANCOUVER AREA</b><br/>                 11920 HORSESHOE WAY<br/>                 RICHMOND, BC V7A 4V5<br/>                 PHONE: (604) 448-9344<br/>                 FAX: (604) 448-9322</p> | <p><b>32 MONTREAL AREA</b><br/>                 8200, RUE DES BÂTISSEURS<br/>                 ANJOU, QC H1J 3B3<br/>                 PHONE: (514) 352-3300<br/>                 FAX: (514) 352-1017</p> | <p><b>CANADA HEADQUARTERS</b></p> <p><b>33 TORONTO AREA</b><br/>                 65 TIGI COURT<br/>                 CONCORD, ON L4K 5E4<br/>                 PHONE: (905) 303-7966<br/>                 FAX: (905) 303-7965</p> | <p><b>34 CALGARY, ALBERTA</b><br/>                 4200 116 AVENUE SE<br/>                 CALGARY, AB T2Z 4B5<br/>                 PHONE: (403) 250-5783<br/>                 FAX: (403) 291-3260</p> |
|--|---|---|--|

## An Integration of Capabilities to Benefit Your Storefront Business



### U.S. Aluminum Systems are Designed and Fabricated Here

Your orders for U.S. Aluminum Systems are designed and fabricated in one of our North American Service Centers. This keeps lead times short because there's no delay for parts or accessories to come from overseas. This also helps prevent unexpected cost surges due to unstable international currency markets.



### U.S. Aluminum Can Help Design Your Next Storefront Project

We have a dedicated Computer Aided Drafting (CAD) Department to assist you with drawing submittals and custom design work after you've landed that special project. They will work with you to assure your plans are safe and viable and the best option for your prospective clients in today's very competitive business environment.



### U.S. Aluminum Systems Can Be Delivered Closer to Your Project Site

U.S. Aluminum and C.R. Laurence Company have Service Centers in over 20 major metropolitan areas in the United States and Canada, and operate an interbranch transfer system that can bring your orders closer to your job site. You save on costly cross-country shipping and have the assurance that we will handle your order with care.



### U.S. Aluminum Has a New Stocking Program for Standard Doors at All U.S. Aluminum and C.R. Laurence Service Centers

- **Need a Quality Built Storefront Door in a Rush?**  
**Our New Stocking Program for Standard Doors is the Solution**

Many things can happen to storefront doors in busy stores: damage from storms, vandalism, and just plain wear and tear from years of service. U.S. Aluminum can help you be prepared for that next service call with our new Stocking Program for Standard Doors, now available to you through all U.S. Aluminum and C.R. Laurence Service Centers. See page 08-A1 thru 11-A1 for more information.

## You Can Do It With the Help of Our Storefront Estimating Software



### U.S. Aluminum Currently Supports Two Estimating and Bidding Storefront Programs to Produce Professional Results

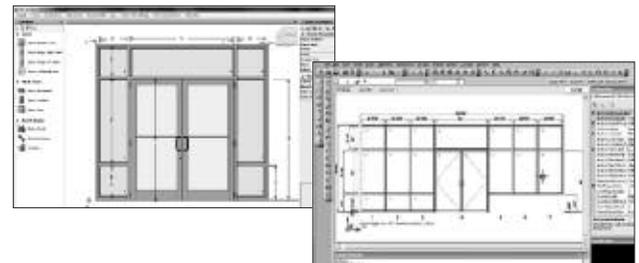
C.R. Laurence and U.S. Aluminum are making storefront estimating software available that allows you to produce professional plan views and make hardware ordering lists right from your own PC.

A powerful stock material optimizer allows you to check and modify cut pieces before the job is optimized. You get glass sizes based on elevations drawn, and a print sheet can be produced for the shop to use for optimization of materials. The software provides you with libraries of common storefront templates that can be tailored to a particular project or you can build your own library of your most common designs. You can also copy and modify past jobs.

Contact U.S. Aluminum Technical Sales toll free at (800) 262-5151 for information on how you can put this valuable innovation to work for you.

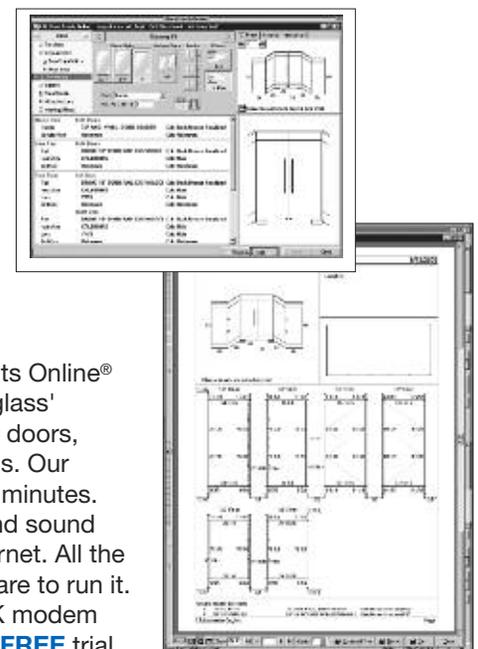


**FOR MORE INFORMATION ON OUR STOREFRONT ESTIMATING SOFTWARE CALL US TOLL FREE (800) 262-5151**



## CRL 'All-Glass' Storefronts Online®

- Request Quotes and Order Directly From Program
- You Can Create a Job Template Library or Clone Any Saved Project
- New Branding Features Add Your Company Logo to Documents
- Direct Link to CRL Web Site From Program
- CRL Training Webinars to Get You Started



Designers of 'all-glass' storefronts will find our web based 'All-Glass' Storefronts Online® program to be a real time and money saver. It is tailored for use in most any 'all-glass' storefront application using 3/8", 1/2", or 3/4" (10, 12, or 19 mm) glass, including doors, sidelites, transoms, and fin supports with full top and bottom rails or patch fittings. Our program will create a hardware list, print glass sizes, and create a quote sheet in minutes. This includes warnings regarding any issues that may conflict with a complete and sound entrance. You can simply log on from any computer that is connected to the Internet. All the processing takes place on our computers so you do not need any special hardware to run it. Any Windows-based PC running Windows 2000 or newer with a minimum of 56K modem can be used. Go to [crlaurence.com](http://crlaurence.com) and sign up for our Webinar and a 30-day **FREE** trial.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Visit the U.S. Aluminum Web Site

The entire scope of our products and services can be quickly and easily accessed online through our ever-evolving web site, [usalum.com](http://usalum.com). Areas of interest are easily navigated through simple drop down menu selections that are clearly and colorfully presented.

You can examine our systems, search our resource guides, and view our project galleries. If you wish to contact any of our Service Centers there's a directory of phone numbers and addresses. You can also request product literature and installation guides or just catch up on the latest U.S. Aluminum news and press releases.

New features, such as online stock checks, updated product guides, and links to our social media pages are frequently updated to enhance the value of the web site for all users.

We invite you to visit us at [usalum.com](http://usalum.com), and to contact us with your comments and suggestions about how we can make it an even more valuable business resource.

**Meydenbauer Convention Center**  
 Architects: LMN Architects  
 General Contractor: Regency Northwest  
 photo: provided by Meydenbauer Center

**NEW U.S. Aluminum Stock Check**  
 We are pleased to announce the addition of the U.S. Aluminum Stock Check application. View "real-time" stock quantities at the various U.S. Aluminum branches throughout North America. [Click here to begin.](#)

**U.S. Aluminum is a Fabricator and Supplier of:**

- Entrances and Storefronts
- Windows and Curtain Walls
- Hurricane Resistant Building Fronts
- Sun Control Systems
- Blast Mitigation Systems
- Ribbon Wall
- Curtain Walls

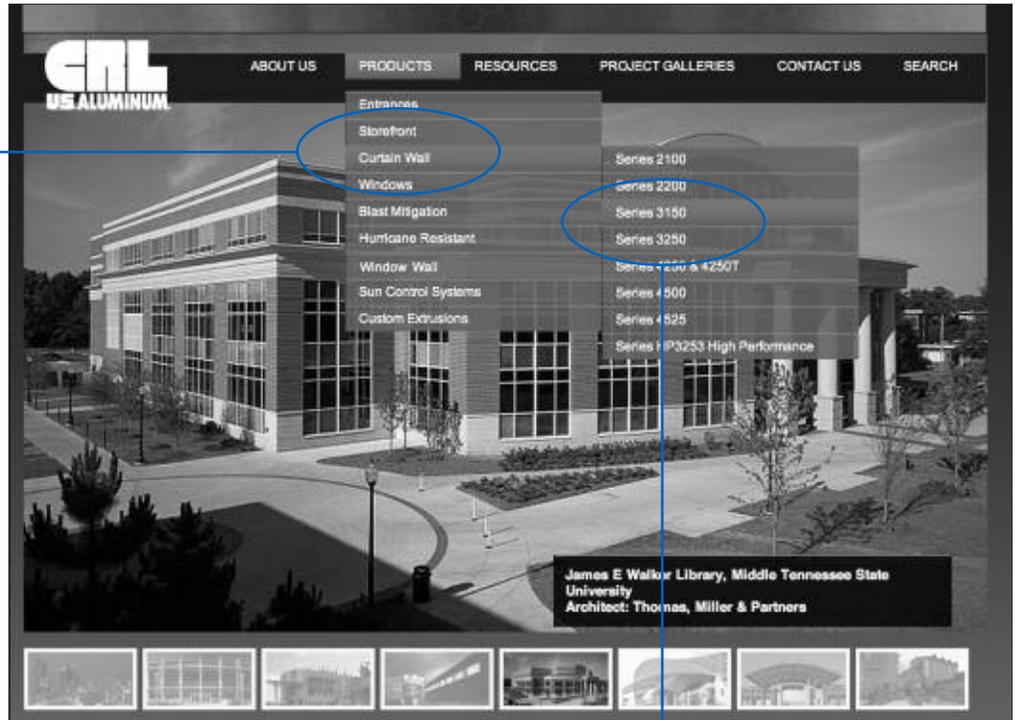
**DELTA DOORS**  
 NEW MIAMI-DADE COUNTY NOA ON NON-

**Product Breakdown: Hurricane Resistant: Storm Front™ IG500**  
 Click a part number to check stock - click an image to view it larger:

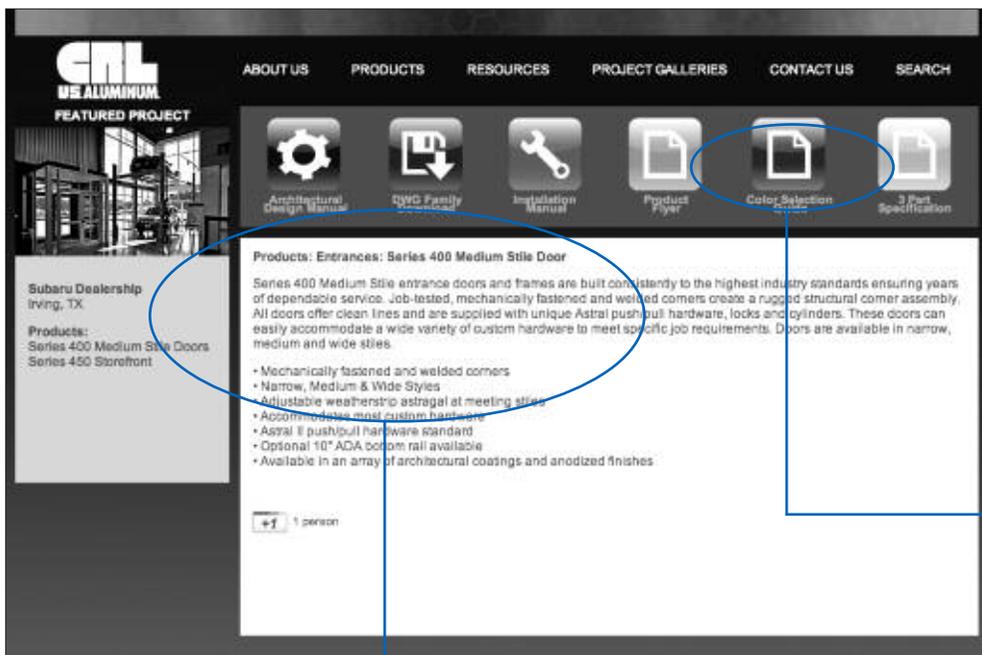
Part Number	Finish	Description	Length / Size	Qty / Pkg	Shape
IG526118024	Clear Anodized	Head/Vertical/Jamb	24'	3	
IG526228024	Bronze Anodized	Head/Vertical/Jamb	24'	3	
IG562118024	Clear Anodized	Horizontal	24'	3	
IG562228024	Bronze Anodized	Horizontal	24'	3	
IG100118024	Clear Anodized	Perimeter Adapter	24'	3	
IG100228024	Bronze Anodized	Perimeter Adapter	24'	3	
IG572118024	Clear Anodized	SH	24'	3	
IG572228024	Bronze Anodized	SH	24'	3	
IG563118024	Clear Anodized	Glass Stop	24'	3	
IG563228024	Bronze Anodized	Glass Stop	24'	3	
IG570118024	Clear Anodized	Sub-SH	24'	3	
IG570228024	Bronze Anodized	Sub-SH	24'	3	
IG524118024	Clear Anodized				

## Product Information on the Web Site

To find information on our systems simply click on the word **PRODUCTS** in the top bar. A drop down menu of the various systems will appear.



Once you click on one of the systems a second drop down menu of that system's series will appear. Click on the series you wish to review to open the next page.



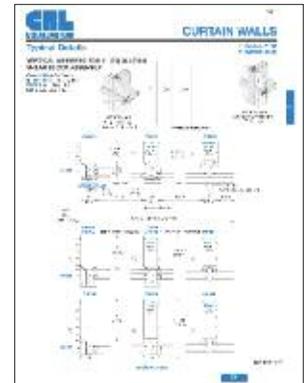
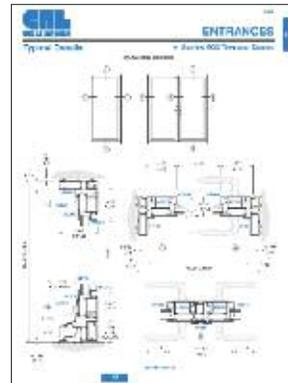
This page also gives you access to other major sources of information about the selected product, such as our architectural manual, product flyers, and installation instructions. Simply click on one of the icons to proceed with your review.

Now that the selected series has opened you will see a summary of the product with bullet points that accentuate the major benefits.

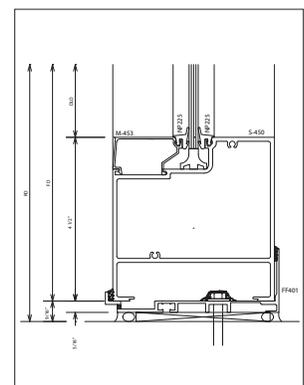
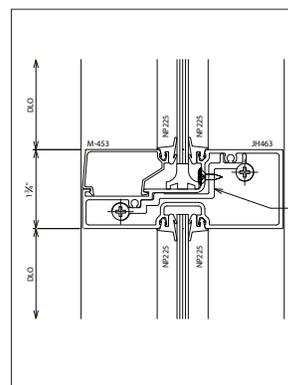
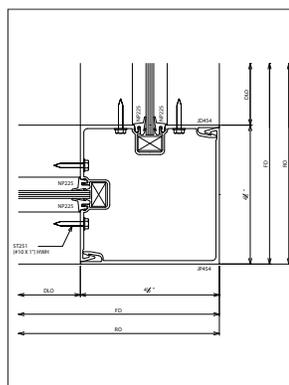
## Product Information on the Web Site



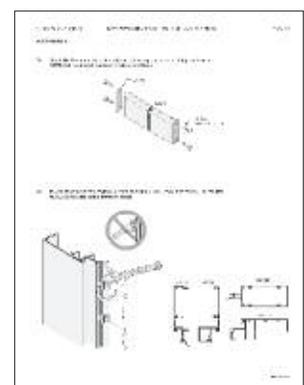
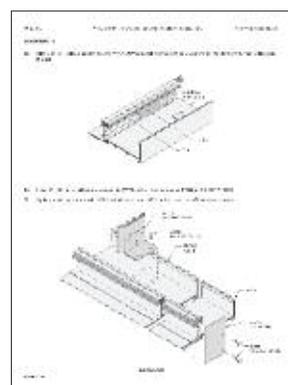
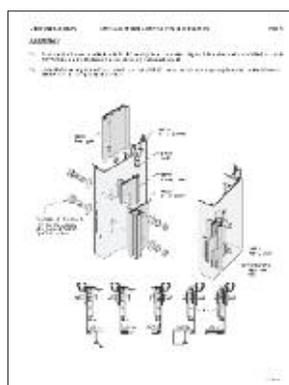
This link displays our Architectural Design Manual pages for the selected series.



This link takes you to our file of CAD Drawings for the selected series.



This link displays the Installation Manual for the selected series.

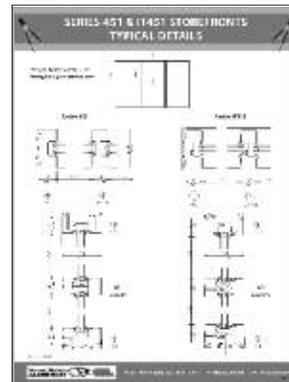


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## Product Information on the Web Site



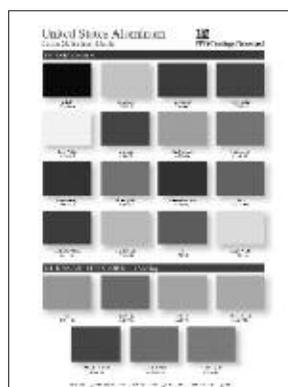
This link displays the color flyer for the selected series.



Flyers, spec data, and other printed materials for all U.S. Aluminum systems and accessory products are available through U.S. Aluminum Service Centers or by calling us toll free at (800) 262-5151 from anywhere in the United States and Canada.



This link displays the Color Selection Guide for standard U.S. Aluminum finishes.



All U.S. Aluminum systems have a range of standard colors and finishes from which to choose. We can also provide special architectural finishes to meet any project requirements through inter-company anodizing and painting facilities.

In addition, many of our systems can be fabricated in a dual or two-tone color scheme by specifying different finishes for the exterior face covers and the interior mullions.

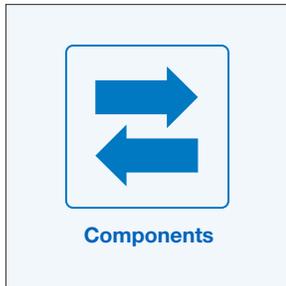


This link displays Architectural Guide Specifications for the selected series.



**NOTE:** Displayed images are samples from [usalum.com](http://usalum.com) at time of publication. All links are subject to update without notice.

## Product Information on the Web Site



This link displays the components list for the selected series.

### Ordering Individual Extrusions and Accessory Components

- Individual Parts for System Repairs and Modifications Are Available
- Detailed Part Numbers Let You Get Online Stock Checks Quicker

Complete U.S. Aluminum Systems typically come with all of the components required to make a complete installation. But if you are ever called to make repairs or modifications to a previously installed system you can get the parts you need that will match the system perfectly. Clicking on the Components icon presents you with images, descriptions, and part numbers that make ordering or checking stock quick and easy. Once you've made your selection you can place your order with your nearest U.S. Aluminum Service Center, or call our national toll free number at (800) 262-5151.

### Aluminum Extrusions

Aluminum extrusion profiles are shown with a description of their function within the system, their standard stock length, and the part numbers for the primary finishes, typically Clear Anodized and Bronze Anodized.

Product Breakdown: Curtain Wall: 3150 & 3250				
Click a part number to check stock - click an image to view it larger				
Part Number	Finish	Description	Length / Size	Qty / Pkg
CW04119004	Clear Anodized	Vertical/Horizontal	24"	3
CW04223004	Bronze Anodized	Vertical/Horizontal	24"	3
CW04119004	Clear Anodized	Vertical	24"	3
CW04223004	Bronze Anodized	Vertical	24"	3
CW08119004	Clear Anodized	Intermediate Horizontal	24"	4
CW08223004	Bronze Anodized	Intermediate Horizontal	24"	4
CW12119004	Clear Anodized	Horizontal Filler	24"	4
CW12223004	Bronze Anodized	Horizontal Filler	24"	4
CW23119004	Clear Anodized	Intermediate Horizontal	24"	4
CW23223004	Bronze Anodized	Intermediate Horizontal	24"	4
CW08119004	Clear Anodized	Horizontal Filler	24"	4
CW08223004	Bronze Anodized	Horizontal Filler	24"	4
CW18119004	Clear Anodized	Vertical/Horizontal	24"	2
CW18223004	Bronze Anodized	Vertical/Horizontal	24"	2
CW14119004	Clear Anodized	Vertical	24"	2
CW14223004	Bronze Anodized	Vertical	24"	2
CW03030004	MS	Pressure Bar	24"	12
CW07119004	Clear Anodized	Posttension Pressure Bar	24"	10
CW07223004	Bronze Anodized	Posttension Pressure Bar	24"	10
CW01119004	Clear Anodized	Panel Cap	24"	12
CW01223004	Bronze Anodized	Panel Cap	24"	12
CW11119004	Clear Anodized	Posttension Anchor (Optional)	24"	6
CW11223004	Bronze Anodized	Posttension Anchor (Optional)	24"	6
CW18119004	Clear Anodized	Pocket Filler	24"	10
CW18223004	Bronze Anodized	Pocket Filler	24"	10
CW08119004	Clear Anodized	Door Jamb Adaptor	24"	4
CW08223004	Bronze Anodized	Door Jamb Adaptor	24"	4
TJ108119002	Clear Anodized	Door Jamb	22"	4
TJ108223002	Bronze Anodized	Door Jamb	22"	4
JH06719001	Clear Anodized	Offset Door Header	21"	4
JH06723001	Bronze Anodized	Offset Door Header	21"	4
DS01119001	Clear Anodized	Door Stop	21"	12
DS01223001	Bronze Anodized	Door Stop	21"	12
F-05010021	Clear Anodized	Panel Filler	21"	12
F-05020021	Bronze Anodized	Panel Filler	21"	12
JC-03119002	Clear Anodized	Center Hung Door Header	22"	6
JC-03123002	Bronze Anodized	Center Hung Door Header	22"	6
F-02119003	Clear Anodized	Header Filler	22"	5
F-02123003	Bronze Anodized	Header Filler	22"	5
J-08119004	Clear Anodized	Center Hung Door Header	24"	4
J-08123004	Bronze Anodized	Center Hung Door Header	24"	4
DA28119021	Clear Anodized	90 Degree Outside Corner	24"	1
DA28123021	Bronze Anodized	90 Degree Outside Corner	24"	1
CW08119004	Clear Anodized	90 Degree Outside Corner	24"	2
CW08223004	Bronze Anodized	90 Degree Outside Corner	24"	2

### Accessory Components

Accessory components are shown with a description of their function within the system, the quantity of pieces in a standard package, and the part number for ordering. Some components can be used in multiple systems.

Product Breakdown: Curtain Wall: 3150 & 3250				
Click a part number to check stock - click an image to view it larger				
Part Number	Finish	Description	Length / Size	Qty / Pkg
H03000000		Temporary Glass Retainer for Wall Closure		80
HT42000000		Exterior Gasket		250'
HT42000000		Interior Gasket		250'
SP45000000		Spacer Gasket for Glass Glaze		250'
SD2100100		Setting Block		100
AM06000000		Edge Gasket		50
PS02000000		Pressure Bar Screw		200
GP08000000		Closure Flange for Outside Corner		10
WR04000000		Water Drain for Outside Corner		10
GP08000000		Closure Flange for Inside Corner		10
WR08000000		Water Drain for Inside Corner		10
AP02000000		Corner Block for 4", 6", 8" & 10" Members (Inside & Outside Corners)		20
AP07000000		Wall Jamb Anchor at Head & Sill for CW08		8
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW04		12
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW04		12
AP07000000		Wall Jamb Anchor at Head & Sill for CW10		8
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW10		12
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW08		12
AP07000000		Wall Jamb Anchor at Head & Sill for CW10		8
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW10		12
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW04		12
AP08000000		Intermediate Vertical Anchor at Head & Sill for CW04		12
AP08000000		Outside 90 Degree Corner Anchor at Head & Sill for CW08		10
AP08000000		Inside 90 Degree Corner Anchor at Head & Sill for CW08 (Shut-Down Only)		10

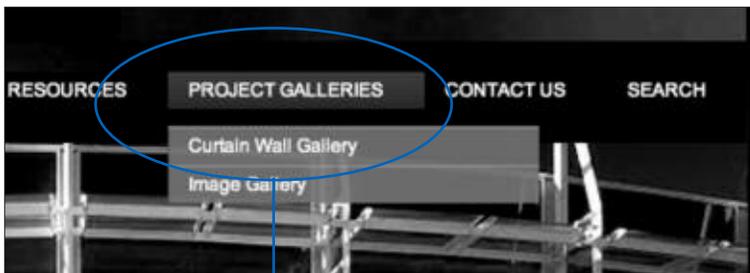
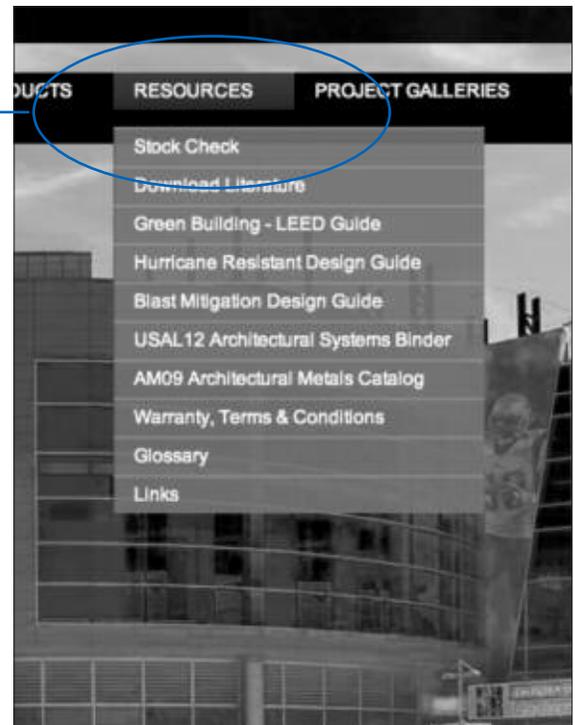
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## Product Information on the Web Site



This link displays our most recent press releases and other news about the growth of our product selection and new services that become available. There is also a place where we offer career positions that may become available, plus a brief history of the company and our new union with C.R. Laurence.

This link provides access to many of the features that our customers have told us are the most useful. You can check available stock in our Service Centers; download our literature in PDF format; review our design guides and assorted architectural catalogs from C.R. Laurence; review company policies regarding warranties, accounting terms and conditions. We also make available an extensive glossary of the terminology and abbreviations used by our industry. You can even access links to industry groups and publications from this menu.



This link allows you to view images from our galleries of completed projects. Click through these images to see how U.S. Aluminum systems have been used to construct beautiful and functional entrances and storefronts, curtain walls, windows, and sun control systems.



**NOTE:** Displayed images are samples from [usalum.com](http://usalum.com) at time of publication. All links are subject to update without notice.

## Product Information on the Web Site

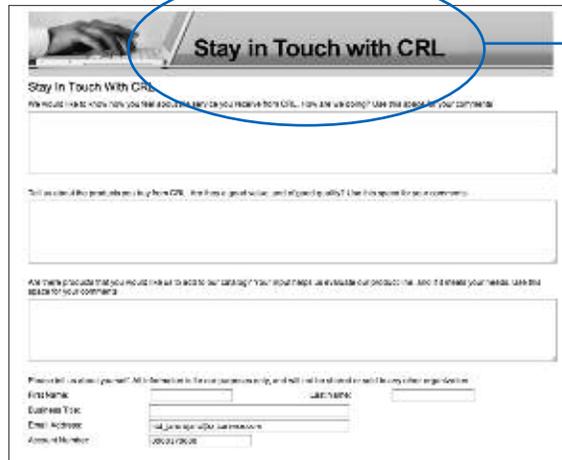
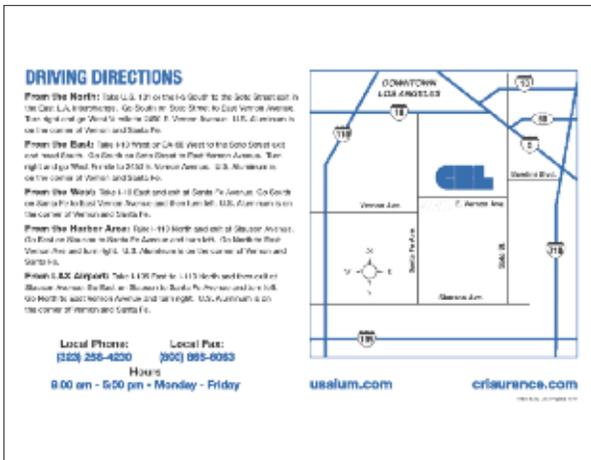


This link provides information on how to contact or visit all U.S. Aluminum Service Centers. When you click on Locations you get a map showing our Service Centers in the U.S. and Canada. Click on any Service Center and you'll get driving directions and a map.

This link also provides information on how to contact the U.S. Aluminum Sales Representative that serves your area.



Western U.S.	Central U.S.	Eastern U.S.	Canada
Salesman Name	Cell Phone	State	Area Covered if not the whole state
Carl Lappe	(800) 262-5151	Arizona	
		California	San Diego
Gordon Peterson	(800) 262-5151	Colorado	Denver
		Utah	
John Labare	(800) 262-5151	California	Orange County
Lou Joella		California	Los Angeles
		Nevada	Las Vegas
Steve Jones	(800) 262-5151	California	Union City
		Nevada	Reno
Todd Sheppard	(800) 262-5151	Oregon	
		Washington	Seattle



You can use this link to send us your comments and suggestions about any aspect of service or product quality you receive from U.S. Aluminum or C.R. Laurence Company.

The U.S. Aluminum web site makes it easier for you to do business with us, and we intend to continue our efforts to improve its value to you. We want your online experience with U.S. Aluminum to be pleasant and productive, and welcome at any time your comments on how we can make it better.

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# A

## ENTRANCES

- Series 250/400/550 Entrance Doors
  - Series 800/850 Durafront Doors
  - Platinum Series Doors
  - Balanced Doors
  - Thermal Entrances
  - Series 900 Terrace Doors
  - Series 2000 Sliding Doors
  - Accessory Hardware
- 

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Devils Lake Regional Airport  
Devils Lake, ND

U.S. Aluminum has long been an industry leader in the manufacture of entrance doors and frames. Our products are consistently built to the highest industry standards, ensuring years of reliable service. Job-tested, mechanically fastened and welded corner construction creates a sturdy structural corner assembly. All doors offer clean lines, and are supplied with push-pull hardware and maximum security locks.

All U.S. Aluminum Entrances can be custom modified to the specific requirements of your project. Our product specialists will work with you to ensure the entrance hardware you order from us will meet your needs and the approval of your clients.

## SYSTEM

## PAGES

- **Series 250/400/550 Entrance Doors .....01-A1 thru 16-A1**
- **Series 800/850 Durafront Doors.....01-A2 thru 11-A2**
- **Panic and Egress Control Hardware .....01-A3 thru 08-A3**
- **Platinum Series Doors .....01-A4 thru 07-A4**
- **Balanced Doors .....01-A5 thru 09-A5**
- **Thermal Entrances .....01-A6 thru 05-A6**
- **Series 900 Terrace Doors.....01-A7 thru 07-A7**
- **Series 2000 Sliding Doors.....01-A8 thru 08-A8**
- **Accessory Hardware .....01-A9 thru 17-A9**

For information or other assistance, use our toll free phone  
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**Toll Free Fax (866) 262-3299**

Contact us through our web site at [usalum.com](http://usalum.com)

## Table of Contents

- Series 250
- Series 400
- Series 550

SECTION A1	PAGE
SPECIFICATIONS .....	02-A1
TECHNICAL DATA .....	03-A1
DOOR FEATURES, OPTIONS, AND PUSH/PULL HARDWARE .....	04-A1
TYPICAL DETAILS .....	05-A1 thru 07-A1
CENTER PIVOT STOCK DOORS AND FRAMES .....	08-A1 and 09-A1
OFFSET PIVOT STOCK DOORS AND FRAMES .....	10-A1 and 11-A1
STOCK HEADERS AND THRESHOLDS .....	12-A1 and 13-A1
DOOR CORNER CONSTRUCTION .....	14-A1
ACCESSORIES .....	15-A1 and 16-A1



Project: Retail Entrance, Dallas, TX

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |

# ENTRANCES

## Specifications

- Series 250
- Series 400
- Series 550

### SECTION 08 11 16 ALUMINUM DOORS AND FRAMES

SERIES	STILES	TOP RAIL	BOTTOM RAIL	GLAZING INFILL
<b>250 Narrow Stile</b>	2" (50.8)	2-1/8" (54)	3-3/16" (81)	1/4" (6) or 1" (25)
<b>400 Medium Stile</b>	3-1/2" (88.9)	3-3/16" (81)	6-1/2" (165.1)	1/4" (6) or 1" (25)
<b>550 Wide Stile</b>	5" (127)	5-1/2" (139.7)	6-1/2" (165.1)	1/4" (6) or 1" (25)
A.D.A. Bottom Rail Option for Any Series			9-1/2" (241.3)	

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum entrance doors, door frames, and hardware as detailed on the drawings and specified herein.

Work Not Included: Structural support of the framing system, wood framing, structural steel, masonry, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on one of the following U.S. Aluminum Series 250, 400 or 550 Entrance Doors.

**OPTIONAL:** Door shall have A.D.A. 9-1/2" (241.3) bottom rail.

When substitute products are to be considered, supporting technical literature, samples, and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### II. PRODUCT MATERIALS

Door members shall be extruded architectural aluminum 6063-T5 alloy and temper. Major portions of all door sections, except glazing beads, shall be nominal .125 (3.2) inch. Wall thickness of frame members shall be nominal .093 (2.4) inch. Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR CONSTRUCTION

Door stiles and rails shall be tubular

sections accurately joined at corners with heavy concealed reinforcement brackets secured with bolts, screws, and then MIG welded. Doors shall have snap-in stops with E.P.D.M. glazing gasket on both sides of the glass. No exposed screws shall be permitted. Each door leaf shall be equipped with an adjusting mechanism, located in the top rail near the lock stile, which provides for minor clearance adjustments after installation.

A hard-backed poly-pile weatherstrip shall be installed in both stiles of center hung single doors and in hinge stiles of center hung pairs of doors. Offset pivoted or butt hung doors shall have weatherstripped doorstops at frame jambs and header. The active meeting stile of all pairs of doors shall have an adjustable astragal with a double line of weatherstripping.

**OPTIONAL:** Door bottom rail will be weatherstripped with an E.P.D.M. blade gasket sweep strip applied with concealed fasteners. (**NOTE:** This option is required for high performance conditions.)

**OPTIONAL:** Door bottom rail shall receive a concealed weatherstripped insert.

#### HARDWARE

Hardware for aluminum doors and door frames shall be the entrance manufacturer's standard. If custom hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious

blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... (Specify one of the following).

- \_\_\_\_\_ #11 Clear anodic coating
- \_\_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_\_ #33 Black anodic coating

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

#### III. EXECUTION INSTALLATION

All items under this heading shall be set in their correct locations as shown in the details and shall be level, square, plumb, at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between entrance framing and the building structure shall be sealed in order to secure a watertight installation. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

## Technical Data

- Series 250
- Series 400
- Series 550

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

As an industry leader in the manufacture of entrance doors and frames, U.S. Aluminum consistently builds products to meet the highest industry standards, ensuring years of reliable service. Job-tested, mechanically fastened and welded corner construction creates a rugged structural corner assembly. All doors offer clean lines and are supplied with unique Astral II push/pull hardware and maximum security locks. These entrances can easily accommodate a wide variety of custom hardware for specific job requirements.

SERIES	STILES	TOP RAIL	BOTTOM RAIL	TRAFFIC APPLICATIONS
<b>250 Narrow Stile</b>	2" (50.8)	2-1/8" (54)	3-3/16" (81)	Light to Moderate
<b>400 Medium Stile</b>	3-1/2" (88.9)	3-3/16" (81)	6-1/2" (165.1)	Moderate to Heavy
<b>550 Wide Stile</b>	5" (127)	5-1/2" (139.7)	6-1/2" (165.1)	Heavy
A.D.A. Bottom Rail Option for Any Series			9-1/2" (241.3)	

#### STANDARD FEATURES:

**Glass Stops** - Pressure type glass stops (square or beveled) with E.P.D.M. glazing gaskets permit time saving installation of 1/4" (6) glass. Optional glass stops are available for 1" (25) infills. Setting blocks for glass are preset at the factory.

**Adjustable Leveling Screw** - A simple adjustment on the leveling screw, concealed in the top rail of the door, compensates for minor variances in door openings after installation.

**Adjustable Astragal** - All pairs of doors come with spring-loaded fully adjustable dual weathered astragals for optimum air resistance. Binding or gaps at the meeting stiles can be easily corrected by simple adjustments. The full length dual weather stripping on the astragal is not interrupted by the deadlock.

#### ACCESSORIES:

##### Hinging Hardware

- Offset Pivots for Single Acting Doors
- Butt Hinges for Single Acting Doors
- Concealed Center Pivots for Use With Double Acting Doors

##### Closers

- Exposed Overhead
- Concealed Overhead
- Floor

##### Panic Exit Devices

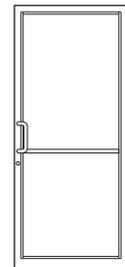
- Conventional Cross Bar
- Mid-Panel Panic

**Vanguard Security Astragal** - See page 16-A1.

#### \* MAXIMUM RECOMMENDED DOORS SIZES:

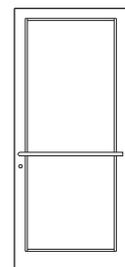
48" (1.219 m) X 96" (2.438 m)

\* Requires special hardware. Please consult with factory.



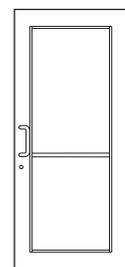
**Series 250 - Narrow Stile**

(Offset hung door shown)



**Series 400 - Medium Stile**

(Center hung door shown)



**Series 550 - Wide Stile**

(Offset hung door shown)

# ENTRANCES

## Door Features and Options

FEATURES	SERIES				
	250 NARROW STILE	400 MEDIUM STILE	550 WIDE STILE	800 DURAFRONT	850 DURAFRONT
Single Glaze 1/4" (6)	●	●	●	●	●
Dual Glaze 1" (25)	●	●	●	●	●
Narrow Stile	●				
Medium Stile		●		●	
Wide Stile			●		●
Light to Moderate Traffic	●	●			
Moderate To Heavy Traffic		●	●	●	●
Heavy Traffic		●	●	●	●
Heavy To Abusive Traffic				●	●
Dual Weatherstrip Meeting Stiles	●	●	●	●	●
Adjustable Astragal	●	●	●	●	●
Swing Out	●	●	●	●	●
Swing In	●	●	●	●	●
Double Acting	●	●	●	●	●
Vanguard Security Astragal	Optional	Optional	Optional	Optional	Optional
Mid-Panel Panic	Optional	Optional	Optional	Optional	Optional
3/16" (4.8) Wall Thickness				●	●
A.D.A. Compliant	Optional	Optional	Optional	Optional	Optional

### Astral II STANDARD PUSH/PULL HARDWARE

Clear Push/Pull Standard on Clear Anodized Doors and Painted Doors. Bronze Push/Pull Standard on Bronze and Black Anodized Doors. Push Bars are made from 1" (25) diameter solid aluminum with a 2-1/2" (63.5) projection at lock stile. Pull Handles are made from 1" (25) diameter, solid aluminum with a 9" (229) centerline attachment and 2-1/2" (63.5) projection. \*Push/Pull Hardware is sold one each. For back-to-back handles you must order a quantity of two.

Astral II Standard Push Bars

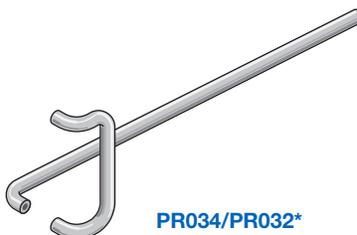


PR034\*

PART NO.	DESCRIPTION	FINISH
PR03411	Push Bar	Clear
PR03425	Push Bar	Champagne

Minimum order: 1 each

Astral II Standard Push/Pull



PR034/PR032\*

PART NO.	DESCRIPTION	FINISH
PR03411	Push Bar	Clear
PR03211	Pull	Clear
PR03425	Push Bar	Champagne
PR03225	Pull	Champagne

Minimum order: 1 each.

Astral II Optional Pulls



PR032\*

PART NO.	DESCRIPTION	FINISH
PR03211	Pull	Clear
PR03225	Pull	Champagne

Minimum order: 1 each.

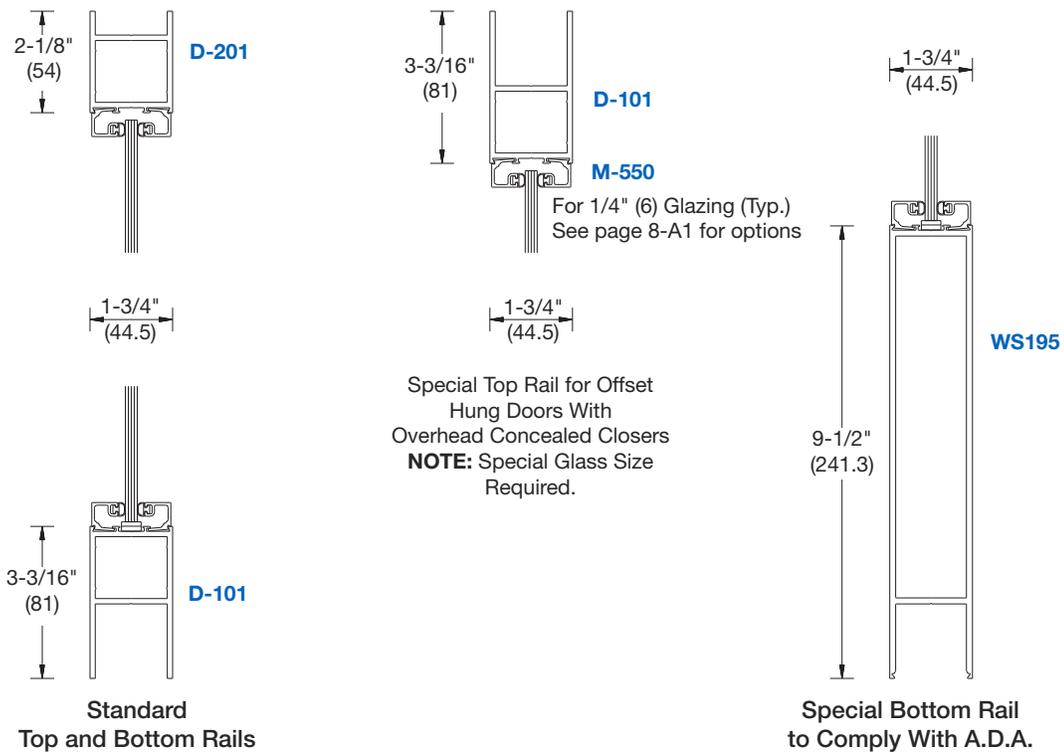
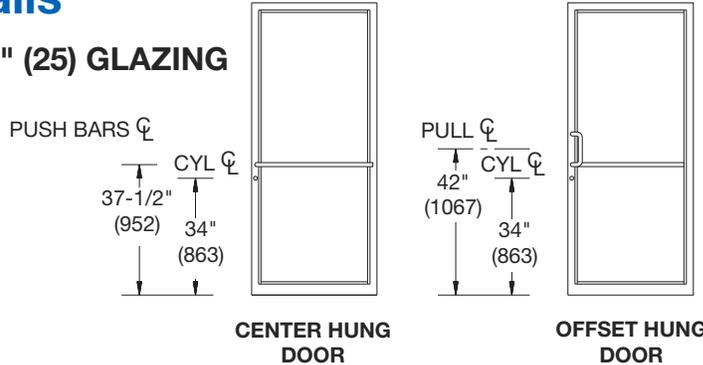
**NOTE:** Other Push/Pull Hardware Available see pages 01-A9 and 02-A9.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaluminum.com](http://crlaluminum.com) By Phone (800) 421-6144

**Typical Details**

**Narrow Stile**  
• Series 250

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

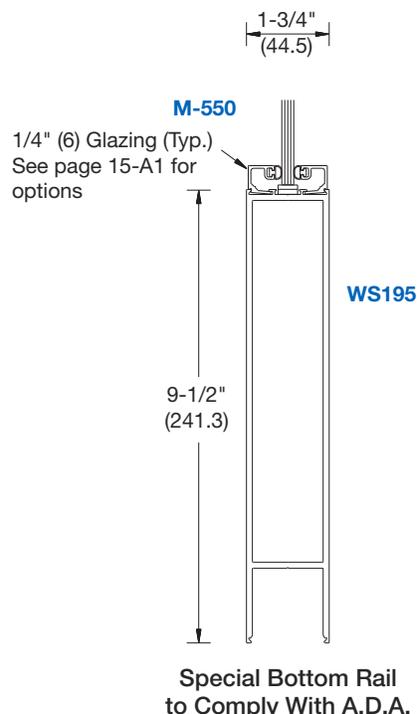
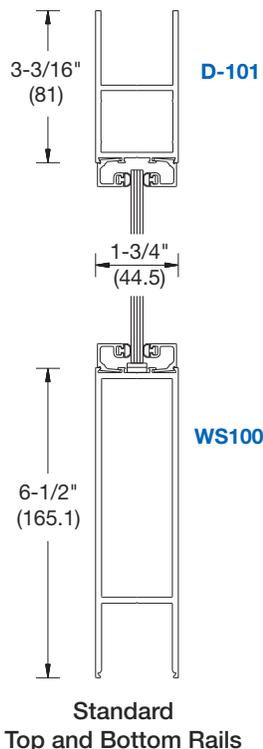
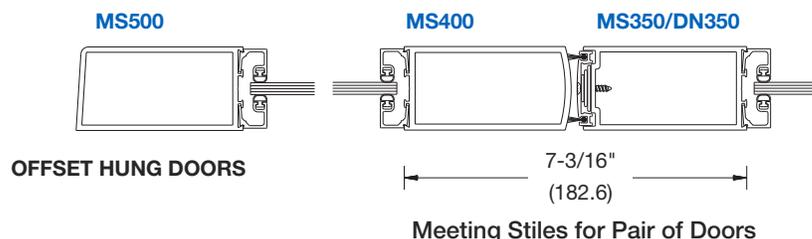
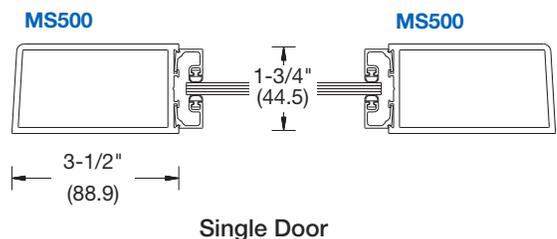
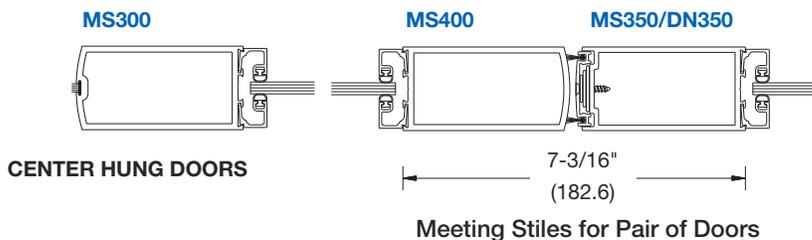
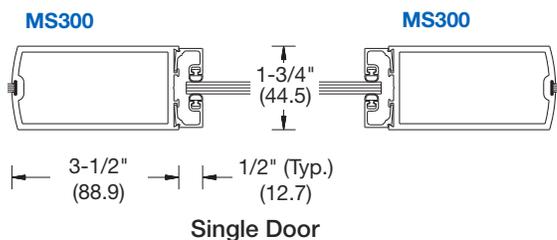
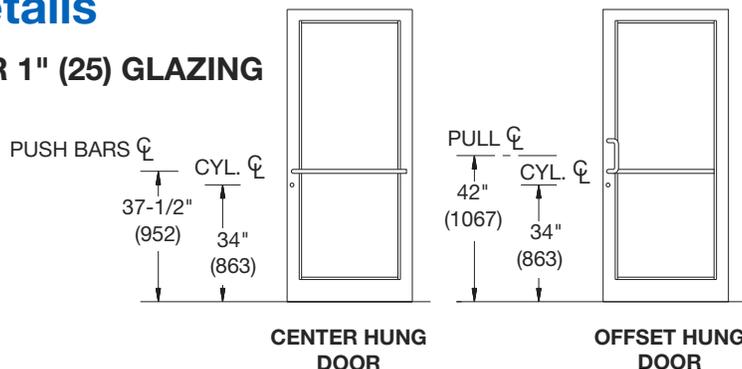


# ENTRANCES

## Typical Details

Medium Stile  
• Series 400

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



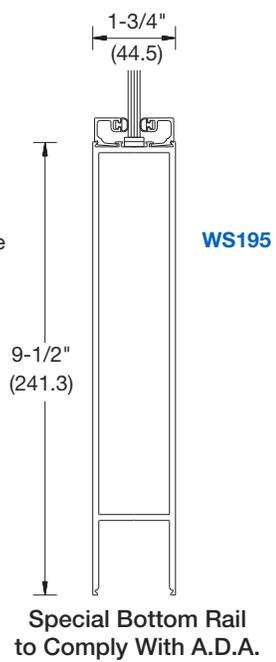
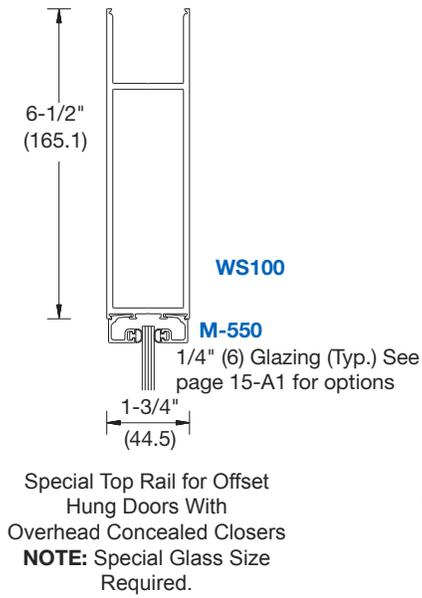
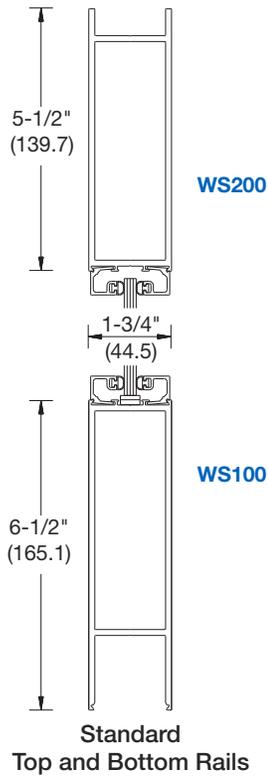
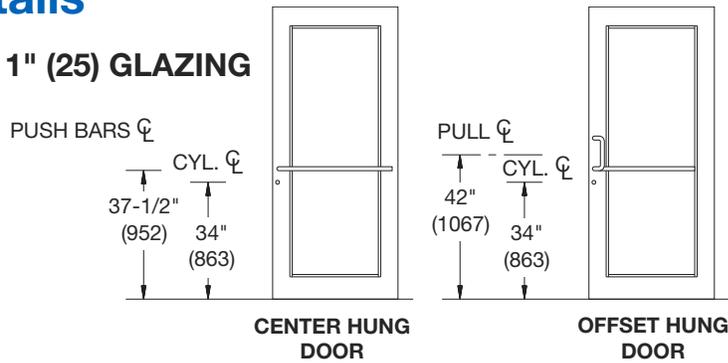
NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaluminum.com](http://crlaluminum.com) By Phone (800) 421-6144

**Typical Details**

**Wide Stile**  
• Series 550

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



# ENTRANCES

## Center Pivot Doors for Overhead Concealed Closers



- Narrow Stile Aluminum Doors for Exterior and Interior Applications
- Accommodates 1/4" (6) Tempered Glass (Not Included)
- Prepped for Overhead Concealed Door Closer (Not Included)
- Choice of Standard or ADA Access Bottom Rails

- Available Through All U.S. Aluminum and C.R. Laurence Service Centers

**Stock Doors**  
• Series 250

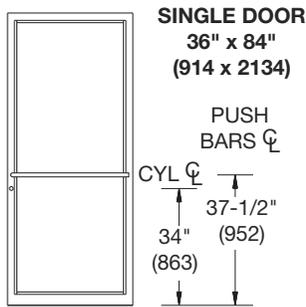
When you need a quality door in a hurry, our new Stocking Program is the solution. U.S. Aluminum now offers a line of stock size Narrow Stile Doors for exterior and interior applications. Both Clear Anodized and Bronze Anodized finishes are available as single doors or in pairs in two versions: Center Pivot and Offset Pivot.

These Center Pivot Doors include standard 2" (51) Stiles, 2-1/8" (54) Top Rails, and your choice of standard 3-3/16" (81) Bottom Rails or 9-1/2" (241) ADA Access Bottom Rails. Other standard features include a Push Bar, Lock, Lock Indicator, Cylinder and Cylinder Guards, Glass Stops, and Glazing Gaskets. You supply the 1/4" (6) tempered glass.

Doors are packed for immediate shipment or pickup from all U.S. Aluminum and C.R. Laurence Service Centers. Pricing is available from U.S. Aluminum at (800) 262-5151 or at [usalum.com](http://usalum.com).

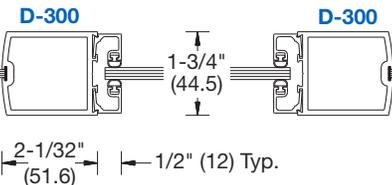
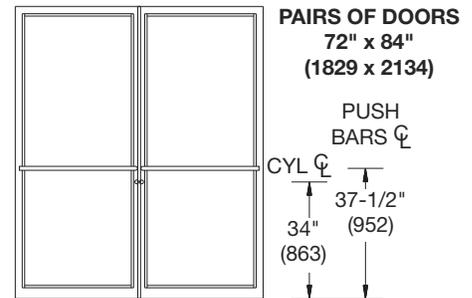


- Clear Anodized and Bronze Anodized in Single or Pairs of Doors



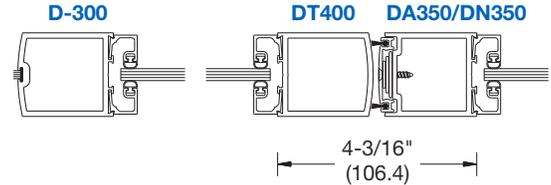
**STANDARD FEATURES:**

- Push Bars
- Hookbolt Lock (Single Doors)
- Three-Point Lock (Paired Doors)
- Lock Indicator
- Cylinders
- Cylinder Guards
- Glazing Gaskets



**AVAILABLE OPTIONS:**

- Panic Devices
- Continuous Geared Hinges
- Butt Hinges
- Vanguard Security Astragal



**SINGLE DOORS 36" X 84" (914 X 2134) WITH 2" (51) STILES AND 2-1/8" (54) TOP RAILS**

CLEAR ANODIZED PART NO.	BRONZE ANODIZED PART NO.	LATCH SIDE*	BOTTOM RAIL TYPE
CD21711R036	CD21722R036	Right	ADA Access 9-1/2" (241)
CD21711L036	CD21722L036	Left	ADA Access 9-1/2" (241)
DC21711R036	DC21722R036	Right	Standard 3-3/16" (81)
DC21711L036	DC21722L036	Left	Standard 3-3/16" (81)

Minimum order: 1 each. Must ship common carrier or will call at our Service Centers.  
\*Latch side as seen from the exterior of the building.

**PAIRS OF DOORS 72" X 84" (1829 X 2134) WITH 2" (51) STILES AND 2-1/8" (54) TOP RAILS**

CLEAR ANODIZED PART NO.	BRONZE ANODIZED PART NO.	BOTTOM RAIL TYPE
CD227110072	CD227220072	ADA Access 9-1/2" (241)
DC227110072	DC227220072	Standard 3-3/16" (81)

Minimum order: 1 pair. Must ship common carrier or will call at our Service Centers.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

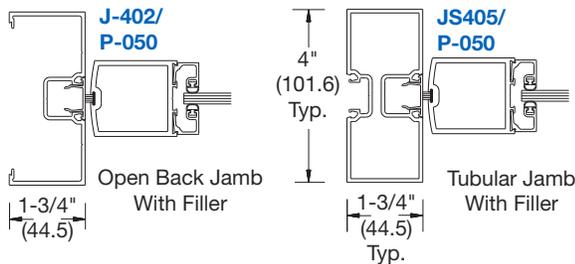
## Stock Frames for Center Pivot Application

## Stock Doors

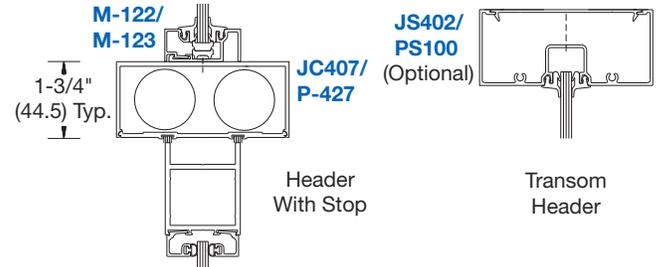
- Series 250

**SERIES 400 SINGLE DOOR FRAME - 1-3/4" X 4" (44.5 X 101.6)**

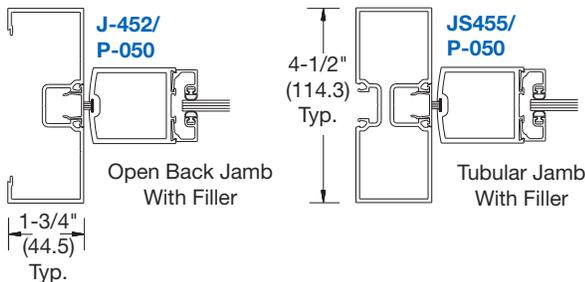
UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FR117</b>		Tubular <b>FR317</b>
39-1/2" x 85-3/4"	Open Back <b>OB117</b>	39-1/2" x 126"	Open Back <b>OB317</b>


**SERIES 400 DOUBLE DOOR FRAME - 1-3/4" X 4" (44.5 X 101.6)**

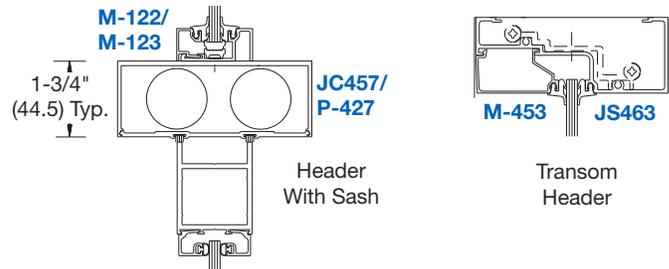
UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FA127</b>		Tubular <b>FA327</b>
75-1/2" x 85-3/4"	Open Back <b>OA127</b>	75-1/2" x 126"	Open Back <b>OA327</b>


**SERIES 450 SINGLE DOOR FRAME - 1-3/4" X 4-1/2" (44.5 X 114.3)**

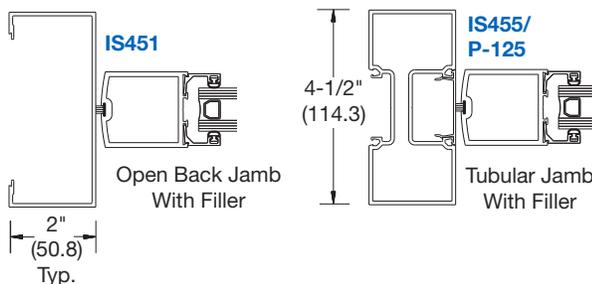
UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FR417</b>		Tubular <b>FR617</b>
39-1/2" x 85-3/4"	Open Back <b>OB417</b>	39-1/2" x 126"	Open Back <b>OB617</b>


**SERIES 450 DOUBLE DOOR FRAME - 1-3/4" X 4-1/2" (44.5 X 114.3)**

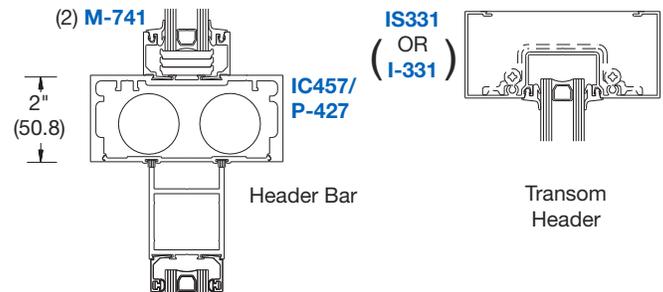
UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FA427</b>		Tubular <b>FA627</b>
75-1/2" x 85-3/4"	Open Back <b>OA427</b>	75-1/2" x 126"	Open Back <b>OA627</b>


**SERIES 451 SINGLE DOOR FRAME - 2" X 4-1/2" (50.8 X 114.3)**

UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FR717</b>		Tubular <b>FR917</b>
40" x 86"	Open Back <b>OB717</b>	40" x 126"	Open Back <b>OB917</b>


**SERIES 451 DOUBLE DOOR FRAME - 2" X 4-1/2" (50.8 X 114.3)**

UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
	Tubular <b>FA727</b>		Tubular <b>FA927</b>
76" x 86"	Open Back <b>OA727</b>	76" x 126"	Open Back <b>OA927</b>



**NOTE:** Frame packages include TH400 threshold and transom sash with glazing gaskets for transom frames. When ordering frame for single door, specify handing. Visit [usalum.com](http://usalum.com) for additional information.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# ENTRANCES

## Offset Pivot Doors for Surface Mounted Closers



- Available Through All U.S. Aluminum and C.R. Laurence Service Centers

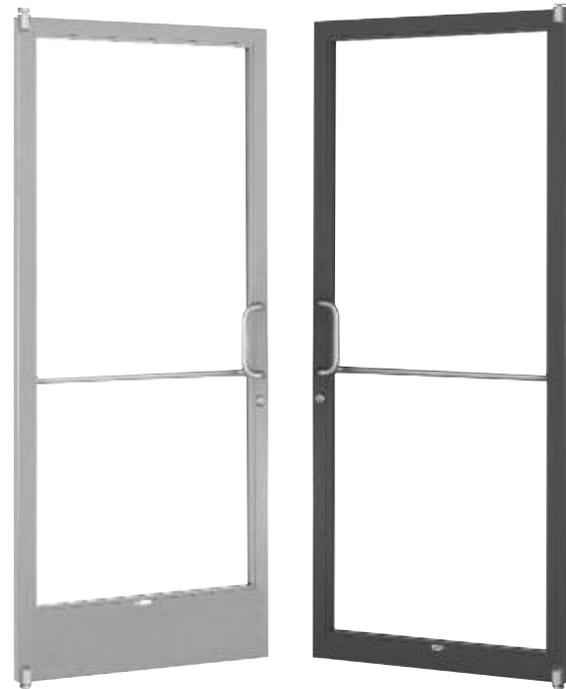
**Stock Doors**  
• Series 250

- Narrow Stile Aluminum Doors for Exterior and Interior Applications
- Accommodates 1/4" (6) Tempered Glass (Not Included)
- Prepped for Offset Pivots and Door Stops, Door Closer (Not Included)
- Choice of Standard or ADA Access Bottom Rails

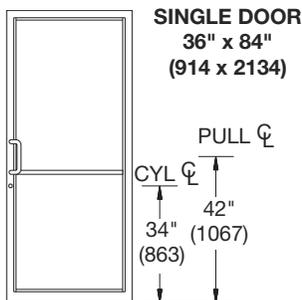
When you need a quality door in a hurry, our new Stocking Program is the solution. U.S. Aluminum now offers a line of stock size Narrow Stile Doors for exterior and interior applications. Both Clear Anodized and Bronze Anodized finishes are available as single doors or in pairs in two versions: Offset Pivot and Center Pivot.

These Offset Pivot Doors include standard 2" (51) Stiles, 2-1/8" (54) Top Rails, and your choice of Standard 3-3/16" (81) Bottom Rails or 9-1/2" (241) ADA Access Bottom Rails. Other standard features include a Push Bar, Offset Pull Handle, Lock, Lock Indicator, Cylinder and Cylinder Guards, Glass Stops, and Glazing Gaskets. You supply the 1/4" (6) tempered glass.

Doors are packed for immediate shipment or pickup from all U.S. Aluminum and C.R. Laurence Service Centers. Pricing is available from U.S. Aluminum at (800) 262-5151 or at [usalum.com](http://usalum.com).

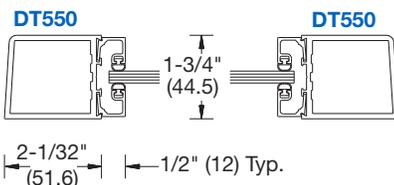
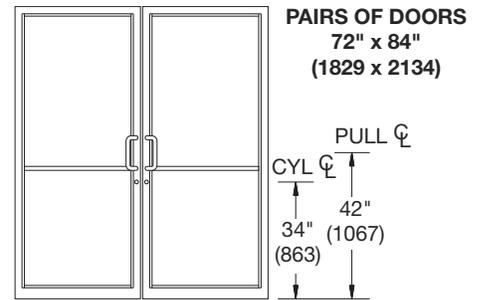


- Clear Anodized and Bronze Anodized in Single or Pairs of Doors



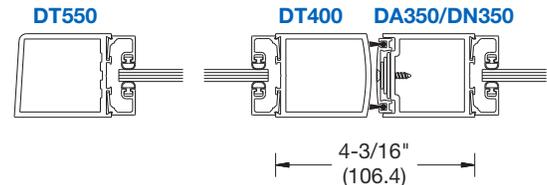
**STANDARD FEATURES:**

- Push Bar and Offset Pull Handle
- Hookbolt Lock (Single Doors)
- Three-Point Lock (Paired Doors)
- Lock Indicator
- Cylinders
- Cylinder Guards
- Glazing Gaskets



**AVAILABLE OPTIONS:**

- Panic Devices
- Continuous Geared Hinges
- Butt Hinges
- Vanguard Security Astragal



**SINGLE DOORS 36" X 84" (914 X 2134) WITH 2" (51) STILES AND 2-1/8" (54) TOP RAILS**

CLEAR ANODIZED PART NO.	BRONZE ANODIZED PART NO.	LATCH SIDE*	BOTTOM RAIL TYPE
CD21211R036	CD21222R036	Right	ADA Access 9-1/2" (241)
CD21211L036	CD21222L036	Left	ADA Access 9-1/2" (241)
DC21211R036	DC21222R036	Right	Standard 3-3/16" (81)
DC21211L036	DC21222L036	Left	Standard 3-3/16" (81)

**PAIRS OF DOORS 72" X 84" (1829 X 2134) WITH 2" (51) STILES AND 2-1/8" (54) TOP RAILS**

CLEAR ANODIZED PART NO.	BRONZE ANODIZED PART NO.	BOTTOM RAIL TYPE
CD222110072	CD222220072	ADA Access 9-1/2" (241)
DC222110072	DC222220072	Standard 3-3/16" (81)

Minimum order: 1 each. Must ship common carrier or will call at our Service Centers.  
\*Latch side as seen from the exterior of the building.

Minimum order: 1 pair. Must ship common carrier or will call at our Service Centers.

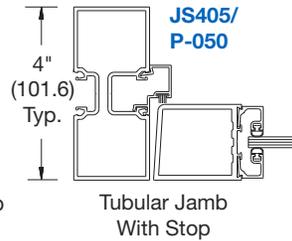
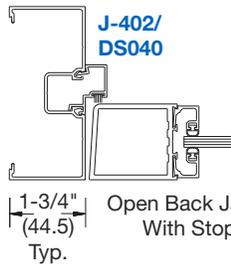
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Stock Frames for Offset Pivot Application

## Stock Doors • Series 250

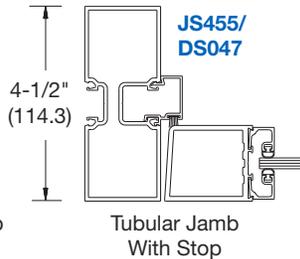
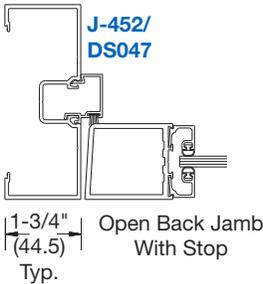
**SERIES 400 SINGLE DOOR FRAME - 1-3/4" X 4" (44.5 X 101.6)**

UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 39-1/2" x 85-3/4"	Tubular <b>FR112</b>	 39-1/2" x 126"	Tubular <b>FR312</b>
	Open Back <b>OB112</b>		Open Back <b>OB312</b>



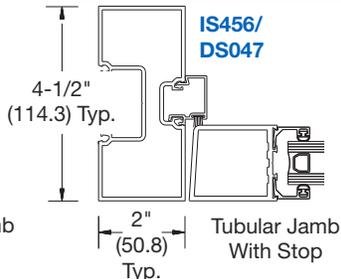
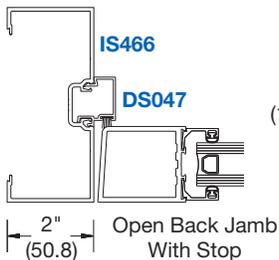
**SERIES 450 SINGLE DOOR FRAME - 1-3/4" X 4-1/2" (44.5 X 114.3)**

UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 39-1/2" x 85-3/4"	Tubular <b>FR412</b>	 39-1/2" x 126"	Tubular <b>FR612</b>
	Open Back <b>OB412</b>		Open Back <b>OB612</b>



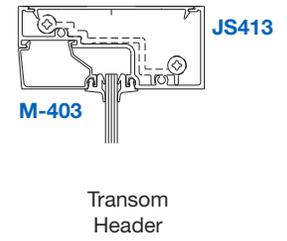
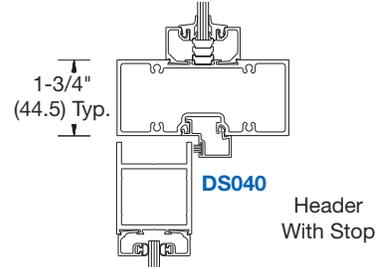
**SERIES 451 SINGLE DOOR FRAME - 2" X 4-1/2" (50.8 X 114.3)**

UP/OVER FRAME FOR SINGLE DOOR	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 40" x 86"	Tubular <b>FR712</b>	 40" x 126"	Tubular <b>FR912</b>
	Open Back <b>OB712</b>		Open Back <b>OB912</b>



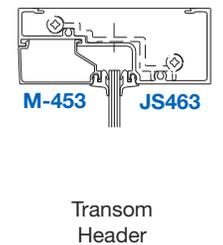
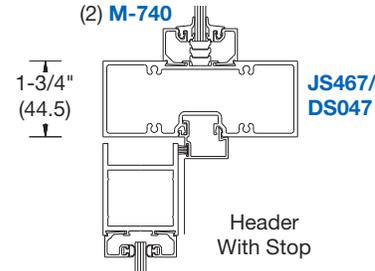
**SERIES 400 DOUBLE DOOR FRAME - 1-3/4" X 4" (44.5 X 101.6)**

UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 75-1/2" x 85-3/4"	Tubular <b>FA122</b>	 75-1/2" x 126"	Tubular <b>FA322</b>
	Open Back <b>OA122</b>		Open Back <b>OA322</b>



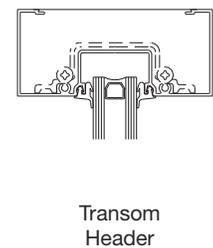
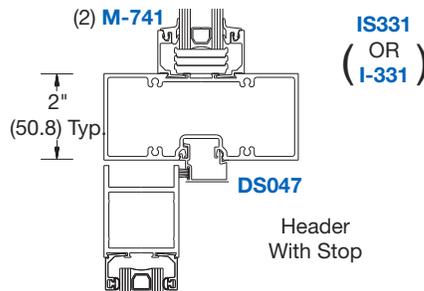
**SERIES 450 DOUBLE DOOR FRAME - 1-3/4" X 4-1/2" (44.5 X 114.3)**

UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 75-1/2" x 85-3/4"	Tubular <b>FA422</b>	 75-1/2" x 126"	Tubular <b>FA622</b>
	Open Back <b>OA422</b>		Open Back <b>OA622</b>



**SERIES 451 DOUBLE DOOR FRAME - 2" X 4-1/2" (50.8 X 114.3)**

UP/OVER FRAME FOR PAIRS	JAMB TYPE	TRANSOM FRAME	JAMB TYPE
 76" x 86"	Tubular <b>FA722</b>	 76" x 126"	Tubular <b>FA922</b>
	Open Back <b>OA722</b>		Open Back <b>OA922</b>



**NOTE:** Frame packages include TH250 threshold and transom sash with glazing gaskets for transom frames. When ordering frame for single door, specify handing. Visit [usalum.com](http://usalum.com) for additional information.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# ENTRANCES

## Prepared Door Headers and Thresholds for Stock Center Pivot Doors

### FABRICATED DOOR HEADERS FOR STOCK CENTER PIVOT DOORS WITH OVERHEAD CONCEALED CLOSERS

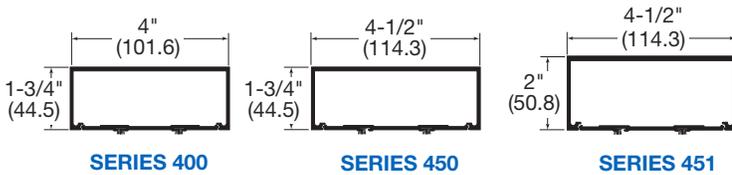
Single and Double Door Headers are fabricated to hold our Overhead Concealed Door Closers. Headers are carried in three stock sizes, and custom sizes can be special ordered. Headers are supplied with Snap-In Cover Plates with weatherstripping. For Door Closers see pages 05-A9 and 06-A9.

**NEW STOCKING PROGRAM ON THESE BEST SELLERS!**

- Available Through All U.S. Aluminum and C.R. Laurence Service Centers

### Stock Doors

- Series 250



**SERIES 400 - 1-3/4" X 4" (44.5 X 101.6) HEADER**

36" (914) SINGLE DOOR HEADER PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB117110036	HB127110072	Clear Anodized
HB117220036	HB127220072	Bronze Anodized

Minimum order: 1 each.

**SERIES 450 - 1-3/4" X 4-1/2" (44.5 X 114.3) HEADER**

36" (914) SINGLE DOOR HEADER PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB217110036	HB227110072	Clear Anodized
HB217220036	HB227220072	Bronze Anodized

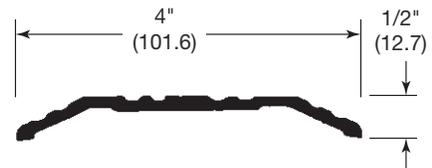
Minimum order: 1 each.

**SERIES 451 - 2" X 4-1/2" (50.8 X 114.3) HEADER**

36" (914) SINGLE DOOR HEADER PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB317110036	HB327110072	Clear Anodized
HB317220036	HB327220072	Bronze Anodized

Minimum order: 1 each.

### FABRICATED 4" (101.6) THRESHOLD FOR CENTER PIVOT DOOR WITH OVERHEAD CONCEALED CLOSER



**4" (101.6) THRESHOLD PREPARED FOR CENTER PIVOT DOORS**

36" (914) SINGLE DOOR THRESHOLD PART NO.	72" (1829) DOUBLE DOORS THRESHOLD PART NO.	FINISH
TP417990036	TP427990072	Mill

Minimum order: 1 each.

## Prepared Door Headers and Thresholds for Stock Offset Pivot Doors

**Stock Doors**  
• Series 250

**NEW STOCKING PROGRAM ON THESE BEST SELLERS!**

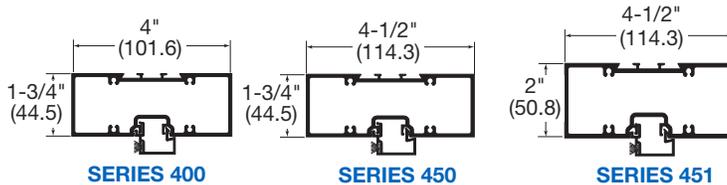
• Available Through All U.S. Aluminum and C.R. Laurence Service Centers

### FABRICATED DOOR HEADERS FOR STOCK OFFSET PIVOT DOORS WITH SURFACE MOUNTED CLOSERS

Single and Double Door Headers are fabricated with door stops to work with our stock offset pivot doors. Headers are carried in three stock sizes, and custom sizes can be special ordered. Headers are supplied with Snap-In Door Stops. For Surface Mounted Door Closers see pages 03-A9 and 04-A9.

36" (914) Single Door Offset Header

72" (1829) Double Doors Offset Header



**SERIES 400 - 1-3/4" X 4" (44.5 X 101.6) HEADER**

36" (914) SINGLE DOOR HEADER* PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB11211L036 HB11211R036	HB122110072	Clear Anodized
HB11222L036 HB11222R036	HB122220072	Bronze Anodized

Minimum order: 1 each. \*Must specify right or left hand.

**SERIES 450 - 1-3/4" X 4-1/2" (44.5 X 114.3) HEADER**

36" (914) SINGLE DOOR HEADER* PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB21211L036 HB21211R036	HB222110072	Clear Anodized
HB21222L036 HB21222R036	HB222220072	Bronze Anodized

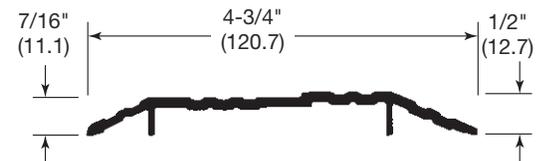
Minimum order: 1 each. \*Must specify right or left hand.

**SERIES 451 - 2" X 4-1/2" (50.8 X 114.3) HEADER**

36" (914) SINGLE DOOR HEADER* PART NO.	72" (1829) DOUBLE DOORS HEADER PART NO.	FINISH
HB31211L036 HB31211R036	HB322110072	Clear Anodized
HB31222L036 HB31222R036	HB322220072	Bronze Anodized

Minimum order: 1 each. \*Must specify right or left hand.

### FABRICATED 4-3/4" (120.7) THRESHOLD FOR OFFSET PIVOT DOOR WITH SURFACE MOUNTED CLOSER



**4-3/4" (120.7) THRESHOLD PREPARED FOR OFFSET PIVOT DOORS**

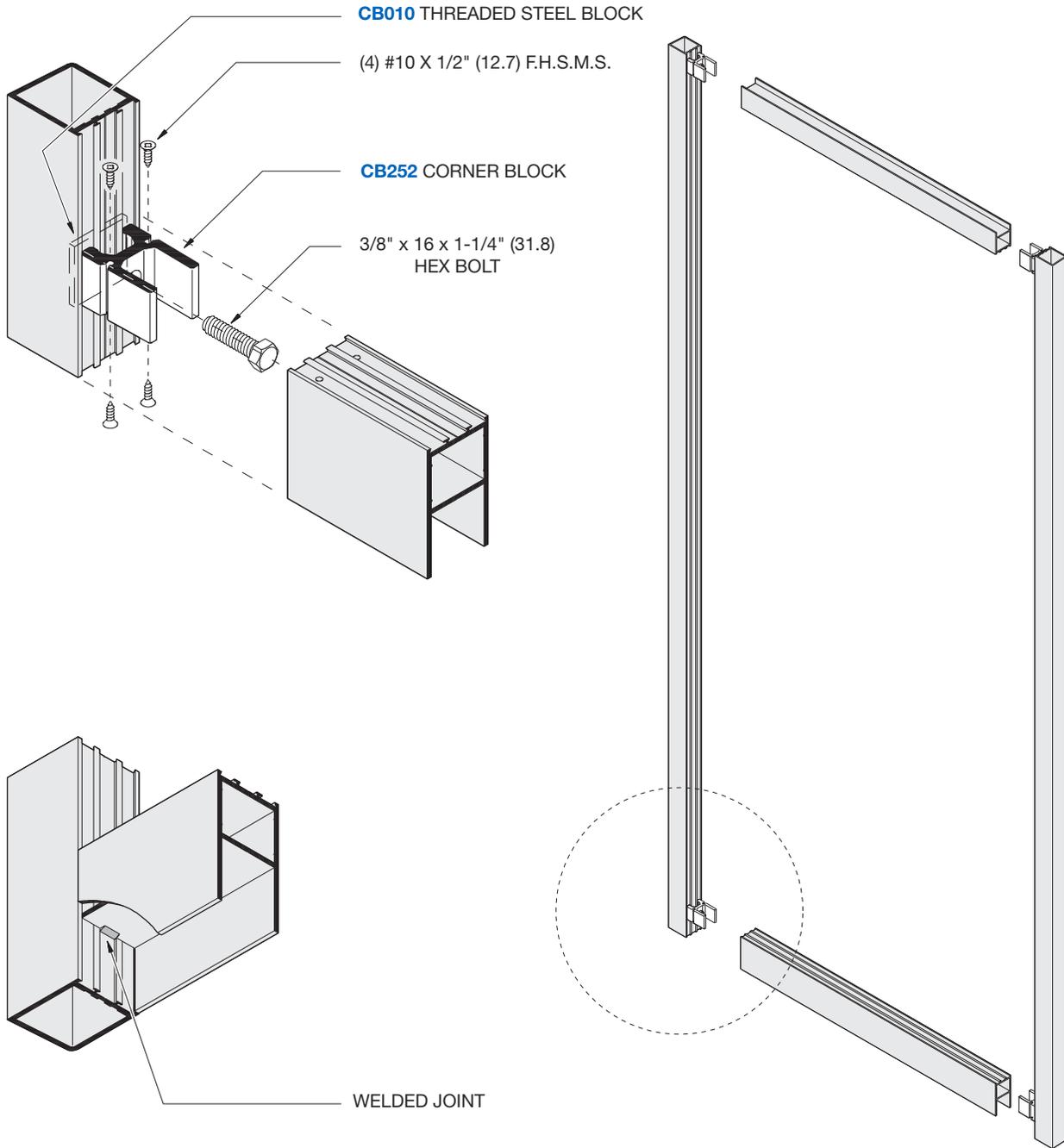
36" (914) SINGLE DOOR THRESHOLD* PART NO.	72" (1829) DOUBLE DOORS THRESHOLD PART NO.	FINISH
TP21299L036 TP21299R036	TP222990072	Mill

Minimum order: 1 each. \*Must specify right or left hand.

# ENTRANCES

## Door Corner Construction

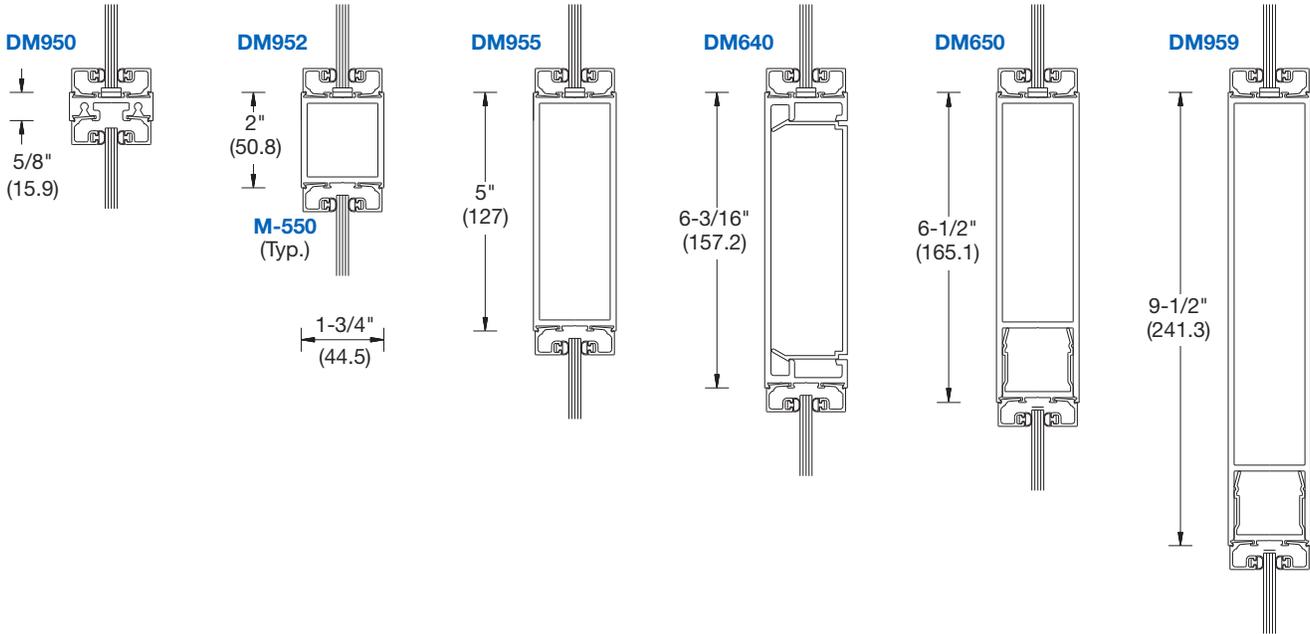
- Series 250
- Series 400
- Series 550



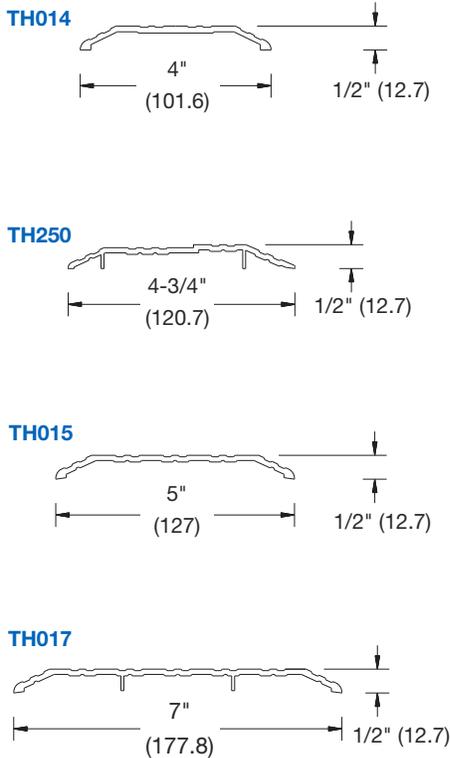
**Accessories**

- Series 250
- Series 400
- Series 550

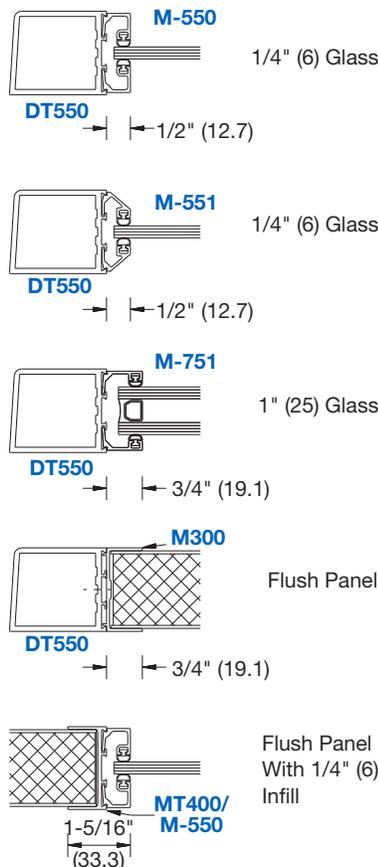
**DOOR MUNTINS**



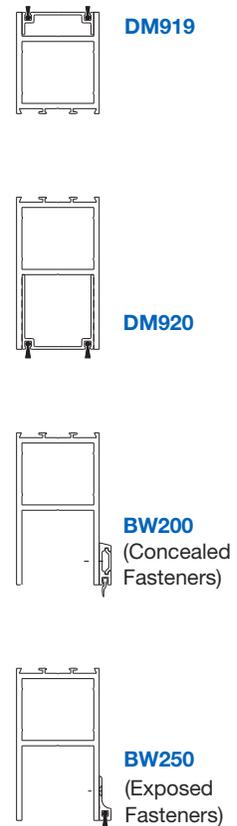
**THRESHOLDS**  
(See Frames for Applications)



**GLAZING OPTIONS**



**TOP AND BOTTOM WEATHERSTRIPPING**



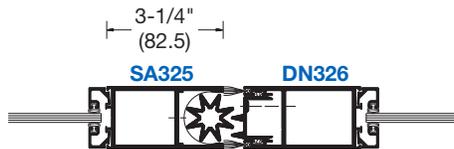
NOT TO SCALE

# ENTRANCES

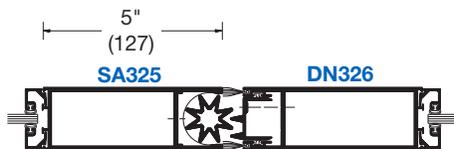
## Accessories

## Vanguard Security Astragal

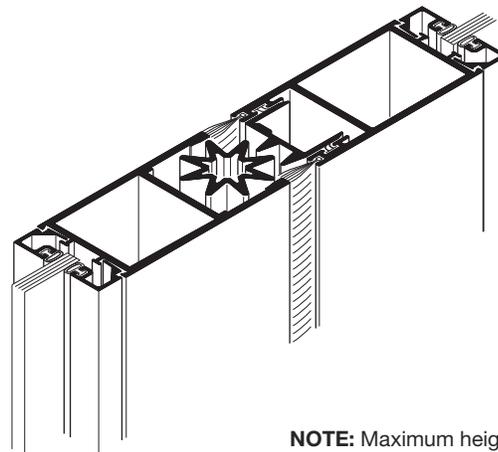
- For Pairs of Doors With Panic Hardware
- Prevents Illegal Access to Buildings
- Factory Installed
- Patent No. 3,959,957



Vanguard meeting stiles for:  
**Series 250 Narrow Stile\***  
**Series 400 Medium Stile**  
**Series 800 Durafront**



Vanguard meeting stiles for:  
**Series 550 Wide Stile**  
**Series 850 Durafront**



**NOTE:** Maximum height of Vanguard Security Astragal is 96" (2.4 m).  
 Doors require special glass sizes.

The U.S. Aluminum Vanguard Security Astragal has a continuous rotary astragal that deters the use of a tripping device from being inserted between meeting stiles on panic doors for gaining illegal access to a building. When the panic device is in the exit only mode, access to a building through doors with Vanguard Security Astragal installed will only be possible by forced entry. The concealed Vanguard Security Astragal is a simple but effective free wheeling sprocket which engages into an adjustable rack. It is available for all U.S. Aluminum entrance doors and accommodates most standard panic devices.

\*NOTE: Vanguard meetings stiles are medium stile for Series 250 Narrow Stile doors.

## Custom Designed Door Handles

- For Aluminum, Glass or Wood Doors
- Round, Square or Flat Bar Stock
- Solid or Tubular Construction
- Custom Cast Designs
- Metal Etched Logos and Designs
- Bending, Mitering, and Welding
- Available in Brass, Bronze, Aluminum, and Stainless Steel
- Brushed, Polished, Etched, or Powder Coated Finishes
- Over 20 Standard Finishes
- Custom Color Matching Available



Let us make your idea a reality! Send us your specifications and our Technical Sales Staff will design your custom handles for you. Then our Engineering Staff will supply you with a 3D rendered drawing of your design to ensure we make exactly what you want.

For additional information, or to begin the design process, contact U.S. Aluminum at (800) 262-5151.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Table of Contents

## Durafront Entrance Systems

- Series 800
- Series 850

### SECTION A2

### PAGE

SPECIFICATIONS .....02-A2

TECHNICAL DATA.....03-A2

TYPICAL DETAILS.....04-A2 thru 09-A2

SUBFRAMES AND GEAR HINGES.....10-A2

SPECIAL FEATURES.....11-A2



Project: Waxahachie Civic Center, Waxahachie, TX

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |

## Specifications

## Durafront Entrance Systems

- Series 800
- Series 850

### 08 11 16 ALUMINUM DOOR AND FRAMES

SERIES	STILES	TOP RAIL	BOTTOM RAIL	GLAZING INFILL
<b>800 Medium Stile</b>	3-1/2" (88.9)	3-11/32" (84.9)	6-1/2" (165.1)	1/4" (6) or 1" (25)
<b>850 Wide Stile</b>	5" (127)	5-1/2" (139.7)	6-1/2" (165.1)	1/4" (6) or 1" (25)
A.D.A. Bottom Rail Option for Either Series			9-1/2" (241.3)	

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum entrance doors, door frames, and hardware as detailed on the drawings and specified herein.

Work Not Included: Structural support of the framing system, wood framing, structural steel, masonry, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on United States Aluminum Series (*Specify*) Durafront Entrance System. Optional: Door shall have ADA 9-1/2" (241.3) bottom rail.

When substitute products are to be considered, supporting technical literature, samples and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### II. PRODUCT MATERIALS

Door and frame members shall be extruded architectural aluminum 6063-T5 alloy and temper. Jamb and major portions of doors shall have a minimum wall thickness of .188" (4.8). Frame sections shall be tubular members and shall provide for flush glazing of sidelites and transom areas. Applied stops shall be allowed at header bar only.

Overall dimension of frame members shall be 1-3/4" (44.5) x 4-1/2" (114.3) to accommodate 1/4" glass or 2" (50.8) x 4-1/2" (114.3) to accommodate 1" glass. Frames for offset hung doors shall feature snap-in

door stops with continuous weather-stripping. Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR CONSTRUCTION

Door stiles and rails shall be tubular sections, accurately joined at corners with heavy concealed reinforcement brackets secured with bolts, screws, and then MIG welded. Doors shall have snap-in stops with E.P.D.M. glazing gasket on both sides of the glass. No exposed screws shall be permitted. Each door leaf shall be equipped with an adjusting mechanism, located in the top rail near the lock stile, which provides for minor clearance adjustments after installation. A hard-backed poly-pile weather-strip shall be installed in center hung door stiles and in lock stile of all pairs of doors. Offset pivoted or butt hung doors shall have weather-stripped door stops at frame jambs and header. The active meeting stile of all pair of doors shall have an adjustable astragal with double line of weather-stripping.

**OPTIONAL:** Door bottom rail will be weathered with an E.P.D.M. blade gasket sweep strip applied with concealed fasteners. (**NOTE:** This option is required for high performance conditions.)

**OPTIONAL:** Door bottom rail shall receive a concealed weather-stripped insert.

#### HARDWARE

Hardware for aluminum doors and door frames shall be the entrance manufacturer's standard. If custom hardware is to be furnished by others,

templates and physical hardware must be submitted prior to any fabrication.

#### FINISH

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

\_\_\_\_ #11 Clear anodic coating  
 \_\_\_\_ #22 Dark Bronze anodic coating  
 \_\_\_\_ #33 Black anodic coating  
 A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (*Specify a U. S. Aluminum standard color*).

#### III. EXECUTION INSTALLATION

All items under this heading shall be set in their correct locations as shown in the details and shall be level, square, plumb and at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between entrance framing and the building structure shall be sealed in order to secure a watertight installation. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

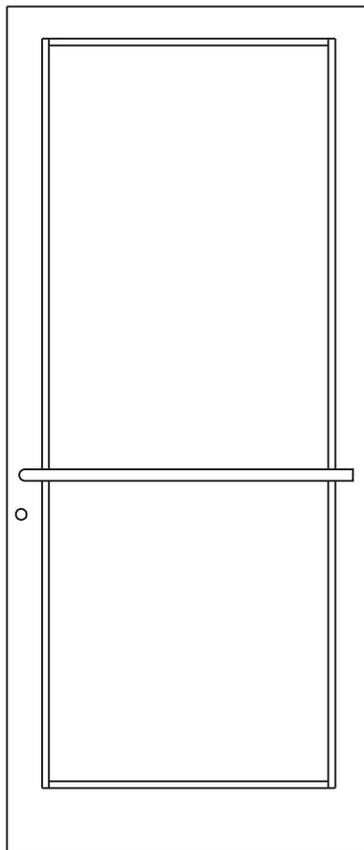
## Technical Data

## Durafront Entrance Systems

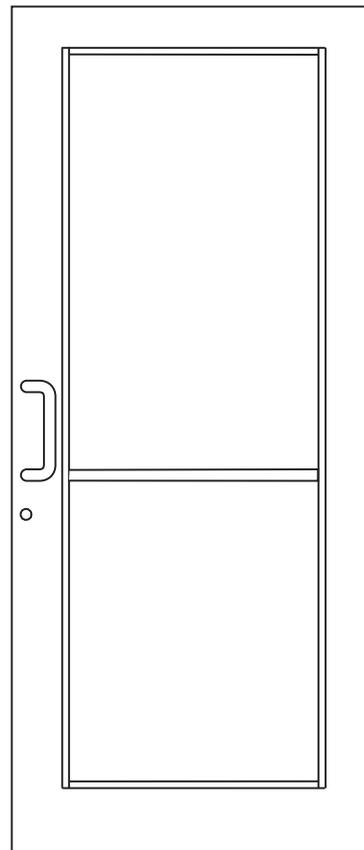
- Series 800
- Series 850

Durafront Doors and frames are fabricated from tubular aluminum extrusions with a wall thickness of 3/16" (4.8). These extra strong, long-lasting entrance packages are ideal for locations subjected to extremely high traffic flow.

Durafront Entrance Packages, which are offered for center and offset hung doors, can be easily adapted to most U.S. Aluminum Framing Systems. The door feature mechanically fastened and welded corner construction. Offset hung doors are supplied with a pair and a half of heavy-duty hinges, or pivot sets or a continuous gear hinge. A variety of custom hardware is available upon request.



**Series 800**  
(Center Hung Door Shown)



**Series 850**  
(Offset Hung Door Shown)

SERIES	STILES	TOP RAIL	BOTTOM RAIL	APPLICATIONS
<b>800 Medium Stile</b>	3-1/2" (88.9)	3-11/32" (84.9)	6-1/2" (165.1)	Extremely Heavy Traffic (Institutional Buildings, Schools, Sports Arenas)
<b>850 Wide Stile</b>	5" (127)	5-1/2" (139.7)	6-1/2" (165.1)	
A.D.A. Bottom Rail Option for Any Series			9-1/2" (241.3)	A.D.A.

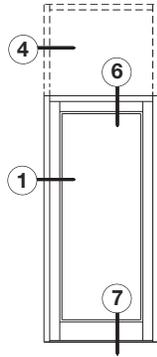
# ENTRANCES

## Typical Details

## Durafront Entrance Systems

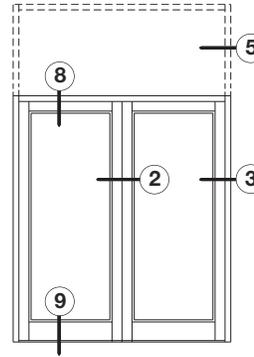
• Series 800

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



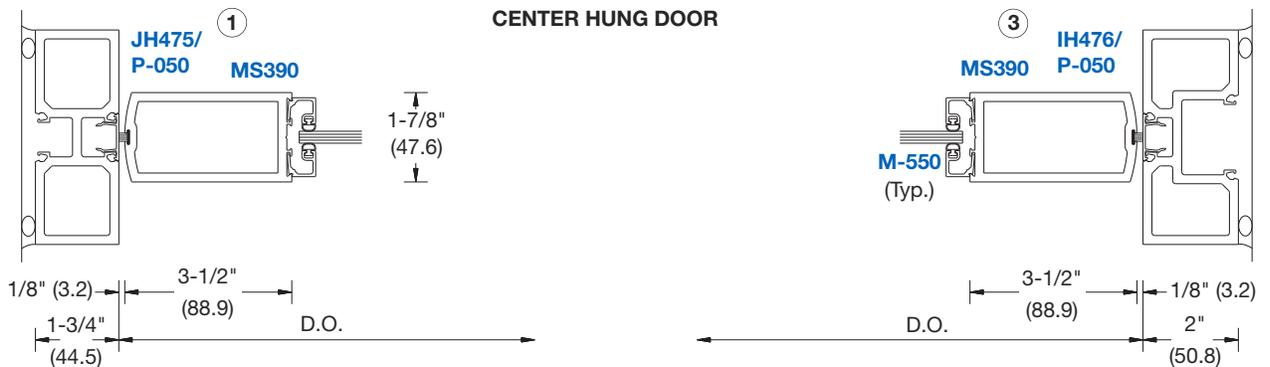
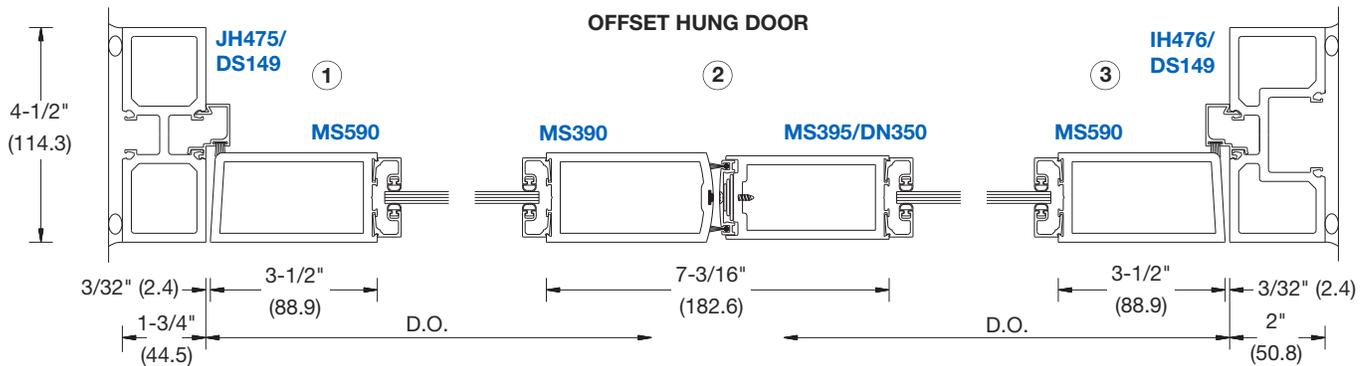
**SINGLE DOOR**

Shown With 1-3/4" x 4-1/2" (44.5 x 114.3) Frame



**PAIRS OF DOORS**

Shown With 2" x 4-1/2" (50.8 x 114.3) Frame



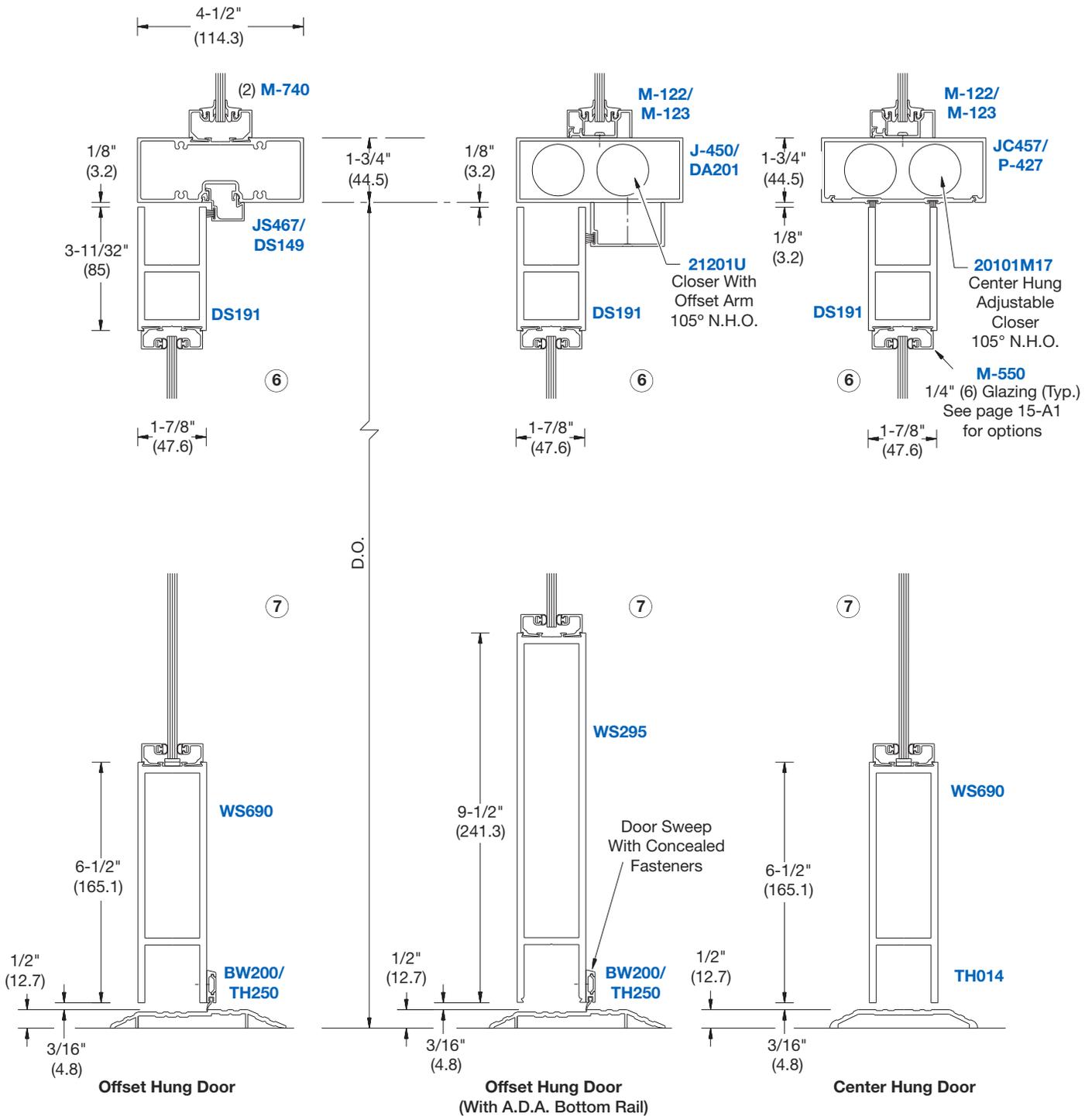
NOT TO SCALE

**Typical Details**

**Durafront Entrance Systems**

• Series 800

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



NOT TO SCALE

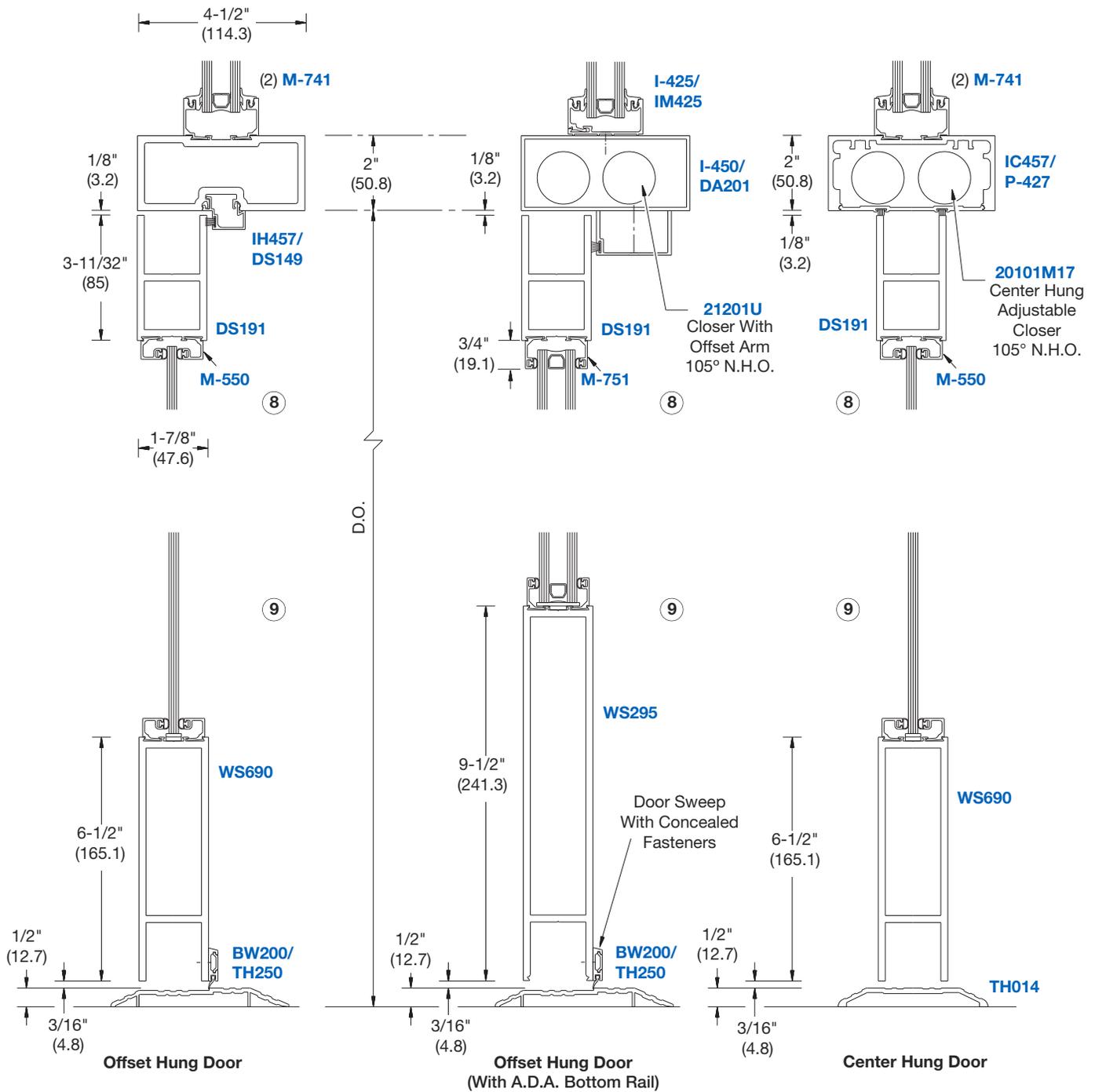
# ENTRANCES

## Typical Details

## Durafront Entrance Systems

• Series 800

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



NOT TO SCALE

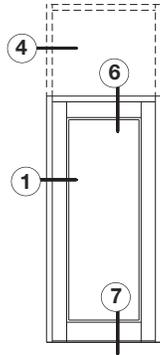
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**Durafront Entrance Systems**

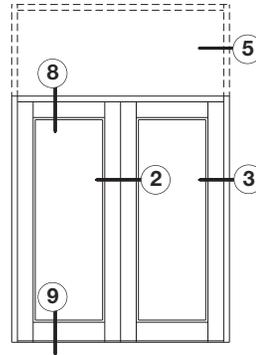
• Series 850

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



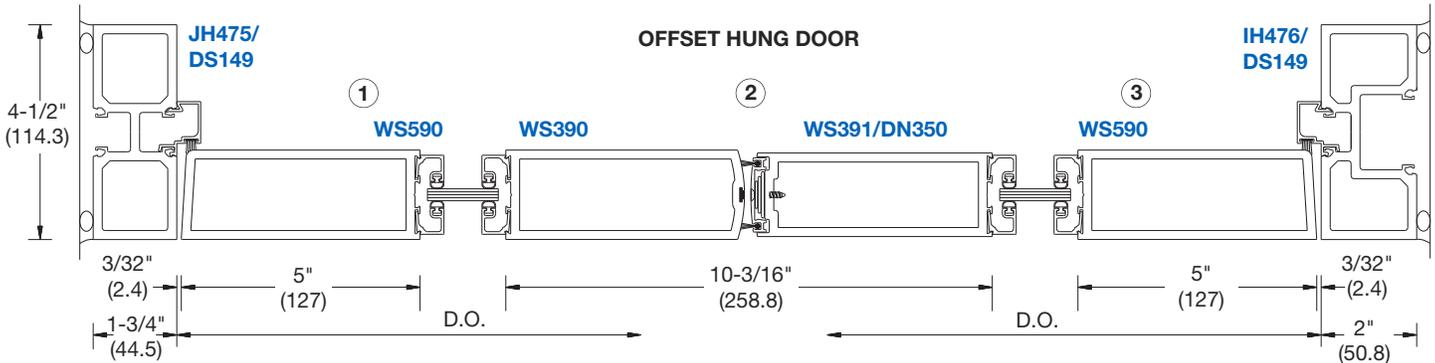
**SINGLE DOOR**

Shown With 1-3/4" x 4-1/2"  
(445 x 1143) Frame

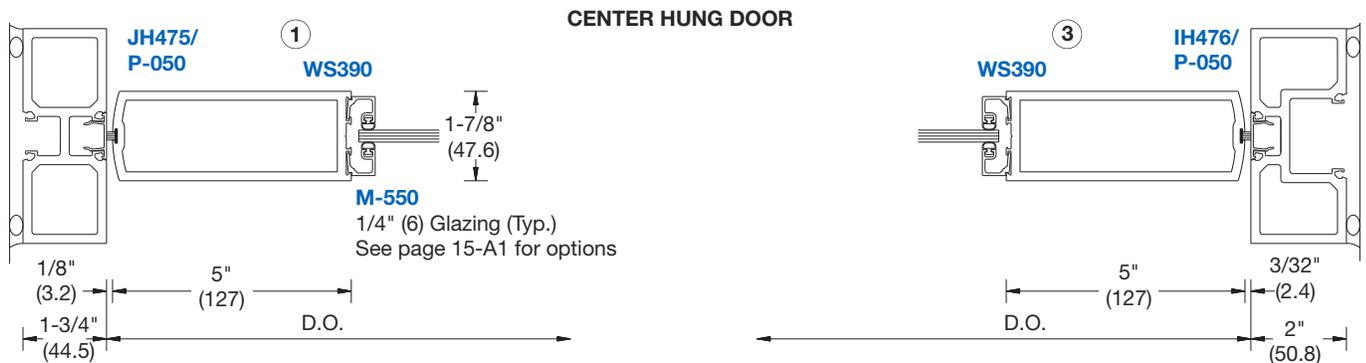


**PAIR OF DOORS**

Shown With 2" x 4-1/2"  
(445 x 1143) Frame



**OFFSET HUNG DOOR**



**CENTER HUNG DOOR**



**TRANSOM**

NOT TO SCALE

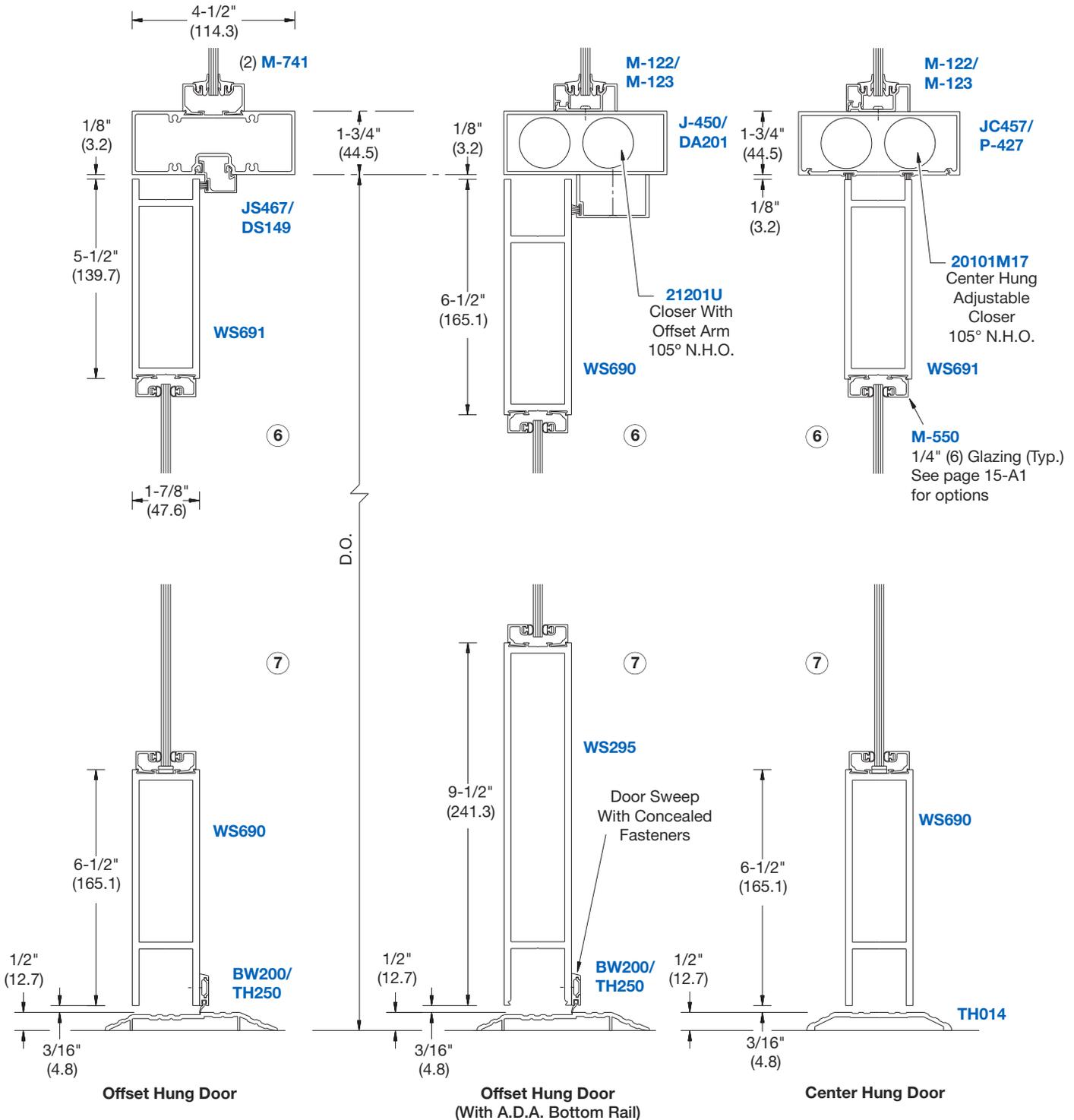
# ENTRANCES

## Typical Details

## Durafront Entrance Systems

• Series 850

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



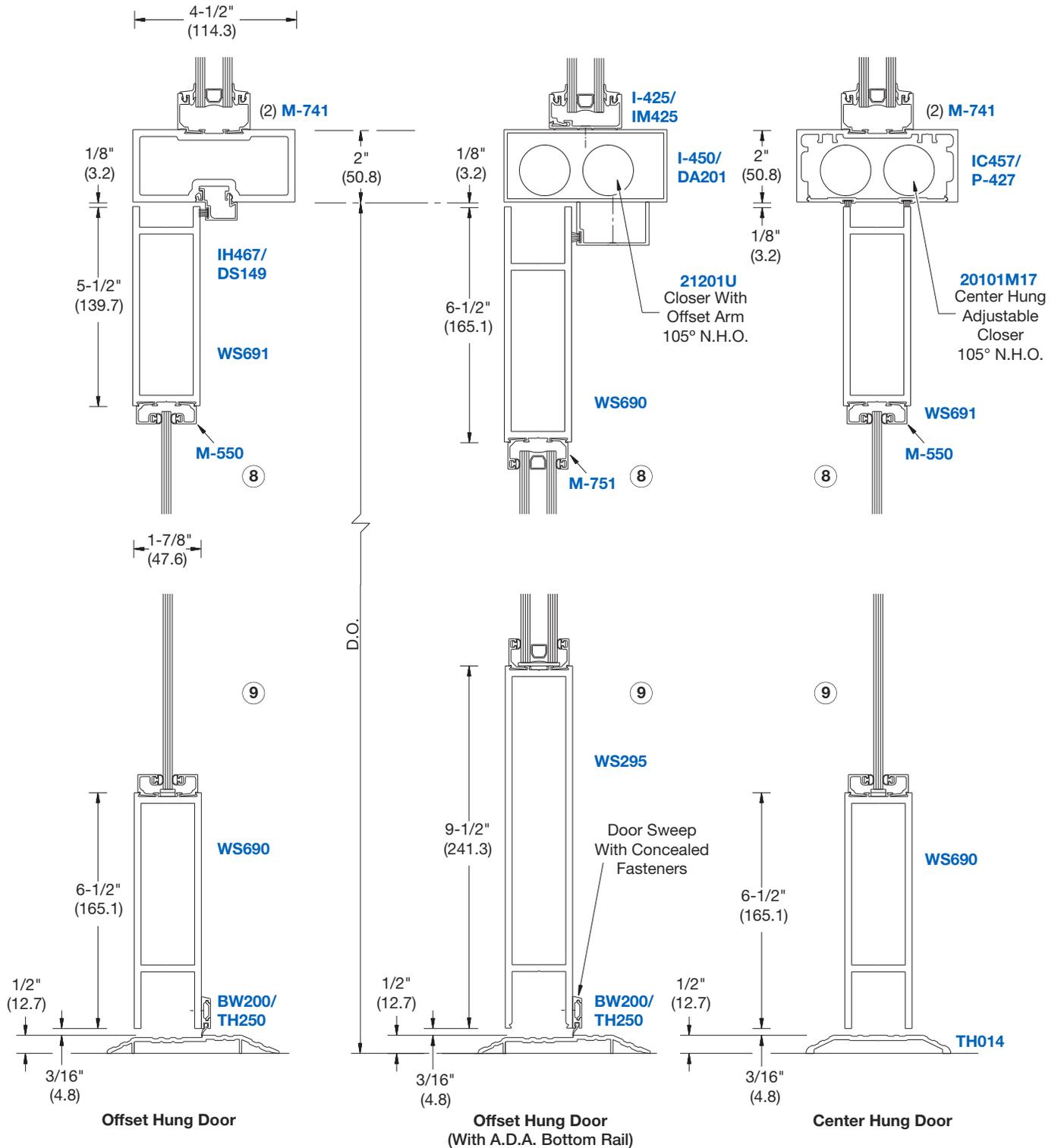
NOT TO SCALE

**Typical Details**

**Durafront Entrance Systems**

• Series 850

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



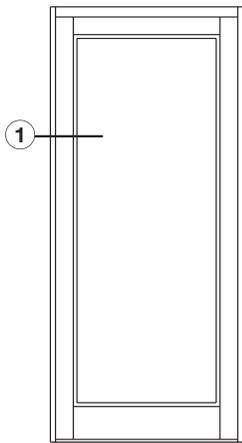
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# ENTRANCES

## Subframes and Gear Hinges

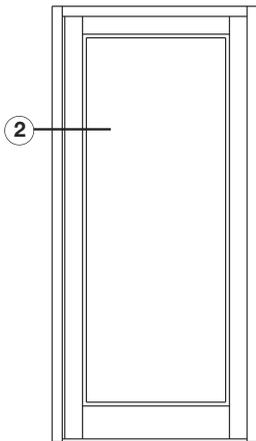
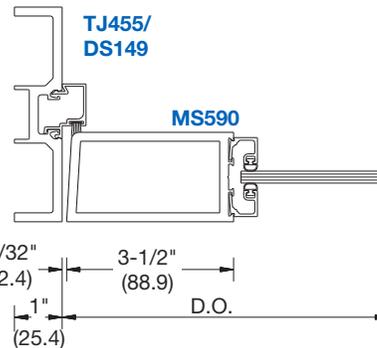
## Durafront Entrance Systems

- Series 800
- Series 850

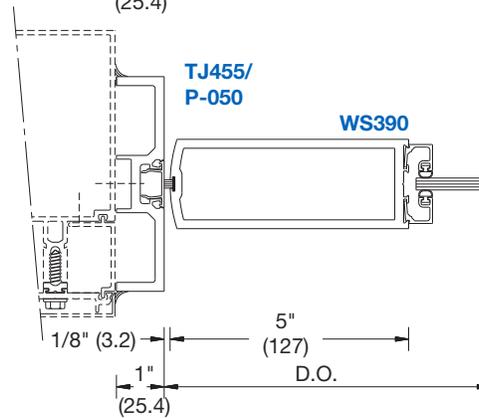


**1**  
**SERIES 800**  
Shown With  
Offset Hung Door  
With 1" (25)  
Subframe

4-1/2"  
(114.3)

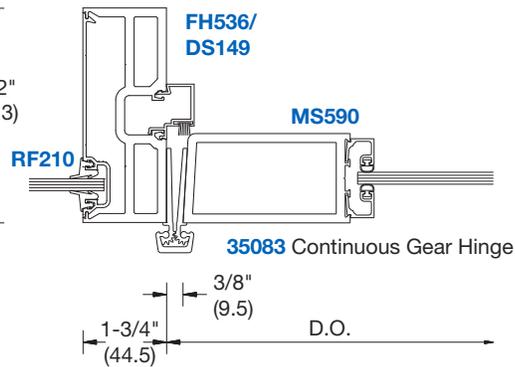


**1**  
**SERIES 850**  
Shown With  
Center Hung Door  
in Curtain Wall  
Application With  
1" (25) Subframe



**2**  
**SERIES 800**  
Shown With  
1-3/4" x 4-1/2"  
(44.5 x 114.3) Flush Front  
Frame

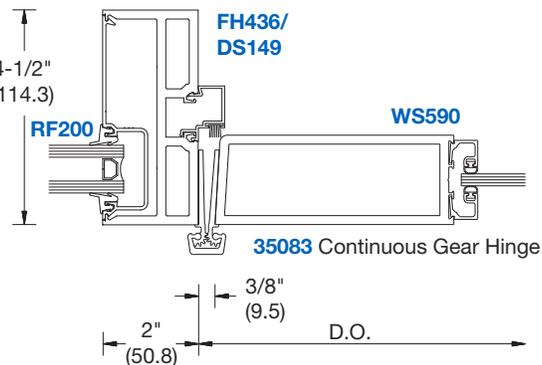
4-1/2"  
(114.3)



**NOTE:** Continuous Gear Hinge  
Requires Special Clearance

**2**  
**SERIES 850**  
Shown With  
2" x 4-1/2"  
(50.8 x 114.3) Flush Front  
Frame

4-1/2"  
(114.3)



NOT TO SCALE

**Special Features**

**Durafront Entrance Systems**

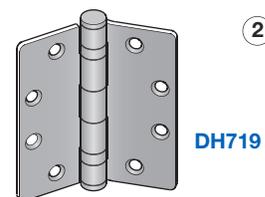
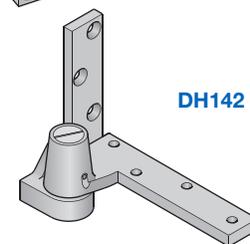
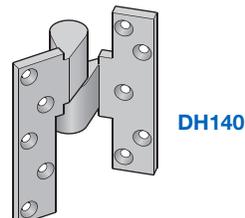
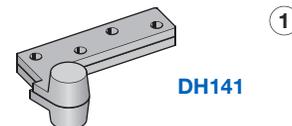
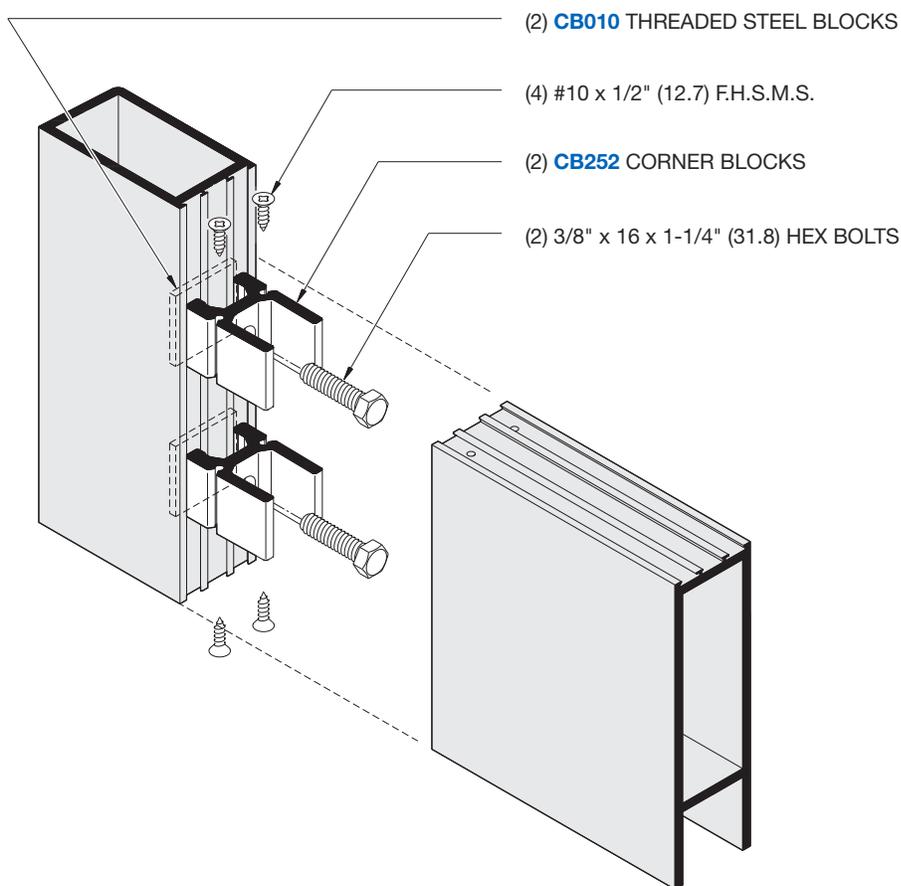
- Series 800
- Series 850

**Hinging Hardware for Offset Hung Doors**

- ① Heavy-Duty Top, Intermediate, and Bottom Pivots - Standard
- ② Pair and a Half of 5" x 4-1/2" (127 x 114.3) Butt Hinges Per Leaf - Standard
- ③ Continuous Gear Hinges - Optional

**Door Corner Construction**

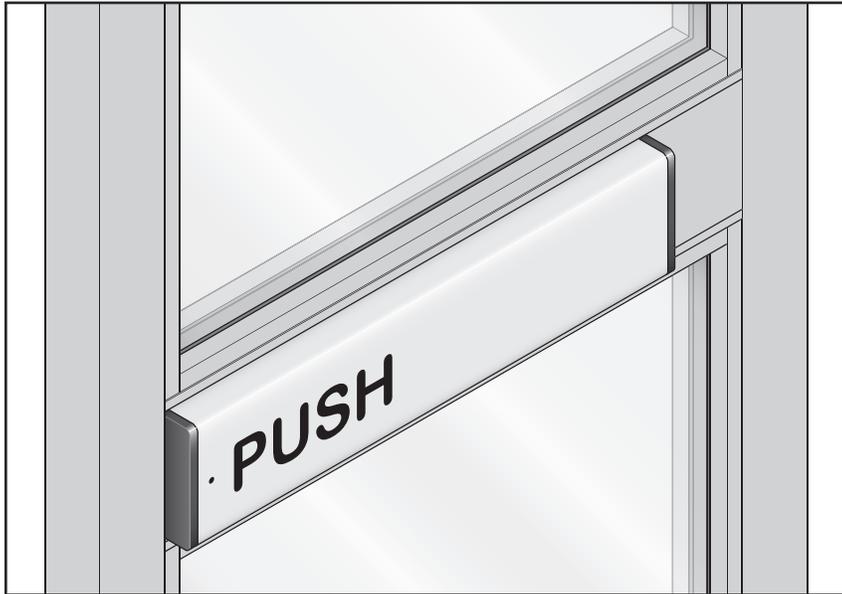
DOOR CORNERS ARE MECHANICALLY FASTENED AND WELDED



# ENTRANCES

## Entrance Door Options

## Mid-Panel Panic Exit Devices



This entrance option is available on the following U.S. Aluminum products:

### MID-PANEL PANIC COMPATIBLE PRODUCTS

Series 250 Narrow Stile Doors

Series 400 Medium Stile Doors

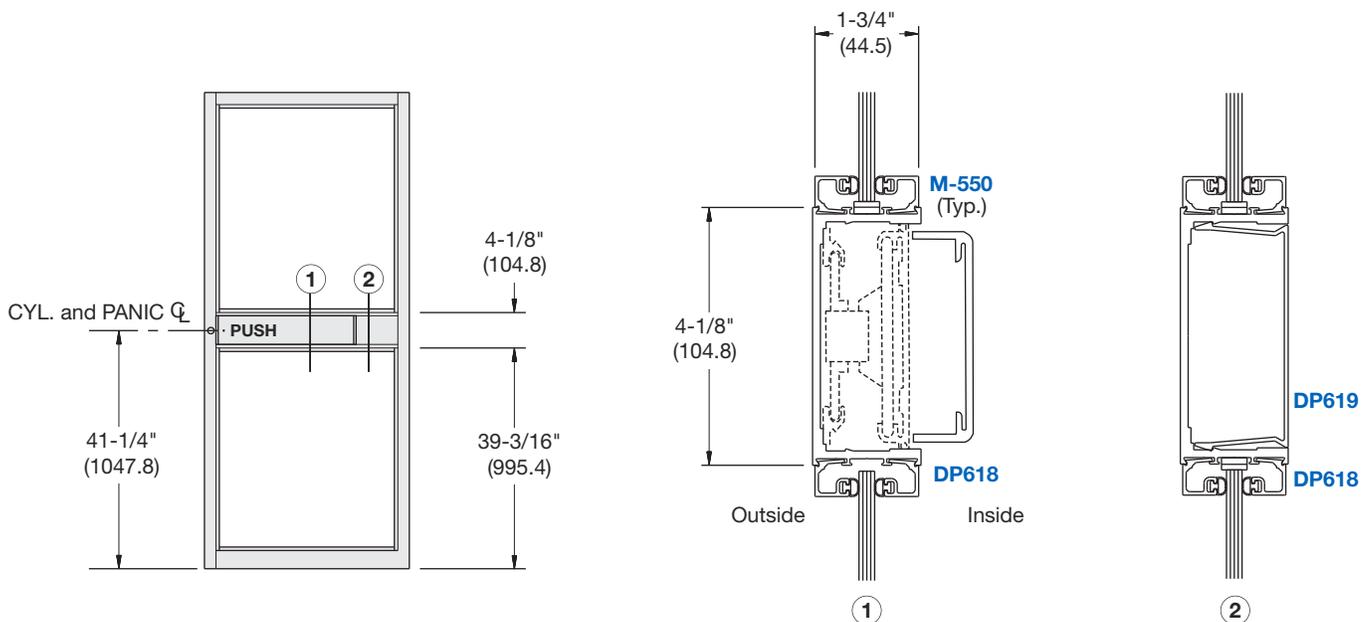
Series 550 Wide Stile Doors

Series 800 Durafront Entrance Systems

Series 850 Durafront Entrance Systems

**NOTE:** CRL Jackson Brand Panics are the standard. However, if you require Von Duprin® or other brand panics we can supply as requested.

Combining contemporary styling with maximum security features, the Mid-Panel Panic option provides a Concealed Vertical Rod Panic Device with a Touch Bar Actuator. Matching mid-panels without hardware are available for sidelites.



NOT TO SCALE

Von Duprin is a registered trademark of Ingersoll-Rand plc, its subsidiaries and/or affiliates in the United States and other countries.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Entrance Door Options

## Panic Exit Devices

### VON DUPRIN® 33A/35A SERIES EXIT DEVICE PRODUCTS

- Fits Door Stiles as Narrow as 1-3/4" (44)
- Available With Smooth or Grooved Housing
- Non-Handed
- UL Listed and Tested to ANSI A156.3, Grade 1



# VON DUPRIN®

Von Duprin® designs and manufactures Exit Devices to the highest standards of quality and reliability in accordance with U.S. domestic and international standards. All 33A and 35A Series Exit Devices are UL Listed for Panic Exit Hardware, and are tested in accordance to ANSI A156.3, Grade 1 standards. For additional information, contact U.S. Aluminum Technical Sales at (800) 262-5151. You can also visit our web site at [usalum.com](http://usalum.com).



33A Series features a grooved mechanism case



35A Series features a smooth mechanism case

#### RIM DEVICES

33A GROOVED PART NO.	35A SMOOTH PART NO.	DEVICE LENGTH	FINISH
33AE03626	35AE03626	36" (914)	Satin Chrome
33AE03313	35AE03313	36" (914)	Dark Bronze
33AE04626	35AE04626	48" (1219)	Satin Chrome
33AE04313	35AE04313	48" (1219)	Dark Bronze

Minimum order: 1 each.

#### SURFACE MOUNTED VERTICAL ROD DEVICES

33A GROOVED PART NO.	35A SMOOTH PART NO.	DEVICE LENGTH	FINISH
3327AE03626	3527AE03626	36" (914)	Satin Chrome
3327AE03313	3527AE03313	36" (914)	Dark Bronze
3327AE04626	3527AE04626	48" (1219)	Satin Chrome
3327AE04313	3527AE04313	48" (1219)	Dark Bronze

Minimum order: 1 each.

#### CONCEALED VERTICAL ROD DEVICES

33A GROOVED PART NO.	35A SMOOTH PART NO.	DEVICE LENGTH	FINISH
3347AE03626	3547AE03626	36" (914)	Satin Chrome
3347AE03313	3547AE03313	36" (914)	Dark Bronze
3347AE04626	3547AE04626	48" (1219)	Satin Chrome
3347AE04313	3547AE04313	48" (1219)	Dark Bronze

Minimum order: 1 each.



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# ENTRANCES

## Entrance Door Options

- Design for Use With 1-3/4" (44) Narrow, Medium, and Wide Stile Aluminum, Wood, or Hollow Metal Doors
- Concealed Fastening for Added Security

## Panic Exit Devices



### CRL JACKSON 10 SERIES PANIC EXIT DEVICES

#### Features:

- Contoured Field Sizeable 48" (1219) Long Crossbar
- Standard Door Height 84" (2134) – Extension Available
- Dual Dogging Feature – By Outside Cylinder  
– By Dogging Pins on Panic Housing
- Wear Points Insulated by Nylon Sleeves and Rollers

PART NO.	TYPE	HANDING	FINISH
<a href="#">311095LC4628</a>	Rim - 'C' Strike	Left Hand-Reverse Bevel	Satin Aluminum
<a href="#">311095RC4628</a>	Rim - 'C' Strike	Right Hand-Reverse Bevel	Satin Aluminum
<a href="#">311095LC4313</a>	Rim - 'C' Strike	Left Hand-Reverse Bevel	Dark Bronze
<a href="#">311095RC4313</a>	Rim - 'C' Strike	Right Hand-Reverse Bevel	Dark Bronze
<a href="#">31108547628</a>	Concealed Vertical Rod	Non-Handed	Satin Aluminum
<a href="#">31108547313</a>	Concealed Vertical Rod	Non-Handed	Dark Bronze

Minimum order: 1 each.



Model 1095



Model 1085

#### Materials:

Body and Arms: High Tensile Strength Aluminum  
Mechanical Components: Stainless and Hardened, Plated Steel  
Latch and Strikes: Sintered Steel

### CRL JACKSON 20 SERIES PANIC EXIT DEVICES

#### Features:

- Standard 36" (914) Wide Door - Field Sizeable up to 48" (1219) Width Available on Special Order
- Standard Door Height 84" (2134) – Extension Available
- Concealed Easy to Use Dogging System – Optional Cylinder Dogging Available on Special Order
- Wear Points Insulated by Nylon Sleeves and Rollers

PART NO.	TYPE	HANDING	FINISH
<a href="#">312095LC3628</a>	Rim - 'C' Strike	Left Hand-Reverse Bevel	Satin Aluminum
<a href="#">312095RC3628</a>	Rim - 'C' Strike	Right Hand-Reverse Bevel	Satin Aluminum
<a href="#">312095LC3313</a>	Rim - 'C' Strike	Left Hand-Reverse Bevel	Dark Bronze
<a href="#">312095RC3313</a>	Rim - 'C' Strike	Right Hand-Reverse Bevel	Dark Bronze
<a href="#">312085L37628</a>	Concealed Vertical Rod	Left Hand-Reverse Bevel	Satin Aluminum
<a href="#">312085R37628</a>	Concealed Vertical Rod	Right Hand-Reverse Bevel	Satin Aluminum
<a href="#">312085L37313</a>	Concealed Vertical Rod	Left Hand-Reverse Bevel	Dark Bronze
<a href="#">312085R37313</a>	Concealed Vertical Rod	Right Hand-Reverse Bevel	Dark Bronze

Minimum order: 1 each.



Model 2095



Model 2085

#### Materials:

Body and Push-Pad: Extruded Aluminum  
Mechanical Components: Stainless and Hardened, Plated Steel  
Latch and Strikes: Sintered Steel



## Entrance Door Options

### JACKSON 1200 SERIES PANIC EXIT DEVICES

- Designed for Use With 1-3/4" (44) Narrow, Medium, and Wide Stile Aluminum, Wood or Hollow Metal Doors
- "Soft-Touch" Smooth Action Push-Pad
- Field Sizeable

PART NO.	TYPE	HANDING	FINISH
31127537628	36" Surface Vertical Rod	Non-Handed	Satin Aluminum
31127537313	36" Surface Vertical Rod	Non-Handed	Dark Bronze
311285L37628	36" Concealed Vertical Rod	Left Hand-Reverse Bevel	Satin Aluminum
311285R37628	36" Concealed Vertical Rod	Right Hand-Reverse Bevel	Satin Aluminum
311285L37313	36" Concealed Vertical Rod	Left Hand-Reverse Bevel	Dark Bronze
311285R37313	36" Concealed Vertical Rod	Right Hand-Reverse Bevel	Dark Bronze
311295C3628	Rim – 36" Base-'C' Strike	Non-Handed	Satin Aluminum
311295C4628	Rim – 48" Base-'C' Strike	Non-Handed	Satin Aluminum
311295C3313	Rim – 36" Base-'C' Strike	Non-Handed	Dark Bronze
311295C4313	Rim – 48" Base-'C' Strike	Non-Handed	Dark Bronze

Minimum order: 1 each.

#### Specifications:

##### 1275 Surface Vertical Rod Device

- Stocked in Both 36" (914) and 48" (1219) Widths
- Standard Door Height 84" (2134 mm) – Field Sizeable

##### 1285 Concealed Vertical Rod Device

- Stocked in Both 36" (914) and 48" (1219) Widths
- Standard Height 84" (2134) - Extension Available
- Requires Cylinder Mounting Pad When Using Mortise Cylinder for Keyed Outside Entry

##### 1295 Rim Device

- Stocked in Both 36" (914) and 48" (1219) Widths
- Surface Mounted Roller Strike Standard
- Requires Rim Cylinder for Keyed Entry

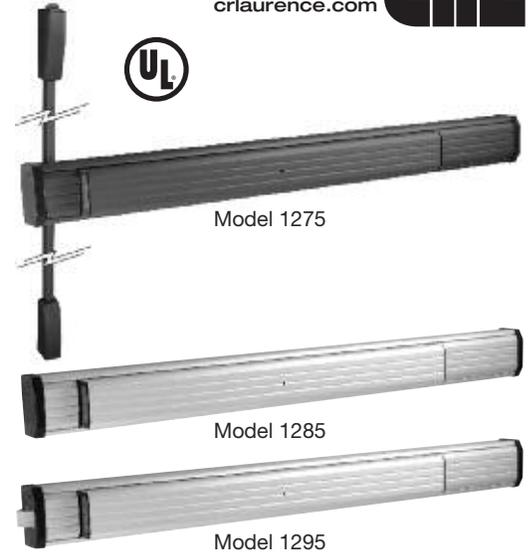
### JACKSON 10 SERIES PUSH-PAD RETROFIT DEVICE

- Sleek, Contemporary Style Push-Pad to Retrofit Existing CRL Jackson 1085 Concealed Vertical Rod Crossbar Exit Device
- Uses Existing 10 Series Rod and Case Assembly
- Easy Installation – Cut to Fit

PART NO.	HANDING	FINISH
311285RL3628	36" Left Hand-Reverse Bevel	Satin Aluminum
311285RR3628	36" Right Hand-Reverse Bevel	Satin Aluminum
311285RL3313	36" Left Hand-Reverse Bevel	Dark Bronze
311285RR3313	36" Right Hand-Reverse Bevel	Dark Bronze



## Panic Exit Devices



#### Materials:

Base and Push-Pad: Extruded Aluminum  
 Mechanical Components: Stainless and Hardened, Plated Steel  
 Latch and Strikes: Sintered Steel



#### Specifications:

- Stocked in Both 36" (914) and 48" (1219) Widths

#### Materials:

Base and Push-Pad: Extruded Aluminum  
 Mechanical Components: Stainless and Hardened, Plated Steel

# ENTRANCES

## Entrance Door Options



- Access Control Handles With a Large Selection of Exterior Fixed Pulls for Medium and Wide Stile Doors
- Available in Polished and Brushed Stainless, Satin and Polished Brass, and Oil Rubbed Bronze
- Custom Finishes Available By Special Order

CRL-Blumcraft manufactures a complete line of Access Control Handles for all your door needs. We have Panic Devices, Deadbolt Handles, and Electronic Egress Control Handles in a wide variety of configurations. We can also supply you with Dummy Handles to match these devices, allowing you to maintain the same appearance throughout the project, but without the added costs. Please review the following pages for the complete selection, or visit [crlaurence.com](http://crlaurence.com) for more information.



## Access Control Handles



For additional information, contact CRL Technical Sales at (800) 421-6144 in the U.S., (877) 421-6144 from Canada, or (323) 588-1281 International, and ask for Ext. 7700. You can e-mail us through our web site at [crlaurence.com](http://crlaurence.com). From the home page click on Contact Us, and then click on Technical Sales for Commercial Products.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Entrance Door Options

- Available in Panic, Deadbolt, Electronic Egress, and Dummy Models
- Stock Sizes Available for Immediate Shipment
- Custom Sizes Ship Within One to Two Weeks



### CRL-BLUMCRAFT PANIC HANDLES

- Elegant Tubular Design
- UL and ANSI/BHMA Certified



The operating mechanism concealed within the vertical tubing of our Panic Handles retracts the latch bolt when the interior actuation bar is pushed. An optional exterior Keyed Access Device can be installed to allow entry. A special dogging feature allows the doors to remain unlocked during business hours. Electronic Strikes are also available, providing a variety of secured entry options.



### CRL-BLUMCRAFT DEADBOLT HANDLES

- Easy Secure Access
- ANSI/BHMA Certified

The locking mechanism is concealed within the vertical tubing of our Deadbolt Handles, providing easy access through the use of a variety of keying options. An optional Top Latch Roller Bolt allows the use of Electronic Strikes for controlled entry systems.



### CRL-BLUMCRAFT ELECTRONIC EGRESS CONTROL HANDLES

- Ideal for Maintaining Security and Aesthetics
- UL Recognized Component
- U.S. Patent No. 7,347,461



An electronic switch concealed within the vertical tubing of our Electronic Egress Control Handle releases the magnetic lock at the top or bottom of the door when the interior actuation bar is pushed. Please consult your local building codes as they relate to electromagnetic locking hardware acceptability.



### CRL-BLUMCRAFT DUMMY HANDLES

- An Endless Variety of Configurations are Available to Match Our Panic, Deadbolt, and Electronic Egress Handles
- Elegant Tubular Design

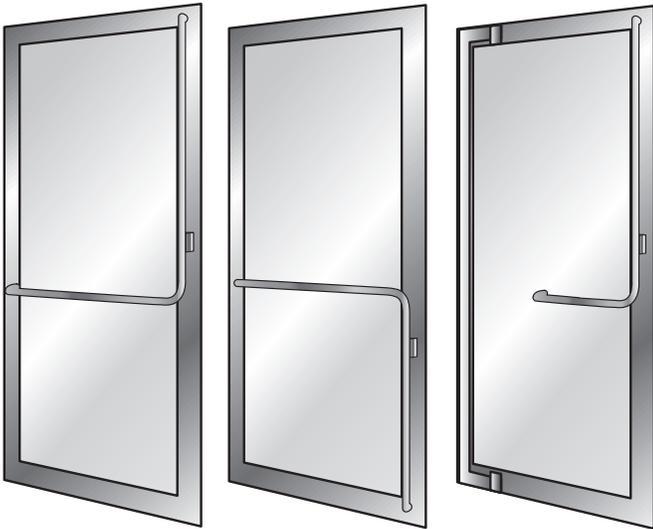
When functionality is not required, our Dummy Handles can be made to match any of our Panic, Deadbolt or Electronic Egress Handles, giving you the same appearance throughout your project.



# ENTRANCES

## Entrance Door Options

### STANDARD INTERIOR CONFIGURATIONS FOR CRL-BLUMCRAFT PANIC HANDLES



PA100 Series

PA110 Series

BDA100 Series

Available with or without Keyed Access Device

For Balanced Door Panic Handles see opposite page

### EXTERIOR HANDLE COMBINATIONS FOR DOORS WITH CRL-BLUMCRAFT PANIC HANDLES



Handle A

Handle D

Handle B

Handle C

Handle E

Handle F

Handle G

Handle H

Handle J

Handle J-S



Handle K

Handle K-S

Handle L

Handle L-S

Handle M

Handle M-S

Handle N

Handle P

Handle X

Handle Y

**NOTE:** All Access Control Handles on this page function as health and safety tools, and may only be purchased through CRL Authorized Glass Temperers and Door Manufacturers.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Access Control Handles



**NOTE:** All Exterior Fixed Handles below can be used in combination with any Panic Handle.  
 Contact U.S. Aluminum Technical Sales at (800) 262-5151 in the U.S. and Canada, or International at (323) 268-4230, and ask for Ext. 5305. You can also send e-mail from the [usalum.com](http://usalum.com) home page.

## Entrance Door Options

- Specifically Designed for Balanced Doors
- UL, ULC, and ANSI/BHMA Certified
- For 1/2" or 3/4" (12 or 19) Tempered Glass
- Available in Polished and Brushed Stainless, Satin and Polished Brass, and Oil Rubbed Bronze
- Custom Finishes Available By Special Order
- Custom Sizes Ship Within One to Two Weeks

Our Balanced Door Panic Handles were created to meet the building code requirements for Balanced Doors, while maintaining an excellent appearance. The building code states that the push pad shall not extend more than one-half the width of the door measured from the latch side, and this creates an undesirable appearance.

Our BDA100 Series has a fixed handle portion that extends toward the hinge side of the door, with a clearly defined push pad handle portion at the latch side of the door. This wider handle has greatly improved aesthetics over a handle that only spans one-half of the door's width.

Yet another fine example of our commitment to meeting building code requirements, while at the same time delivering the beautiful hardware that our architectural customers demand.

## Panic Handles for Balanced Doors

• Series BDA100



## EXTERIOR HANDLE COMBINATIONS FOR BALANCED DOORS WITH CRL PANIC HANDLES

**NOTE:** Exterior Fixed Handles shown below can be used in combination with our BDA100 Series Panic Handle. For additional Exterior Fixed Handle options, see page 07-A3.



Handle A-BD



Handle D-BD



Handle B-BD

Contact U.S. Aluminum Technical Sales at (800) 262-5151 in the U.S. and Canada, or International at (323) 268-4230, and ask for Ext. 5305. You can also send e-mail from the [usalum.com](http://usalum.com) home page. **NOTE:** All Access Control Handles on this page function as health and safety tools, and may only be purchased through CRL Authorized Glass Temperers and Door Manufacturers.

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# ENTRANCES

## Table of Contents

## Platinum Full Framed Doors

- Series FFN1
- Series FFM1
- Series FFW1

### SECTION A4

### PAGE

SPECIFICATIONS .....	02-A4
TECHNICAL DATA.....	03-A4
TYPICAL DETAILS.....	04-A4 thru 06-A4
DOOR CORNER CONSTRUCTION .....	07-A4



Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter

Kg - kilogram

Pa - pascal

KPa - kilopascal

MPa - megapascal

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## Specifications

## Platinum Full Framed Doors

- Series FFN1
- Series FFM1
- Series FFW1

### SECTION 08 11 16 ALUMINUM DOORS AND FRAMES

SERIES	STILES	CHOICE OF TOP RAIL	CHOICE OF BOTTOM RAIL	GLAZING INFILL
FFN1 Narrow Stile	3" (76)	4" (102)	4" (102)	1/4" (6) or 1" (25)
FFM1 Medium Stile	4-1/16" (103)	5" (127)	5" (127)	1/4" (6) or 1" (25)
FFW1 Wide Stile	5-9/16" (141)	10" (254)	10" (254)	1/4" (6) or 1" (25)
A.D.A. Bottom Rail Option for Any Series			10" (254)	

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor and equipment for the complete installation of aluminum entrance doors, door frames and hardware as detailed on the drawings and specified herein.

Work Not Included: Structural support of the framing system, wood framing, structural steel, masonry, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on one of the following U.S. Aluminum Platinum Series FFN1, FFM1 or FFW1 Entrance Doors.

**Optional:** Door shall have A.D.A. 10" (254) bottom rail.

When substitute products are to be considered, supporting technical literature, samples and drawings must be submitted ten (10) days prior to bid date in order to make a valid comparison of the products involved.

#### II. PRODUCT MATERIALS

Door members shall be extruded architectural aluminum 6063-T5 alloy and temper. Major portions of all door sections, shall be nominal .125 (3.2) inch. Wall thickness of frame members shall be nominal .093 (2.4) inch. Glazing to be 1/4" (6) or 1" (25) monolithic, laminated or insulating glass (specify). Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR CONSTRUCTION

Door stiles and rails shall be tubular sections accurately joined at corners with heavy concealed reinforcement brackets secured with bolts, and screws. Doors shall have no exposed stops with E.P.D.M. glazing gasket on both sides of the glass.

No exposed screws shall be permitted. Each door leaf shall be equipped with an adjusting mechanism, located in the top rail near the lock stile, which provides for minor clearance adjustments after installation.

A hard-backed poly-pile weatherstripped shall be installed in both stiles of center hung single doors and in hinge stiles of center hung pair of doors. Offset pivoted or butt hung doors shall have weatherstripped doorstops at frame jambs and header. The active meeting stile of all pair of doors shall have an adjustable astragal with double line of weather-stripping. **OPTIONAL:** Door bottom rail will be weatherstripped with an E.P.D.M. blade gasket sweep strip applied with concealed fasteners. (**NOTE:** This option is required for high performance conditions.)

**OPTIONAL:** Door bottom rail shall receive a concealed weatherstripped insert.

#### HARDWARE

Hardware for aluminum doors and door frames shall be the entrance manufacturer's standard. If custom hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious

blemishes. Aluminum extrusions shall be clad....

(Specify one of the following).

- \_\_\_ Brushed Stainless
- \_\_\_ Polished Stainless
- \_\_\_ Polished Brass
- \_\_\_ Satin Brass
- \_\_\_ Satin Anodized
- \_\_\_ Dark Bronze Anodized
- \_\_\_ Oil Rubbed Bronze

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

#### III. EXECUTION INSTALLATION

All items under this heading shall be set in their correct locations as shown in the details and shall be level, square, plumb, and at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between entrance framing and the building structure shall be sealed in order to secure a watertight installation. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

# ENTRANCES

## Technical Data

## Platinum Full Framed Doors

- Series FFN1
- Series FFM1
- Series FFW1

We manufacture a full line of Architectural Full Framed Doors for interior and exterior applications. These innovative door systems are available in seven standard architectural finishes, with custom finishes available on special order. Our Platinum Series Full Framed Doors are made to order and can be designed for almost any application. With the ability to prep and install almost any architectural hardware configuration, we are confident we can meet your design requirements. We offer a wide selection of top and bottom rail sizes. Mid-rails or applied mullions can be incorporated.

SERIES	STILES	CHOICE OF TOP RAIL	CHOICE OF BOTTOM RAIL	TRAFFIC APPLICATIONS
<b>FFN1 Narrow Stile</b>	3" (76)	4" (102) 5" (127) 10" (254)	4" (102) 5" (127) 10" (254)	Light to Moderate
<b>FFM1 Medium Stile</b>	4-1/16" (103)			Moderate to Heavy
<b>FFW1 Wide Stile</b>	5-9/16" (141)			Heavy

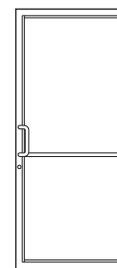
### STANDARD FEATURES:

- Supplied With 1/4" to 1" (6 to 25) Monolithic, Laminated or Insulating Glass
- Narrow, Medium, and Wide Stiles to Choose From
- No Exposed Glass Stops
- Clad Aluminum Construction
- Seven Standard Architectural Finishes

### ORDERING INFORMATION:

All Platinum Full Framed Doors are manufactured to order. To request a quote or place an order you need to specify the door size, top and bottom rail heights, glass type and thickness, finish required, and what hardware type is needed for the application.

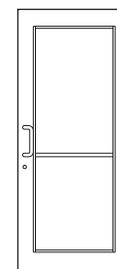
Platinum Full Framed Doors can be prepped and supplied with CRL Panic Handles, Push/Pulls, Ladder Style Handles, Three Point Locks, Intermediate Pivots, Butt Hinges, Flush Bolts, and even Balanced Door Hardware. Our Full Framed Door product line can also support Floor Closers, Overhead Concealed Closers, and Door Holders. Contact Technical Sales at (800) 262-5151 in the U.S. or from Canada, and ask for Ext. 5305. You can also send e-mail from the [usalum.com](http://usalum.com) home page.



**Series FFN1 - Narrow Stile**  
(Offset hung door shown)



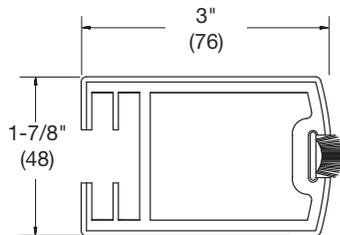
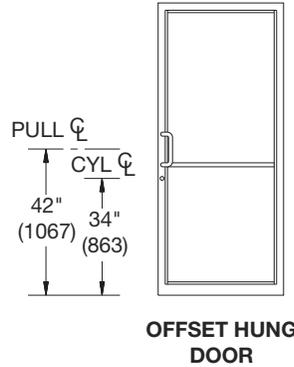
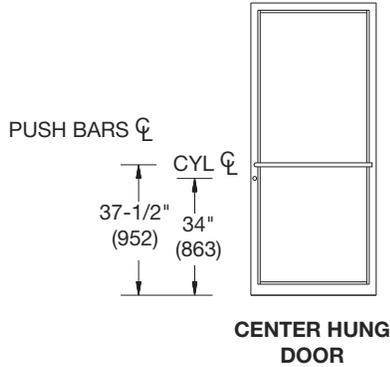
**Series FFM1 - Medium Stile**  
(Center hung door shown)



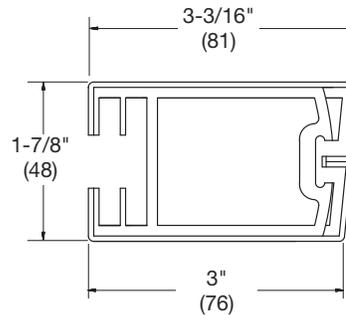
**Series FFW1 - Wide Stile**  
(Offset hung door shown)

**Typical Details**

**Platinum Full Framed Doors**  
• Series FFN1



**CENTER HUNG DOORS**  
Narrow Radius Stile for Center Hung and Meeting Point Conditions



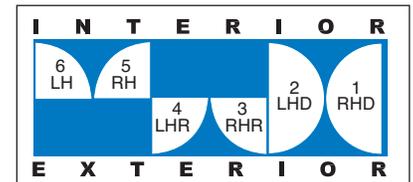
**OFFSET HUNG DOORS**  
Narrow Beveled Stile for Butt Hinge/Offset Pivot Conditions



10" (254)      5" (127)      4" (102)

Choice of Top and Bottom Rails

**DOOR SWING CHART**



Use the Door Swing Chart to determine how the door(s) should be handed.

**NARROW STILE FULL FRAMED DOORS**

PART NO.	FINISH
FFN1BS	Brushed Stainless
FFN1PS	Polished Stainless
FFN1PB	Polished Brass
FFN1SB	Satin Brass
FFN1SA	Satin Anodized
FFN1DU	Dark Bronze Anodized
FFN10RB	Oil Rubbed Bronze

Minimum order: 1 each.

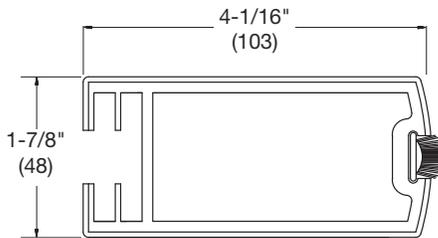
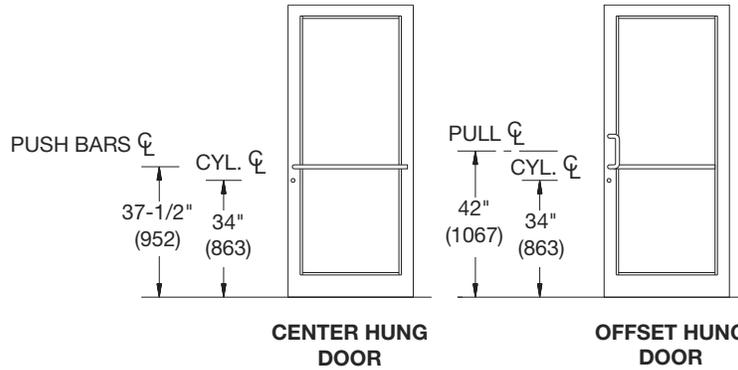
NOT TO SCALE

# ENTRANCES

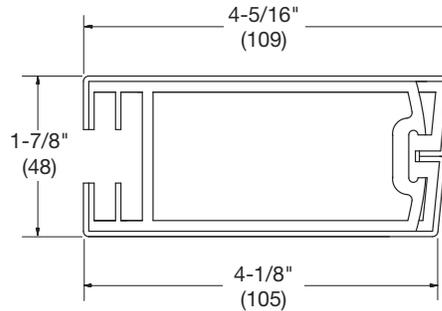
## Typical Details

## Platinum Full Framed Doors

• Series FFM1



**CENTER HUNG DOORS**  
 Medium Radius Stile for Center Hung and Meeting Point Conditions



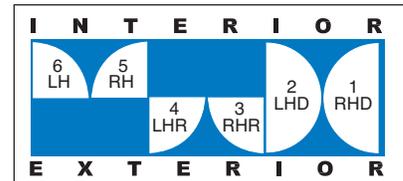
**OFFSET HUNG DOORS**  
 Medium Beveled Stile for Butt HInge/Offset Pivot Conditions



10" (254)      5" (127)      4" (102)

Choice of Top and Bottom Rails

**DOOR SWING CHART**



Use the Door Swing Chart to determine how the door(s) should be handed.

**MEDIUM STILE FULL FRAMED DOORS**

PART NO.	FINISH
<b>FFM1BS</b>	Brushed Stainless
<b>FFM1PS</b>	Polished Stainless
<b>FFM1PB</b>	Polished Brass
<b>FFM1SB</b>	Satin Brass
<b>FFM1SA</b>	Satin Anodized
<b>FFM1DU</b>	Dark Bronze Anodized
<b>FFM10RB</b>	Oil Rubbed Bronze

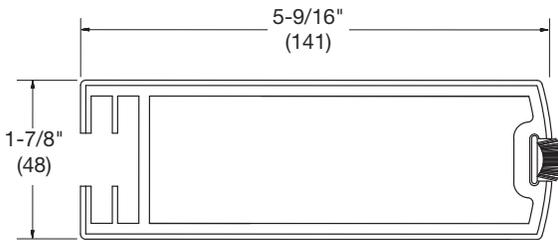
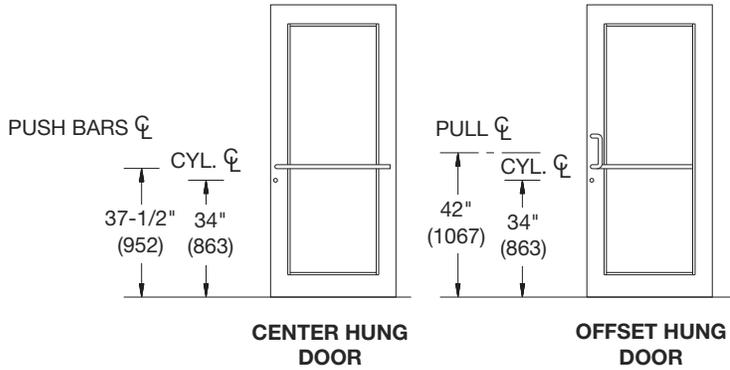
Minimum order: 1 each.

NOT TO SCALE

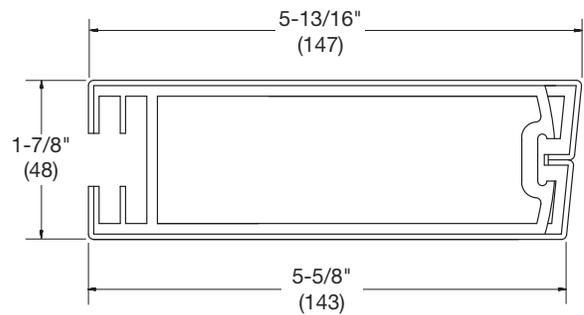
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**Typical Details**

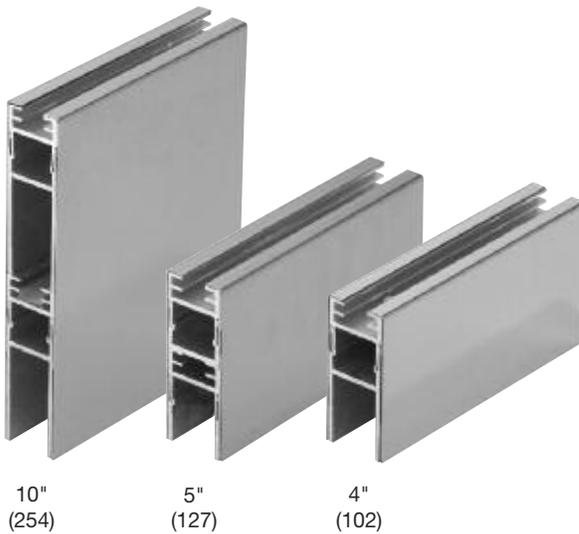
**Platinum Full Framed Doors**  
 • Series FFW1



**CENTER HUNG DOORS**  
 Wide Radius Stile for Center Hung  
 and Meeting Point Conditions



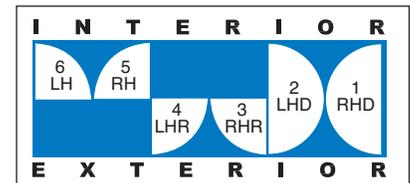
**OFFSET HUNG DOORS**  
 Wide Beveled Stile for  
 Butt Hinge/Offset Pivot Conditions



Choice of Top and Bottom Rails

NOT TO SCALE

**DOOR SWING CHART**



Use the Door Swing Chart to determine how the door(s) should be handed.

**WIDE STILE FULL FRAMED DOORS**

PART NO.	FINISH
<b>FFW1BS</b>	Brushed Stainless
<b>FFW1PS</b>	Polished Stainless
<b>FFW1PB</b>	Polished Brass
<b>FFW1SB</b>	Satin Brass
<b>FFW1SA</b>	Satin Anodized
<b>FFW1DU</b>	Dark Bronze Anodized
<b>FFW10RB</b>	Oil Rubbed Bronze

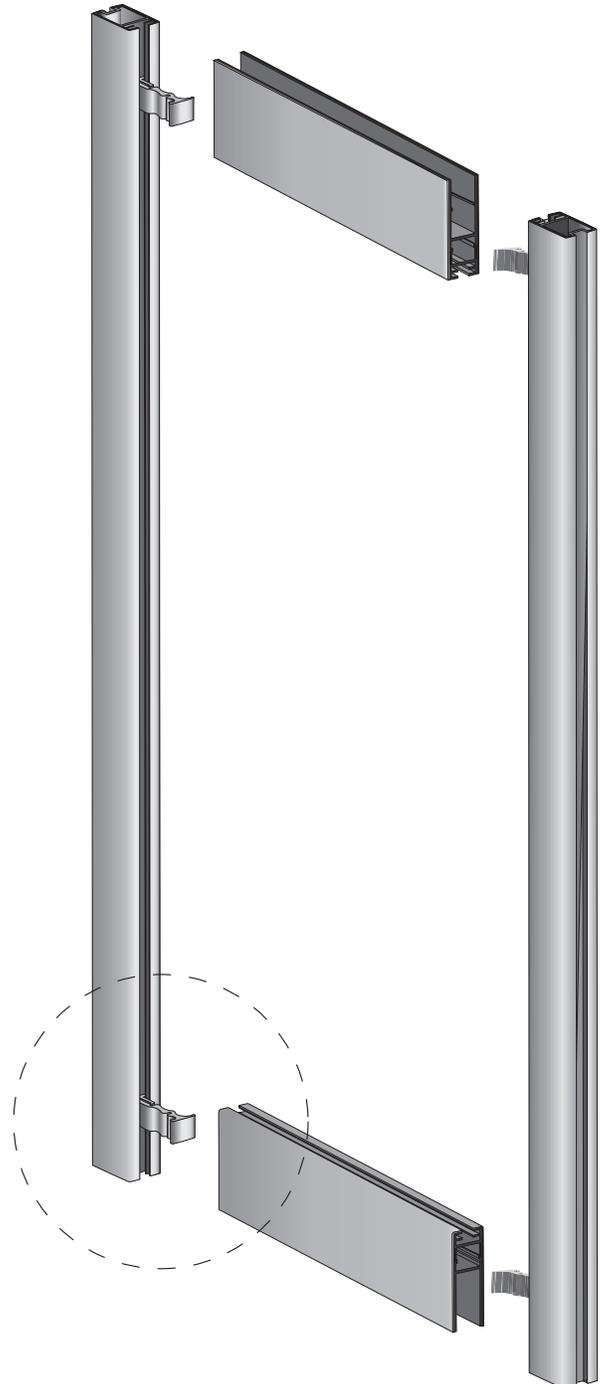
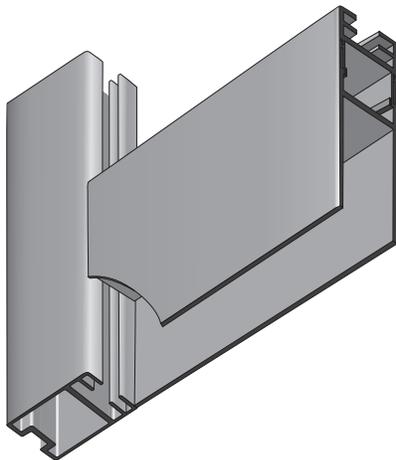
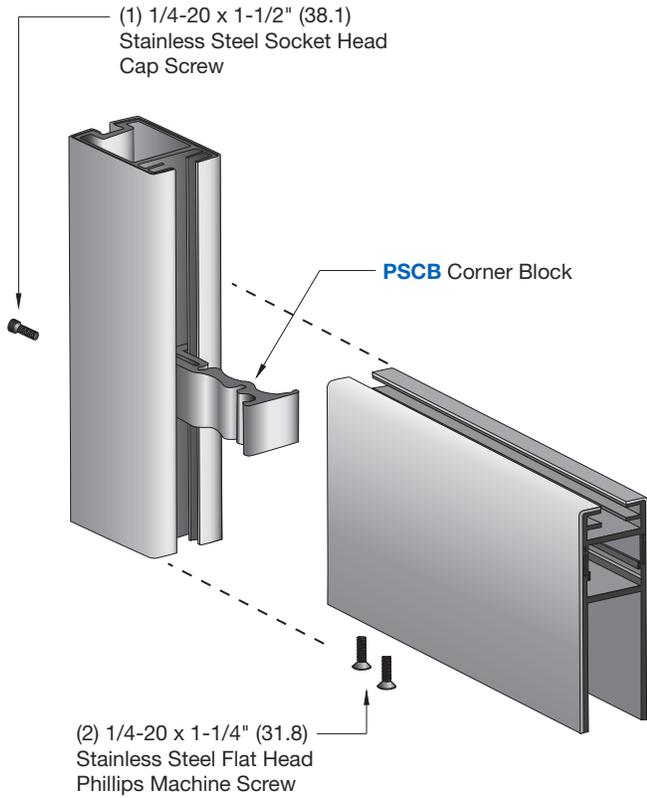
Minimum order: 1 each.

# ENTRANCES

## Door Corner Construction

## Platinum Full Framed Doors

- Series FFN1
- Series FFM1
- Series FFW1



## Table of Contents

**Balanced Doors**  
 • Balancer™ Series  
 • Premium Series

SECTION A5	PAGE
SPECIAL FEATURES.....	02-A5 thru 04-A5
SPECIFICATIONS .....	05-A5
TECHNICAL DATA.....	06-A5 and 07-A5
TYPICAL DETAILS.....	08-A5 and 09-A5



Project: Corporate Building Entrance, Los Angeles, CA

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- m - meter
- Pa - pascal
- MPa - megapascal
- Kg - kilogram
- KPa - kilopascal

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# ENTRANCES

## Special Features

### Balanced Doors

- Balancer™ Series
- Premium Series



### BALANCED DOORS AND ENTRANCES

- Neutralizes Wind and Stack Pressure for Easy Operation
- Requires Less Operating Space Than Conventionally Hinged Doors
- Two Styles Available; Concealed Vertical Tube and Exposed Vertical Tube
- "Barrier Free Door"; Meets A.D.A. Requirements Without Power Operators
- Available for Our 451, IT451, IG500, IG600, and IT600 Storefront Systems
- Custom Engineered and Fabricated Systems With Over 40 Years of Proven Performance
- Manufactured to Withstand the Most Demanding Design Requirements
- Provides Strength and Durability Throughout Years of Heavy Use
- Fast Turn-Around Times
- For Doors Weighing Up to 700 Pounds (318 kg)
- Automatic Operators Available With Premium Series Only
- 10 Year Warranty

U.S. Aluminum introduces the latest edition to our extensive Architectural Hardware line, Balanced Doors. We now offer a complete line of Balanced Doors utilizing the high performance hardware as designed by Wikk Industries, a leading manufacturer of Balanced Doors for over 40 years.

Our new line of Balanced Doors and Entrances offers a variety of options that fit within everyone's budget. All are available in a wide variety of styles and finishes, as well as custom finishes to meet your every need.

Balanced Door Hardware, combined with our Door Line, allows us to offer you endless possibilities in design, finish, and functionality. We have applied our strict manufacturing standards, which you have come to know and trust over the years, to the Wikk Balanced Door and Hardware line to ensure the high quality, performance, and durability of the Wikk product continues. Keeping our commitment to customer service, we offer complete engineering and design services, as well as the best lead times in the industry.

When using our IG500, IG600, and IT600 Series Storefronts, Premium Series Balanced Doors are also available with an automatic operator. This is a Standard Balanced Door during manual operation, and automated with power only when required, accomplished using a concealed low energy Stanley Magic-Force™ Motorized Operator.

For additional information, contact U.S. Aluminum Technical Sales at (800) 262-5151 in the U.S. and Canada, or (323) 268-4230 International. Ask for Ext. 5305. You can e-mail us through our web site at [usalum.com](http://usalum.com).

## Special Features

### Balanced Doors

- Balancer™ Series
- Premium Series

### WHAT IS A BALANCED DOOR?

In a Balanced Door the door panel rotates around a rolling pivot in an elliptical path to provide the widest possible opening with the smallest swing arc (see diagram below). This design neutralizes two naturally occurring pressures, atmospheric (wind) and interior stack pressure, allowing effortless opening and positive closing. Balanced Doors are typically required when a commercial project has a monumental entrance, requiring an oversized, heavy door. The 'balanced' principle permits the use of these monumental doors where ordinary closer mechanisms would fail to offer adequate control.

### LET STACK PRESSURES WORK FOR YOU

#### HEATING SEASON

Building air lighter than outside air



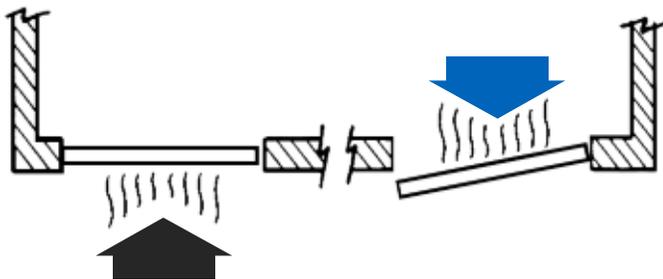
Negative inside pressure makes conventionally hinged doors hard to open

#### COOLING SEASON

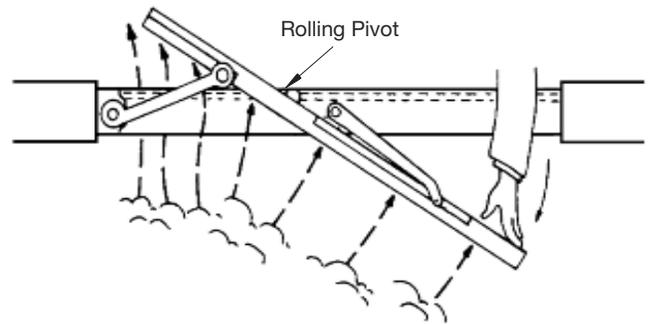
Building air heavier than outside air



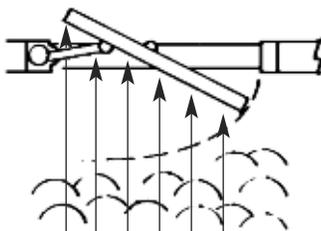
Strong tension required to hold some doors closed against positive Building pressure



### BALANCED DOOR DESIGN OFFERS MANY ADVANTAGES

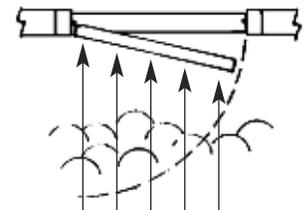


When our Balanced Doors open, approximately two thirds of the door swings outward while one third swings inward, allowing wind or stack pressure to assist rather than hinder the operation of the door. Air pressure balances itself out around the rolling pivot, so less force is needed to operate the door.



Balanced Door

WIND	BALANCED DOOR WITH 5 LBS. SPRING PRESSURE	REGULAR DOOR WITH 5 LBS. SPRING PRESSURE
m.p.h.	lbs. pressure to open	lbs. pressure to open
10	1 + 5 = 6 lbs.	3 + 5 = 8 lbs.
20	3 + 5 = 8 lbs.	11 + 5 = 16 lbs.
30	7 + 5 = 12 lbs.	26 + 5 = 31 lbs.
40	13 + 5 = 18 lbs.	47 + 5 = 52 lbs.
50	21 + 5 = 26 lbs.	73 + 5 = 78 lbs.
60	30 + 5 = 35 lbs.	105 + 5 = 110 lbs.



Regular Door

# ENTRANCES

## Special Features

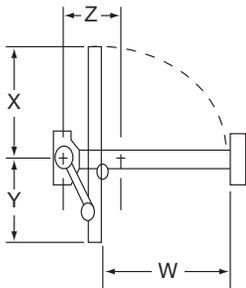
### Balanced Doors

- Balancer™ Series
- Premium Series

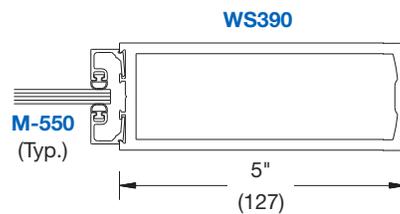
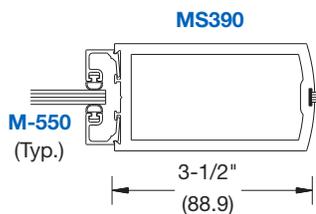
### ADVANTAGES OF BALANCED DOORS BY U.S. ALUMINUM

- Cost Effective Alternative to Standard Entrance Doors
- Maximum Size for Balancer™ Series is 48" Wide x 108" High (1219 x 2743)
- Maximum Size for Premium Series is 50" Wide x 120" High (1270 x 3048)
- Lets Wind and Stack Pressures Work for You Instead of Against You
- Assures Easy Operation and Positive Closing, Even Under Adverse Conditions
- Designed With Dependable LCN Hydraulic Check Connected Directly to Door
- Adjustable Hydraulic Back Check for Consistently Smooth Operation
- Latching Speed, Closing Speed, Back Check, and Spring Power are All Adjustable Without Removing Hardware or Covers
- Compact Header With Integral Guide Track
- Requires Less Operating Space Than Conventionally Hinged Doors
- Hardware is Fully Capable of Supporting and Controlling Large and Monumental Doors
- Easily Installed in New or Remodeled Buildings, Exterior or Interior
- Models Available to Work With Our Series 451, IT451, IG500, IG600, and IT600 Storefronts

Design Dimensions (shown in inches)



	SHORT ARM						LONG ARM					
Door Size	30"	32"	34"	36"	38"	39"	40"	42"	44"	46"	48"	
W	26-11/16"	28-11/16"	30-11/16"	32-11/16"	34-11/16"	35-11/16"	36-11/16"	38-11/16"	40-11/16"	42-11/16"	44-11/16"	
X	17-1/2"	19-1/2"	21-1/2"	23-1/2"	25-1/2"	26-1/2"	24"	26"	28"	30"	32"	
Y	12-1/2"						16"					
Z	7-1/8"						8-7/8"					



SERIES	CHOICE OF STILES	CHOICE OF TOP RAIL	BOTTOM RAIL	TRAFFIC APPLICATIONS
Balancer™	3-1/2" (88.9) 5" (127)	3-11/32" (84.9) 5-1/2" (139.7)	6-1/2" (165.1)	Extremely Heavy Traffic (Institutional Buildings, Schools, Sports Arenas)
Premium				
A.D.A. Bottom Rail Option for Either Series			9-1/2" (241.3)	A.D.A.

## Specifications

### SECTION 08 42 40 BALANCED DOORS

#### I. GENERAL DESCRIPTION

**Work Included:** The glazing contractor shall furnish all necessary materials, labor and equipment for the complete installation of balanced entrance doors, door frames and hardware as detailed on the drawings and specified herein.

**Work Not Included:** Structural support of the framing system, wood framing, structural steel, masonry, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on one of the following U.S. Aluminum Series Balancer™ or Premium Balanced Entrance Doors.

**OPTIONAL:** Door shall have A.D.A. 9-1/2" (241.3) bottom rail.

When substitute products are to be considered, supporting technical literature, samples and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### II. PRODUCT MATERIALS

Heavy-duty, 1-7/8" (47.6) minimum door members shall be extruded aluminum 6063-T5 alloy and temper. Major portions of all door sections, except glazing beads, shall be nominal .188 inch (5) thickness. Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR CONSTRUCTION

Balancer™ Series – Customized cast iron hydraulic speed control with back checking feature is manufactured by LCN. Meets ANSI standards and is designated as a "Grade 1" speed control. Premium Series – Customized cast bronze hydraulic speed control with first and second speed adjustment. Hydraulic speed controls and other integral parts are heavy-duty and designed to allow variation in adjustments to meet this particular job with respect to door size, door weight, and varying or internal building

pressures. Manual speed control or automatic operator is concealed in the head frame. The unit is removable without requiring the removal of the door, head frame or any other hardware. Heavy-duty steel tube hinge shaft is 1-3/4 inch (44) diameter with 3/16 inch (4.8) minimum wall thickness. Hinge shaft is furnished complete with integral closing force spring: adjustments are made with a cast worm gear at the floor to meet ambient wind or building pressure conditions. Hardware includes a spring-cushioned door roller bumper located in the guide channel. The operating mechanisms in the head include ball bearing pivots, manual speed control guide channel.

Guide roller is of self-aligning design with no lubrication needed. Field adjustment is possible for proper perimeter clearance of each door leaf in relation to its finished framework to accommodate on-site conditions.

Manual doors have a semi-automatic hold open device located in the bottom rail. A.D.A. compliant openings: doors designated as handicapped entrances have a maximum of 8 lbs. (3.63 kg) spring tension adjustment at pull handle. The clear opening is a minimum of 32 inches (812) or greater depending on local codes. The hydraulic speed control shall be adjusted so that from an open position of 70 degrees, the door will take at least three seconds to move to a point 3 inches (76.2) from the latch, measured to the leading edge of the door (optional time delay closer is available if desired; consult factory). Arms and pivots are one-piece stainless or bronze castings or aluminum extrusions, finished as specified.

#### HARDWARE

Hardware for balanced doors and door frames shall be the entrance manufacturer's standard. If custom hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication.

## Balanced Doors

- Balancer™ Series
- Premium Series

**OPTIONAL:** Panic hardware (If required) is furnished by the door supplier.

#### FINISH

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

- \_\_\_ #11 Clear anodic coating
- \_\_\_ #22 Dark Bronze anodic coating
- \_\_\_ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (Specify a U.S. Aluminum standard color). For Clad Finishes – Aluminum extrusions shall be clad over in stainless steel and/or bronze. (Specify one of the following).

- \_\_\_ Polished
- \_\_\_ Brushed
- \_\_\_ Non-Directional
- \_\_\_ Oil Rubbed Bronze

#### III. EXECUTION INSTALLATION

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

Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

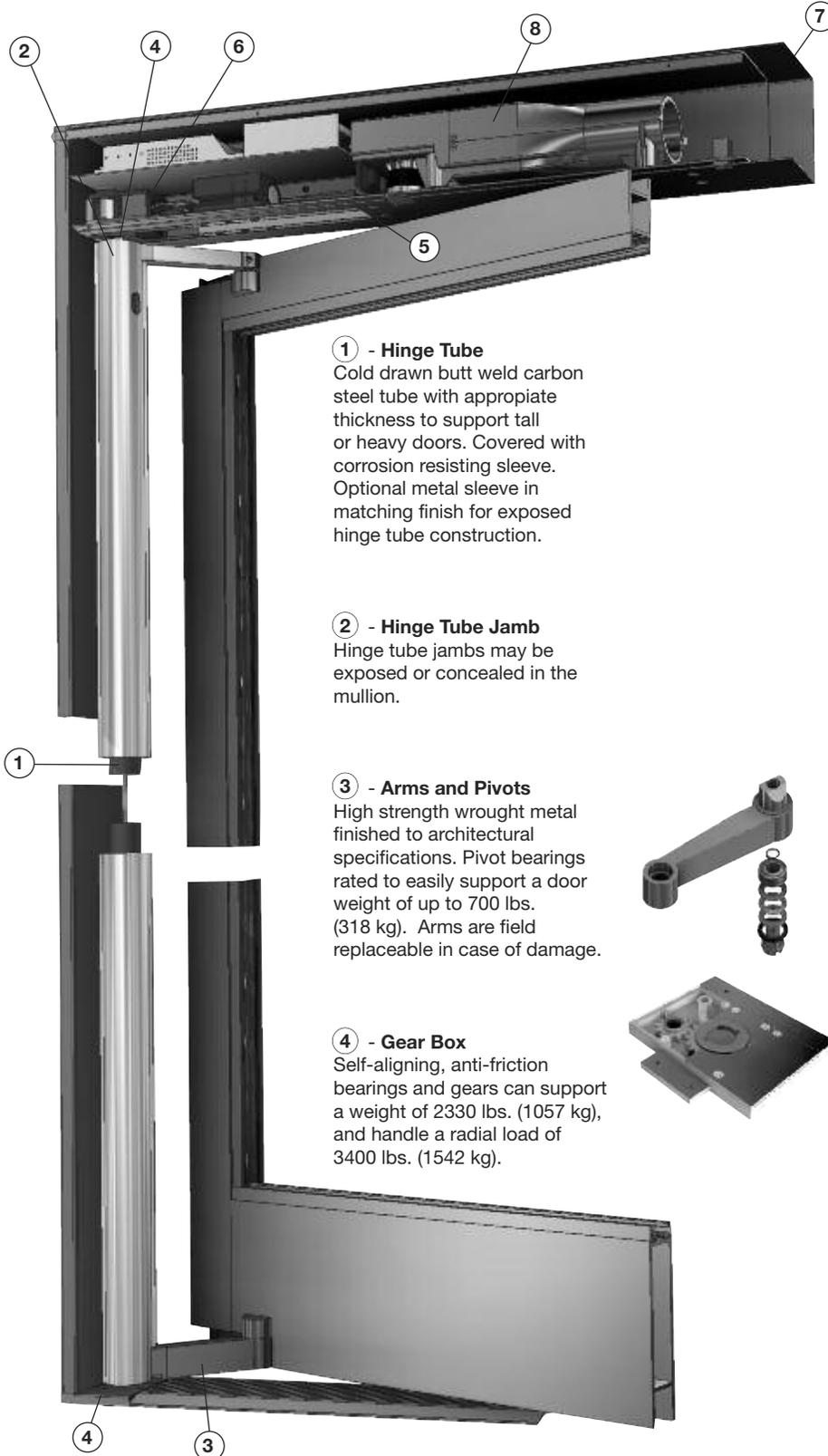
# ENTRANCES

## Technical Data

## Balanced Doors

- Premium Series

### ANATOMY OF A PREMIUM SERIES BALANCED DOOR



**1 - Hinge Tube**  
Cold drawn butt weld carbon steel tube with appropriate thickness to support tall or heavy doors. Covered with corrosion resisting sleeve. Optional metal sleeve in matching finish for exposed hinge tube construction.

**2 - Hinge Tube Jamb**  
Hinge tube jambs may be exposed or concealed in the mullion.

**3 - Arms and Pivots**  
High strength wrought metal finished to architectural specifications. Pivot bearings rated to easily support a door weight of up to 700 lbs. (318 kg). Arms are field replaceable in case of damage.

**4 - Gear Box**  
Self-aligning, anti-friction bearings and gears can support a weight of 2330 lbs. (1057 kg), and handle a radial load of 3400 lbs. (1542 kg).

**5 - Balancing Guide Roller**  
Rigidly mounted, yet self aligning to overcome any misalignment between door and frame. Sturdy and maintenance free.



**6 - Cast Bronze Hydraulic Check**  
Completely concealed in the header. Has first and second speed adjustment. Removable without requiring the removal of the door.



**7 - Compact Header**  
Header with integral bronze guide roller track, requires only 2-3/4" x 5-1/2" (70 x 140) above door to house the Hydraulic Check.

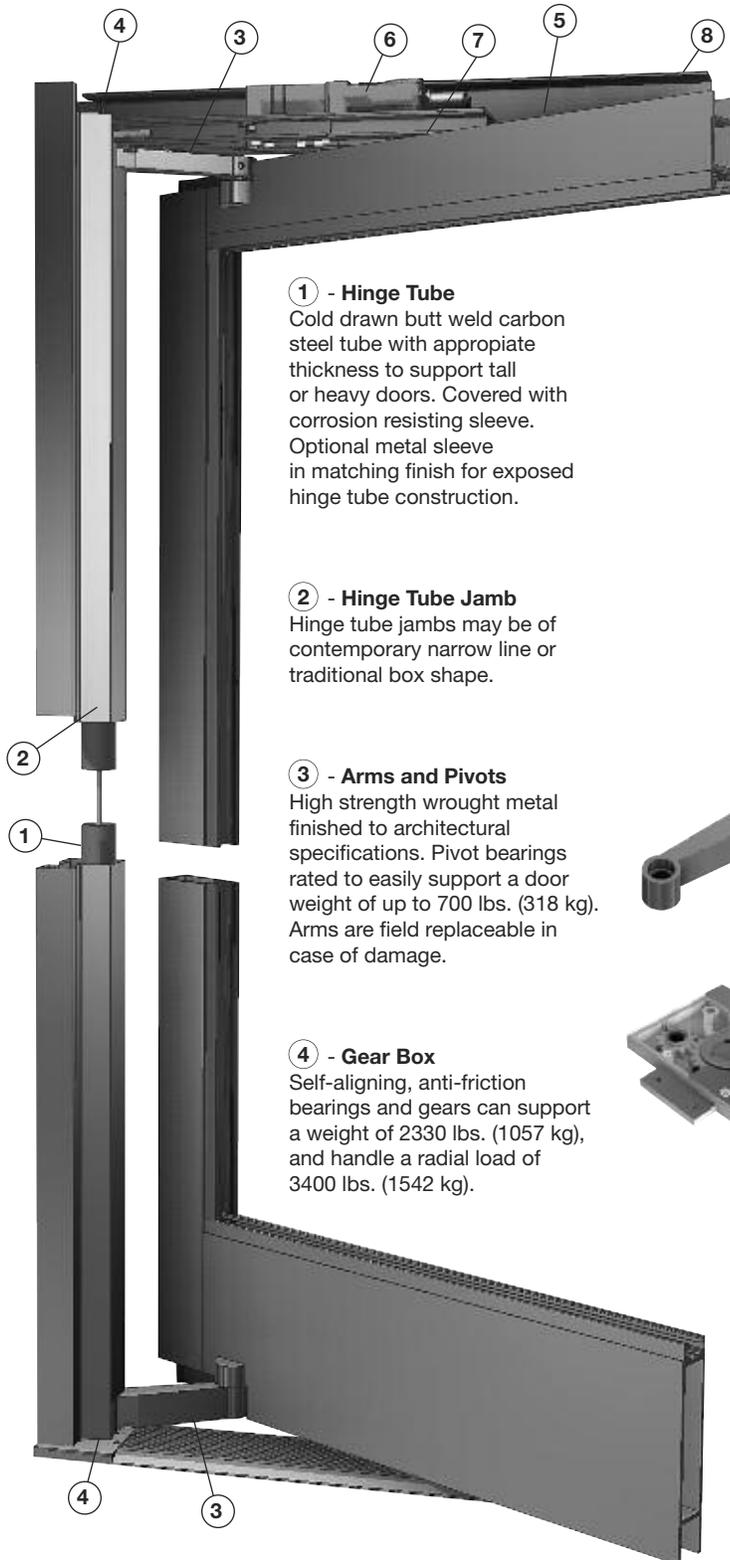


**8 - Optional Stanley Magic-Force™ Motorized Operator**  
Heavy-duty (low energy) concealed overhead electromechanical power operator with control box, conforming to ANSI/BHMA A156.19. Motor permanent magnet, DC 3/16 HP (minimum), 1.25 AMP, 120V AC, UL listed. Adjustable slow opening speed and adjustable time delay. Requires 5-1/2" x 6" (140 x 152) header to house power operator.

## Technical Data

### Balanced Doors • Balancer™ Series

#### ANATOMY OF A BALANCER™ SERIES BALANCED DOOR



**① - Hinge Tube**  
Cold drawn butt weld carbon steel tube with appropriate thickness to support tall or heavy doors. Covered with corrosion resisting sleeve. Optional metal sleeve in matching finish for exposed hinge tube construction.

**② - Hinge Tube Jamb**  
Hinge tube jambs may be of contemporary narrow line or traditional box shape.

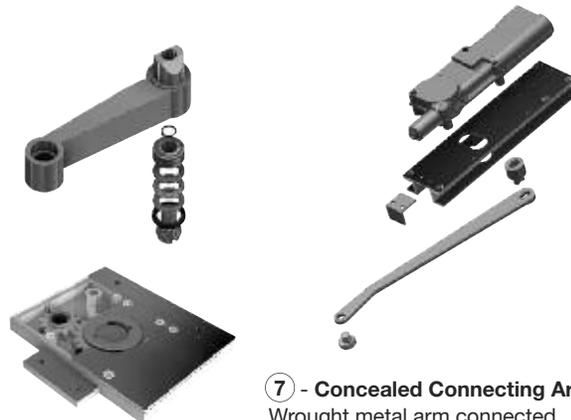
**③ - Arms and Pivots**  
High strength wrought metal finished to architectural specifications. Pivot bearings rated to easily support a door weight of up to 700 lbs. (318 kg). Arms are field replaceable in case of damage.

**④ - Gear Box**  
Self-aligning, anti-friction bearings and gears can support a weight of 2330 lbs. (1057 kg), and handle a radial load of 3400 lbs. (1542 kg).

**⑤ - Balancing Guide Roller**  
Rigidly mounted, yet self aligning to overcome any misalignment between door and frame. Sturdy and maintenance free.



**⑥ - LCN Hydraulic Check**  
Completely concealed in the header. Dependable and easy to adjust without removing hardware or covers. A hydraulic back check cushions the limiting point of the door swing.



**⑦ - Concealed Connecting Arm**  
Wrought metal arm connected directly to door to provide a strong, triangular positive stop at 90 degree opening and prevent stress at the header to jamb connection. Constant check control avoids abrupt rebounding of door.

**⑧ - Compact Header**  
Header with integral guide roller track, requires only 2-3/4" x 4-1/2" (70 x 114) above door to house the LCN Hydraulic Check.

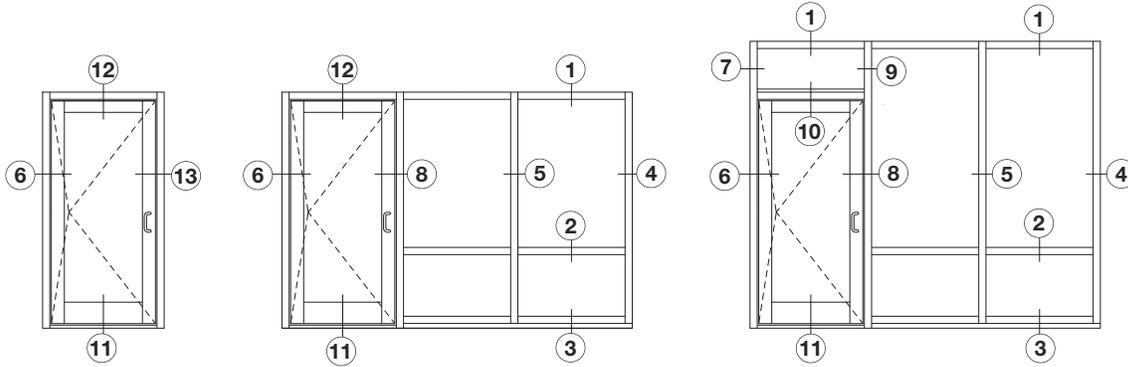
# ENTRANCES

## Typical Details

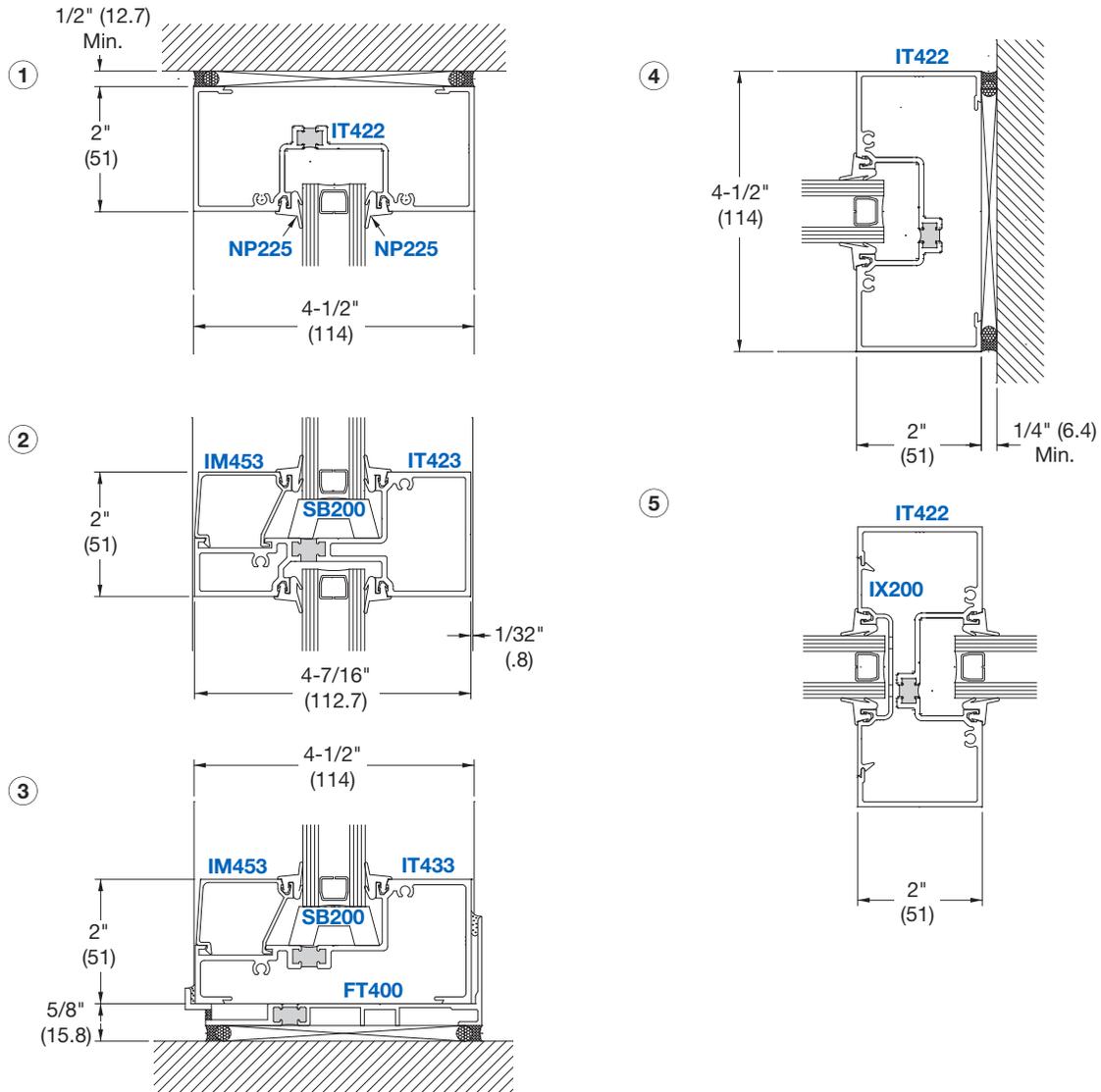
### Balanced Doors • Balancer™ Series

#### DOOR FRAMING

**NOTE:** Balancer™ Series Balanced Door Shown with IT451 Storefront System. Also available for 451, IG500, IG600, and IT600 Storefront Systems. For Premium Series Balanced Door, visit [usalum.com](http://usalum.com) for more information.



TYPICAL ELEVATIONS



NOT TO SCALE

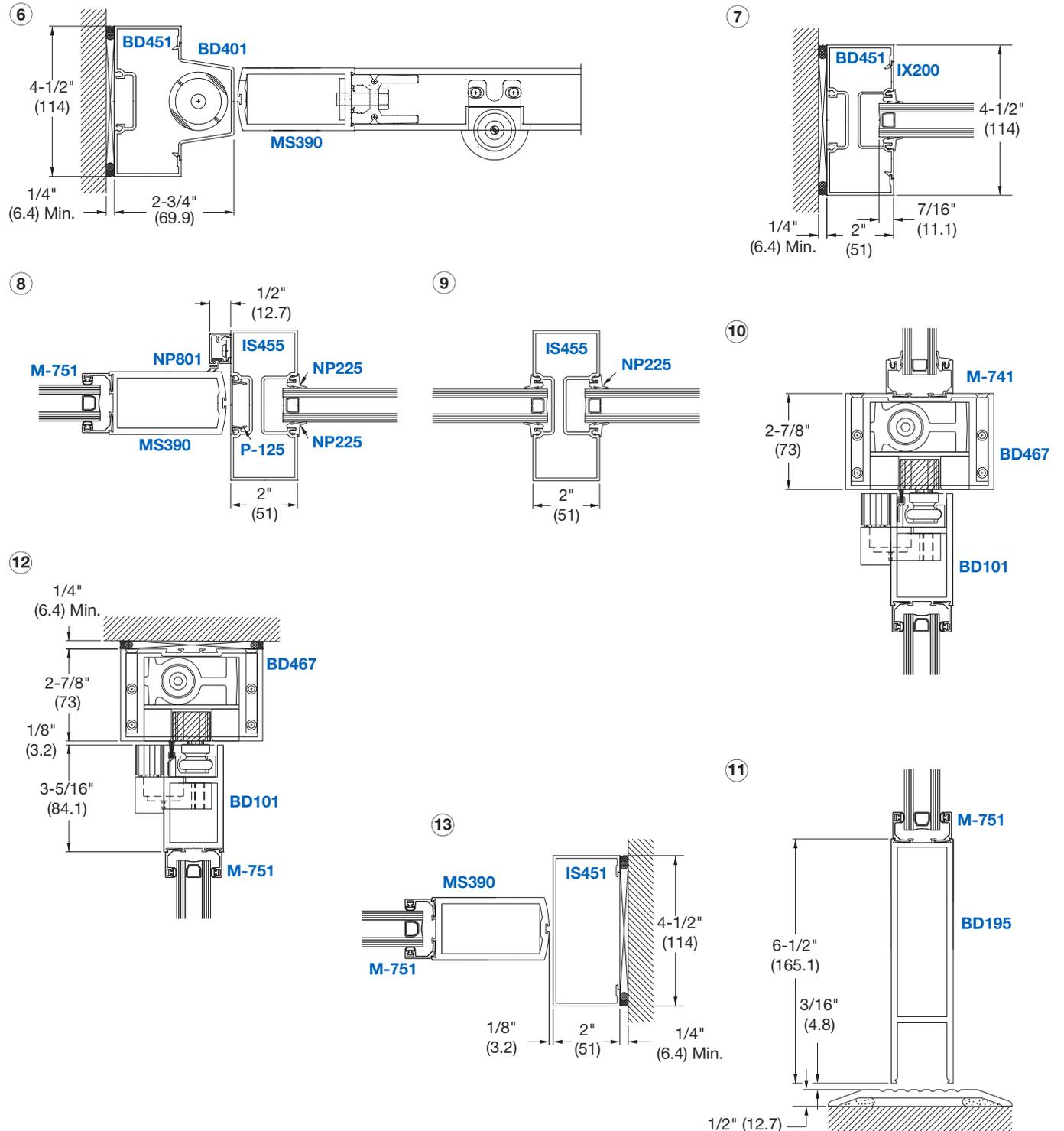
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**Typical Details**

**Balanced Doors**  
• Balancer™ Series

**DOOR FRAMING**

**NOTE:** Balancer™ Series Balanced Door Shown with IT451 Storefront System. Also available for 451, IG500, IG600, and IT600 Storefront Systems. For Premium Series Balanced Door, visit [usalum.com](http://usalum.com) for more information.



NOT TO SCALE

# ENTRANCES

## Table of Contents

## Thermal Doors

- Series 250-T
- Series 400-T

SECTION A6	PAGE
SPECIFICATIONS .....	02-A6
TECHNICAL DATA.....	03-A6
TYPICAL DETAILS.....	04-A6
DOOR CORNER CONSTRUCTION .....	05-A6



Project: AP Solis Middle School, Donna, TX

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The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |

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## Specifications

### Thermal Doors

- Series 250-T
- Series 400-T

### SECTION 08 11 16 ALUMINUM DOORS AND FRAMES

SERIES	STILES	TOP RAIL	BOTTOM RAIL	GLAZING INFILL
<b>250-T Narrow Stile</b>	3" (76.2)	2-7/8" (73)	4-5/16" (109.5)	1" (25)
<b>400-T Medium Stile</b>	4-1/4" (108)	4-5/16" (109.5)	7-1/4" (184.2)	1" (25)
A.D.A. Bottom Rail Option			9-1/2" (241.3)	

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum entrance doors, door frames, and hardware as detailed on the drawings and specified herein.

Work Not Included: Structural support of the framing system, wood framing, structural steel, masonry, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on U.S. Aluminum Series 250-T or 400-T Entrance Doors.

**OPTIONAL:** Door shall have ADA 9-1/2" (241.3) bottom rail. When substitute products are to be considered, supporting technical literature, samples, and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### II. PRODUCTS MATERIALS

Door members shall be extruded architectural aluminum 6063-T5 alloy and temper and joined together by a rigid thermal barrier. Major portions of all door sections, except glazing beads, shall be nominal .125 (3.2). Wall thickness of frame members shall be nominal .093 (2.4). Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR CONSTRUCTION

Door stiles and rails shall be aluminum extrusions accurately joined with polyamide strips and heavy concealed reinforcement brackets secured with bolts and screws.

Doors shall have one snap-in glass stop with E.P.D.M. glazing gasket on both sides of the glass. No exposed screws shall be permitted. Each door leaf shall be equipped with an adjusting mechanism, located in the top rail near the lock stile, which provides for minor clearance adjustments after installation.

A hard-backed poly-pile weatherstrip shall be installed in both stiles of center hung single doors and in hinge stiles of center hung pair of doors. Offset pivoted or butt hung doors shall have weatherstripped door stops at frame jambs and header. The active meeting stile of all pairs of doors shall have an adjustable astragal with double line of weatherstripping.

**OPTIONAL:** Door bottom rail will be weathered with an E.P.D.M. blade gasket sweep strip applied with concealed fasteners. (**NOTE:** This option is required for high performance conditions.)

**OPTIONAL:** Door bottom rail shall receive a concealed weatherstripped insert.

#### HARDWARE

Hardware for aluminum doors and door frames shall be the entrance manufacturer's standard. If custom hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain...(Specify one of the following).  
 \_\_\_\_ #11 Clear anodic coating  
 \_\_\_\_ #22 Dark Bronze anodic coating  
 \_\_\_\_ #33 Black anodic coating

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

#### III. EXECUTION INSTALLATION

All items under this heading shall be set in their correct locations as shown in the details and shall be level, square, plumb and at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between entrance framing and the building structure shall be sealed in order to secure a watertight installation. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

# ENTRANCES

## Technical Data

## Thermal Doors

- Series 250-T
- Series 400-T

Our Series 250-T and 400-T Thermal Entrances offer a two glass stop design, Polyamide Nylon Thermal Break, and mechanically fastened corners, offering one of the best thermal properties available in commercial entrance doors. All doors offer clean lines and are supplied with unique Astral II push/pull hardware and maximum security locks. These entrances can easily accommodate a wide variety of custom hardware for specific job requirements. Optional 9-1/2" (241.3) bottom rail is available for A.D.A. requirements.

### STANDARD FEATURES:

**Glass Stops** - Pressure type glass stop with E.P.D.M. glazing gaskets permit time saving installation of glass. Glass stops are for 1 inch (25) infills. Setting blocks for glass are preset at the factory.

**Adjustable Leveling Screw** - A simple adjustment on the leveling screw, concealed in the top rail of the door, compensates for minor variances in door openings after installation.

**Adjustable Astragal** - All pairs of doors come with spring-loaded fully adjustable dual weathered astragals for optimum air resistance. Binding or gaps at the meeting stiles can be easily corrected by simple adjustments. The full length dual weather stripping on the astragal is not interrupted by the deadlock.

### ACCESSORIES:

#### Hinging Hardware

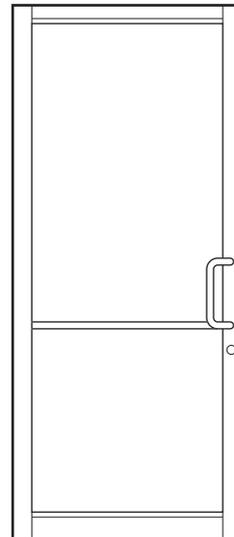
- Offset Pivots for single acting doors
- Butt Hinges for single acting doors

#### Closers

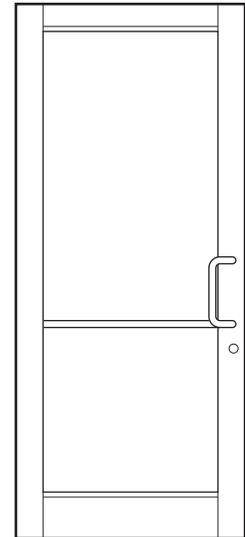
- Exposed Overhead (Surface Mounted)
- Concealed Overhead with Offset Arm (Series 400-T only)
- Floor Mounted

#### Panic Exit Devices

- Conventional Push Panel



**Series 250-T**  
(Offset Hung Door Shown)



**Series 400-T**  
(Offset Hung Door Shown)

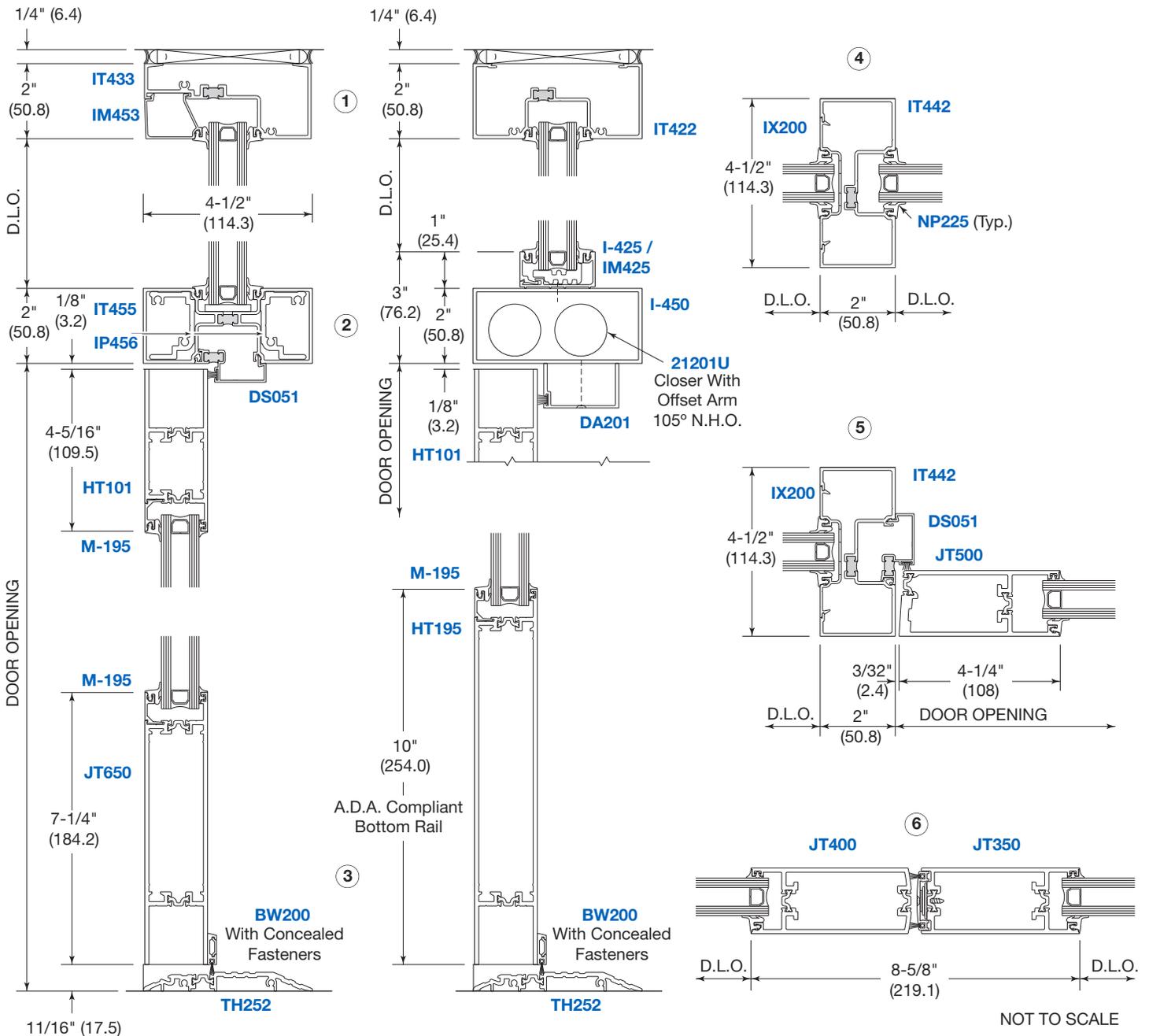
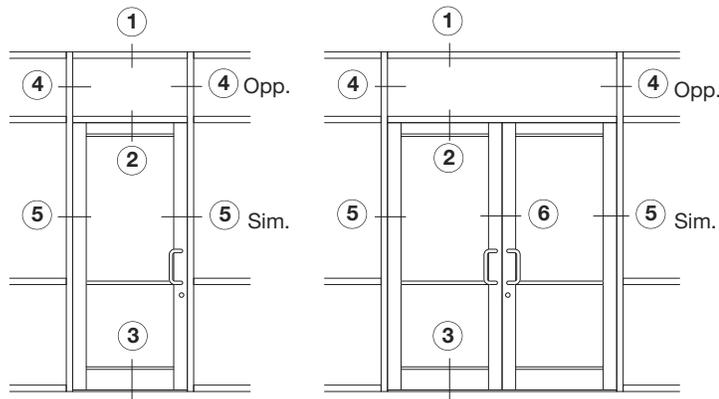
SERIES	STILES	TOP RAIL	BOTTOM RAIL	APPLICATION
<b>250-T Narrow Stile</b>	3" (76.2)	2-7/8" (73)	4-5/16" (109.5)	Light to Moderate Traffic
<b>400-T Medium Stile</b>	4-1/4" (108)	4-5/16" (109.5)	7-1/4" (184.2)	Moderate to Heavy Traffic
A.D.A. Bottom Rail Option			9-1/2" (241.3)	A.D.A.

**Typical Details**

**Thermal Doors**

- Series 250-T
- Series 400-T

**NOTE:** Series 400-T Medium Stile Door Shown. For Series 250-T Narrow Stile Door Details, visit [usalum.com](http://usalum.com).

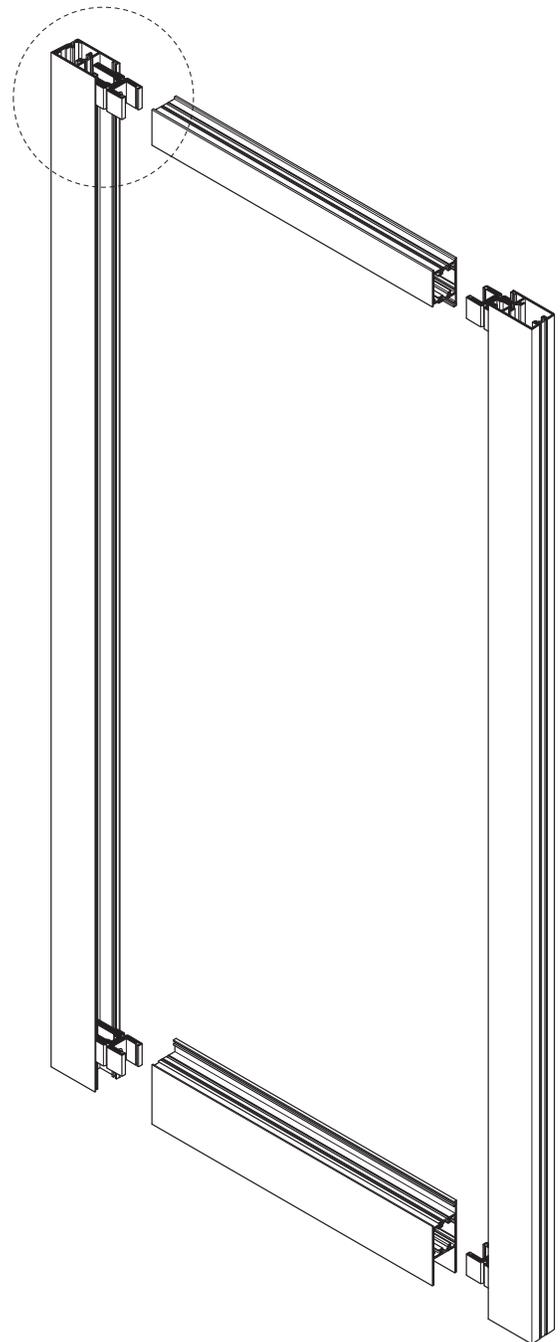
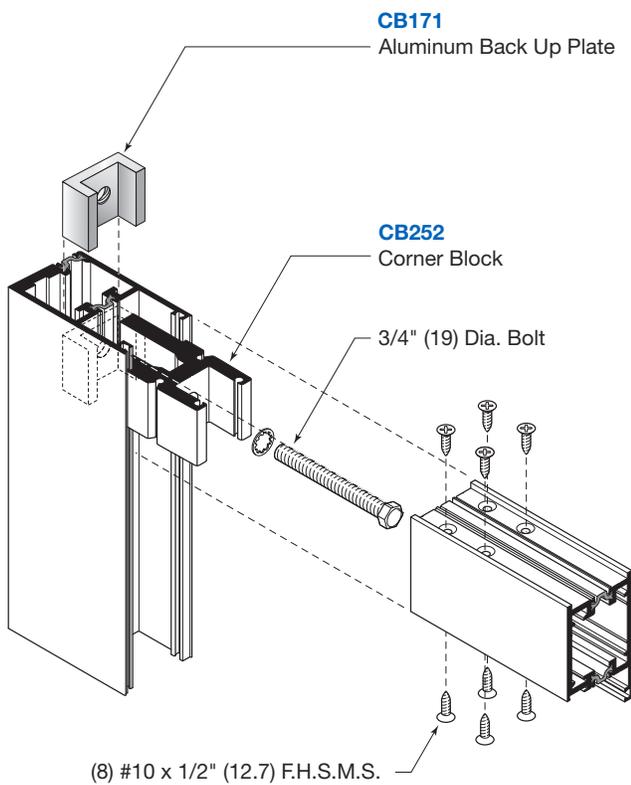


# ENTRANCES

## Door Corner Construction

### Thermal Doors

- Series 250-T
- Series 400-T



**Table of Contents**

**Terrace Doors**  
 • Series 900

**SECTION A7**

**PAGE**

SPECIFICATIONS .....02-A7  
 TECHNICAL DATA.....03-A7  
 TYPICAL DETAILS.....04-A7 thru 06-A7  
 HARDWARE .....07-A7



Project: Private Condominium Complex, Los Angeles, CA

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:  
 m - meter                      Kg - kilogram  
 Pa - pascal                      KPa - kilopascal  
 MPa - megapascal

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# ENTRANCES

## Specifications

## Terrace Doors • Series 900

### SECTION 08 11 16 ALUMINUM DOORS AND FRAMES

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum terrace doors and framing as detailed on the drawings and specified herein.

Work Not Included: A structural support of the framing system, wood framing, structural steel, masonry, and interior trim.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on U.S. Aluminum Series 900 Terrace Door, 3-3/4" (95.3) vertical face dimension, 2-1/4" (57.2) depth and 1" x 4-1/2" (25 x 114.3) frame for moderate traffic applications. When substitute products are to be considered, supporting technical literature, samples, and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### PERFORMANCE

Door rating shall be no less than HC40 as tested in accordance with AAMA 101/CSA-A440-05.

**Air Infiltration:** Out-Swing and In-Swing Doors: When closed and locked, the test specimen shall be tested in accordance with ASTM E 283 and shall not exceed 0.30cfm/sq. ft. at a test pressure differential of 6.24 psf.

**Water Resistance:** For Out-Swing Doors: When closed and locked, the test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547. There shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of 12 psf. (single and pairs)

For In-Swing Doors: When closed and locked, the test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547. There shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of 6.24 psf. (single and pairs).

**Uniform Design Load Test:** When closed and locked, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of 40 psf applied in a positive and negative direction.

**Uniform Load Structural Test:** When

closed and locked, the test specimen shall be tested in accordance with ASTM E 330 at a minimum static air design pressure of 60 psf (one and a half times design load) applied in a positive and negative direction.

**Thermal Resistance Test:** When tested in accordance with AAMA 1503, the conductive thermal transmittance (U-factor) shall not be more than .59 BTU/hrs/sf/°F (Out-Swing) .60 BTU/hrs/sf/°F (In-Swing).  
**Condensation Resistance Test (CRF):** When tested in accordance with AAMA 1503, the condensation resistance factor (CRF) shall not be less than 61 (Out-Swing Door and frame) or 63 (In-Swing Door and frame).

**Acoustical Performance:** When tested to AAMA Specification 1801 and in accordance with ASTM E 90 the STC (Sound Transmission Class). Rating shall be no less than 34.

AAMA HC40 Rating  
Testing Procedures -  
AAMA/DWMA/CSA 101/I.S.2/  
A440-0.8 - Laboratory Performance Testing.  
AAMA 502-08 - Newly Installed Fenestration Products.  
AAMA 511-08 - Installed Fenestration Products After 6 Months.

#### II. PRODUCT MATERIALS

Door members shall be extruded architectural aluminum 6063-T5 alloy and temper. Major portions of all door sections, except glazing beads, shall be nominal .125" (3.2). Wall thickness of frame members shall be nominal .125" (3.2). Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR AND FRAME CONSTRUCTION

Door stiles, rails, and frame members shall be tubular sections joined by two polyamide glass reinforced nylon 6/6 struts mechanically crimped in raceways in exterior and interior extrusions. Door corners are to be accurately joined at corners with corner keys and crimped. The weather seals shall be open cell, urethane foam core, bonded to a U.V. stabilized polyurethane liner. Doors shall have snap-in glass stops with E.P.D.M.

glazing gasket on one side, and Tremco Polyshim II glazing tape or equal on the other. No exposed screws shall be permitted except for anchoring.

#### HARDWARE \*

Multi-point locking hardware shall be as recommended by manufacturer (*Specify finish*). There are 3 styles available to choose from: Estate, Heritage, and Manor. Door leaves shall have 1-1/2 pairs (minimum) of mortised 4-1/4" (108) long butt hinges with non-removable stainless steel pins, painted to match door finish. If hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication being started.

#### FINISH

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

- \_\_\_ #11 Clear anodic coating
- \_\_\_ #22 Dark Bronze anodic coating
- \_\_\_ #33 Black anodic coating

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

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

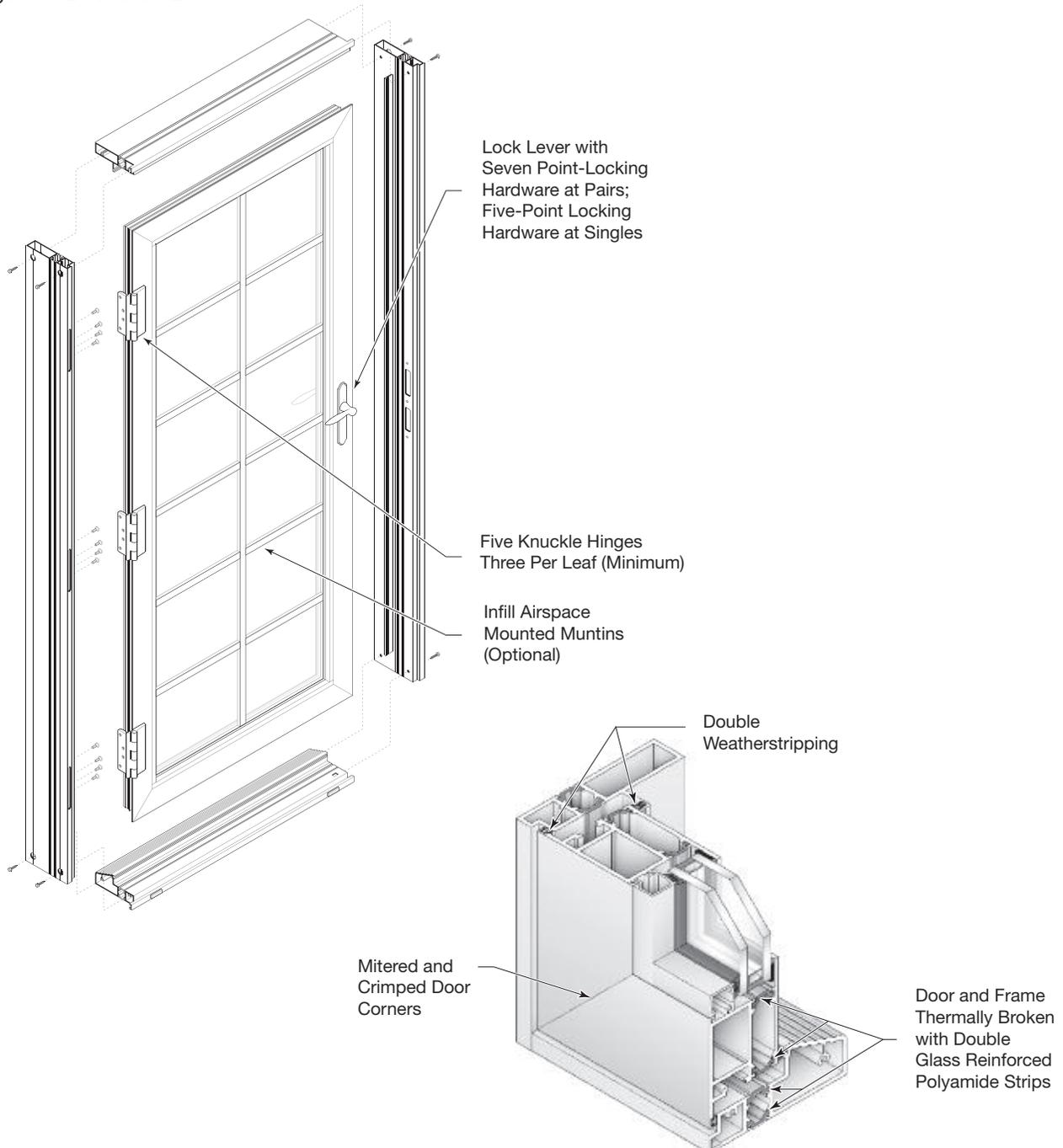
After installation the General Contractor shall adequately protect exposed portions of the aluminum entrance work from damage by grinding and polishing compounds, plaster, lime, acid, cement or other contaminants. The General Contractor shall be responsible for final cleaning.

\* Performance criteria is based on standard hardware configurations as supplied by U.S. Aluminum.

**Technical Data**

**Terrace Doors**  
 • Series 900

The Series 900 is a High Performance Terrace Door for use in condominiums, lofts, hotels, and high-rise apartments with all the benefits you are looking for in a French Door look. The Series 900 Terrace Door will withstand heavy traffic and the worst of weather conditions while maintaining it's elegant styling. The 2-1/4" (57.2) thick door with a 1" x 4-1/2" (25 x 114.3) frame features double polyamide glass strips providing superior interior to exterior thermal separation. For maximum security, the Series 900 Terrace Door includes a Seven-Point Locking Device for pairs and Five-Point Device for singles. Three each, Five Knuckle Butt Hinges with non-removable stainless steel pins per leaf complete the sturdy look and feel of the Series 900 Terrace Door. For information about our Hurricane Resistant Balcony/Terrace Doors please see pages 01-E4 thru 05-E4.

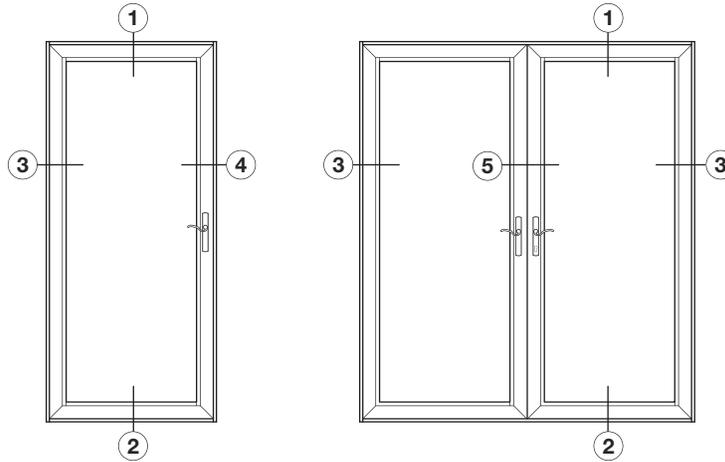


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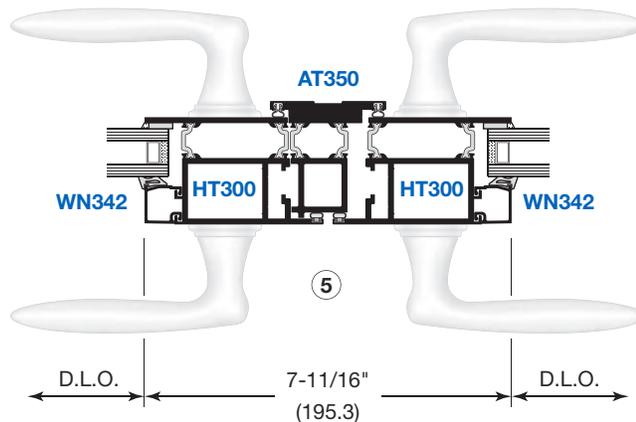
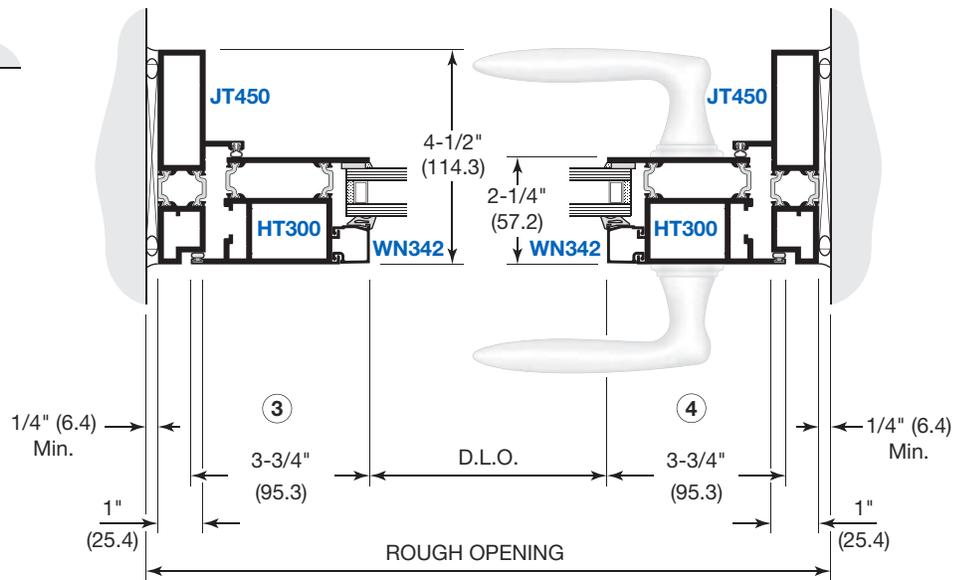
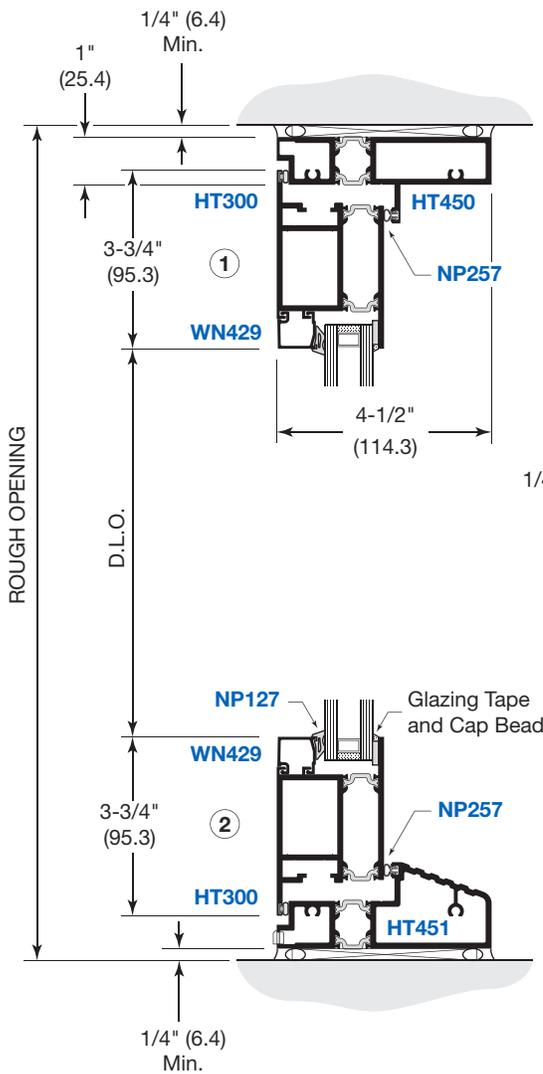
# ENTRANCES

## Typical Details

### Terrace Doors • Series 900



OUT-SWING DOOR ELEVATIONS

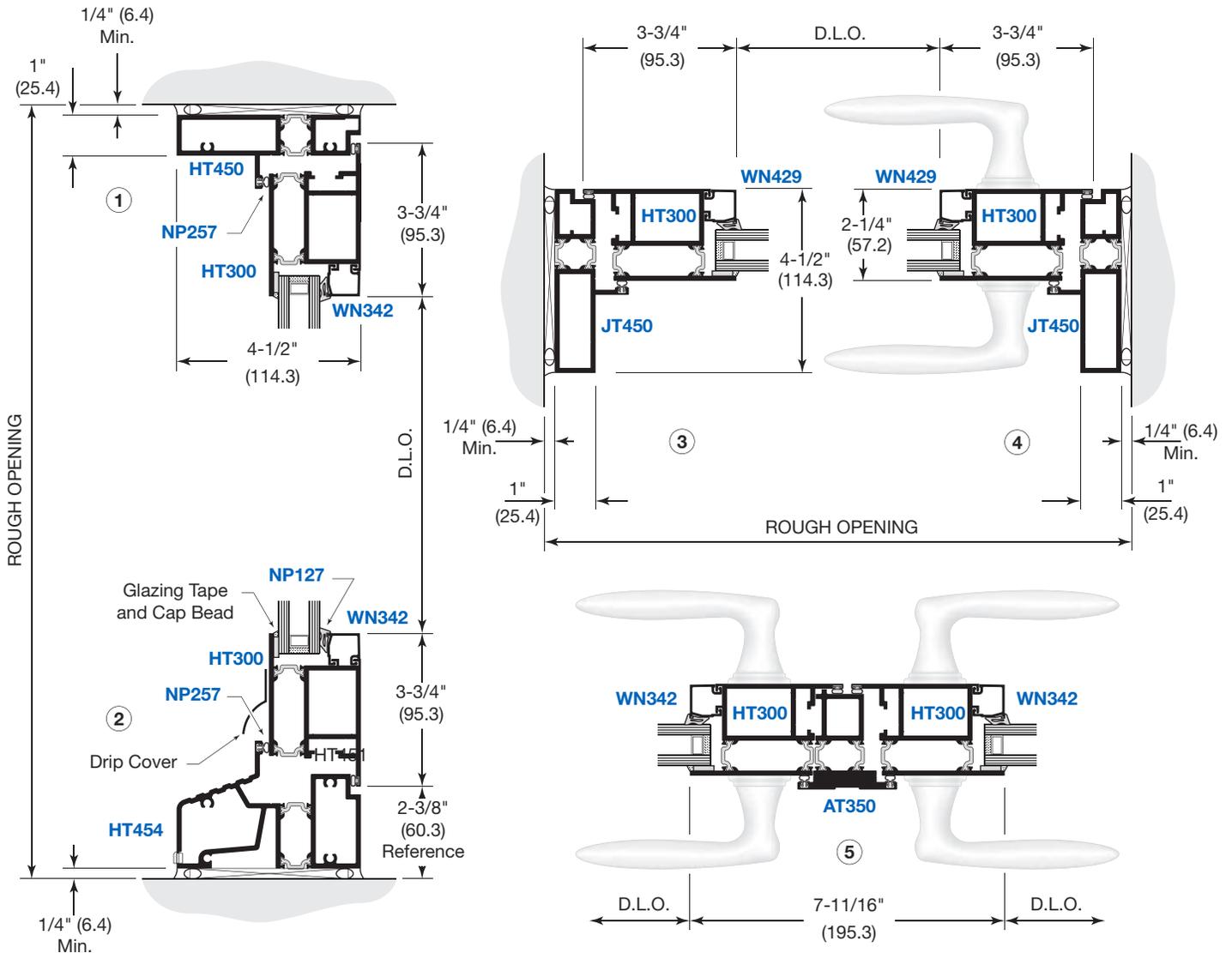
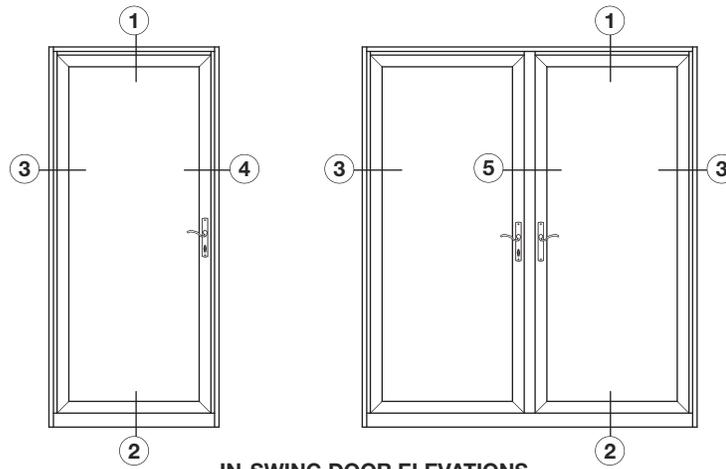


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**Typical Details**

**Terrace Doors**  
• Series 900



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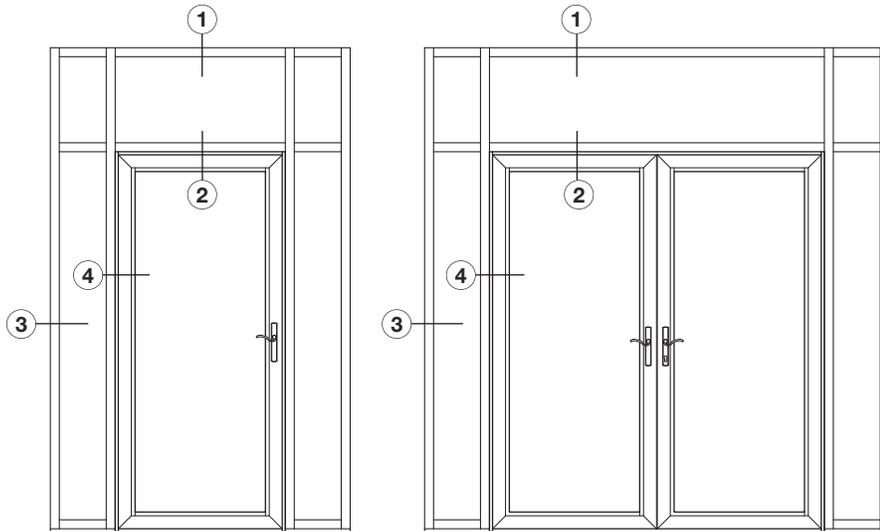
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# ENTRANCES

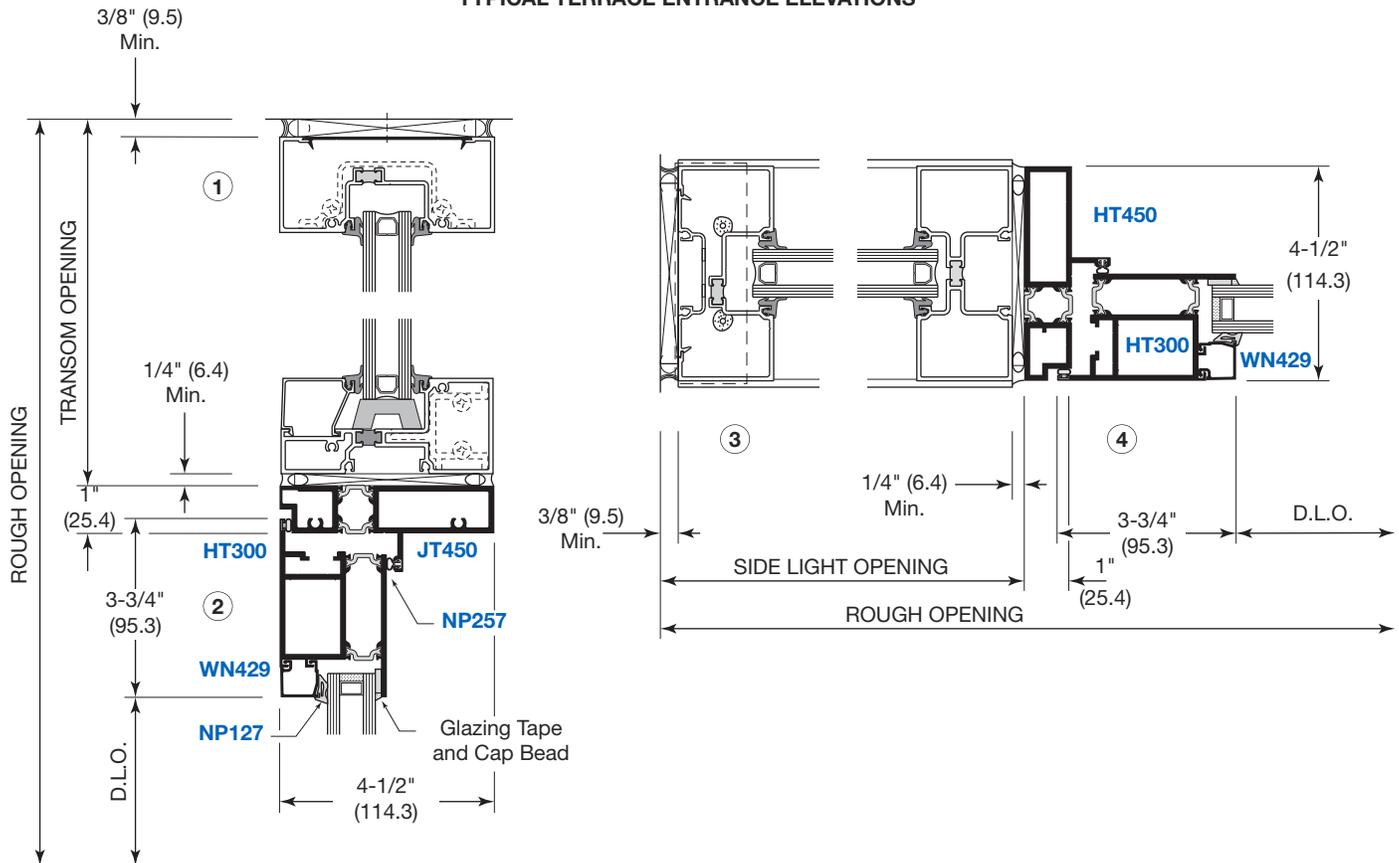
## Typical Details

### Terrace Doors • Series 900

Out-Swing Door Shown in Series IT451 Center Glaze Storefront



TYPICAL TERRACE ENTRANCE ELEVATIONS



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**Hardware**

**Terrace Doors**  
• Series 900

**LEVER HANDLE OPTIONS**



**MANOR**



**HERITAGE**



**ESTATE**

**FINISH OPTIONS**

Style	Polished Brass	Antique Brass	Polished Chrome	Satin Nickel	Antique Nickel	Polished Chrome	Oil Rubbed	Rustic Umber	White	Matte Black	Polished Chrome/Brushed Stainless	Polished Brass/Brushed Brass
MANOR	●	●	●	●	●	●	●	●	●	●		
HERITAGE	●			●							●	●
ESTATE	●	●	●	●	●	●	●	●	●	●		

**CYLINDER OPTIONS**

EXTERIOR	INTERIOR
None	None
None	Thumb Turn
None	Keyed
Keyed	None
Keyed	Thumb Turn
Keyed	Keyed

Please specify when ordering.



Key Cylinder



Thumb Turn

# ENTRANCES

## Table of Contents

### Sliding Doors • Series 2000

SECTION A8	PAGE
SPECIFICATIONS .....	02-A8
TECHNICAL DATA.....	03-A8
TYPICAL DETAILS.....	04-A8 thru 08-A8



Project: Retail Storefront, Los Angeles, CA

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**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal

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## Specifications

### Sliding Doors • Series 2000

#### 08 32 13 SLIDING GLASS DOORS

SERIES	STILES	TOP RAIL	BOTTOM RAIL	INTERIOR APPLICATIONS ONLY	GLAZING INFILL
2000	2-1/16" (52.4)	2-1/8" (54)	3-3/16" (81)	Shopping Malls and Auto Dealerships	1/4" (6) or 1" (25)

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum sliding doors as detailed on the drawings and specified herein.

Work Not Included: Structural support of the framing system, wood framing, structural steel, masonry and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on U.S. Aluminum Series 2000 Sliding Doors. When substitute products are to be considered, supporting technical literature, samples and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### PERFORMANCE REQUIREMENTS

Series 2000 Sliding Doors are designed for interior application only.

#### II. PRODUCT MATERIALS

Door and frame members shall be extruded architectural aluminum 6063-T5 alloy and temper. Major portion of all door sections, except glazing beads, shall be nominal .125" (3.2). Wall thickness of frame members shall be nominal .093" (2.4). Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials. Sliding door floor track shall have stainless steel cover cap. Perimeter fasteners shall be aluminum or steel providing that the steel is properly isolated from the aluminum.

#### DOOR CONSTRUCTION

Fixed and sliding panels shall be 1-3/4" (44.5) deep. Stiles and rails shall be tubular sections, accurately joined at corners with heavy concealed reinforcement brackets secured with bolts and screws. Doors shall have snap-in stops with E.P.D.M. glazing gaskets on both sides of glass. No exposed screws shall be permitted. A hard-backed poly-pile weather-strip shall be installed in interlockers and meeting stiles of bi-parting doors. Sliding panels shall be equipped with two tandem ball bearing rollers, each capable of supporting 125 pounds (56 Kg) of moving weight.

#### HARDWARE

Hardware for Series 2000 Sliding Doors shall be the manufacturer's standard: Maximum Security hookbolt lock with two three-pin cylinders, flush finger pulls, and adjustable tandem steel rollers. If custom hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication.

#### FINISH

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

\_\_\_\_ #11 Clear anodic coating  
 \_\_\_\_ #22 Dark Bronze anodic coating  
 \_\_\_\_ #33 Black anodic coating

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

#### III. EXECUTION INSTALLATION

All items under this heading shall be set in their correct locations as shown in the details and shall be level, square, plumb, and at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

# ENTRANCES

## Technical Data

### Sliding Doors • Series 2000

The Series 2000 Sliding Door is a multi-track entrance designed for interior applications only. This multi-track slider is engineered with stacking head channels and bottom tracks allowing multi-slider combinations. Rugged overall construction coupled with heavy wall stiles and interlocks create a truly monumental sliding unit. Doors are equipped with flush finger pulls, hooklocks, and lock cylinders. Adjustable tandem rollers and floor track with stainless steel caps ensure smooth operation and durability.

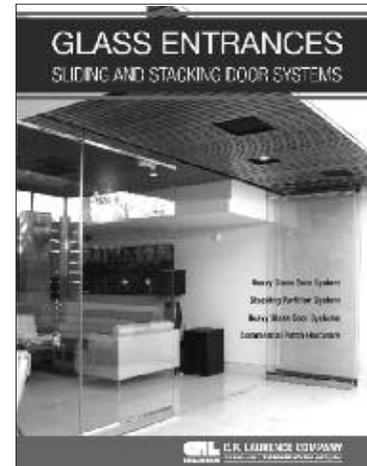
Various combinations of sliding and pocket door panels can accommodate many design plans. Floor tracks can be installed, recessed or surface applied. Each sliding door has two tandem steel rollers to provide smooth operation and years of service.

**NOTE:** An intermediate horizontal muntin should be installed in panels with perimeters exceeding 288" (7.3 m).

SERIES	STILES	TOP RAIL	BOTTOM RAIL	INTERIOR APPLICATIONS ONLY
<b>2000 Sliding Door</b>	2-1/16" (52.4)	2-1/8" (54)	3-3/16" (81)	Shopping Malls, Office Partitions, Auto Dealerships



**TYPE XO**  
(As Viewed from Exterior)

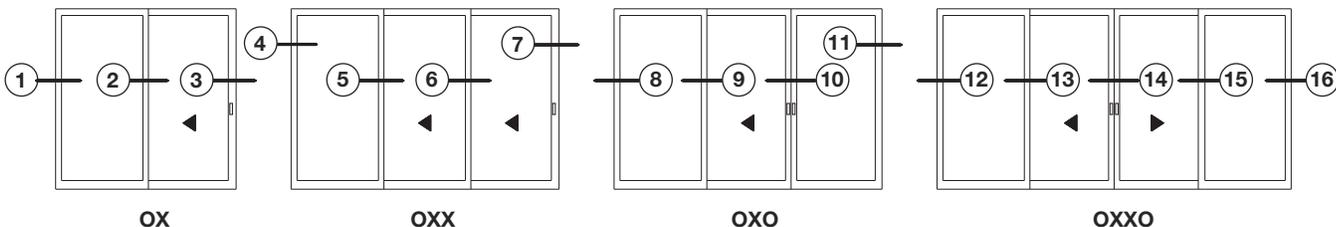


See our SL12 Catalog for our complete selection of sliding and stacking heavy glass door systems for commercial and residential use. All are designed to be attractive, easy to operate, and most of all safe, even in high traffic circumstances. For more information go to [crlaurence.com](http://crlaurence.com).

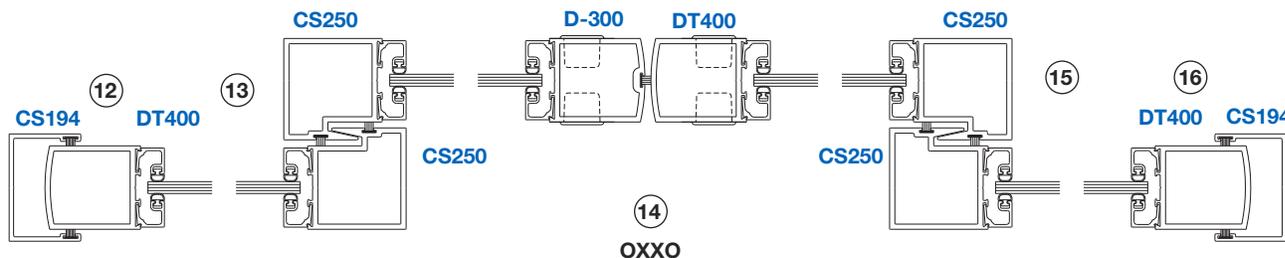
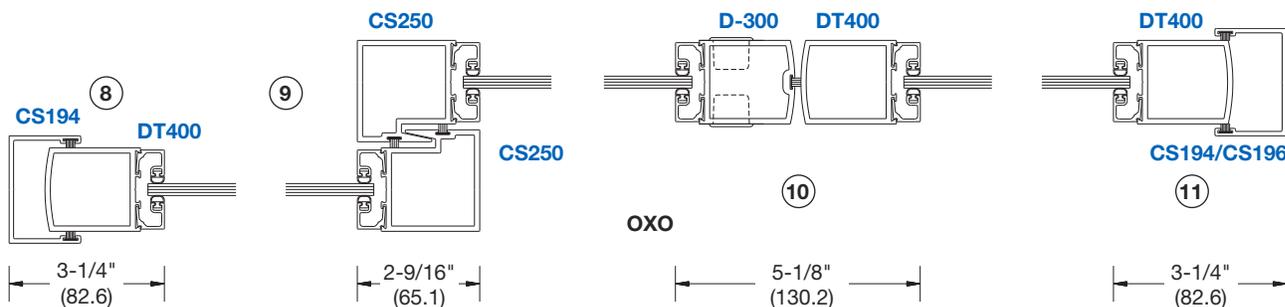
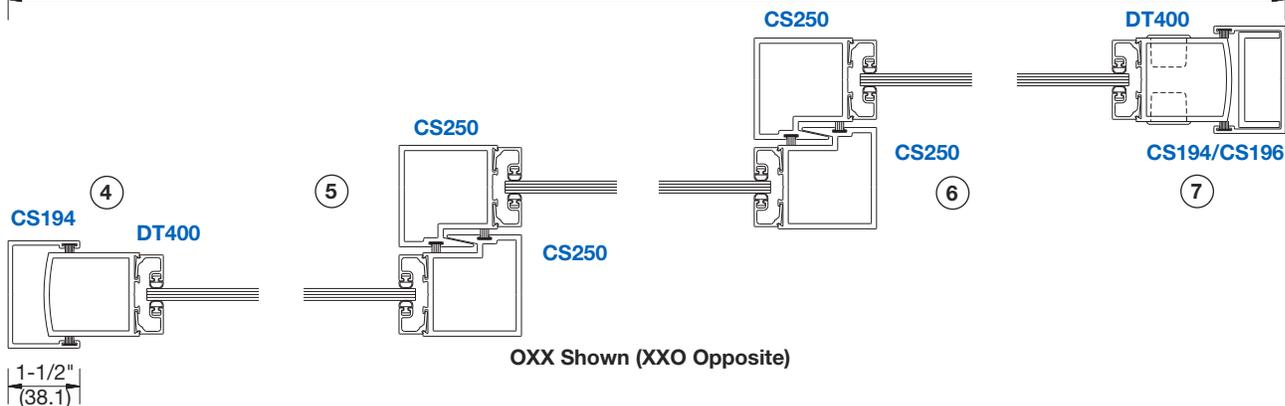
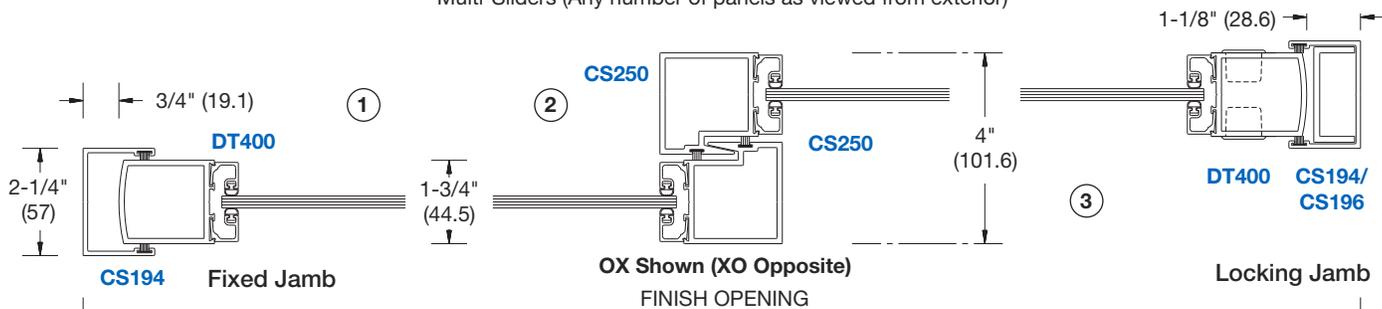
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**Typical Details**

**Sliding Doors**  
• Series 2000



Multi-Sliders (Any number of panels as viewed from exterior)

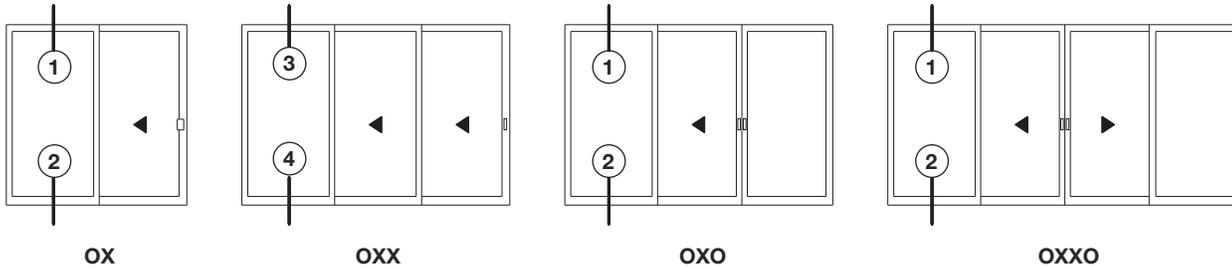


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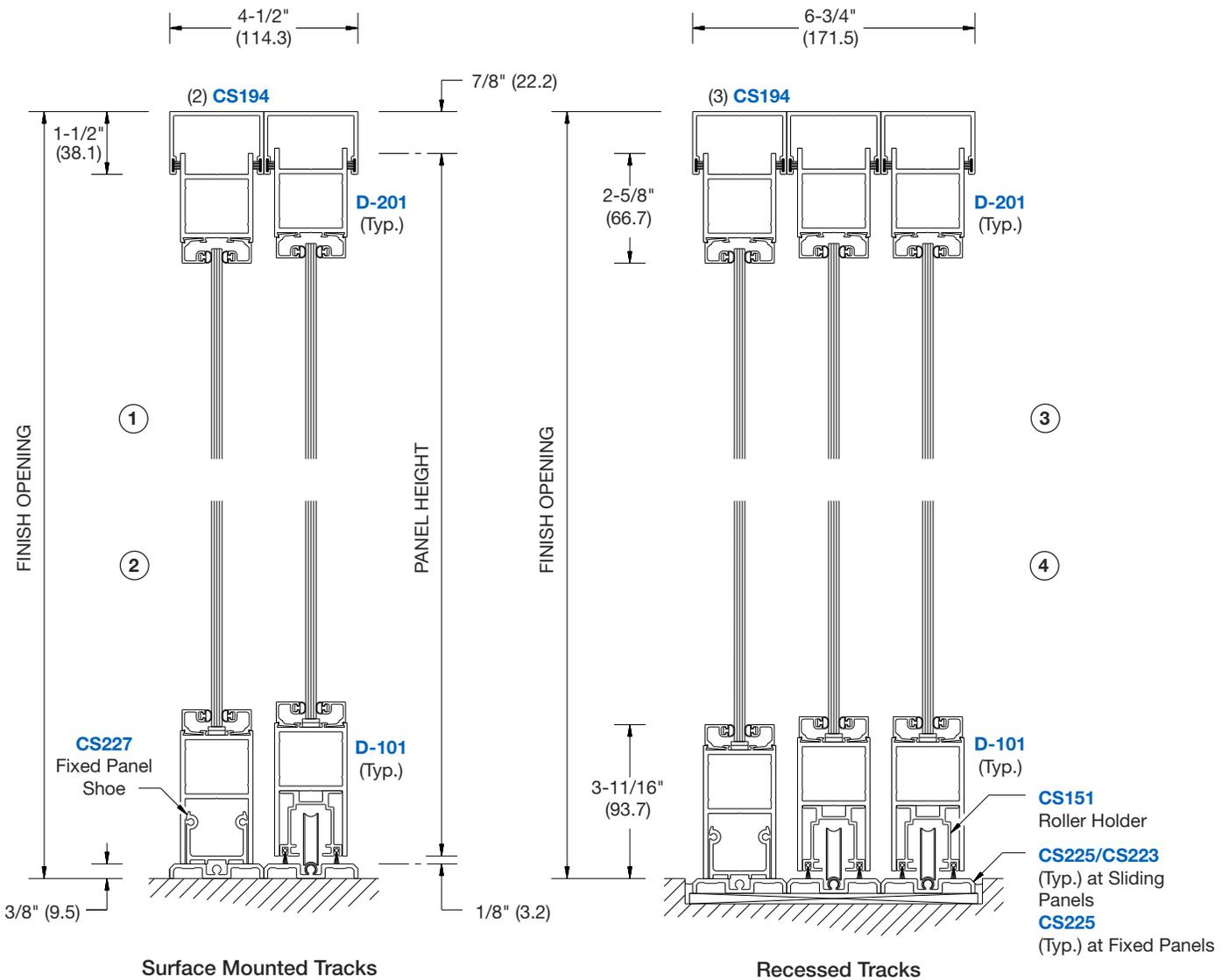
# ENTRANCES

## Typical Details

### Sliding Doors • Series 2000



Multi-Sliders (Any number of panels as viewed from exterior)

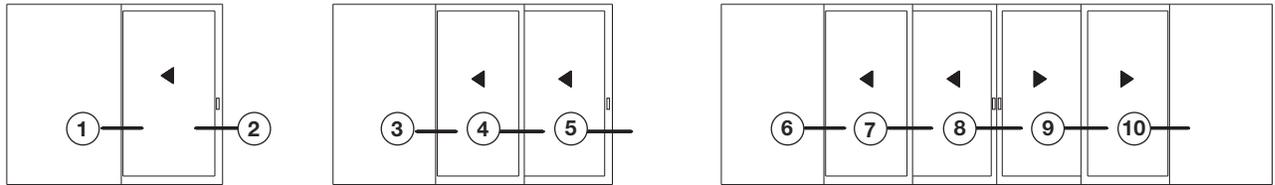


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**Typical Details**

**Sliding Doors**  
• Series 2000

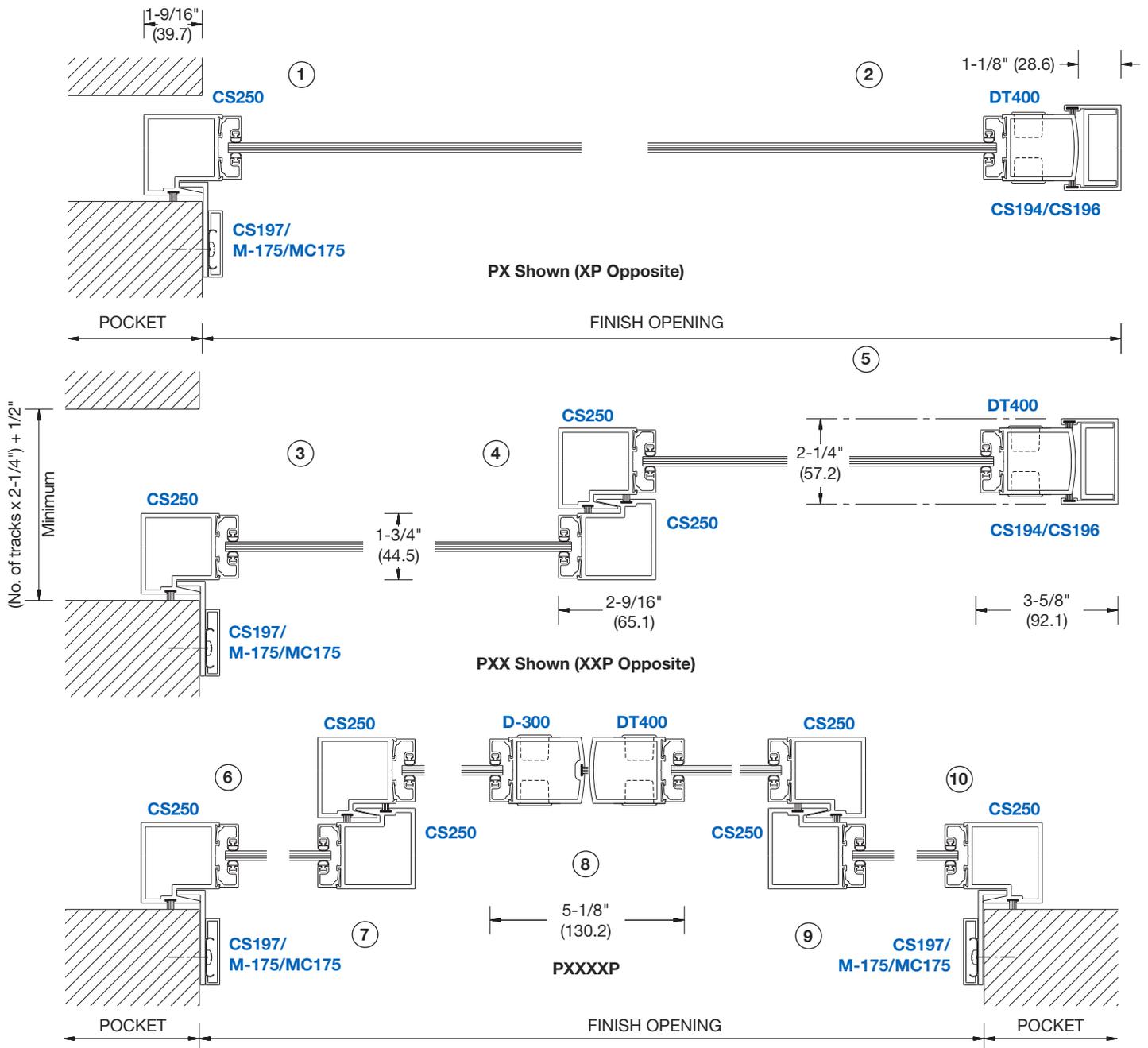


PX

PXX

PXXXXP

Pocket Doors (Any number of panels as viewed from exterior)



PX Shown (XP Opposite)

PXX Shown (XP Opposite)

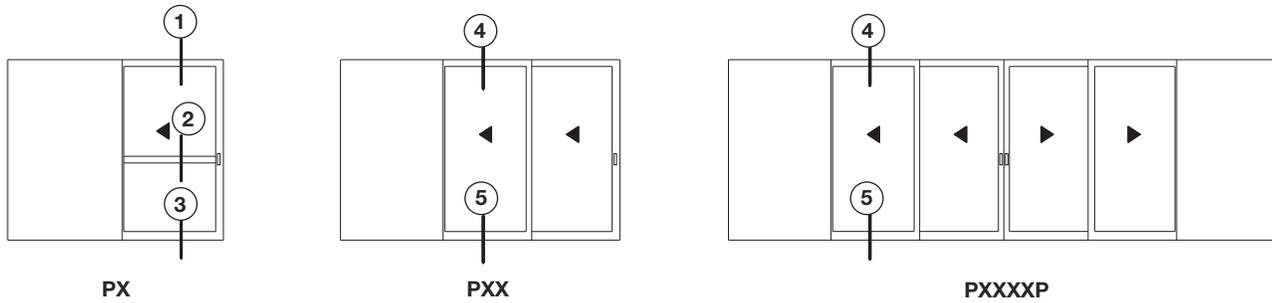
PXXXXP

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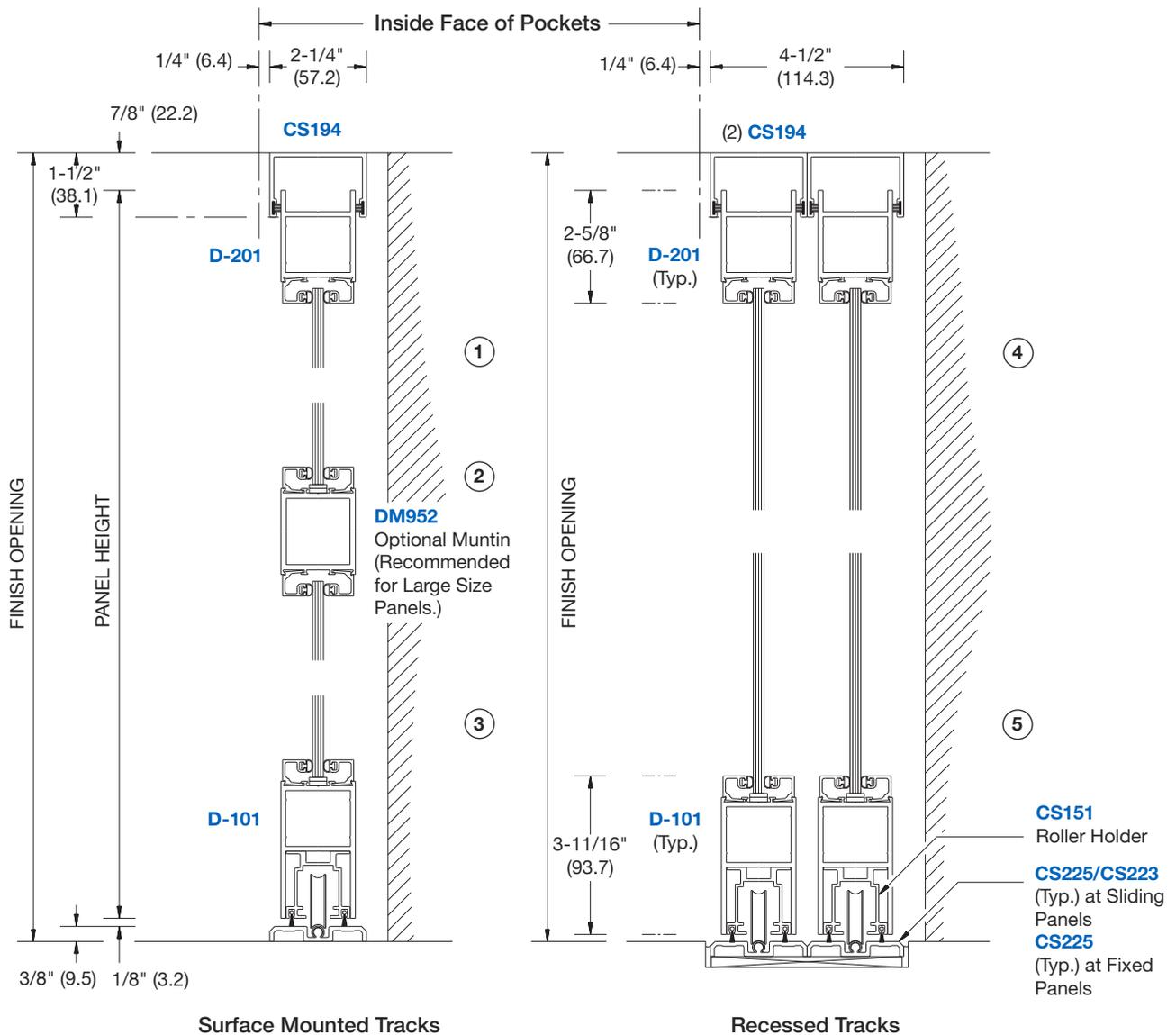
# ENTRANCES

## Typical Details

### Sliding Doors • Series 2000



Pocket Doors (Any number of panels as viewed from exterior)



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**Hardware**

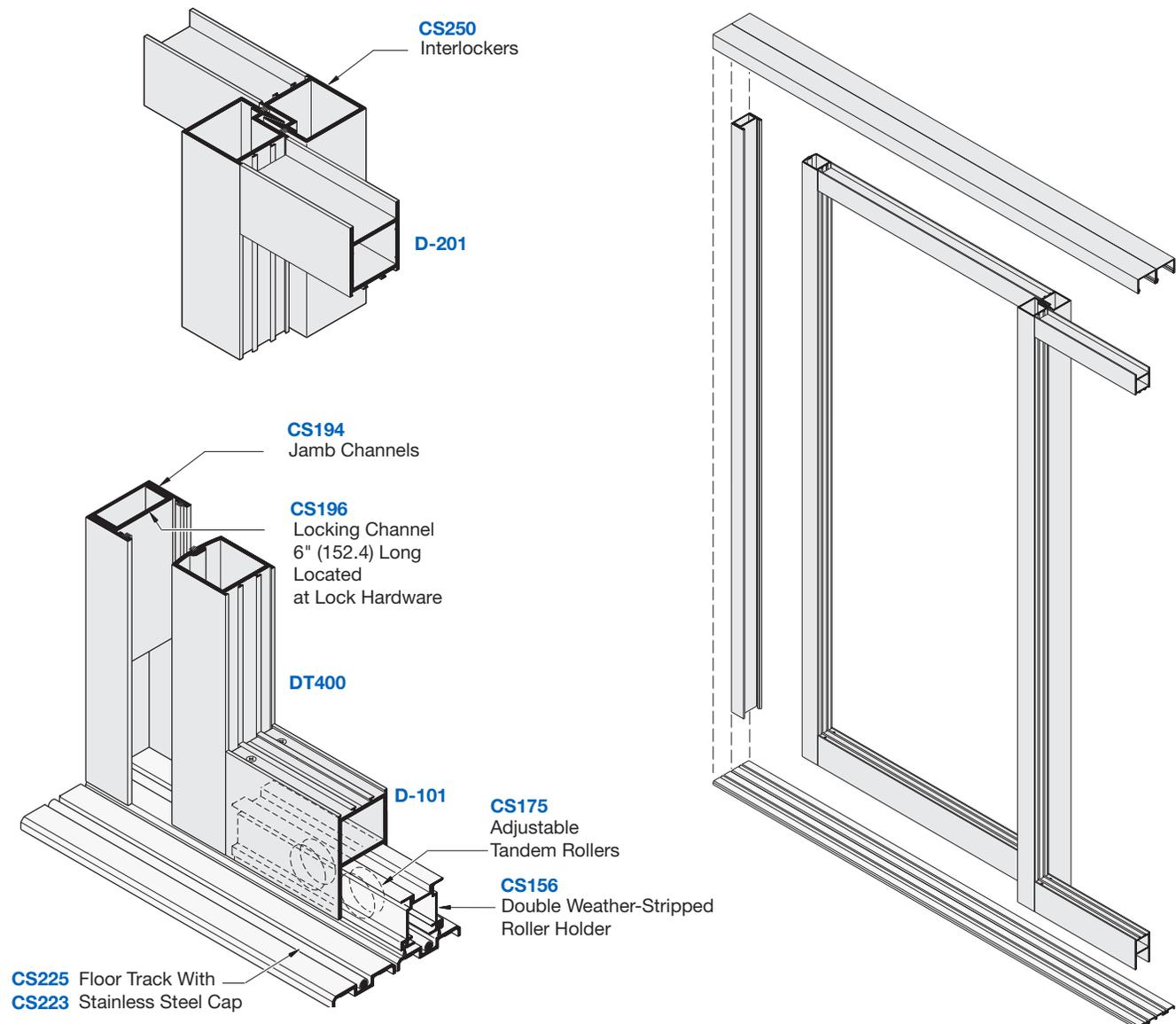
**Sliding Doors**  
 • Series 2000

**DOOR PACKAGES INCLUDE:**

**Fabricated Items:** Door panels are shop assembled with the following items installed: Maximum Security Hookbolt Lock, Two Cylinders, Flush Finger Pulls, Tandem Rollers, and Roller Holders. The locking channel with lock cut-out is furnished loose.

**Non-Fabricated Items:** Headers, Jambs, Tracks, Interlocker Angle, and Trim for Pocket Doors. Sizes need to be field adjusted to exact opening dimensions.

**NOTE:** Installation screws and preparation is excluded.



# ENTRANCES

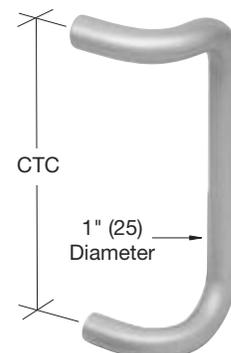
## Accessories

## Pull Handles and Push Bars

### OFFSET PULL HANDLES (SINGLE SIDED)

- **1" (25) Diameter Solid Aluminum Available in Three Finishes**

1" (25.4) diameter Solid Offset Pull Handles have an overall projection height of 3-1/4" (83), and an offset clearance of 2-1/4" (57). They are supplied with 1/4"-20 thru-bolts and finish washers. All Offset Pulls are packed individually.



#### 8" (203) CENTER TO CENTER PULL HANDLE

PART NO.	FINISH
<b>M174810B</b>	Oil Rubbed Bronze
<b>M174828</b>	Clear Anodized
<b>M174832D</b>	Brushed Stainless

Minimum order: 1 each.

#### 10" (254) CENTER TO CENTER PULL HANDLE

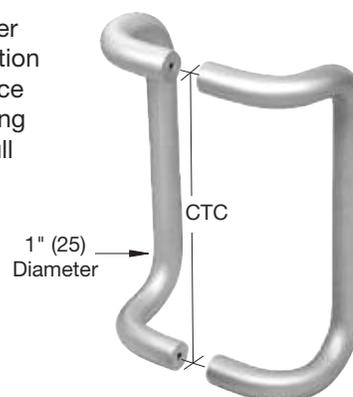
PART NO.	FINISH
<b>M1741010B</b>	Oil Rubbed Bronze
<b>M1741028</b>	Clear Anodized
<b>M1741032D</b>	Brushed Stainless

Minimum order: 1 each.

### OFFSET PULL HANDLES (BACK-TO-BACK)

- **1" (25) Diameter Solid Aluminum Available in Three Finishes**

Extruded solid aluminum 1" (25) diameter Offset Pull Handles have an overall projection height of 3-1/4" (83) and an offset clearance of 2-1/4" (57). Handle sets include mounting hardware for back-to-back installation. Pull Handle sets are packed one each.



#### 8" (203) CENTER TO CENTER PULL HANDLE

PART NO.	FINISH
<b>M2174810B</b>	Oil Rubbed Bronze
<b>M2174828</b>	Clear Anodized
<b>M2174832D</b>	Brushed Stainless

Minimum order: 1 each.

#### 10" (254) CENTER TO CENTER PULL HANDLE

PART NO.	FINISH
<b>M21741010B</b>	Oil Rubbed Bronze
<b>M21741028</b>	Clear Anodized
<b>M21741032D</b>	Brushed Stainless

Minimum order: 1 each.

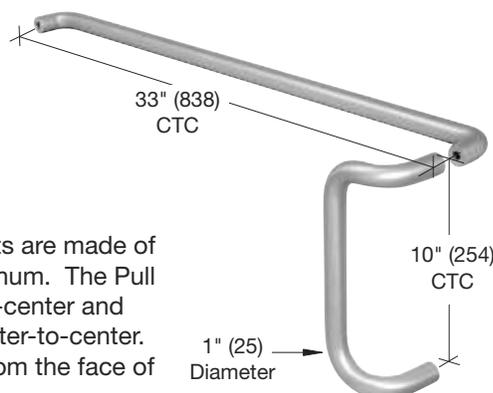
### OFFSET PULL HANDLE AND PUSH BAR SET

- **1" (25) Diameter Solid Aluminum Available in Three Finishes**
- **Fits 36" (914 mm) Narrow Stile Doors**

PART NO.	FINISH
<b>M10X3310B</b>	Oil Rubbed Bronze
<b>M10X3328</b>	Clear Anodized
<b>M10X3332D</b>	Brushed Stainless

Minimum order: 1 each.

Solid Push Bar and Pull Handle Sets are made of 1" (25) diameter solid extruded aluminum. The Pull Handle measures 10" (254) center-to-center and the Push Bar measures 33" (838) center-to-center. The projection height is 2-1/4" (57) from the face of the door. Packed one set each.



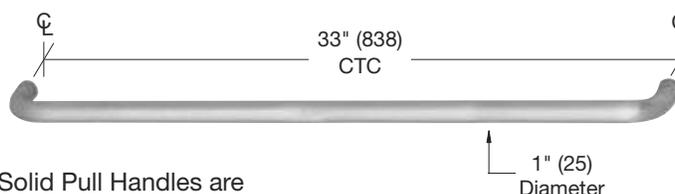
### SOLID PUSH BARS

- **1" (25) Diameter Solid Aluminum Available in Three Finishes**

PART NO.	FINISH
<b>M1653310B</b>	Oil Rubbed Bronze
<b>M1653328</b>	Clear Anodized
<b>M1653332D</b>	Brushed Stainless

Minimum order: 1 each.

1" (25) diameter Solid Pull Handles are made for standard one side mounting. Pulls are supplied with 1/4"-20 thru-bolts and finish washers, and are packed individually.

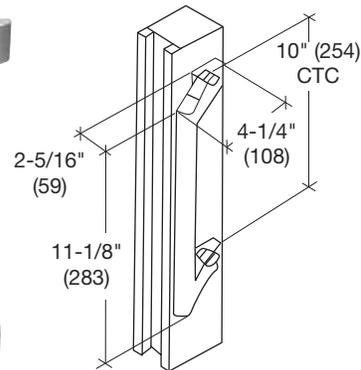


## Accessories

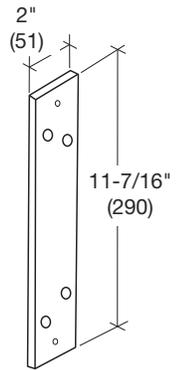
### EXTRUDED ALUMINUM PULL HANDLES

- **Solid Aluminum Handle Mounts to Door With Concealed Fasteners**

The Extruded Aluminum Pull Handle comes with two studs that are tapped (1/4-20 thread) into the aluminum door frame on 10" (254) centers. Then the Handle is slipped over the studs and secured with Allen screws to provide a concealed fastener look. Available in choice of satin anodized and dark bronze finishes. One per package.



Pull Handle



Mounting Plate

#### DL915 EXTRUDED ALUMINUM PULL HANDLE

PART NO.	FINISH
<a href="#">DL915A</a>	Satin Anodized
<a href="#">DL915DU</a>	Dark Bronze

Minimum order: 1 each.

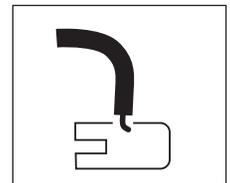
#### DL916 OPTIONAL MOUNTING PLATE

PART NO.	FINISH
<a href="#">DL916A</a>	Satin Anodized
<a href="#">DL916DU</a>	Dark Bronze

Minimum order: 1 each.

### EXTRUDED ALUMINUM PUSH BARS

- **Available in Three Lengths and Two Finishes**



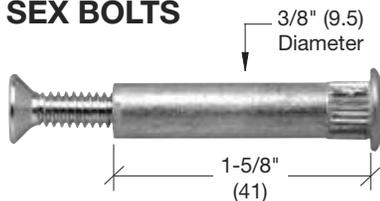
J-Hook Mount

Extruded Aluminum Push Bars come with a "J" Hook on one end. The opposite end needs to be drilled at time of installation to match application. Bar measures 1/2" x 1-1/4" (12.7 x 31.7). One per package.

PART NO.	FITS UP TO:	FINISH
<a href="#">DL9530A</a>	36" (914) Doors	Satin Aluminum
<a href="#">DL9530DU</a>	36" (914) Doors	Bronze Anodized
<a href="#">DL9535A</a>	42" (1067) Doors	Satin Aluminum
<a href="#">DL9535DU</a>	42" (1067) Doors	Bronze Anodized
<a href="#">DL9540A</a>	48" (1219) Doors	Satin Aluminum
<a href="#">DL9540DU</a>	48" (1219) Doors	Bronze Anodized

Minimum order: 1 each.

### SEX BOLTS



Used for securing push bars, surface mounted door closers, and other fixtures to 1-3/4" (44.5) doors. Knurled barrel fits a 3/8" (9.5) diameter hole. Available in aluminum and bronze finishes. Four bolts per package.

- **1/4"-20 Thread Size**

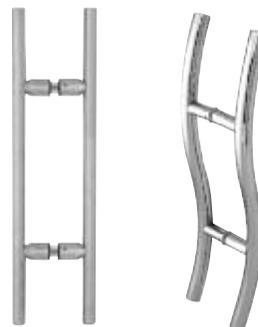
PART NO.	THREAD SIZE	FINISH
<a href="#">8025</a>	1/4" - 20	Satin Aluminum
<a href="#">8025BRZ</a>	1/4" - 20	Bronze Anodized

Minimum order: 1 pack. All Sex Bolts can be combined for quantity pricing.

### LADDER PULL HANDLES

- **A Variety of Styles and Sizes in Brushed or Polished Stainless Steel**
- **Suitable for Narrow, Medium, and Wide Stile Doors, as Well as 'All-Glass' Entrance Doors**

Ladder Pull Handles are available in a variety of designs, sizes, and finishes to suit the requirements of metal framed and all-glass doors. Consult the [crlaurence.com](http://crlaurence.com) web site for specs and ordering details.



Straight and "S" Style Handles in Lengths of Up to 84" (2.13 m)



- **Also Available for Use in 'All-Glass' Entrance Doors is a Full Selection of Locking Ladder Pulls**

# ENTRANCES

## Accessories

## Surface Mounted Door Closers

CRL Jackson Brand Non-Handed, Reversible Door Closers That Can Be Mounted Three Ways



### DC50 SERIES ANSI GRADE 1 SURFACE MOUNTED DOOR CLOSERS

- Aluminum and Bronze Finishes
- ANSI A156.4 Grade 1
- Door Weights: 33-264 Lbs.
- 10 Year Limited Warranty



PART NO.	FINISH	SIZE	CLOSER DESCRIPTION
DC51A	Aluminum	1	Light Commercial/Residential
DC51BRZ	Dark Bronze	1	Light Commercial/Residential
DC52A	Aluminum	2	Light-Duty
DC52BRZ	Dark Bronze	2	Light-Duty
DC53A	Aluminum	3	Standard-Duty
DC53BRZ	Dark Bronze	3	Standard-Duty
DC54A	Aluminum	4	Standard-Duty
DC54BRZ	Dark Bronze	4	Standard-Duty
DC55A	Aluminum	5	Heavy-Duty Commercial
DC55BRZ	Dark Bronze	5	Heavy-Duty Commercial

Minimum order: 1 each.



### PR80 SERIES ADJUSTABLE SPRING POWER SURFACE MOUNTED DOOR CLOSERS

- Aluminum and Bronze Finishes
- Adjustable Size From 1 to 5
- Door Weights: 33-264 Lbs.
- 10 Year Limited Warranty

PART NO.	FINISH	SIZE	CLOSER DESCRIPTION
PR80A	Aluminum	2-5	Adjustable
PR80DU	Dark Bronze	2-5	Adjustable
PR82BFA	Aluminum	1-4	Barrier-Free/Adjustable
PR82BFDU	Dark Bronze	1-4	Barrier-Free/Adjustable

Minimum order: 1 each.

Mounting accessories for all CRL Surface Mounted Door Closers are available for viewing or order through [crlaurence.com](http://crlaurence.com).



### PR70 SERIES ADJUSTABLE SPRING POWER SURFACE MOUNTED DOOR CLOSERS

- Available in Up to Four Finishes
- Adjustable Spring Sizes From 1/2 to 6
- Door Weights: 22-330 Lbs.
- 10 Year Limited Warranty



PART NO.	FINISH	SPRING SIZE	CLOSER DESCRIPTION
PR70BFA	Aluminum	1/2-4	Barrier-Free/Adjustable
PR70BFDU	Dark Bronze	1/2-4	Barrier-Free/Adjustable
PR70BFBG	Bright Gold	1/2-4	Barrier-Free/Adjustable
PR70BFCH	Bright Chrome	1/2-4	Barrier-Free/Adjustable
PR72DAA	Aluminum	1/2-4	Delayed Action/Adjustable
PR72DADU	Dark Bronze	1/2-4	Delayed Action/Adjustable
PR72DABG	Bright Gold	1/2-4	Delayed Action/Adjustable
PR72DACH	Bright Chrome	1/2-4	Delayed Action/Adjustable
PR74BCA	Aluminum	2-6	Adjustable
PR74BCDU	Dark Bronze	2-6	Adjustable
PR76DAA	Aluminum	2-6	Delayed Action/Adjustable
PR76DADU	Dark Bronze	2-6	Delayed Action/Adjustable

Minimum order: 1 each.

Each Closer is conveniently packaged with instructions and a mounting template.

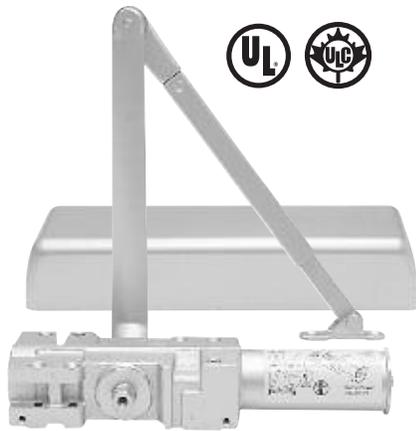
**NEED MORE INFO?** Full details and specifications for all CRL Jackson brand Door Closers can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Accessories

## Surface Mounted Door Closers

CRL Jackson Brand Non-Handed, Reversible Door Closers That Can Be Mounted Three Ways



### PR90 SERIES ANSI GRADE 1 ADJUSTABLE SPRING POWER SURFACE MOUNTED DOOR CLOSERS

- Aluminum and Bronze Finishes
- ANSI A156.4 - Grade 1
- Door Weights: 33-330 Lbs.
- 10 Year Limited Warranty

PART NO.	FINISH	SPRING SIZE	CLOSER DESCRIPTION
PR90A	Aluminum	1-6	Barrier-Free/Adjustable
PR90DU	Dark Bronze	1-6	Barrier-Free/Adjustable
PR92DAA	Aluminum	1-6	Delayed Action/Adjustable
PR92DADU	Dark Bronze	1-6	Delayed Action/Adjustable

Minimum order: 1 each.



### PR40 SERIES ANSI GRADE 1 ADJUSTABLE SPRING POWER SURFACE MOUNTED DOOR CLOSERS

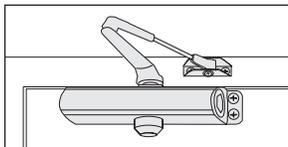
- Aluminum and Bronze Finishes
- Adjustable Size From 1 to 5
- Door Weights: 33-264 Lbs.
- 10 Year Limited Warranty



PART NO.	FINISH	SPRING SIZE	CLOSER DESCRIPTION
PR40A	Aluminum	1-4	Barrier-Free/Adjustable
PR40DU	Dark Bronze	1-4	Barrier-Free/Adjustable
PR42A	Aluminum	2-5	Adjustable
PR42DU	Dark Bronze	2-5	Adjustable
PR44DAA	Aluminum	2-5	Delayed Action/Adjustable
PR44DADU	Dark Bronze	2-5	Delayed Action/Adjustable

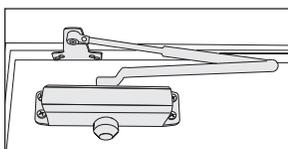
Minimum order: 1 each.

### SURFACE MOUNTED CLOSER UNIVERSAL MOUNTING OPTIONS



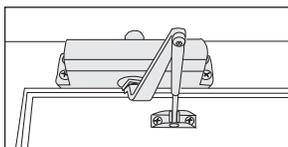
#### Regular Projecting Arm Installation

Closer installed on "PULL" side of the door



#### Parallel Arm Installation

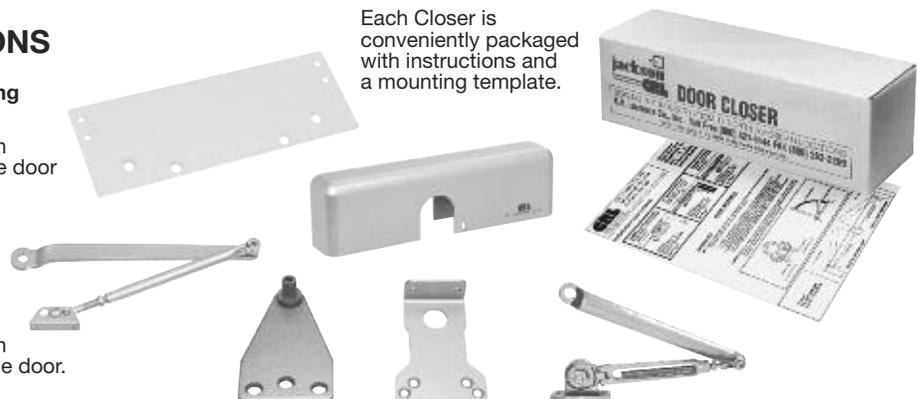
Closer installed on "PUSH" side of the door.



#### Top Jamb Installation

Closer Installed above door on "PUSH" side.

Each Closer is conveniently packaged with instructions and a mounting template.



Mounting accessories for all CRL Jackson Surface Mounted Door Closers are available for viewing or order through [crlaurence.com](http://crlaurence.com).

**NEED MORE INFO?** Full details and specifications for all CRL Jackson brand Door Closers can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# ENTRANCES

## Accessories

### CRL JACKSON ADJUSTABLE SPRING POWER OVERHEAD CONCEALED CENTER HUNG DOOR CLOSERS

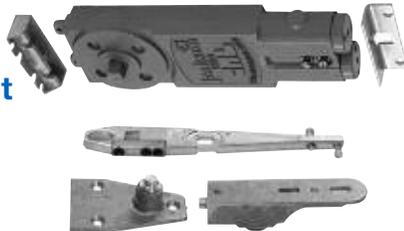
- Adjustable Spring Power Size 1 (Barrier-Free) to 4 (Regular)
- Suitable for Doors From 30" to 48" (762 to 1219) Wide to Meet A.D.A. Opening Force Requirements
- Five Year Limited Warranty
- UL Listed

## Overhead Door Closers



### SIDE-LOAD "S" PIVOT PACKAGE

- Floor Mounted Pivot for 1-1/2" (38) Deep Bottom Rail
- 3/16" (5) Height Adjustment

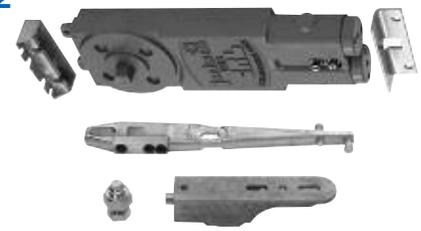


PART NO.	SPRING SIZE	TYPE
21101S17	Adjustable	105° No Hold Open
21101S18	Adjustable	105° Hold Open
21101S19	Adjustable	90° No Hold Open
21101S20	Adjustable	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### SIDE-LOAD "GE" PIVOT PACKAGE

- Threshold Mounted Pivot for 1-1/2" (38) Deep Bottom Rail
- 3/16" (5) Height Adjustment



PART NO.	SPRING SIZE	TYPE
21101GE17	Adjustable	105° No Hold Open
21101GE18	Adjustable	105° Hold Open
21101GE19	Adjustable	90° No Hold Open
21101GE20	Adjustable	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### CRL JACKSON OVERHEAD CONCEALED CENTER HUNG DOOR CLOSERS

- Suitable for Doors From 30" to 48" (762 to 1219) Wide
- Five Year Limited Warranty
- UL Listed



### SIDE-LOAD "S" PIVOT PACKAGE

- Floor Mounted Pivot for 1-1/2" (38) Deep Bottom Rail
- 3/16" (5) Height Adjustment



PART NO.	SPRING SIZE	TYPE
21101S01	Regular	105° No Hold Open
21101S02	Regular	105° Hold Open
21101S03	Regular	90° No Hold Open
21101S04	Regular	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### SIDE-LOAD "GE" PIVOT PACKAGE

- Threshold Mounted Pivot for 1-1/2" (38) Deep Bottom Rail
- 3/16" (5) Height Adjustment



PART NO.	SPRING SIZE	TYPE
21101GE01	Regular	105° No Hold Open
21101GE02	Regular	105° Hold Open
21101GE03	Regular	90° No Hold Open
21101GE04	Regular	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

**A.D.A. NOTE:** Although the Adjustable Spring Power Door Closer can be adjusted to compensate for site conditions, adequate closing force might not be obtained while complying with A.D.A. opening force requirements.

**NOTE:** An auxiliary floor or overhead door stop is recommended to prevent possible damage to both the door closer and entryway due to over-extension of maximum allowable door swing.

Visit [crlaurence.com](http://crlaurence.com) for all available CRL Jackson door closer packages.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Accessories

### CRL JACKSON OVERHEAD CONCEALED CENTER HUNG DOOR CLOSERS

- Suitable for Doors From 30" to 48" (762 to 1219) Wide
- Five Year Limited Warranty
- UL Listed

## Overhead Door Closers



### ADJUSTABLE SPRING POWER OFFSET ARM PACKAGE



- Adjustable Spring Power Size 1 (Barrier-Free) to Size 4 (Regular)
- Meets A.D.A. Opening Force Requirements
- Available in Two Arm Finishes



ALUMINUM PART NO.	DARK BRONZE PART NO.	SPRING SIZE	TYPE
21201U62817	21201U31317	Adjustable	105° No Hold Open
21201U62818	21201U31318	Adjustable	105° Hold Open
21201U62819	21201U31319	Adjustable	90° No Hold Open
21201U62820	21201U31320	Adjustable	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### REGULAR SPRING POWER OFFSET ARM PACKAGE

- Fixed Spring Size
- Available in Two Arm Finishes



ALUMINUM PART NO.	DARK BRONZE PART NO.	SPRING SIZE	TYPE
21201U62801	21201U31301	Regular	105° No Hold Open
21201U62802	21201U31302	Regular	105° Hold Open
21201U62803	21201U31303	Regular	90° No Hold Open
21201U62804	21201U31304	Regular	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### CRL JACKSON OVERHEAD CONCEALED DOOR CLOSER BODIES

- Closer Body Only in Fixed and Adjustable Spring Sizes
- Suitable for Doors From 30" to 48" (762 to 1219) Wide



### ADJUSTABLE SPRING POWER OVERHEAD CONCEALED DOOR CLOSER BODY

- Adjustable Spring Power Size 1 (Barrier-Free) to Size 4 (Regular)
- Can Retrofit Existing Fixed Spring Closers
- Five Year Limited Warranty



Body Only – Mounting Clips are not included. For standard clips, specify Part No. 20219.

1/2" STANDARD SPINDLE PART NO.	SPRING SIZE	TYPE
20101M17	Adjustable	105° No Hold Open
20101M18	Adjustable	105° Hold Open
20101M19	Adjustable	90° No Hold Open
20101M20	Adjustable	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

### STANDARD OVERHEAD CONCEALED DOOR CLOSER BODY

- Fixed Regular Spring Size
- Five Year Limited Warranty



Body Only – Mounting Clips are not included. For standard clips, specify Part No. 20219.

1/2" STANDARD SPINDLE PART NO.	SPRING SIZE	TYPE
20101M01	Regular	105° No Hold Open
20101M02	Regular	105° Hold Open
20101M03	Regular	90° No Hold Open
20101M04	Regular	90° Hold Open

Minimum order: 1 each. All Door Closers can be combined for quantity pricing.

**A.D.A. NOTE:** Although the Adjustable Spring Power Door Closer can be adjusted to compensate for site conditions, adequate closing force might not be obtained while complying with A.D.A. opening force requirements.

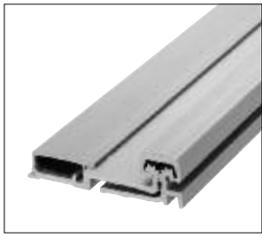
Visit [crlaurence.com](http://crlaurence.com) for all available CRL Jackson door closer packages and accessories.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# ENTRANCES

## Accessories

## Continuous Hinges



100 and 150 Series  
Full Surface Hinges



200 and 250 Series  
Full Surface Hinges

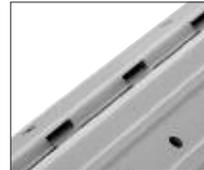


300 and 350 Series  
Concealed Leaf Hinges



### FEATURES AND BENEFITS

All Hinges are anodized after machining is done to provide longer life and reduce corrosion.



Standard Duty Hinges have 16 load bearing blocks for doors up to 200 pounds (90 kg). Heavy-Duty Hinges have 32 load bearing blocks for doors up to 600 pounds (272 kg) if attached with Riv-Nuts®.



Precision extruded components deliver smooth operation and long life.



Our hole pattern is designed to speed up installations, but still provide the required attachment points needed to carry the weight.

- **Continuous Hinges are Specified by Large Retail Stores and Schools Because of Their Long Service Life**
- **Three Models are Available in Standard or Heavy-Duty Models**
- **Two Finishes – Satin Anodized and Dark Bronze Anodized**

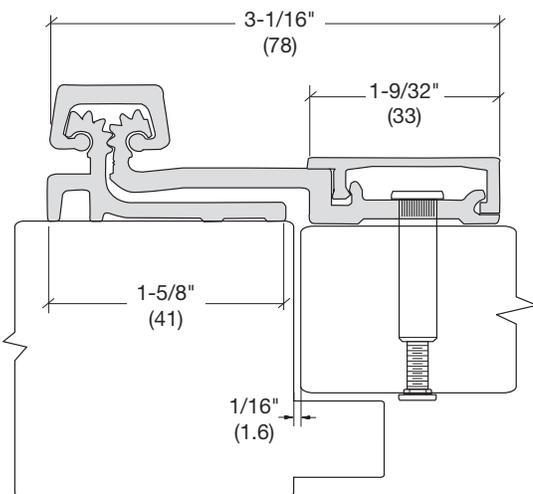
U.S. Aluminum Continuous Hinges are made of high strength aluminum with a full-length rolling gear profile to align doors perfectly from top to bottom. Special self-lubricating polyacetal load bearing blocks deliver smooth, almost floating operation on even the heaviest doors. Hinges are completely secure because all mounting hardware is hidden when installed. Easy-to-install Hinges come with instructions and all necessary hardware for mounting. Replacement Screw Packs are also available separately for on the job repairs.

### 100 AND 150 SERIES FULL SURFACE CONTINUOUS HINGES

- **Standard Duty Hinges for Doors Weighing Up to 200 Pounds (90 kg)**
- **Heavy-Duty Hinges for Doors Weighing Up to 600 Pounds (272 kg)**
- **Available in Satin Anodized and Dark Bronze Anodized Finishes**



These U.S. Aluminum Full Surface Continuous Hinges have load bearing blocks every 5-1/8" (130) on the Standard Duty Hinge, and every 2-9/16" (65) on the Heavy-Duty Hinge. They are available in satin anodized and dark bronze anodized finishes, and stocked in 83" (2.11 m) lengths. A pack of installation screws is included with each Hinge. Replacement Screw Packs are also available separately.



#### STANDARD DUTY FULL SURFACE CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
10083A	83" (2.11 m)	Satin Anodized	RSP100A
10083DU	83" (2.11 m)	Dark Bronze Anodized	RSP100DU

#### HEAVY-DUTY FULL SURFACE CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
15083A	83" (2.11 m)	Satin Anodized	RSP100A
15083DU	83" (2.11 m)	Dark Bronze Anodized	RSP100DU

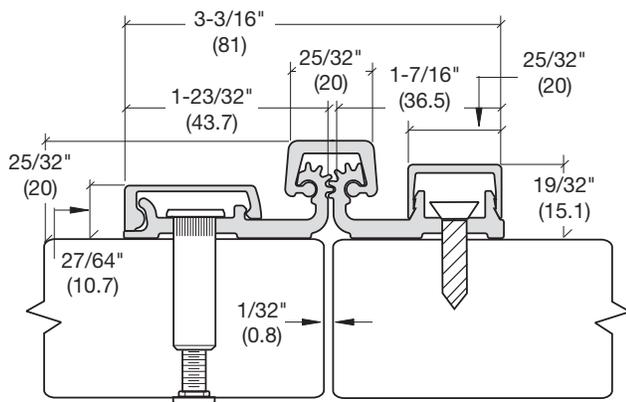
Minimum order: 1 each. All Continuous Hinges can be combined for quantity pricing.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Accessories

### 200 AND 250 SERIES FULL SURFACE CONTINUOUS HINGES

- **Standard Duty Hinges for Doors Weighing Up to 200 Pounds (90 kg)**
- **Heavy-Duty Hinges for Doors Weighing Up to 600 Pounds (272 kg)**
- **Available in Satin Anodized and Dark Bronze Anodized Finishes**



These U.S. Aluminum Full Surface Continuous Hinges have load bearing blocks every 5-1/8" (130.2) on the Standard Duty Hinge, and every 2-9/16" (65.1) on the Heavy-Duty Hinge. They are available in satin anodized and dark bronze anodized finishes, and stocked in 83" (2.11 m) lengths. A pack of installation screws is included with each Hinge. Replacement Screw Packs are also available separately.

#### STANDARD DUTY FULL SURFACE CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
<b>20083A</b>	83" (2.11 m)	Satin Anodized	<b>RSP200A</b>
<b>20083DU</b>	83" (2.11 m)	Dark Bronze Anodized	<b>RSP200DU</b>

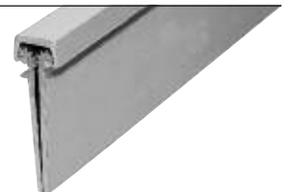
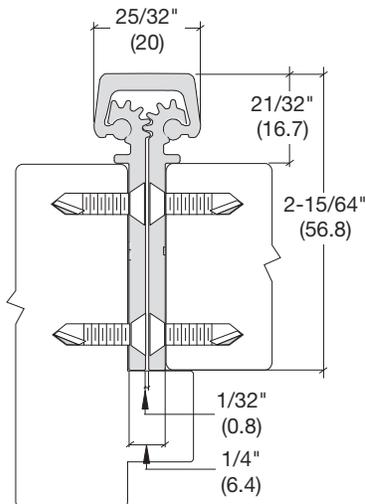
#### HEAVY-DUTY FULL SURFACE CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
<b>25083A</b>	83" (2.11 m)	Satin Anodized	<b>RSP200A</b>
<b>25083DU</b>	83" (2.11 m)	Dark Bronze Anodized	<b>RSP200DU</b>

Minimum order: 1 each. All Continuous Hinges can be combined for quantity pricing.

### 300 AND 350 SERIES CONCEALED LEAF CONTINUOUS HINGES

- **Standard Duty Hinges for Doors Weighing Up to 200 Pounds (90 kg)**
- **Heavy-Duty Hinges for Doors Weighing Up to 600 Pounds (272 kg)**
- **Available in Satin Anodized and Dark Bronze Anodized Finishes**



These U.S. Aluminum Concealed Leaf Continuous Hinges have load bearing blocks every 5-1/8" (130.2) on the Standard Duty Hinge, and every 2-9/16" (65.1) on the Heavy-Duty Hinge. They are available in satin anodized and dark bronze anodized finishes, and stocked in 83" (2.11 m) lengths. A pack of installation screws is included with each Hinge. Replacement Screw Packs are also available separately.

#### STANDARD DUTY CONCEALED LEAF CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
<b>30083A</b>	83" (2.11 m)	Satin Anodized	<b>RSP300A</b>
<b>30083DU</b>	83" (2.11 m)	Dark Bronze Anodized	<b>RSP300DU</b>

#### HEAVY-DUTY CONCEALED LEAF CONTINUOUS HINGES

HINGE PART NO.	HINGE LENGTH	HINGE FINISH	REPLACEMENT SCREW PACK PART NO.
<b>35083A</b>	83" (2.11 m)	Satin Anodized	<b>RSP300A</b>
<b>35083DU</b>	83" (2.11 m)	Dark Bronze Anodized	<b>RSP300DU</b>

Minimum order: 1 each. All Continuous Hinges can be combined for quantity pricing.

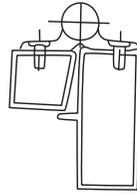
# ENTRANCES

## Accessories

### UNIVERSAL HINGE REPLACEMENT KIT FOR STOREFRONT DOORS

- **Universal Fit for Both Flush and 1/8" (3) Recessed Doors**
- **Use for Doors Weighing Up to 300 Pounds (136 kg)**
- **Instant Adjustments to Fine Tolerances**
- **Smooth Bearing Action**
- **Self-Lubricating Pin**

This Universal Hinge Replacement Kit is machined to the close tolerances required for heavy, continuously used commercial doors. The universal fit allows replacement of all storefront hinges without modification on both flush and 1/8" (3) recessed doors. The secure, non-exposed hinge pins cannot be reached, removed or tampered with. The door weight is supported by a case hardened, self-lubricating pin and machine quality anti-friction roller with thrust bearings sealed in oil.



#### Each Hinge Kit Contains:

Two Hinges; Two 1/8" (3) Thick Shim Plates; Four Screw Cover Plates; 12 One-Way Mounting Screws; One Hex Wrench; Complete Instructions

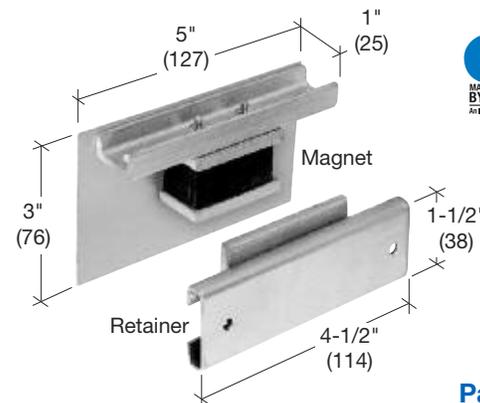
PART NO.	FINISH
DL1099A	Satin Anodized
DL1099DU	Bronze Anodized

Minimum order: 1 pair.

### HEAVY-DUTY MAGNETIC DOOR RETAINER (SURFACE MOUNT TYPE)

- **Up to 50 Pounds (22.7 kg) of Adjustable Holding Strength**
- **Keeps Doors From Blowing Open**
- **Non-Handed**

This Heavy-Duty Magnetic Door Retainer keeps doors closed even during heavy winds. Non-handed retainer provides up to 50 pounds (22.7 kg) of adjustable pull strength once installed. Helps control energy loss, and is easily installed in just minutes. Minimum order is one each.

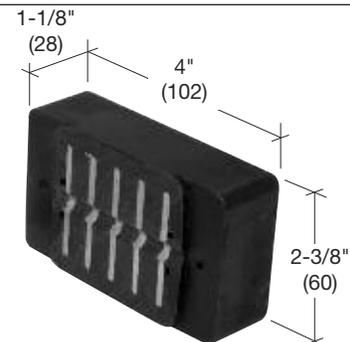


Part No. M50

### MAGNETIC DOOR RETAINER (MORTISE TYPE)

- **Keeps Doors From Blowing Open**
- **Mortised Into Jamb Head**

This Magnetic Door Retainer has a molded plastic base that holds a magnet, and is mortised into the jamb head. A steel roller is then attached to the top center of the top rail. **NOTE:** Requires a jamb head deep enough to hold the 1-1/8" (28) thick base. Minimum order is one each.



Part No. 115445

### E-Z TONE DOOR CHIME

- **No Electricity or Batteries Needed**

The E-Z Tone can be easily installed on all types of doors and jambs. When the door is opened, a magnetic striker hits the chime bar and produces a pleasant, audible tone.

PART NO.	FINISH
TDK13GRY	Light Gray
TDK13BRZ	Bronze

Minimum order: 1 each.



Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Accessories

## Door Pivots

### 3/4" OFFSET PIVOT SETS

- Suitable for Aluminum Frames and Doors Weighing Up to 125 Pounds (57 kg)
- 1/8" (3.2) Vertical Adjustment
- Die Cast Aluminum

### 0P34 SERIES

- Handed - Not Reversible

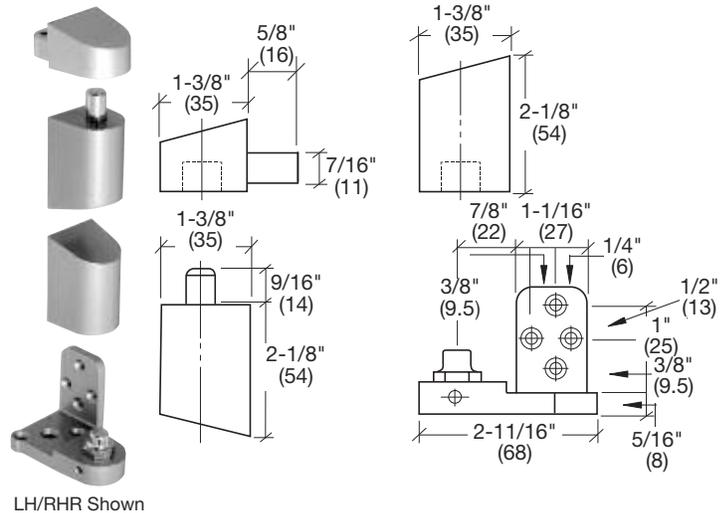
Left or right hand Pivot Sets are available in satin aluminum and dark bronze finishes. One set per box.

PART NO.	HANDING	APPLICATION	FINISH
0P34LHA	Left Hand	Flush with Frame Face	Aluminum
0P34LH DU	Left Hand	Flush with Frame Face	Dark Bronze
0P34RHA	Right Hand	Flush with Frame Face	Aluminum
0P34RH DU	Right Hand	Flush with Frame Face	Dark Bronze

Minimum order: 1 set.

### • Oilite Bronze Bushing in Top Frame Portion

Our Offset Pivot Sets for commercial doors feature quality machined and die cast components. Everything you need comes in one box, including the door fasteners and anchors.



### OFFSET TOP PIVOTS

- Full Mortise Pivots Are Non-Handed

#### 3/4" (19) OFFSET TOP PIVOTS

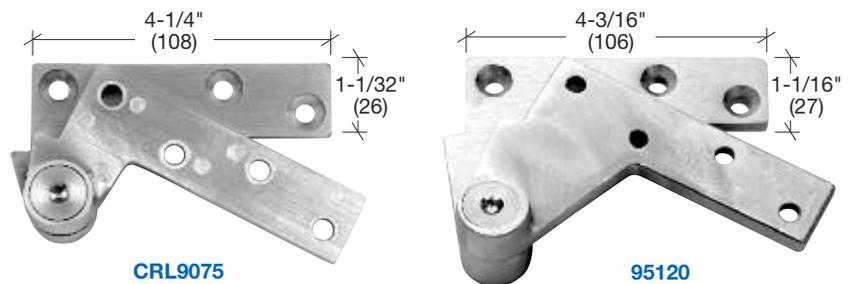
PART NO.	FINISH
CRL9075BS	Brushed Stainless
CRL9075PB	Polished Brass
CRL9075PS	Polished Stainless
CRL9075DU	Dark Bronze

Minimum order: 1 each.

#### 1-1/2" (38) OFFSET TOP PIVOTS

PART NO.	FINISH
95120BS	Brushed Stainless
95120DU	Dark Bronze

Minimum order: 1 each.



Offset Top Pivots are full mortise and non-handed for use with aluminum, wood, and hollow metal doors.

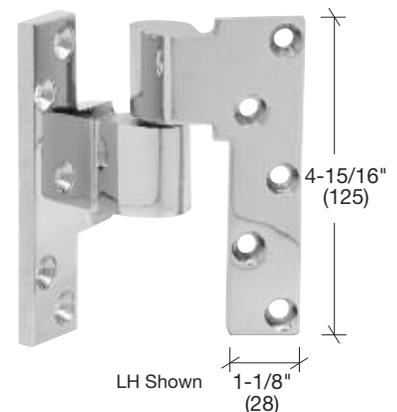
### 3/4" INTERMEDIATE OFFSET ALUMINUM PIVOT SETS

- Handed Left or Right for New or Retrofit Use
- Available in Four Finishes

LEFT HAND (RHR) PART NO.	FINISH	RIGHT HAND (LHR) PART NO.
CRL19LHSC	Satin Chrome	CRL19RHSC
CRL19LHPC	Polished Chrome	CRL19RHPC
CRL19LHPB	Polished Brass	CRL19RHBP
CRL19LH DU	Dark Bronze	CRL19RH DU

Minimum order: 1 each.

These 3/4" (19) Intermediate Offset Pivots are for new or retrofit use with standard 1-3/4" (45) storefront aluminum doors to maintain door alignment. These are handed, full-mortise type Pivots, and feature a full race ball bearing and oilite bronze bushing for a long maintenance-free life. They are not intended to be load-bearing pivots. Pivots allow for a 5/8" (16) vertical adjustment, and feature a fully retractable pin for easy installation.

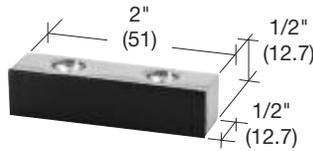


# ENTRANCES

## Accessories

### HEADER MOUNTED SINGLE DOOR STOP

This Header Mounted Single Door Stop provides a positive stop when converting a double acting door into a single acting one-way door. Easy to install and available in four popular finishes (screws not included). One per package.

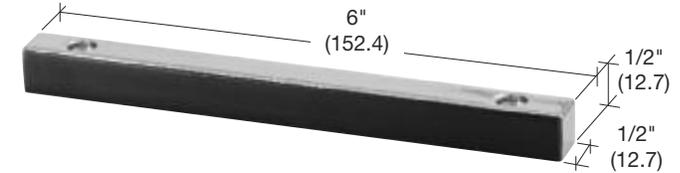


PART NO.	FINISH
1NT307A	Aluminum
1NT307BR	Polished Brass
1NT307BS	Brushed Stainless
1NT307PS	Polished Stainless

Minimum order: 1 each.

### Door Stops and Holders

### HEADER MOUNTED DOUBLE DOOR STOP



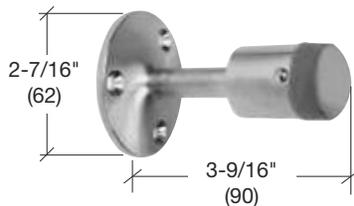
This Header Mounted Double Door Stop provides a positive stop when converting a double acting door into a single acting one-way door. Easy to install and available in four popular finishes (screws not included). One per package.

PART NO.	FINISH
1NT308A	Aluminum
1NT308BR	Polished Brass
1NT308BS	Brushed Stainless
1NT308PS	Polished Stainless

Minimum order: 1 each.

### WALL MOUNTED HEAVY-DUTY DOOR STOP

This Wall Mounted Door Stop has a heavy brass die cast body with rubber bumper. Screws and anchors are included. One per package.

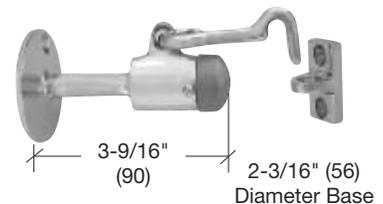


PART NO.	FINISH
DL2532A	Satin Chrome
DL2532PB	Polished Brass

Minimum order: 1 each.

### WALL MOUNTED HEAVY-DUTY DOOR HOLDER

This Wall Mounted Door Holder has a hook latch to keep the door in the open position. The body is made from cast brass. Screws and anchors are included. One per package.



PART NO.	FINISH
DL2531A	Satin Chrome
DL2531PB	Polished Brass

Minimum order: 1 each.

### FLOOR MOUNTED HEAVY-DUTY DOOR STOP

Heavy brass die cast body with rubber bumper. Floor Mounted Stop has a center floor post which seats into a bored hole in the floor, preventing shifting of the base. Screws and anchors are included. One per package.



PART NO.	FINISH
DL2522A	Satin Chrome
DL2522PB	Polished Brass

Minimum order: 1 each.

### FLOOR MOUNTED HEAVY-DUTY DOOR HOLDER

The Floor Mounted Door Holder has a center floor post that seats into a bored hole in the floor, preventing shifting of the base. Screws and anchors are included. One per package.



PART NO.	FINISH
DL2521A	Satin Chrome
DL2521PB	Polished Brass

Minimum order: 1 each.

### LOW PROFILE BASE DOME DOOR STOP

Heavy cast 1-3/4" (44.4) diameter Door Stop with a vinyl insert. The low profile base has a post that seats into a hole bored into the floor, preventing base from shifting. One per package.

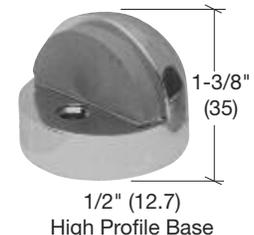


PART NO.	FINISH
DL2501A	Satin Chrome
DL2501DU	Dark Bronze
DL2501PB	Polished Brass

Minimum order: 1 each.

### HIGH PROFILE BASE DOME DOOR STOP

Heavy cast 1-3/4" (44.4) diameter Door Stop with a vinyl insert. The high profile base has a post that seats into a hole bored into the floor, preventing base from shifting. One per package.



PART NO.	FINISH
DL2502A	Satin Chrome
DL2502DU	Dark Bronze
DL2502PB	Polished Brass

Minimum order: 1 each.

## Accessories

## Door Holders, Bumpers, and A.D.A. Adaptor

### DOOR MOUNTED 4" HEAVY-DUTY DOOR HOLDER

- **Cast Iron Construction**

This Heavy-Duty Door Holder is a 4" (101.6) kick-down style holder with rubber tip. It is intended to hold the door open at any degree of opening. One per package or bulk packs of 10.



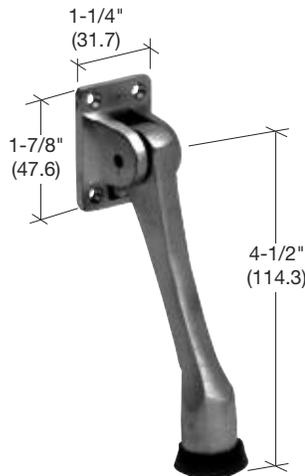
PART NO.	FINISH	QTY/PACK
J4551	Aluminum	1
J4551B	Aluminum	10
J4552	Bronze	1
J4552B	Bronze	10

Minimum order: 1 pack.

### DOOR MOUNTED 4-1/2" HEAVY-DUTY DOOR HOLDER

- **Meets ANSI Standards**

This Heavy-Duty Door Stop is a 4-1/2" (114) kick-down style holder with rubber tip. Designed to hold door open at any degree of opening. One per package.



PART NO.	FINISH
J4571	Brushed Chrome
J4572	Polished Brass
J4671	Polished Chrome

Minimum order: 1 pack.

### DOOR MOUNTED STEP-ON DOOR HOLDER

- **Step-On Application and Release**
- **Spring Loaded Plunger**

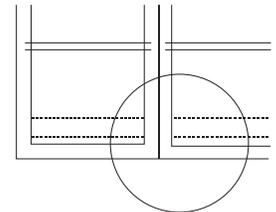
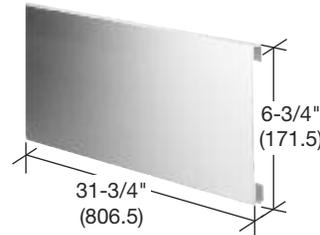
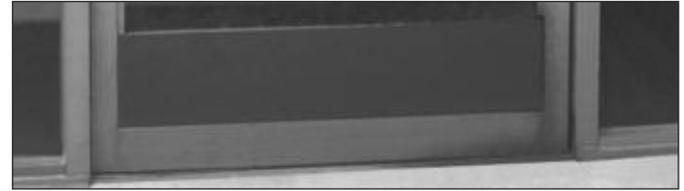
This Door Mounted Step-On Door Holder is a plunger type heavy-duty die cast stop. Easy on and off step-on application with heavy-duty rubber foot. One per package.



PART NO.	FINISH
J4594	Brass
J4595	Aluminum

Minimum order: 1 pack.

### A.D.A. DOOR RAIL ADAPTOR



Allows existing doors to meet California Title 24 Handicap Code requirements of a 10" (254) bottom rail. Easily mounts between door stiles with double face tape. 6-3/4" (171) wide x 31-3/4" (806) long to fit 36" (914) doors. Other sizes available on request. One per package.

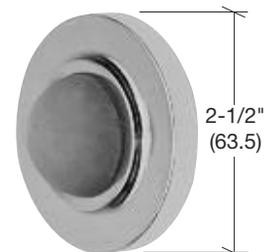


PART NO.	FINISH
10AD	Aluminum
10BRZ	Bronze

Minimum order: 1 each.

### CONVEX TYPE WALL MOUNT DOOR BUMPER

Heavy cast housing with a vinyl insert. 2-1/2" (63.5) diameter base plate mounts to wall, and housing mounts over plate to conceal mounting screws. Projects 1" (25) from surface of wall. One per package.

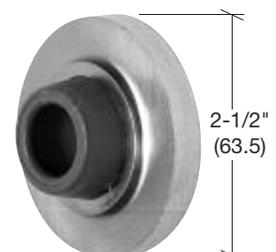


PART NO.	FINISH
DL2511A	Satin Chrome
DL2511DU	Dark Bronze
DL2511PB	Polished Brass

Minimum order: 1 each.

### CONCAVE TYPE WALL MOUNT DOOR BUMPER

Heavy cast housing with a vinyl insert. 2-1/2" (63.5) diameter base plate mounts to wall, and housing mounts over plate to conceal mounting screws. Projects 1" (25) from surface of wall. One per package.



PART NO.	FINISH
DL2512A	Satin Chrome
DL2512DU	Dark Bronze
DL2512PB	Polished Brass

Minimum order: 1 each.

# ENTRANCES

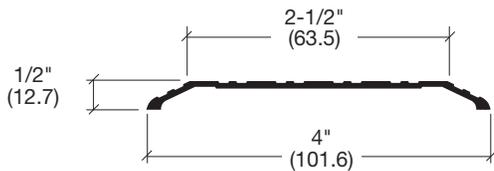
## Accessories

- Aluminum and Bronze Finishes in Three Lengths
- A Variety of Available Widths and Heights
- Furnished With Screws for Installation

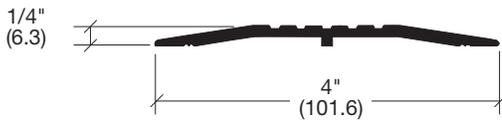
## Aluminum Thresholds



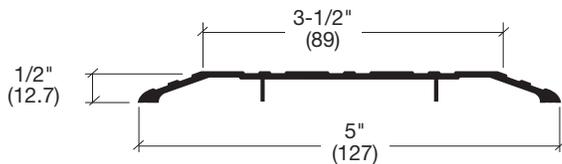
### MODEL TH014A AND TH014D 4" COMMERCIAL SADDLE THRESHOLD



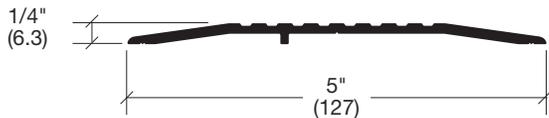
### MODEL 38A AND 38D 4" COMMERCIAL SADDLE THRESHOLD



### MODEL TH015A AND TH015D 5" COMMERCIAL SADDLE THRESHOLD



### MODEL 48A AND 48D 5" COMMERCIAL SADDLE THRESHOLD



These C.R. Laurence brand Aluminum Thresholds for commercial doors are fabricated from extruded aluminum in both satin anodized and duranodic bronze finishes. All are furnished with screws for installation. All of the above models come in pre-cut lengths for single or double doors, and also in full stock lengths that you can cut to the exact size you require. Single and double door sizes can be shipped economically via small package carriers, while the full stock lengths must ship via common carrier. All Thresholds can be made available for pick up at any U.S. Aluminum or C.R. Laurence Service Center.

• COMMONLY USED WITH 4" WIDE STOREFRONT TUBING

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
TH014A36	TH014D36	36-1/2" (927)
TH014A72	TH014D72	73" (1854)
TH014A185	TH014D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

• COMMONLY USED WITH 4" WIDE STOREFRONT TUBING

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
38A36	38D36	36-1/2" (927)
38A72	38D72	73" (1854)
38A185	38D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

• GENERALLY USED WITH 4-1/2" WIDE STOREFRONT TUBING

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
TH015A36	TH015D36	36-1/2" (927)
TH015A72	TH015D72	73" (1854)
TH015A185	TH015D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

• 1/2" MAXIMUM HEIGHT MEETS A.D.A. REQUIREMENTS

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
48A36	48D36	36-1/2" (927)
48A72	48D72	73" (1854)
48A185	48D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

**NEED MORE INFO?** Full details and specifications for all C.R. Laurence brand Thresholds can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

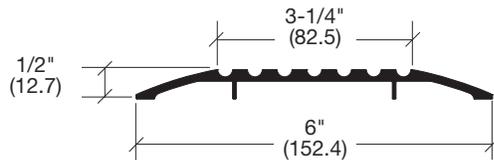
## Accessories

- Aluminum and Bronze Finishes in Three Lengths
- A Variety of Available Widths and Heights
- Furnished With Screws for Installation

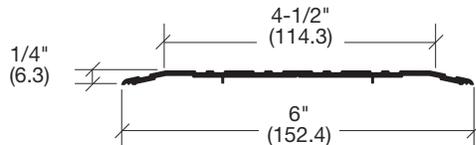
## Aluminum Thresholds



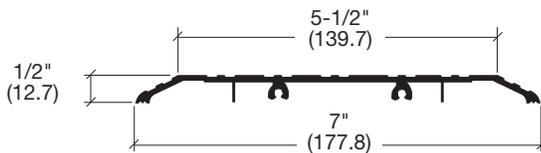
### MODEL 42A AND 42D 6" COMMERCIAL SADDLE THRESHOLD



### MODEL 49A AND 49D 6" COMMERCIAL SADDLE THRESHOLD



### MODEL TH017A AND TH017D 7" COMMERCIAL SADDLE THRESHOLD



### MODEL 491A AND 491D 8" COMMERCIAL SADDLE THRESHOLD



These Aluminum Thresholds for commercial doors are fabricated from extruded aluminum in both satin anodized and duranodic bronze finishes. All are furnished with screws for installation. All of the above models come in pre-cut lengths for single or double doors, and also in full stock lengths that you can cut to the exact size you require. Single and double door sizes can be shipped economically via small package carriers, while the full stock lengths must ship via common carrier. All Thresholds can be made available for pick up at any U.S. Aluminum or C.R. Laurence Service Center.

#### • AVAILABLE IN THREE LENGTHS AND TWO FINISHES

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
42A36	42D36	36-1/2" (927)
42A72	42D72	73" (1854)
42A185	42D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

#### • AVAILABLE IN THREE LENGTHS AND TWO FINISHES

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
49A36	49D36	36-1/2" (927)
49A72	49D72	73" (1854)
49A185	49D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

#### • TYPICALLY USED IN APPLICATIONS USING HEAVY-DUTY FLOOR CLOSERS

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
TH017A36	TH017D36	36-1/2" (927)
TH017A72	TH017D72	73" (1854)
TH017A185	TH017D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

#### • AVAILABLE IN THREE LENGTHS AND TWO FINISHES

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
491A36	491D36	36-1/2" (927)
491A72	491D72	73" (1854)
491A185	491D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.  
\*Must ship common carrier.

**NEED MORE INFO?** Full details and specifications for all C.R. Laurence brand Thresholds can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

# ENTRANCES

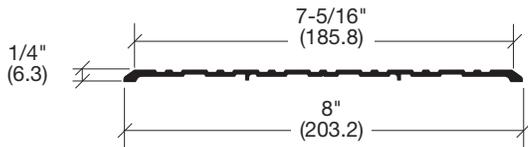
## Accessories

## Aluminum and Stainless Thresholds

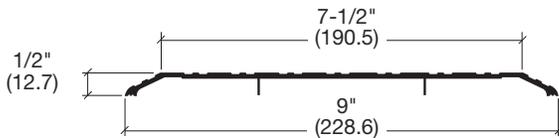
- Aluminum and Bronze Finishes in Three Lengths
- A Variety of Available Widths and Heights
- Furnished With Screws for Installation



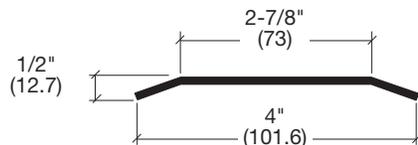
### MODEL 492A AND 492D 8" COMMERCIAL SADDLE THRESHOLD



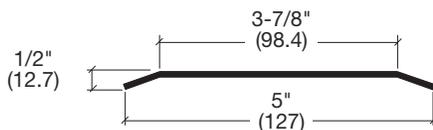
### MODEL TH019A AND TH019D 9" COMMERCIAL SADDLE THRESHOLD



### MODEL TH074 4" STAINLESS STEEL SADDLE THRESHOLD



### MODEL TH075 5" STAINLESS STEEL SADDLE THRESHOLD



These Aluminum Thresholds for commercial doors are fabricated from extruded aluminum in both satin anodized and duranodic bronze finishes. Two models are fabricated from stainless steel. All are furnished with screws for installation. Models come in pre-cut lengths for single or double doors, some also in full stock lengths that you can cut to the exact size you require. Single and double door sizes can be shipped economically via small package carriers, while the full stock lengths must ship via common carrier. All Thresholds can be made available for pick up at any U.S. Aluminum or C.R. Laurence Service Center.

• AVAILABLE IN THREE LENGTHS AND TWO FINISHES

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
492A36	492D36	36-1/2" (927)
492A72	492D72	73" (1854)
492A185	492D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

• BEST THRESHOLD IN APPLICATIONS WHERE PA110 SERIES PANICS OR BOTTOM ENGAGING DEADBOLT HANDLES ARE USED

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
TH019A36	TH019D36	36-1/2" (927)
TH019A72	TH019D72	73" (1854)
TH019A185	TH019D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

• STAINLESS STEEL FOR CORROSIVE ENVIRONMENTS

ALUMINUM PART NO.	LENGTH
TH074SS36	36-1/2" (927)

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.

• STAINLESS STEEL FOR CORROSIVE ENVIRONMENTS

ALUMINUM PART NO.	LENGTH
TH075SS36	36-1/2" (927)

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.

**NEED MORE INFO?** Full details and specifications for all C.R. Laurence brand Thresholds can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

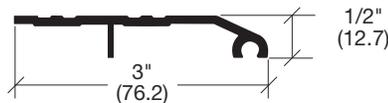
## Accessories

- Aluminum and Bronze Finishes in Three Lengths
- A Variety of Available Widths and Heights
- Furnished With Screws for Installation

## Aluminum Thresholds



### MODEL 39A 3" HALF SADDLE THRESHOLD

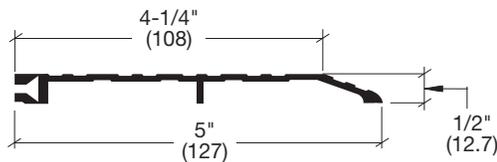


- TYPICALLY USED TO MEET WITH IRREGULAR FLOOR SURFACE

ALUMINUM PART NO.	LENGTH
39A36	36-1/2" (927)

Minimum order: 1 each. All Thresholds can be combined for quantity pricing.

### MODEL 255A AND 255D 5" OFFSET SADDLE THRESHOLD

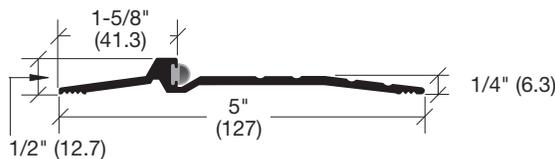


- FIRE RATED, SMOKE TESTED, UL LISTED
- BARRIER FREE

ALUMINUM PART NO.	BRONZE PART NO.	LENGTH
255A36	255D36	36-1/2" (927)
255A72	255D72	73" (1854)
255A185	255D185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

### MODEL 46VA 5" PANIC TYPE THRESHOLD

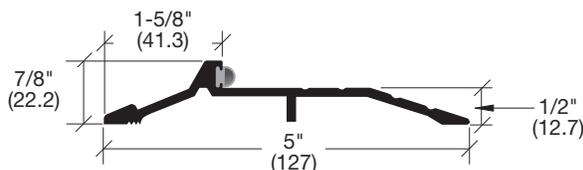


- COMMONLY USED WITH 5" WIDE STOREFRONT TUBING
- BULB SEAL INCLUDED

ALUMINUM PART NO.	LENGTH
46VA36	36-1/2" (927)
46VA72	73" (1854)
46VA185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

### MODEL 47VA 5" PANIC TYPE THRESHOLD



- COMMONLY USED WITH SURFACE APPLIED VERTICAL ROD EXIT DEVICE
- BULB SEAL INCLUDED

ALUMINUM PART NO.	LENGTH
47VA36	36-1/2" (927)
47VA72	73" (1854)
47VA185	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

These Aluminum Thresholds for commercial doors are fabricated from extruded aluminum in both satin anodized and duranodic bronze finishes. All are furnished with screws for installation. Models come in pre-cut lengths for single or double doors, some also in full stock lengths that you can cut to the exact size you require. Single and double door sizes can be shipped economically via small package carriers, while the full stock lengths must ship via common carrier. All Thresholds can be made available for pick up at any U.S. Aluminum or C.R. Laurence Service Center.

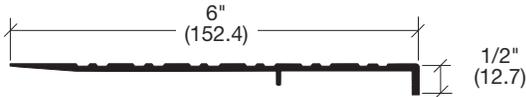
**NEED MORE INFO?** Full details and specifications for all C.R. Laurence brand Thresholds can be seen at [crlaurence.com](http://crlaurence.com). Enter the Part Number into the Search Box to view complete details.

# ENTRANCES

## Accessories

- Aluminum Finish in Three Lengths
- Furnished With Screws for Installation

### MODEL 88A 6" RAMP THRESHOLD



These Aluminum Thresholds for commercial doors are fabricated from extruded aluminum in a satin anodized finish. Furnished with screws for installation. Above model comes in pre-cut lengths for single or double doors, and also in full stock lengths that you can cut to the exact size you require. Single and double door sizes can be shipped economically via small package carriers, while the full stock lengths must ship via common carrier. All Thresholds can be made available for pick up at any U.S. Aluminum or C.R. Laurence Service Center.

## Aluminum Thresholds



- TYPICALLY USED TO MEET WITH IRREGULAR FLOOR SURFACE

ALUMINUM PART NO.	LENGTH
<b>88A36</b>	36-1/2" (927)
<b>88A72</b>	73" (1854)
<b>88A185</b>	185" (4.7 m)*

Minimum order: 1 each. All Thresholds can be combined for quantity pricing. \*Must ship common carrier.

## CUSTOM COMMERCIAL SADDLE THRESHOLDS AND FLOOR CLOSER COVER PLATES

U.S. Aluminum custom fabricates Saddle Thresholds and Floor Closer Cover Plates. For information contact our Technical Sales Department at (800) 262-5151.



## PVC BARRIER STRIP

PVC Barrier Strip protects the aluminum threshold from moisture absorbed through the stucco finish of the exterior wall. 96" (2.4 m) Barrier Strip measures 4-3/8" (111.1) wide, and must cover area in contact with stucco wall to provide protection to the aluminum.

PART NO.	LENGTH	FINISH
<b>THBS8</b>	8' (2.4 m)	Black

Minimum order: 1 each.



## THRESHOLD INSTALLATION TOOLS AND SUPPLIES

U.S. Aluminum offers a complete selection of tools and supplies for the installation of our Aluminum and Stainless Steel Thresholds.



Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



# B

## STOREFRONTS

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

Toll Free Phone Service  
**(800) 262-5151**

Toll Free Fax Service  
**(866) 262-3299**

U.S. and Canada

**GRL**®  
**U.S. ALUMINUM**

[usalum.com](http://usalum.com)



Round Rock Premium Outlets  
Round Rock, TX

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

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

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## SYSTEM

## PAGES

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

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

Toll Free Phone (800) 262-5151

Toll Free Fax (866) 262-3299

Contact us through our web site at [usalum.com](http://usalum.com)



# STOREFRONTS

## Specifications

### Center Glazed

- Series 400
- Series 450
- Series 451

### SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
400	1-3/4" (44.5)	4" (101.6)	1/4" (6) or 3/8" (10)	Exterior/Interior
450	1-3/4" (44.5)	4-1/2" (114.3)	1/4" (6) or 3/8" (10)	
451	2" (50.8)	4-1/2" (114.3)	1" (25)	

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331. No water penetration at test pressure of

8 psf (384 Pa). When tested with the high performance subsill.

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

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

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

Testing Procedures -

ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... *(Specify one of the following):*

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of *(Specify)*. Overall depth shall be *(Specify)*. Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

## Specifications

## Center Glazed Stacking

- Series 400-S
- Series 450-S
- Series 451-S

### SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	FACE WIDTH	HEAD/SILL DEPTH	GLAZING INFILLS	GLAZING METHOD
400-S	1-3/4" (44.5)	4-1/4" (108)	1/4" (6) or 3/8" (10)	Exterior/Interior
450-S	1-3/4" (44.5)	4-3/4" (120.7)	1/4" (6) or 3/8" (10)	
451-S	2" (50.8)	4-3/4" (120.7)	1" (25)	

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

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

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

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

The system shall perform to this criteria under a windload of (*Specify*) psf. Testing Procedures- ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... (*Specify one of the following*):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide continuous head and sill channels spliced together with formed brake metal sleeves at center of vertical mullions as required for thermal expansion and to ensure a continuous sill gutter to handle infiltrated water. The sill channel shall provide for exterior weepage through 1/4" (6.4) diameter weep holes located at approximately 6" (152.4) on each side of vertical mullions. The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of (*Specify*). Overall depth shall be (*Specify*). Entrance framing members shall be compatible with glass framing in appearance.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

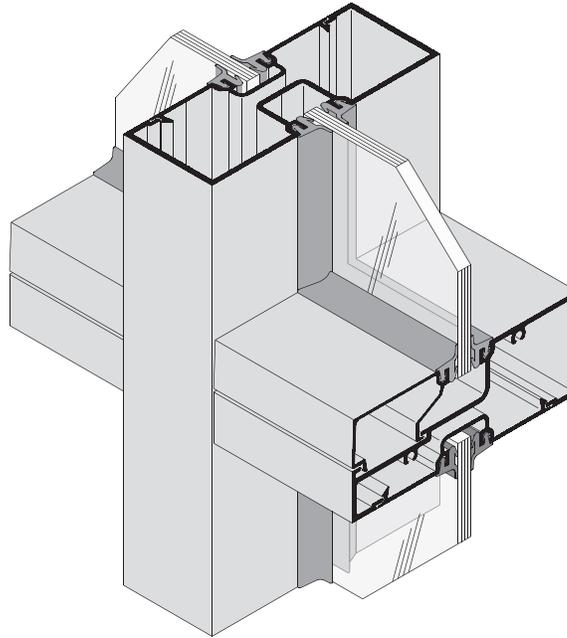
# STOREFRONTS

## Technical Data

### Center Glazed

- Series 400 & 400-S
- Series 450 & 450-S
- Series 451 & 451-S

Fabrication and installation labor costs have always been a decisive factor in selecting framing systems for storefront projects. U.S. Aluminum offers cost efficient versatile Center Glazed Systems with clean lines and superb performance. Series 400, 450, and 451 offer simple panel type installation. Series 400-S, 450-S, and 451-S feature stacking type installation. All series may be interior or exterior glazed. A top load E.P.D.M. gasket is used to position and weatherseal the glass in the aluminum pocket. Center Glazed Systems are compatible with most U.S. Aluminum Entrance Doors. See page 01-B3 for E.P.D.M. gasket options.



SERIES	WIDTH	DEPTH	GLAZING INFILLS	APPLICATION
<b>400 or 400-S</b>	1-3/4" (44.5)	4" (101.6)	1/4" (6) or 3/8" (10)	Retail Shopping Centers, Schools, Post Offices, Clinics or Any Ground Floor Application
<b>450 or 450-S</b>	1-3/4" (44.5)	4-1/2" (114.3)	1/4" (6) or 3/8" (10)	
<b>451 or 451-S</b>	2" (50.8)	4-1/2" (114.3)	1" (25)	

GLASS SIZES*	
For Series 400 and 450 Glass Width and Glass Height	= Daylight Opening + 5/8" (15.9)
For Series 451 Glass Width and Glass Height	= Daylight Opening + 7/8" (22.2)

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

## Technical Data

### EXPANSION MULLIONS

### Center Glazed

- Series 400 & 400-S
- Series 450 & 450-S
- Series 451 & 451-S
- Series IT451



- In large openings locate expansion mullions approximately every 20' (6.1 m) or as required per job conditions and project specifications.

- Maximum distance between expansion members should be:

$$\text{In feet: } = \frac{2422.5}{\text{temperature difference } ^\circ\text{F}} \quad \text{In meters: } = \frac{410.21}{\text{temperature difference } ^\circ\text{C}}$$

- Two piece mullions allow for 3/8" (9.5 mm) maximum movement.
- Gap between half members should be based on the temperature at the time of installation.

**NOTE: Expansion mullions are not required for Series 400-S, 450-S, and 451-S elevations without intermediate horizontals.**

### EXAMPLE

	Units		Units	
Temperature difference	°F	120° (from 30° to 150°)	°C	66.7° (from - 1.1° to 65.6°)
Intermediate vertical spacing	feet	4'	meters	1.22 m
Maximum distance between expansion mullions	feet	$\frac{2422.5}{120} = \mathbf{20.18'}$	meters	$\frac{410.21}{66.7} = \mathbf{6.15 m}$

USE ONE EXPANSION MULLION EVERY FIVE BAYS.

GAP AT THE TIME OF INSTALLATION SHOULD BE BASED ON THE FOLLOWING RATIO:

$$\frac{\text{Maximum temperature} - \text{Actual temperature}}{\text{Maximum temperature} - \text{Minimum temperature}}$$

	°F		°C	
If installed at		70°		21.11°
Gap at time of installation	inches	$\left(\frac{150^\circ - 70^\circ}{150^\circ - 30^\circ}\right) \times 3/8''$	mm.	$\left(\frac{65.6^\circ - 21.1^\circ}{65.6^\circ + 1.1^\circ}\right) \times 9.5 \text{ mm}$
		= 1/4"		= 6.4 mm

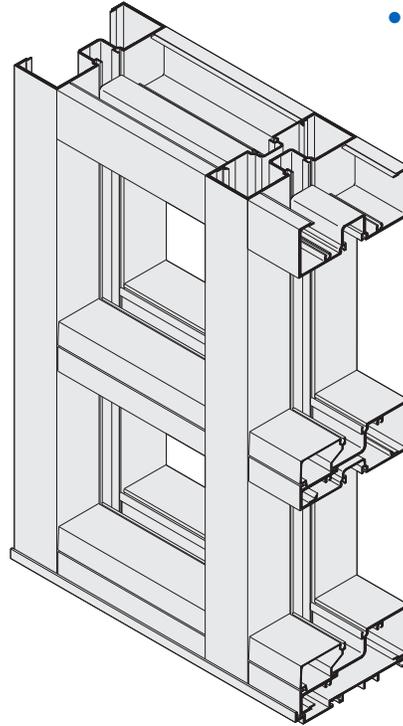
# STOREFRONTS

## Special Features

Panel type installations feature screw race joinery which may be shop fabricated and shipped to the job site partially or totally assembled into panels. The assembled panel units are then snapped together into long runs. AF100, AF400 or FF400 subsill should always be used with this type installation. AF400 or FF400 subsill is required if optional head anchor clips are used.

### Center Glazed

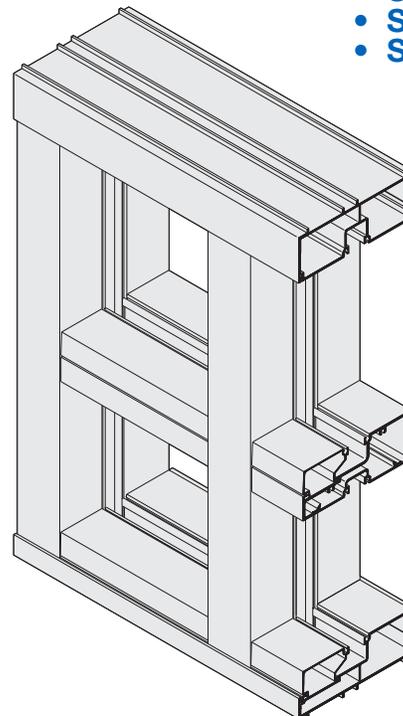
- Series 400
- Series 450
- Series 451



### Center Glazed Stacking

- Series 400-S
- Series 450-S
- Series 451-S

The Stacking System has continuous head and sill channels spliced together with extruded aluminum splice sleeves as required for thermal expansion. Vertical mullions are stacked into the head and sill channels without mechanical fastening to provide for metal expansion and building deflection. Infiltrated water is weeped to the exterior through weep holes located approximately 6" (152.4) on each side of vertical mullions. System may be exterior/interior glazed.



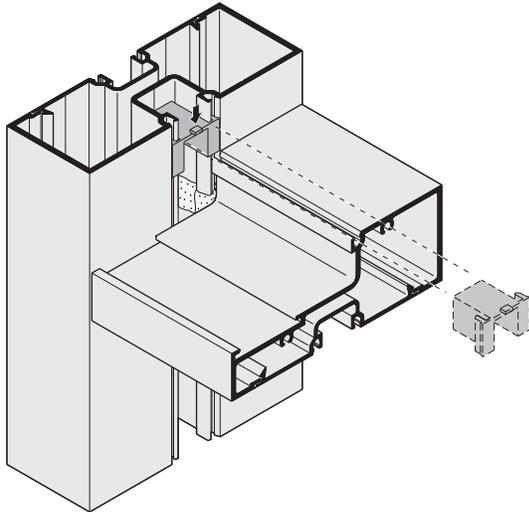
# STOREFRONTS

## Special Features

### Center Glazed

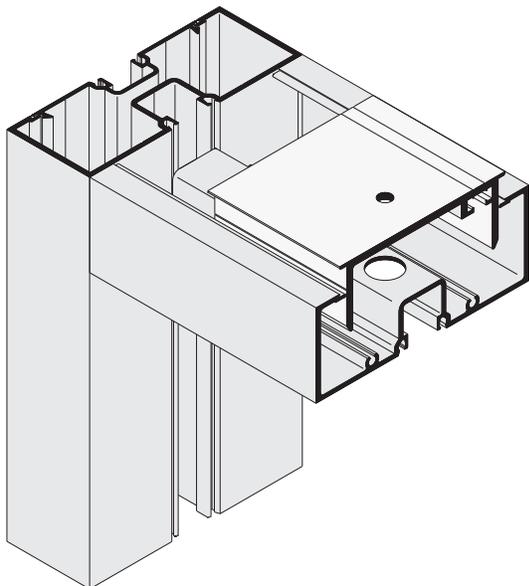
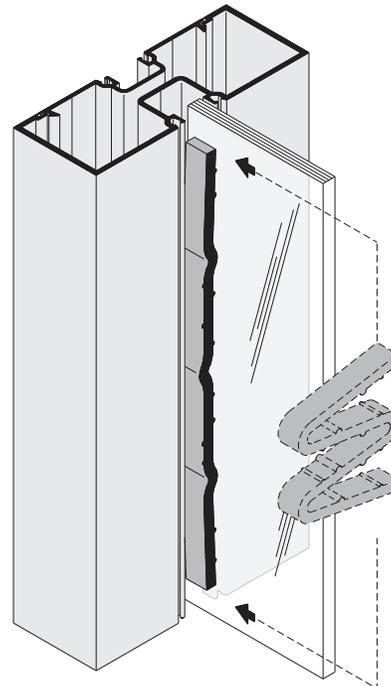
- Series 400 & 400-S
- Series 450 & 450-S
- Series 451 & 451-S
- Series IT451

Details show Series 450 members. Other Series are similar



Apply silicone to two sides of glazing pocket at vertical/horizontal joint and glazing reglets. Slide Water Deflector down into position. Seal over top edges of Water Deflector leaving a gap on outside edge allowing water to drain into Subsill.

Stretch "W" Block and slide it between glass and mullion into deep glazing pocket. Push it all the way until it clears glass and locks into place. These blocks are used to prevent glass from "walking" out of the pocket caused by extreme vibration or minor earthquakes.



When optional Head Anchors are used, fasten them to structure through head member access hole. Anchors may be shimmed as required. Use AF400 or FF400 Subsill when using option Head Anchors.

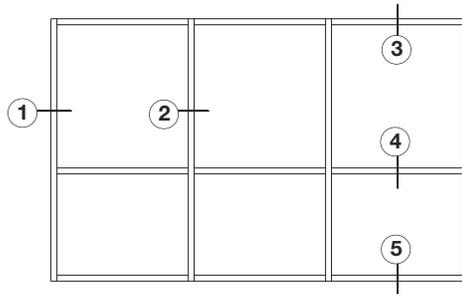
# STOREFRONTS

## Typical Details

### Center Glazed • Series 400

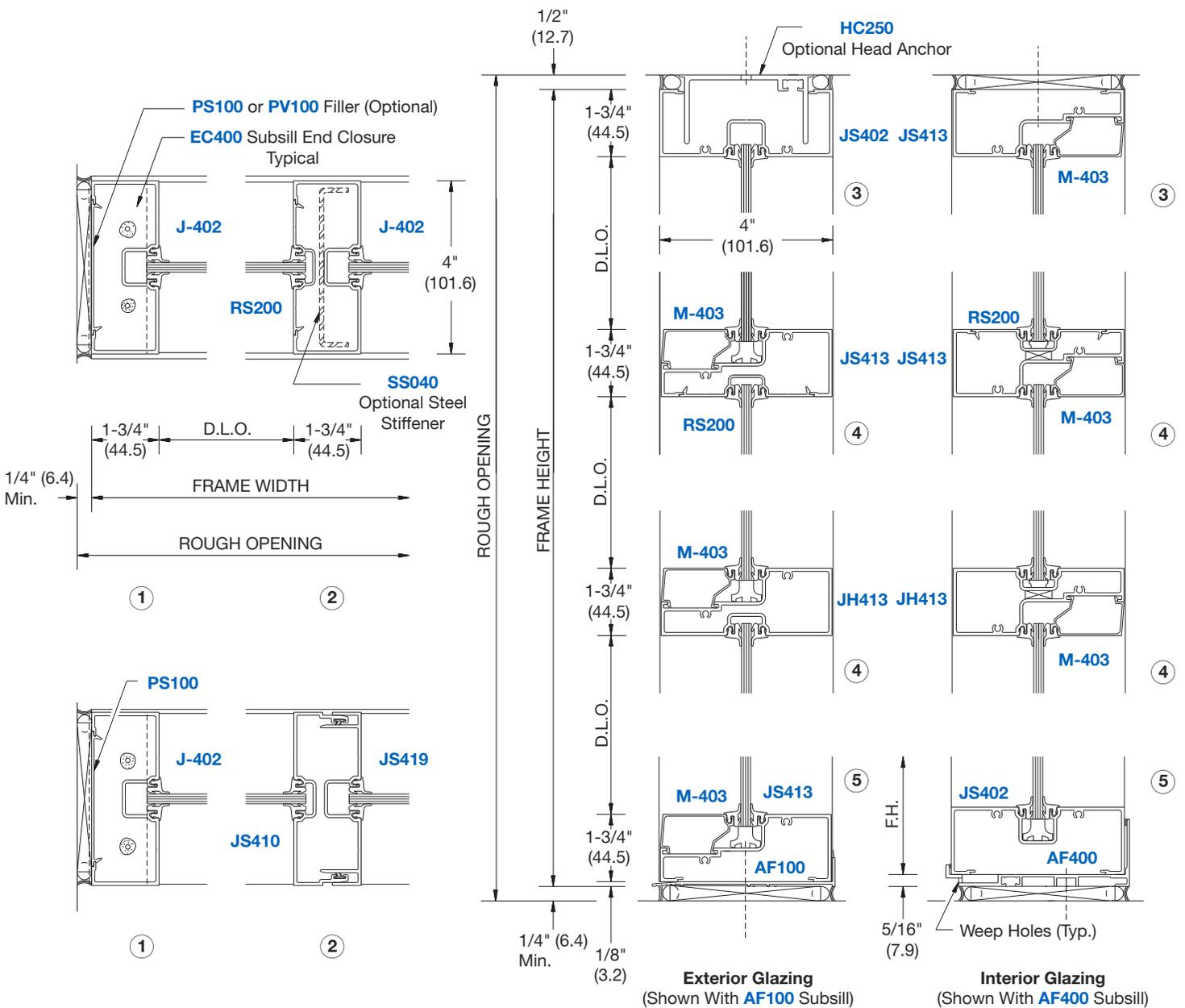
#### SCREW RACE JOINERY FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION

NOTE: NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

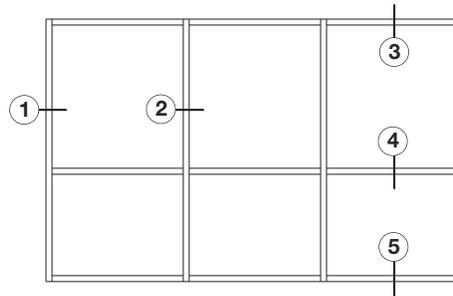
# STOREFRONTS

## Typical Details

### Center Glazed • Series 400

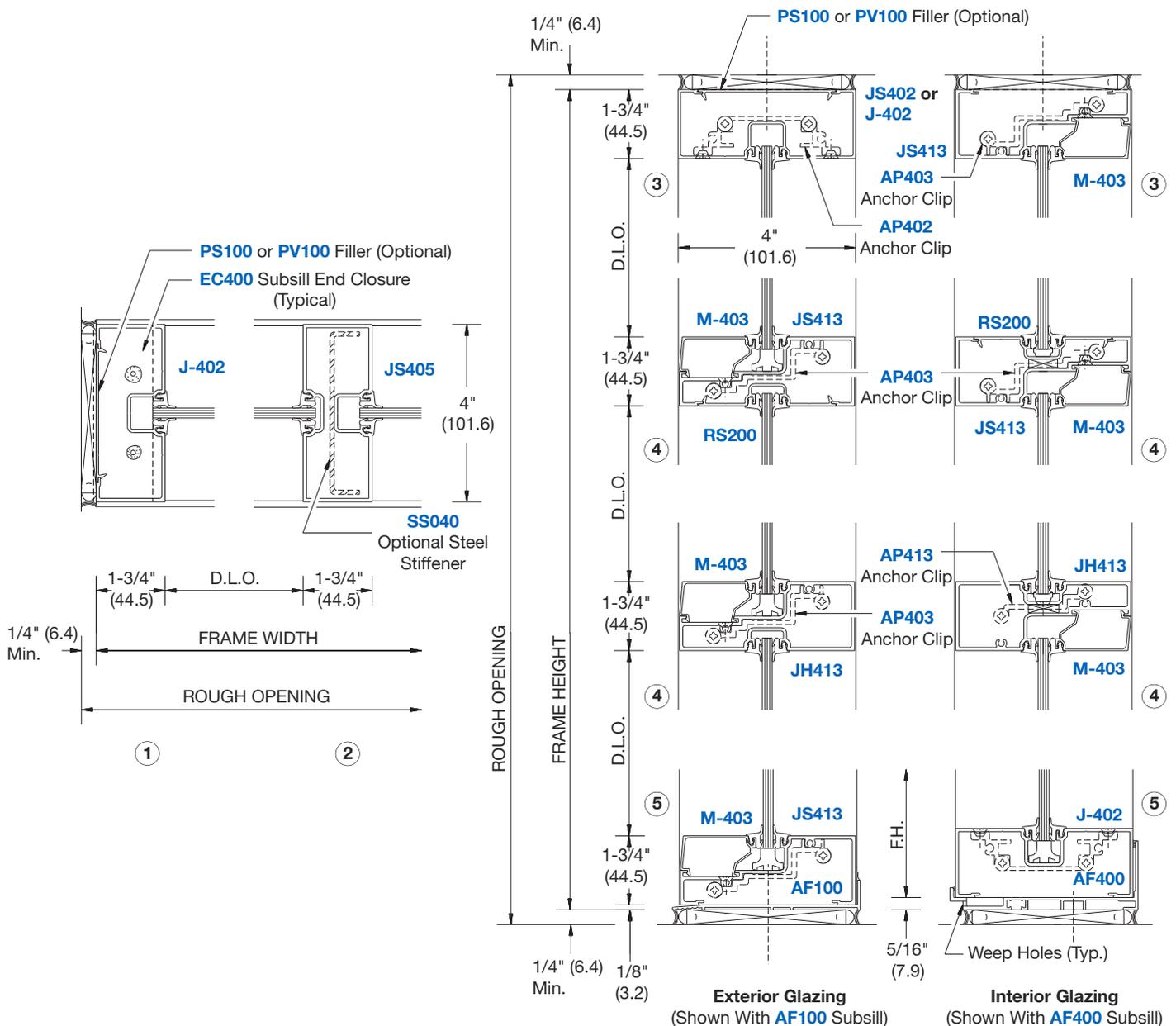
#### ANCHOR CLIP JOINERY FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION

NOTE: NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

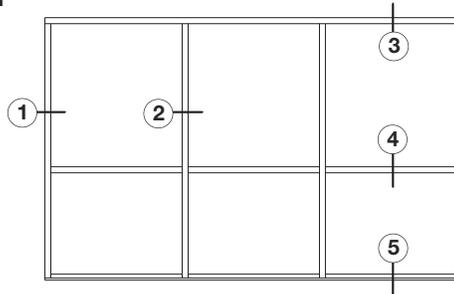
# STOREFRONTS

## Typical Details

## Center Glazed Stacking • Series 400-S

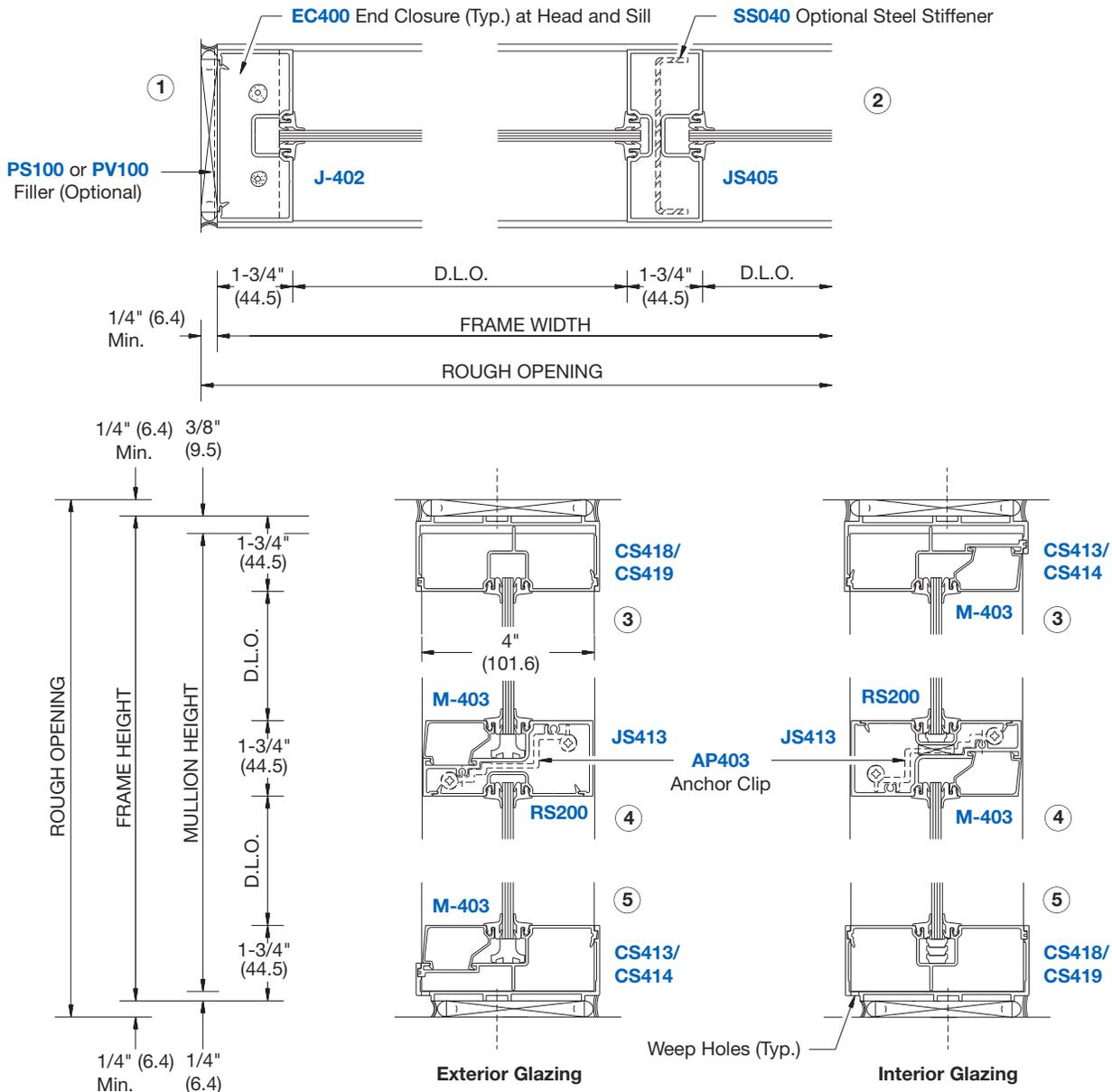
### STACKING INSTALLATION FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

# STOREFRONTS

## Typical Details

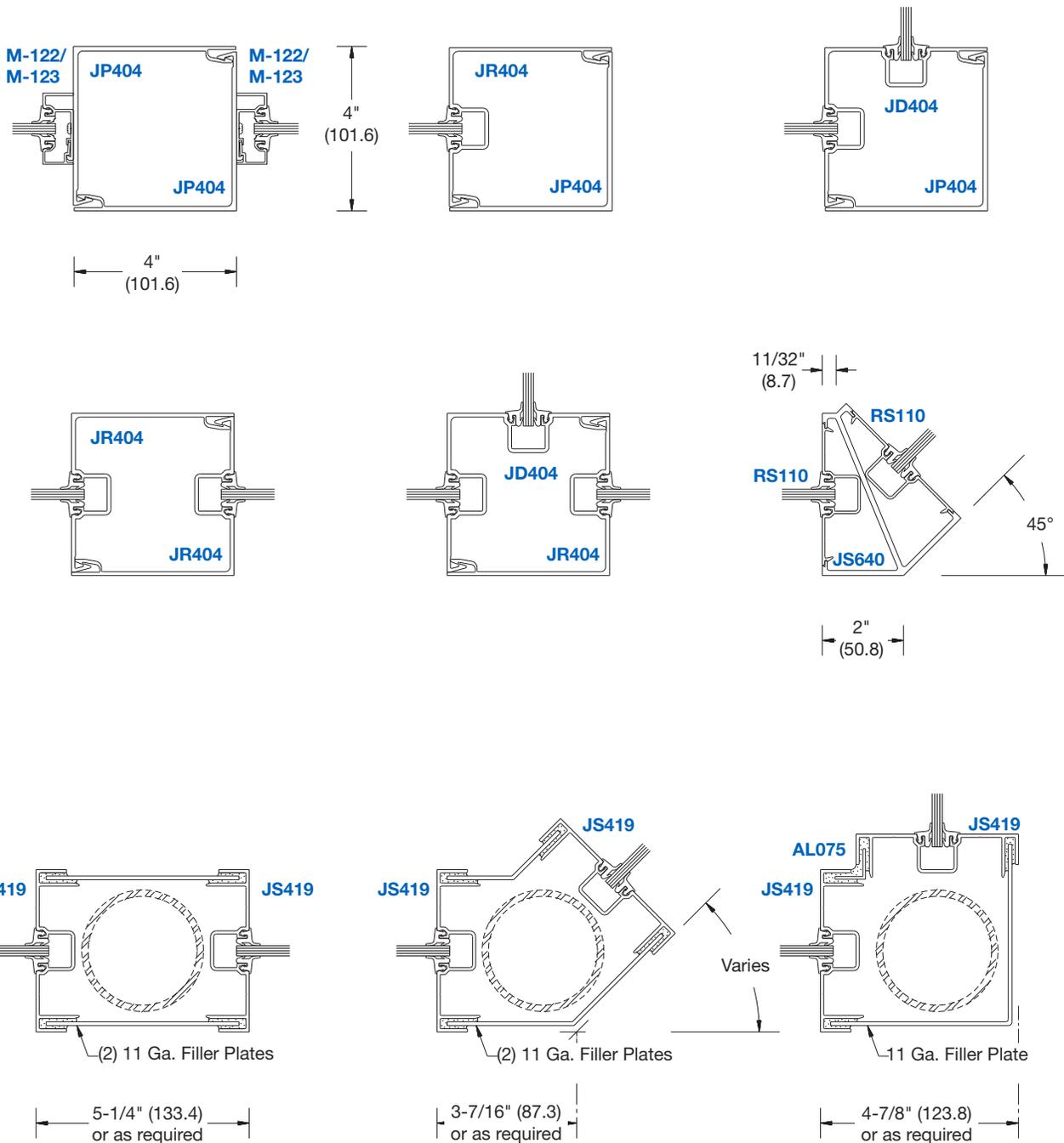
### Center Glazed

- Series 400
- Series 400-S

### CORNER CONDITIONS AND POST COVERS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

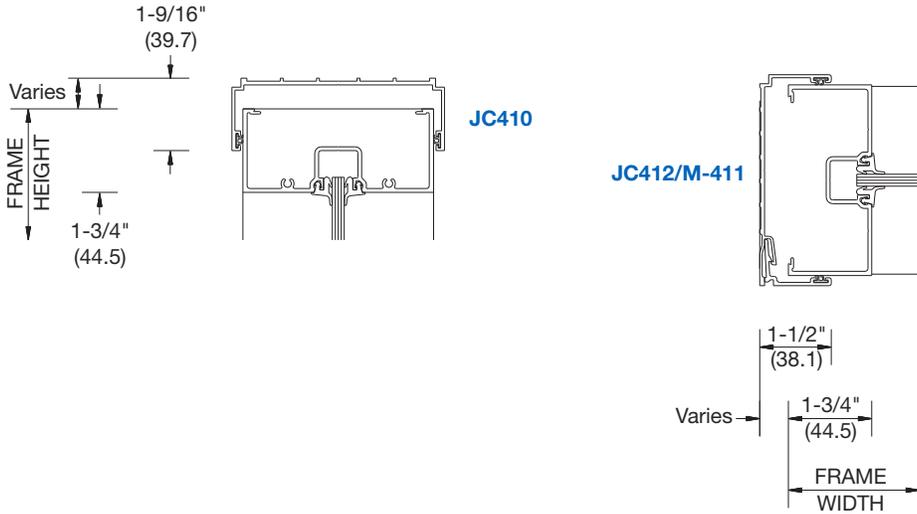
# STOREFRONTS

## Typical Details

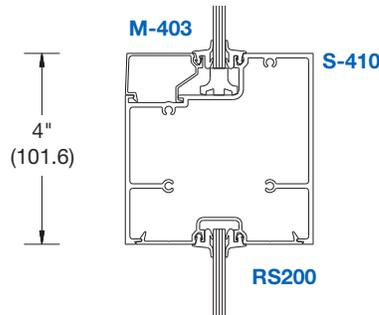
**COMPENSATING CHANNELS  
(FOR HEAD AND JAMBS)  
FOR 1/4" (6) OR 3/8" (10) GLAZING**

**Center Glazed**  
 • Series 400  
 • Series 400-S

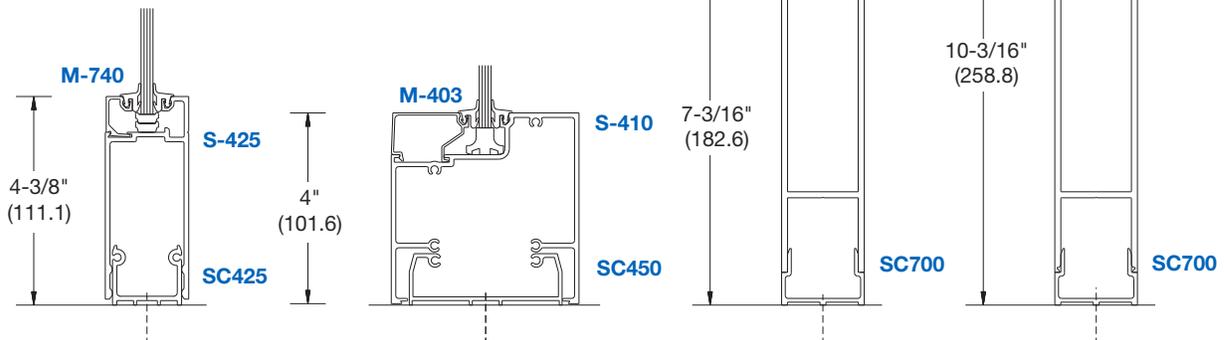
**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
 NP238 Glazing Gaskets are used for 3/8" (10) glazing.



## 4" HIGH HORIZONTAL MEMBER



## BULKHEADS (IN LIEU OF STANDARD SILLS)



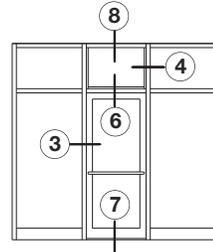
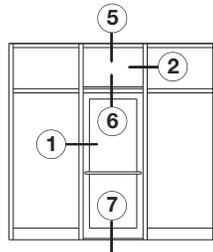
NOT TO SCALE

# STOREFRONTS

## Typical Details

### DOOR FRAMING FOR 1/4" (6) OR 3/8" (10) GLAZING

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



### Center Glazed

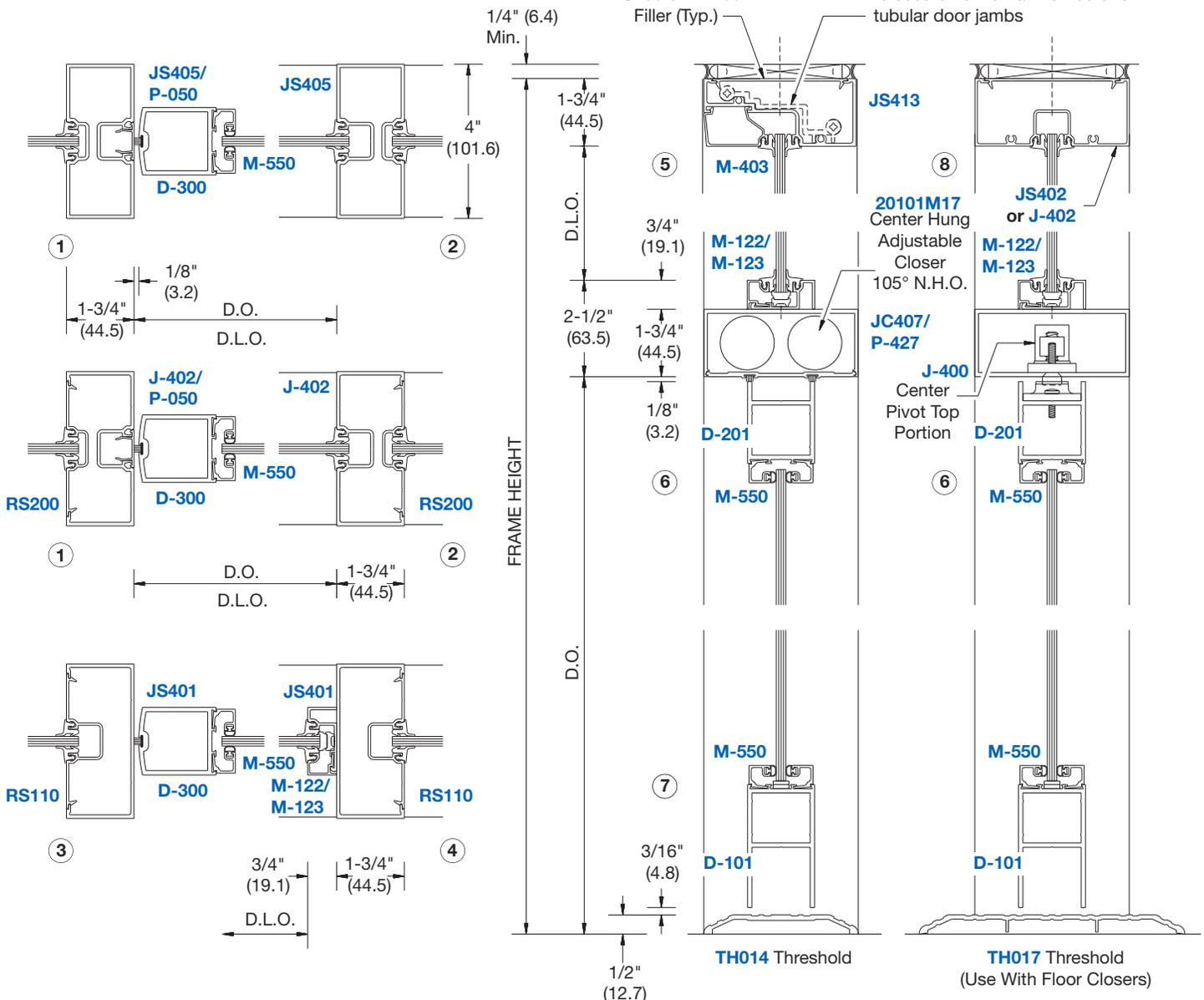
- Series 400
- Series 400-S

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.

### CENTER HUNG DOORS

PS100 or PV100  
Filler (Typ.)

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



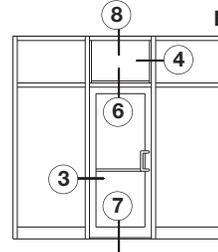
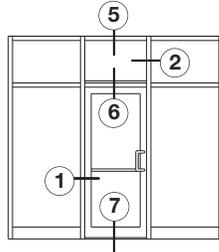
NOT TO SCALE

# STOREFRONTS

## Typical Details

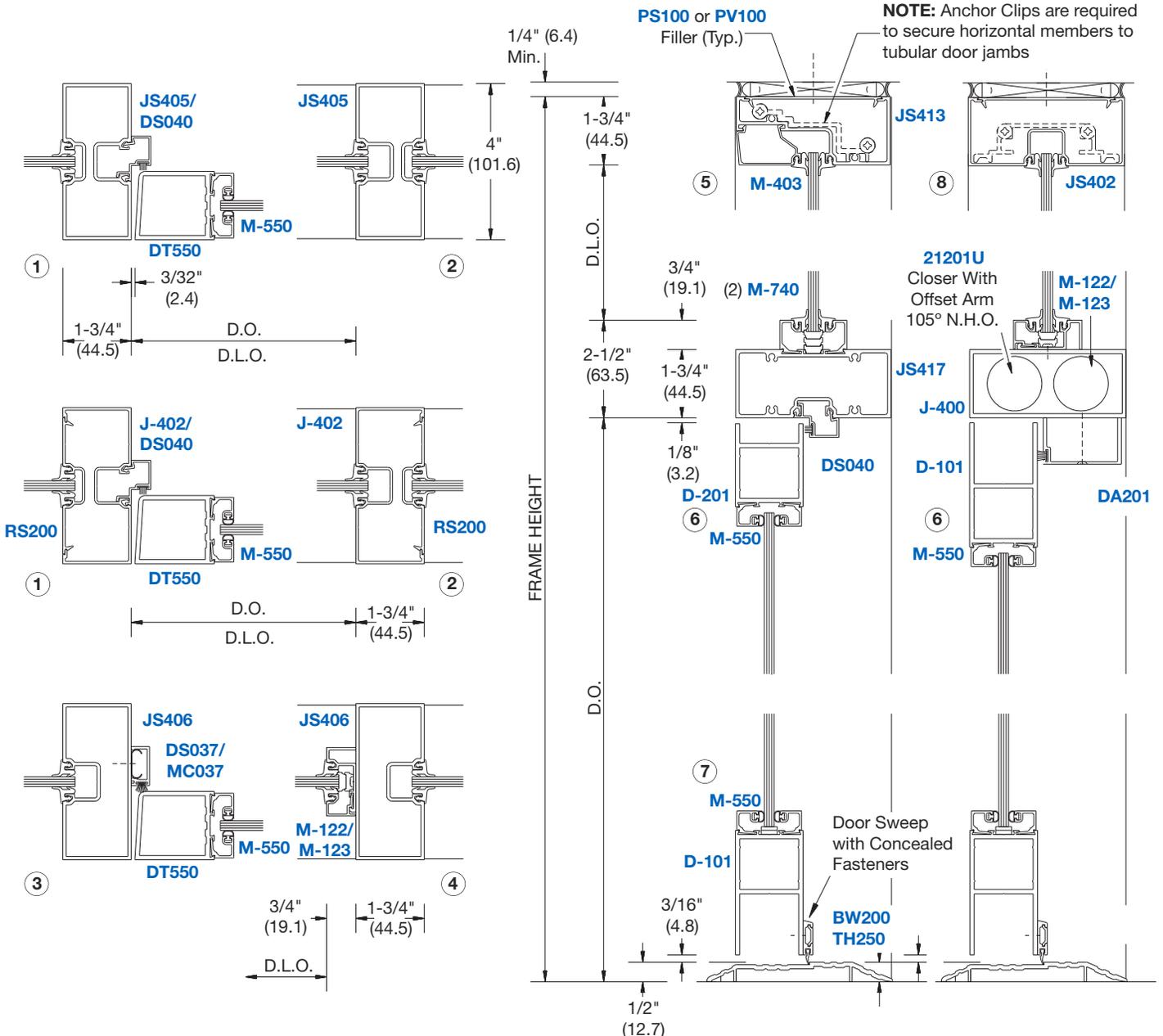
### DOOR FRAMING FOR 1/4" (6) OR 3/8" (10) GLAZING

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



**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.

### OFFSET HUNG DOORS



NOT TO SCALE

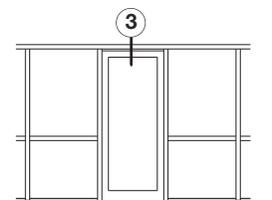
**Typical Details**

**DOOR FRAMING SPECIAL CONDITIONS FOR 1/4" (6) OR 3/8" (10) GLAZING**

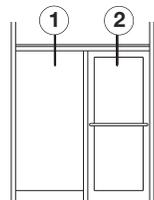
**Center Glazed**

- Series 400
- Series 400-S

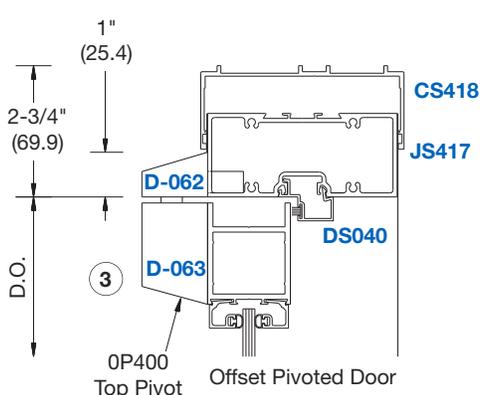
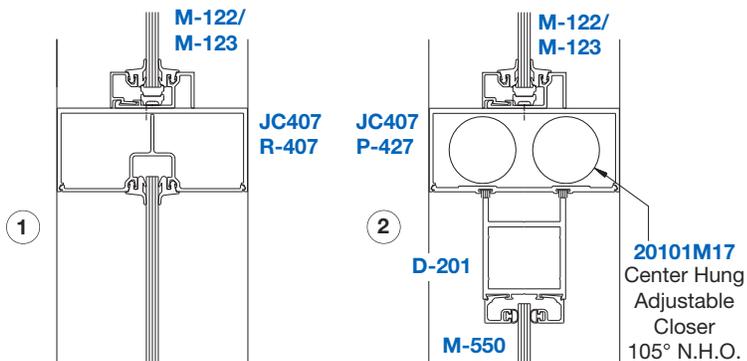
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



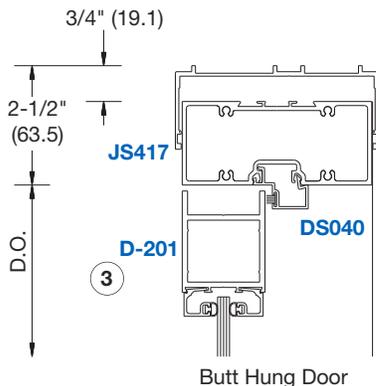
Series 400-S Door Header



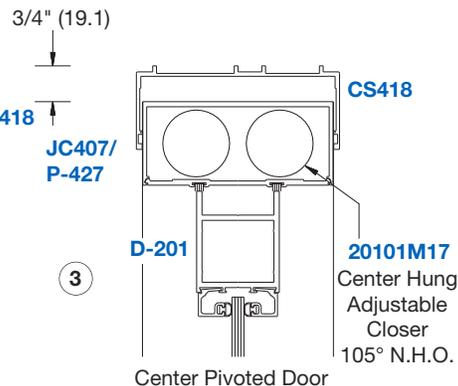
Continuous Header



Offset Pivoted Door



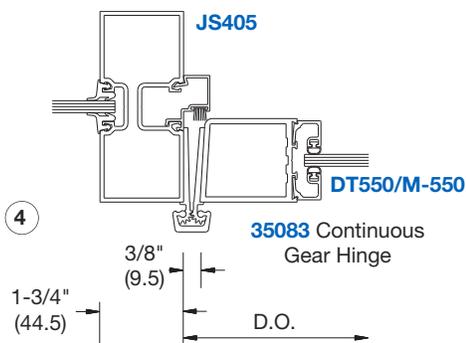
Butt Hung Door



Center Pivoted Door



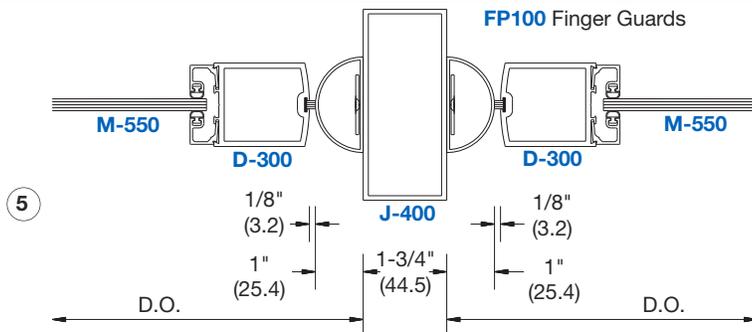
Optional Hinge



35083 Continuous Gear Hinge



Automatic Door Hinging Jamb



FP100 Finger Guards

NOT TO SCALE

# STOREFRONTS

## Windload Charts

## Center Glazed

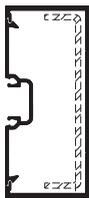
- Series 400
- Series 400-S

### STANDARD WALL VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

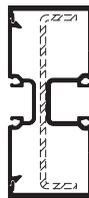
These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at [usalum.com](http://usalum.com).

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



**JS401/RS200**  
 $I = 2.365 (98.44 \times 10^4)$   
 $S = 1.183 (19.39 \times 10^3)$

IAL+STL = 4.702 ( $195.71 \times 10^4$ )



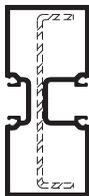
**J-402/RS200**  
 $I = 2.054 (85.49 \times 10^4)$   
 $S = 1.027 (16.83 \times 10^3)$

IAL+STL = 4.391 ( $182.77 \times 10^4$ )



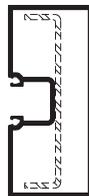
**JS402/RS200**  
 $I = 2.116 (88.07 \times 10^4)$   
 $S = 1.058 (17.34 \times 10^3)$

IAL+STL = 4.453 ( $185.35 \times 10^4$ )



**JS405**  
 $I = 1.989 (82.79 \times 10^4)$   
 $S = .995 (16.31 \times 10^3)$

IAL+STL = 4.326 ( $180.08 \times 10^4$ )



**JS406**  
 $I = 1.970 (82 \times 10^4)$   
 $S = .994 (16.29 \times 10^3)$

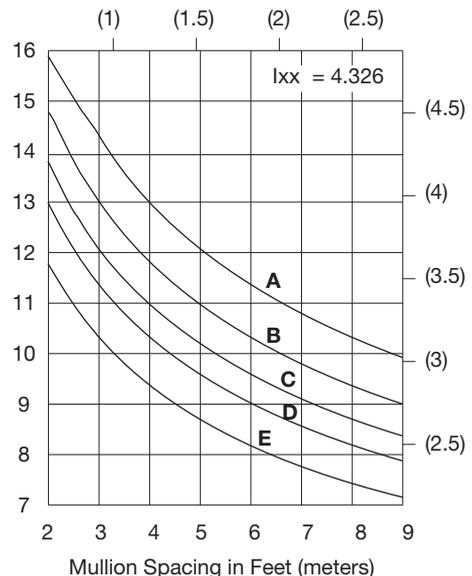
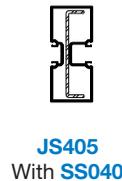
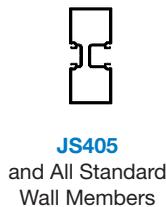
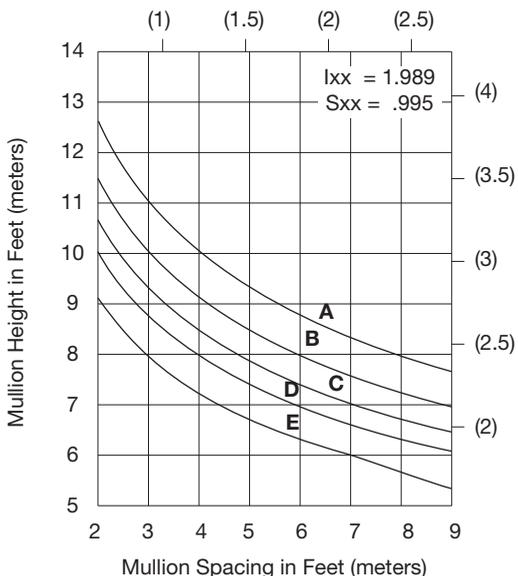
IAL+STL = 4.307 ( $179.27 \times 10^4$ )



**JS410/JS419**  
 $I = 2.646 (110.13 \times 10^4)$   
 $S = 1.323 (21.68 \times 10^3)$

IAL+STL = 4.301 ( $179.02 \times 10^4$ )  
 (with SS469)

Following charts are based on the section properties of **JS405**.



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Deadload Charts

### INTERMEDIATE HORIZONTAL MULLIONS

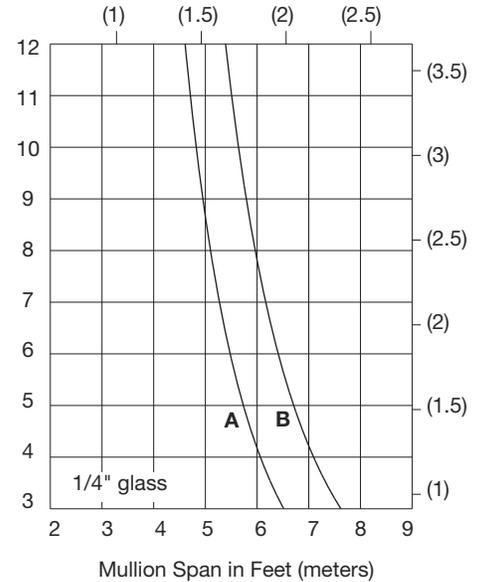
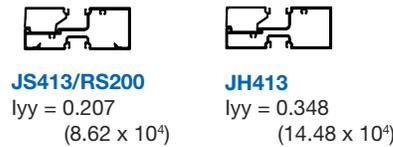
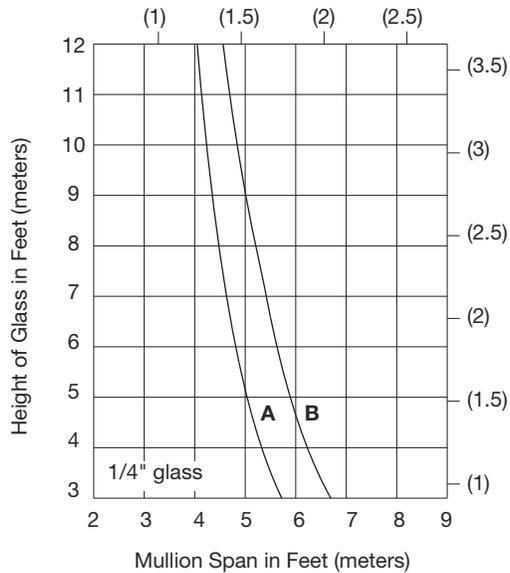
#### FOR 1/4" (6) OR 3/8" (10) GLAZING

**Center Glazed**

- Series 400
- Series 400-S

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

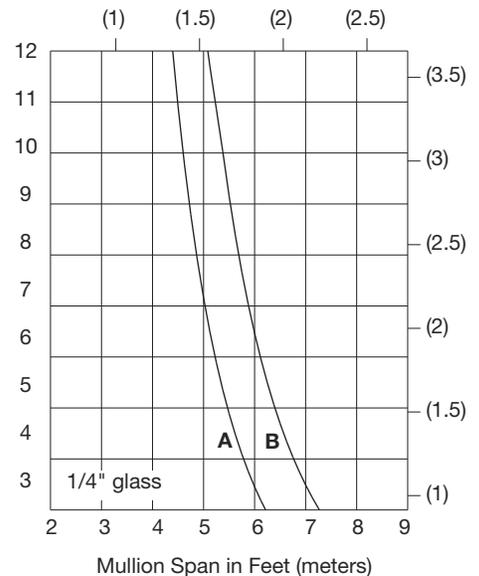
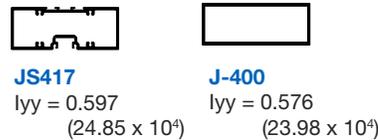
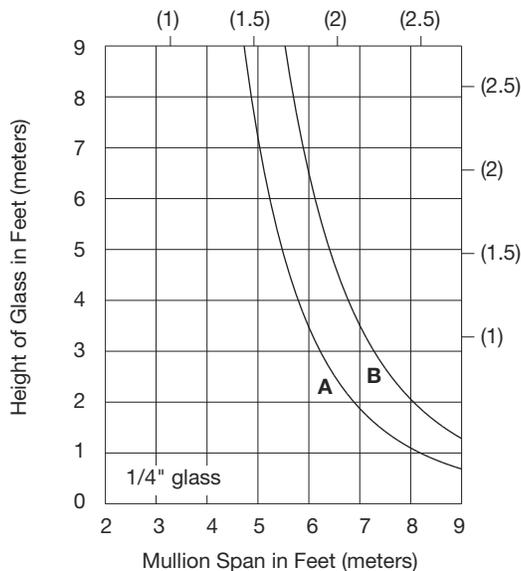
CURVES **A** = 1/4 points  
CURVES **B** = 1/8 points or 8" (203.2) from corners, whichever is larger



## DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

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





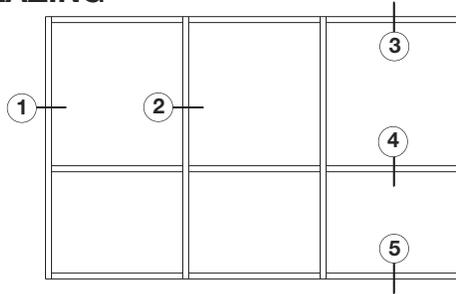
# STOREFRONTS

## Typical Details

### Center Glazed • Series 450

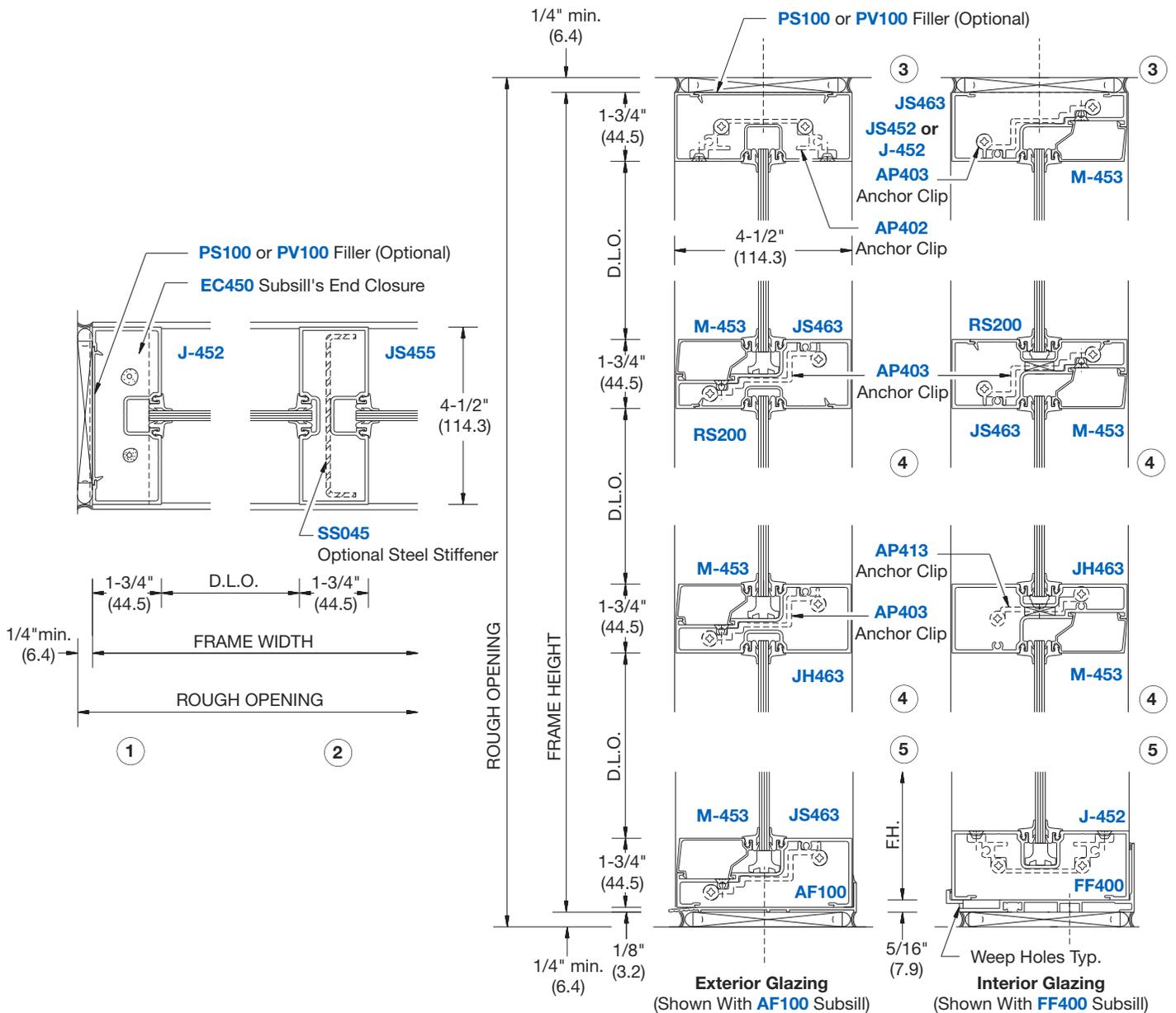
#### FOR 1/4" (6) OR 3/8" (10) GLAZING ANCHOR CLIP JOINERY

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



TYPICAL ELEVATION

NOTE: NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

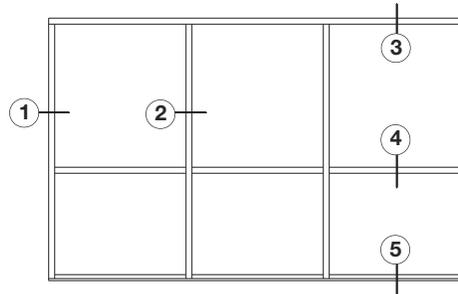
# STOREFRONTS

## Typical Details

**Center Glazed**  
• Series 450-S

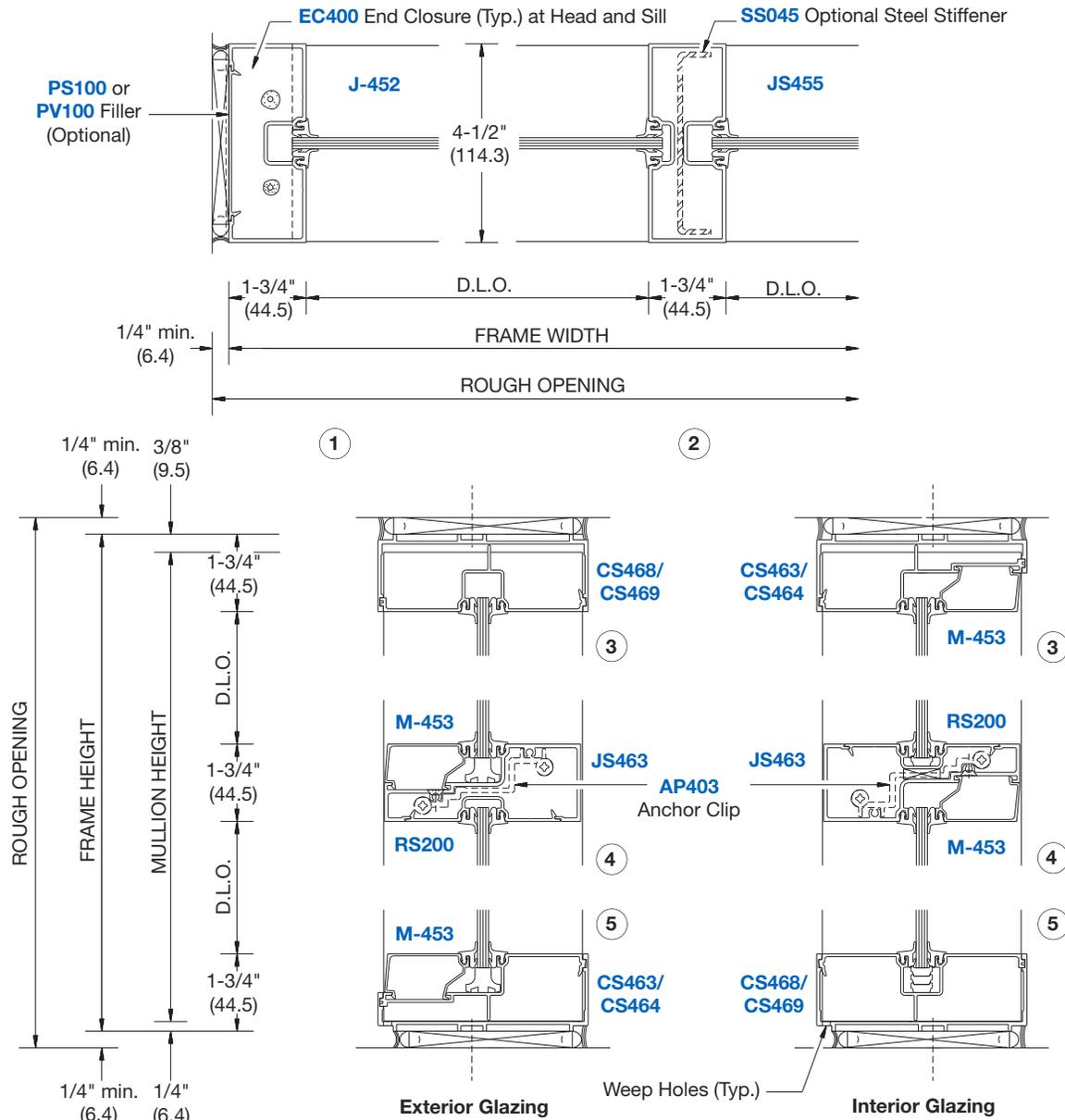
### FOR 1/4" (6) OR 3/8" (10) GLAZING STACKING INSTALLATION

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



TYPICAL ELEVATION

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

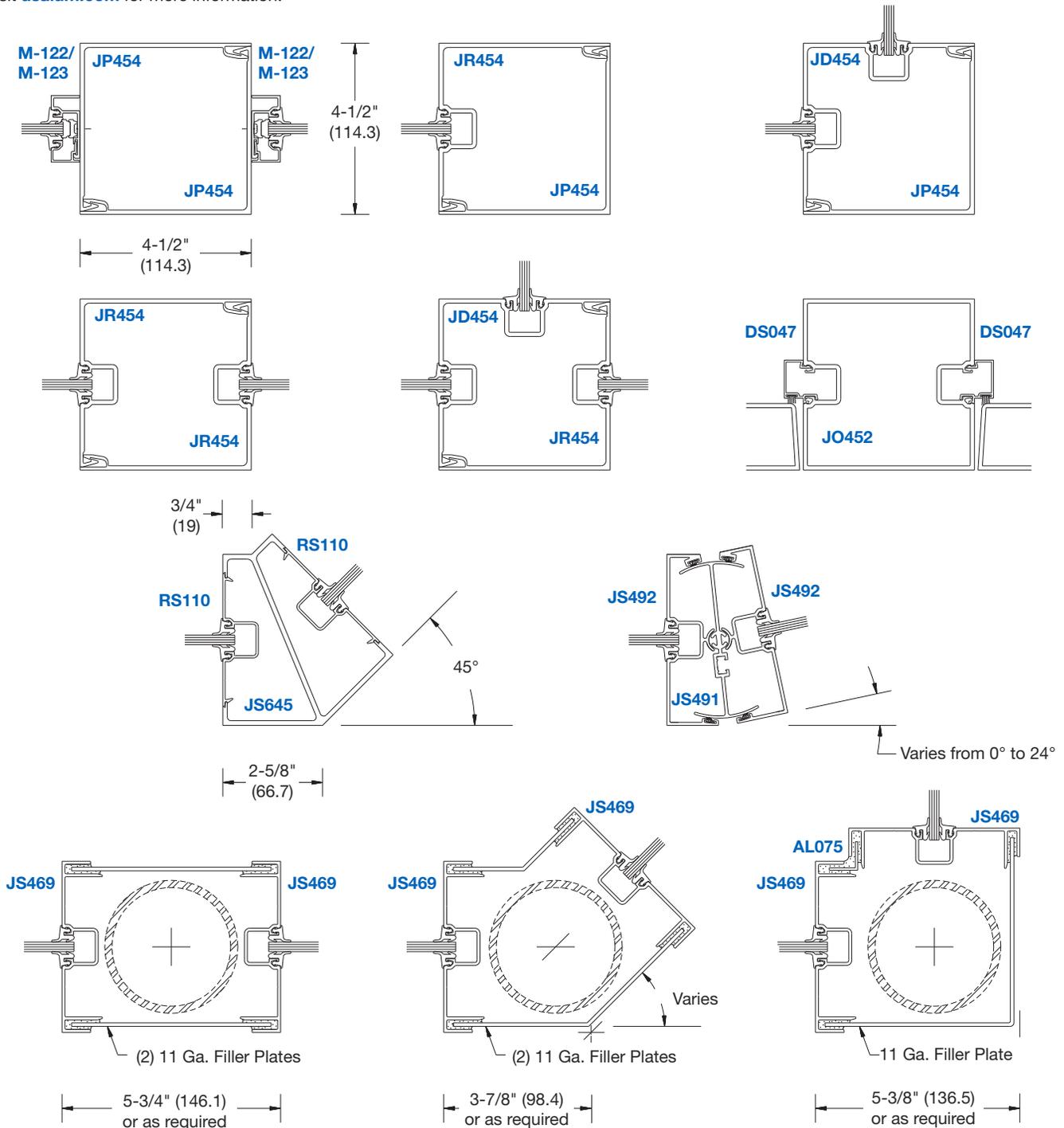
### Center Glazed

- Series 450
- Series 450-S

### FOR 1/4" (6) OR 3/8" (10) GLAZING CORNER CONDITIONS AND POST COVERS

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

NOTE: NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



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Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

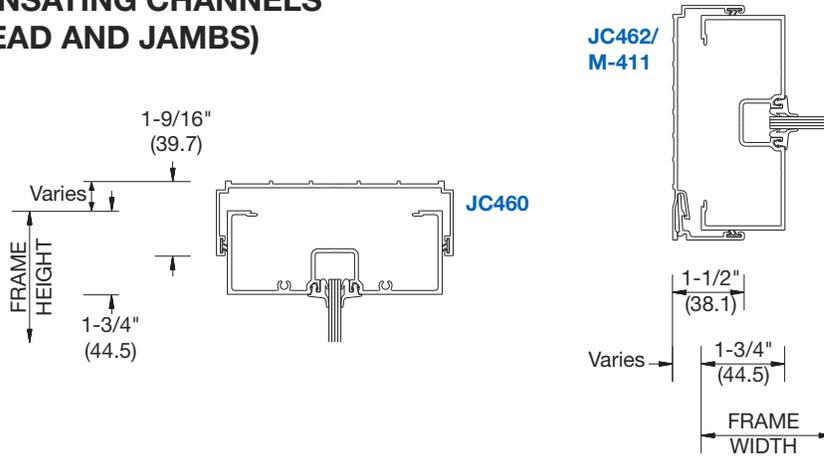
# STOREFRONTS

## Typical Details

### Center Glazed

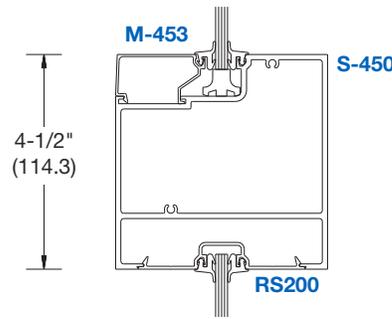
- Series 450
- Series 450-S

FOR 1/4" (6) OR 3/8" (10) GLAZING COMPENSATING CHANNELS (FOR HEAD AND JAMBS)



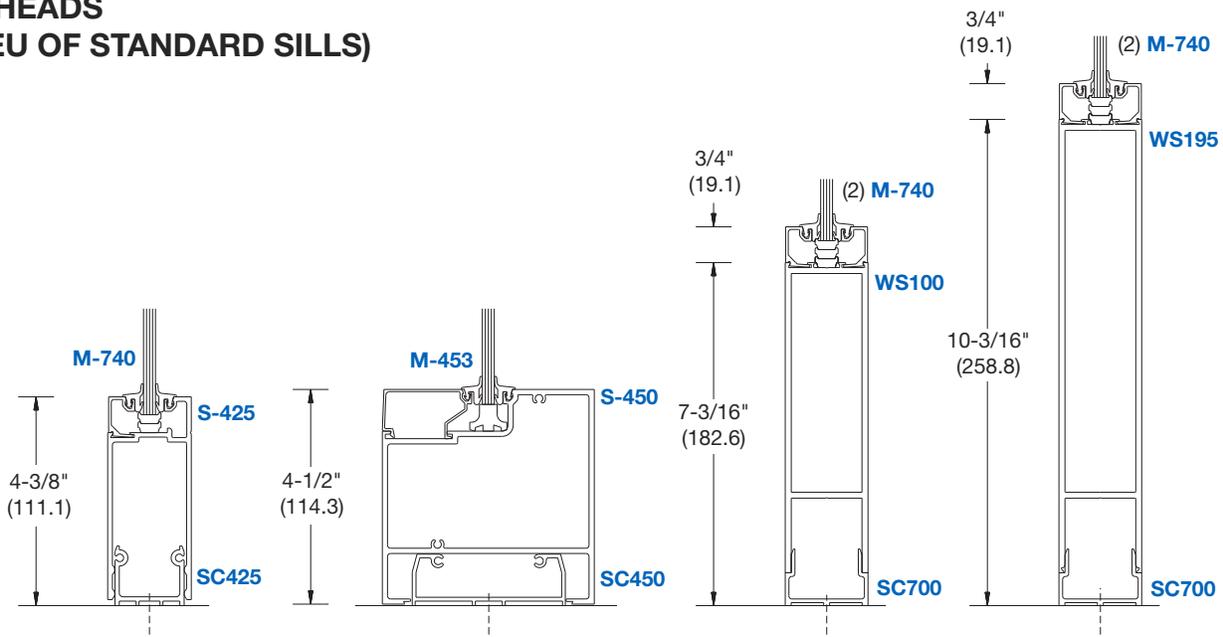
**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.

### 4-1/2" HIGH HORIZONTAL MEMBER



### BULKHEADS

(IN LIEU OF STANDARD SILLS)



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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

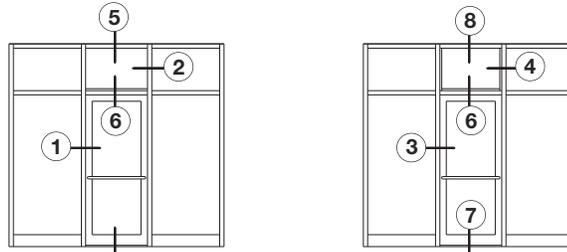
## Typical Details

### FOR 1/4" (6) OR 3/8" (10) GLAZING

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

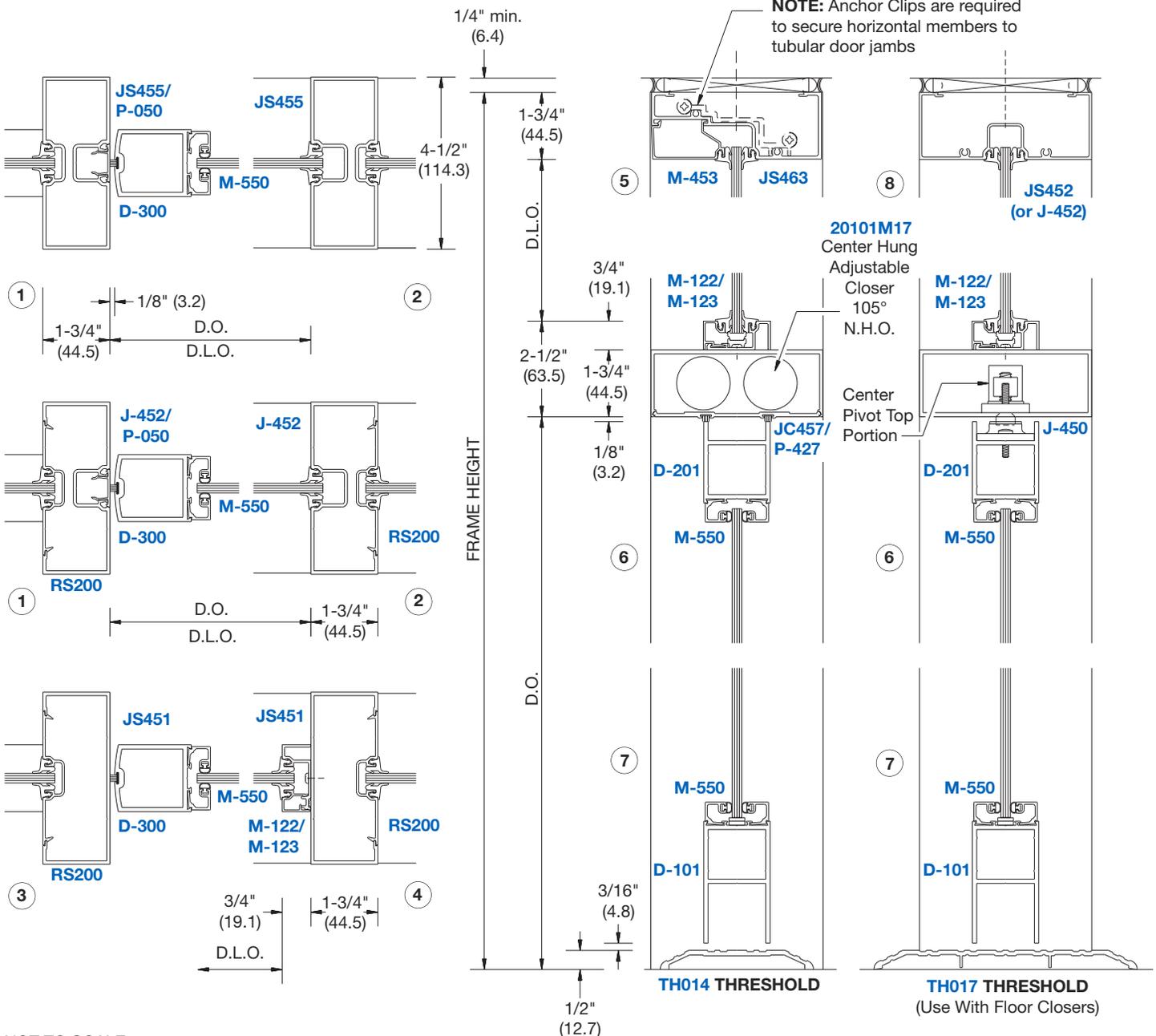
### Center Glazed

- Series 450
- Series 450-S



**CENTER HUNG DOOR**

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
NP238 Glazing Gaskets are used for 3/8" (10) glazing.



NOT TO SCALE

# STOREFRONTS

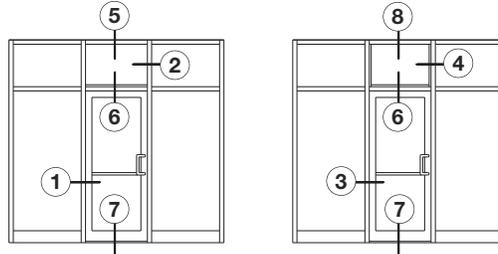
## Typical Details

### Center Glazed

- Series 450
- Series 450-S

### FOR 1/4" (6) OR 3/8" (10) GLAZING

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

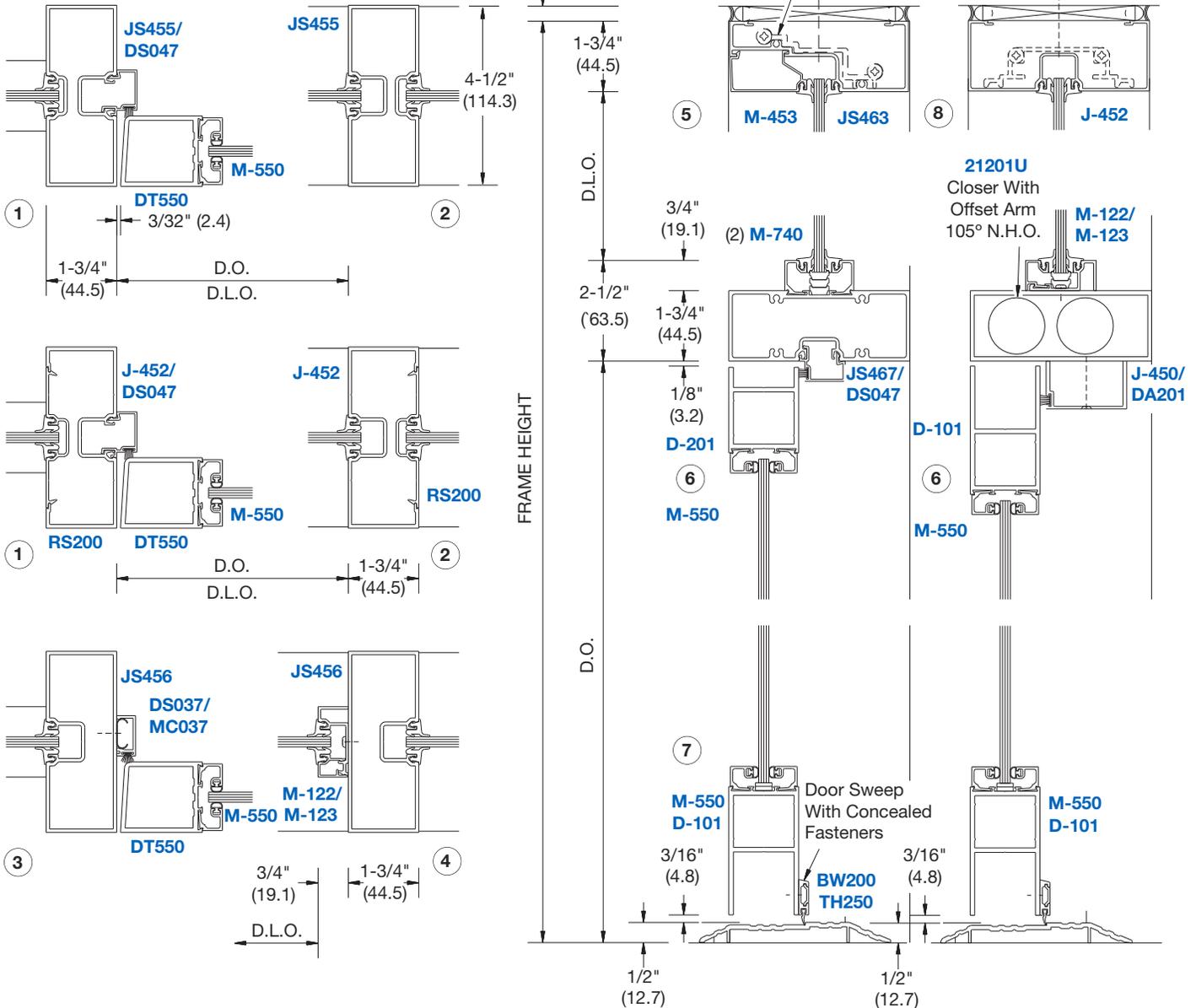


**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) glass. (Typical)  
 NP238 Glazing Gaskets are used for 3/8" (10) glazing.

### OFFSET HUNG DOOR

1/4" min.  
(6.4)

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



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

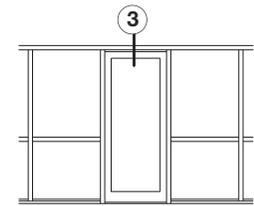
**Typical Details**

**DOOR FRAMING SPECIAL CONDITIONS**

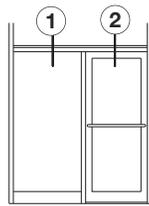
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**Center Glazed**

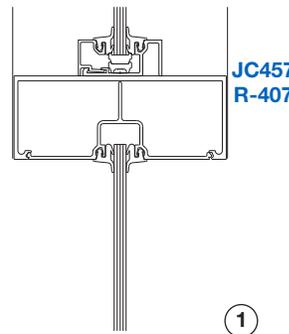
- Series 450
- Series 450-S



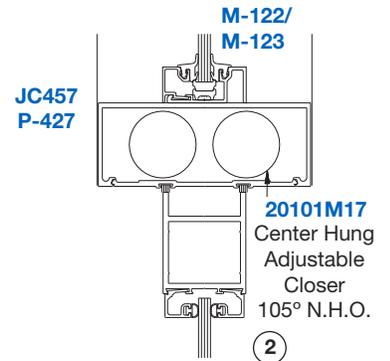
Series 450-S Door Header



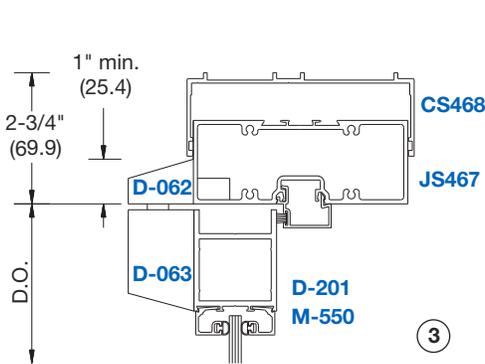
Continuous Header



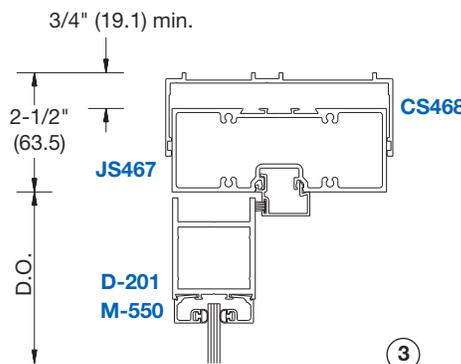
1



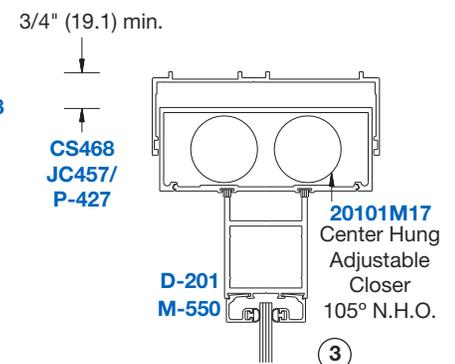
2



Offset Pivoted Door



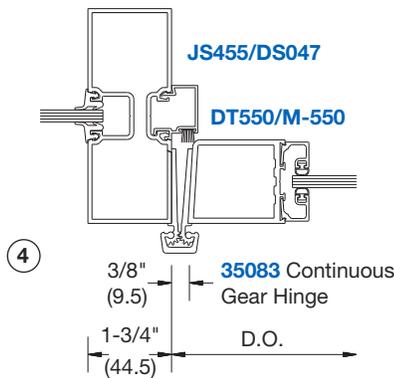
Butt Hung Door



Center Pivoted Door



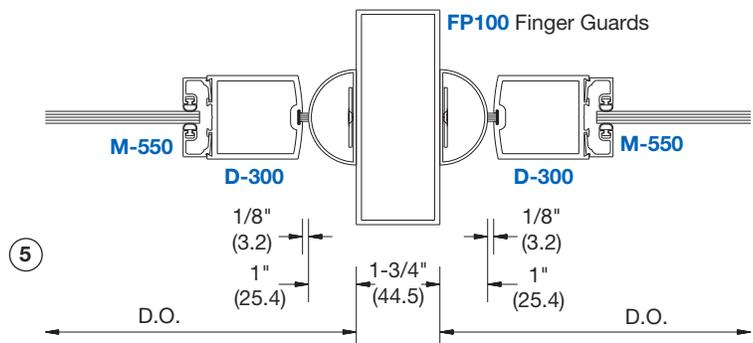
Optional Hinge



4



Automatic Door Hinging Jamb



5

NOT TO SCALE

# STOREFRONTS

## Windload Charts

### Center Glazed

- Series 450
- Series 450-S

### STANDARD WALL VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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

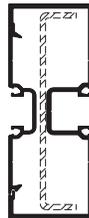
Limitation of vertical mullions for:  
 CURVES **A** = 15 PSF (718 Pa)  
 CURVES **B** = 20 PSF (957 Pa)  
 CURVES **C** = 25 PSF (1197 Pa)  
 CURVES **D** = 30 PSF (1436 Pa)  
 CURVES **E** = 40 PSF (1915 Pa)



**JS451/RS200**

I = 2.661 (110.76 x 10<sup>4</sup>)  
 S = 1.182 (19.38 x 10<sup>3</sup>)

IAL+STL = 5.914 (246.19 x 10<sup>4</sup>)  
 With **SS045** Steel



**J-452/RS200**

I = 2.707 (112.67 x 10<sup>4</sup>)  
 S = 1.203 (19.72 x 10<sup>3</sup>)

IAL+STL = 5.960 (248.11 x 10<sup>4</sup>)  
 With **SS045** Steel



**JS452/RS200**

I = 2.783 (115.84 x 10<sup>4</sup>)  
 S = 1.236 (20.27 x 10<sup>3</sup>)

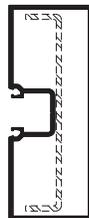
IAL+STL = 6.036 (251.27 x 10<sup>4</sup>)  
 With **SS045** Steel



**JS455**

I = 2.653 (110.43 x 10<sup>4</sup>)  
 S = 1.179 (19.32 x 10<sup>3</sup>)

IAL+STL = 5.906 (245.86 x 10<sup>4</sup>)  
 With **SS045** Steel



**JS456**

I = 2.634 (109.64 x 10<sup>4</sup>)  
 S = 1.171 (19.19 x 10<sup>3</sup>)

IAL+STL = 5.887 (245.07 x 10<sup>4</sup>)  
 With **SS045** Steel

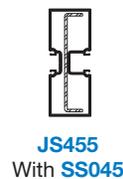
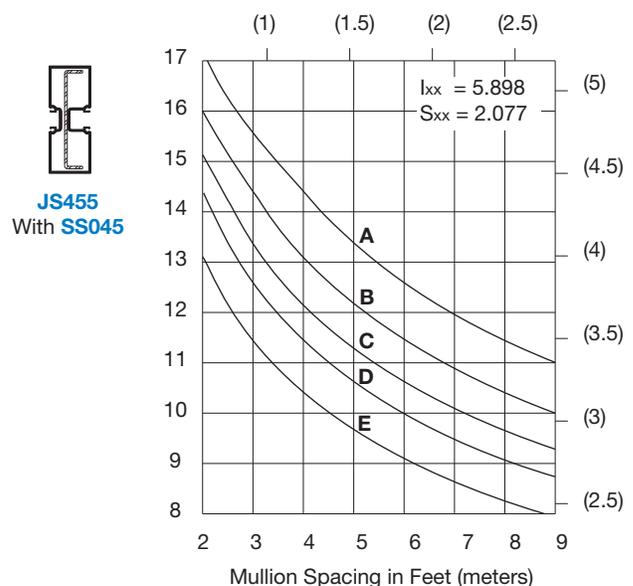
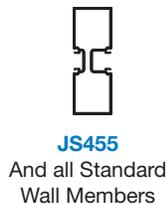
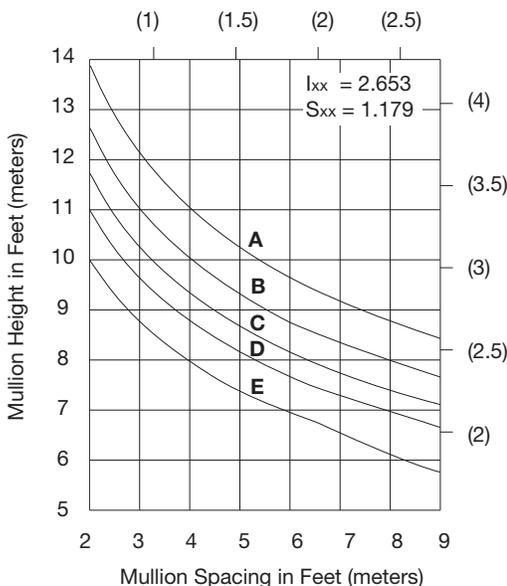


**JS460/JS469**

I = 3.509 (140.06 x 10<sup>4</sup>)  
 S = 1.559 (25.56 x 10<sup>3</sup>)

IAL+STL = 5.165 (214.98 x 10<sup>4</sup>)  
 With **SS469** Steel

Following charts are based on the section properties of **JS455**.



## Deadload Charts

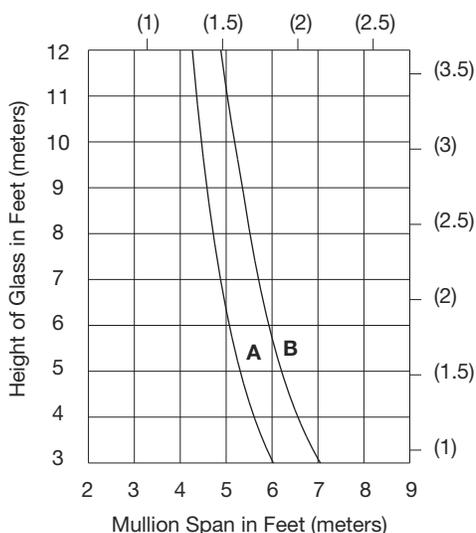
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

### Center Glazed

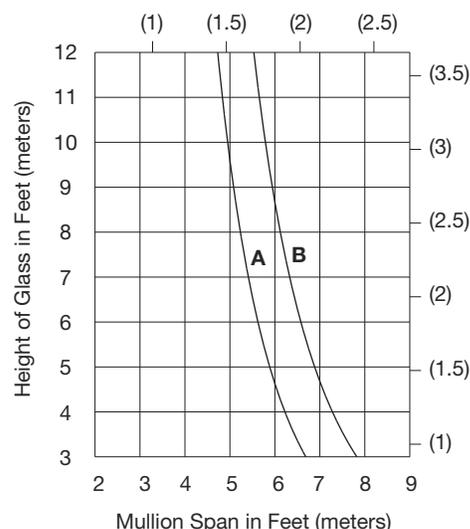
- Series 450
- Series 450-S

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

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



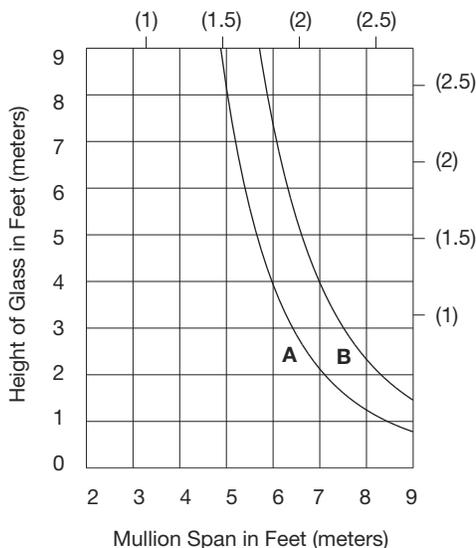
**JH463**  
I<sub>yy</sub> = .386  
(16.07 x 10<sup>4</sup>)



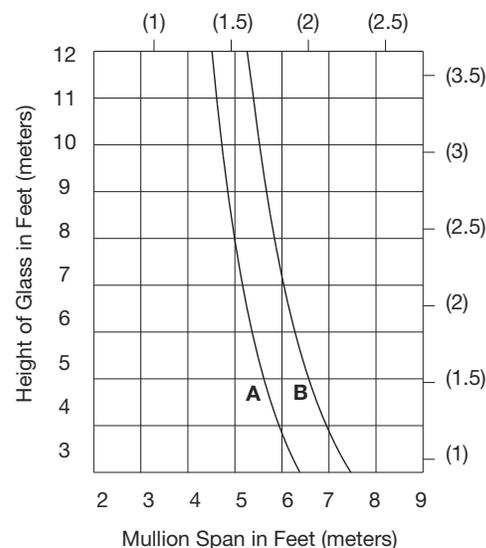
## DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

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



**J-450**  
I<sub>yy</sub> = .640  
(26.64 x 10<sup>4</sup>)



# STOREFRONTS

## Accessories

### Center Glazed

- Series 400 & 400-S
- Series 450 & 450-S

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				400	400-S	450	450-S
SB140		Setting Block	100	●	●	●	●
SB525		Setting Block for JS417, JS467, and WS100	20	●		●	
SB045	Use (2) per Location	Setting Block for S-425 and Inside Glaze Horizontals	100	●		●	
WB452		Edge Blocking	50	●	●	●	●
SV418		Splice Sleeve for Series 400 Stacking Head	10		●		
SV413		Splice Sleeve for Series 400 Stacking Sill	10		●		
SV468		Splice Sleeve for Series 450 Stacking Head	10				●
SV463		Splice Sleeve for Series 450 Stacking Sill	10				●
SV300		Splice Sleeve for Series 400 Stacking Sill	10		●		
SV400		Splice Sleeve for Series 450 Stacking Sill	10				●

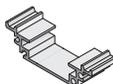
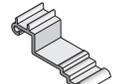
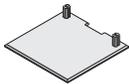
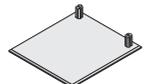
For Steel Stiffeners and Drill Jigs see page 04-B3.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaluminum.com](http://crlaluminum.com) By Phone (800) 421-6144

# STOREFRONTS

## Accessories

**Center Glazed**  
 • Series 400 & 400-S  
 • Series 450 & 450-S

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				400	400-S	450	450-S
ST251		Assembly Screws #10 x 1" (25) HH SMS	200	●	●	●	●
AP402		Head Anchor Clip with Screws	20	●		●	
AP403		Horizontal / Sill Anchor Clip with Screws	20	●	●	●	●
AP413		Inside Glaze Anchor Clip for Intermediate Horiz. with Screws	20	●	●	●	●
HC250		Head Anchor Use Three Per Bay or as Required	30	●		●	
AP050		Angle Clip for S-425 and WS100 with Screws	10	●		●	
CP040		Vertical Closer Plate	20	●	●		
CP045		Vertical Closer Plate	20			●	●
WD160		Water Deflector for Shallow Pocket	50	●	●	●	●
WD150		Water Deflector for Deep Pocket	50	●	●	●	●
EC400		End Dam	20	●	●		
EC450		End Dam	20			●	●

For Steel Stiffeners and Drill Jigs see page 04-B3.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

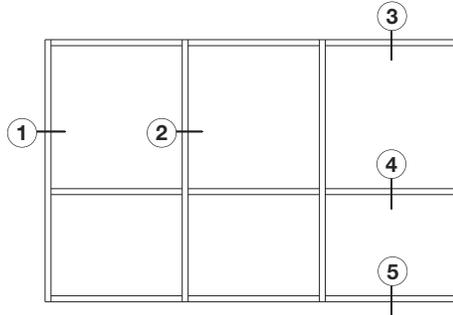
## Typical Details

### Center Glazed • Series 451

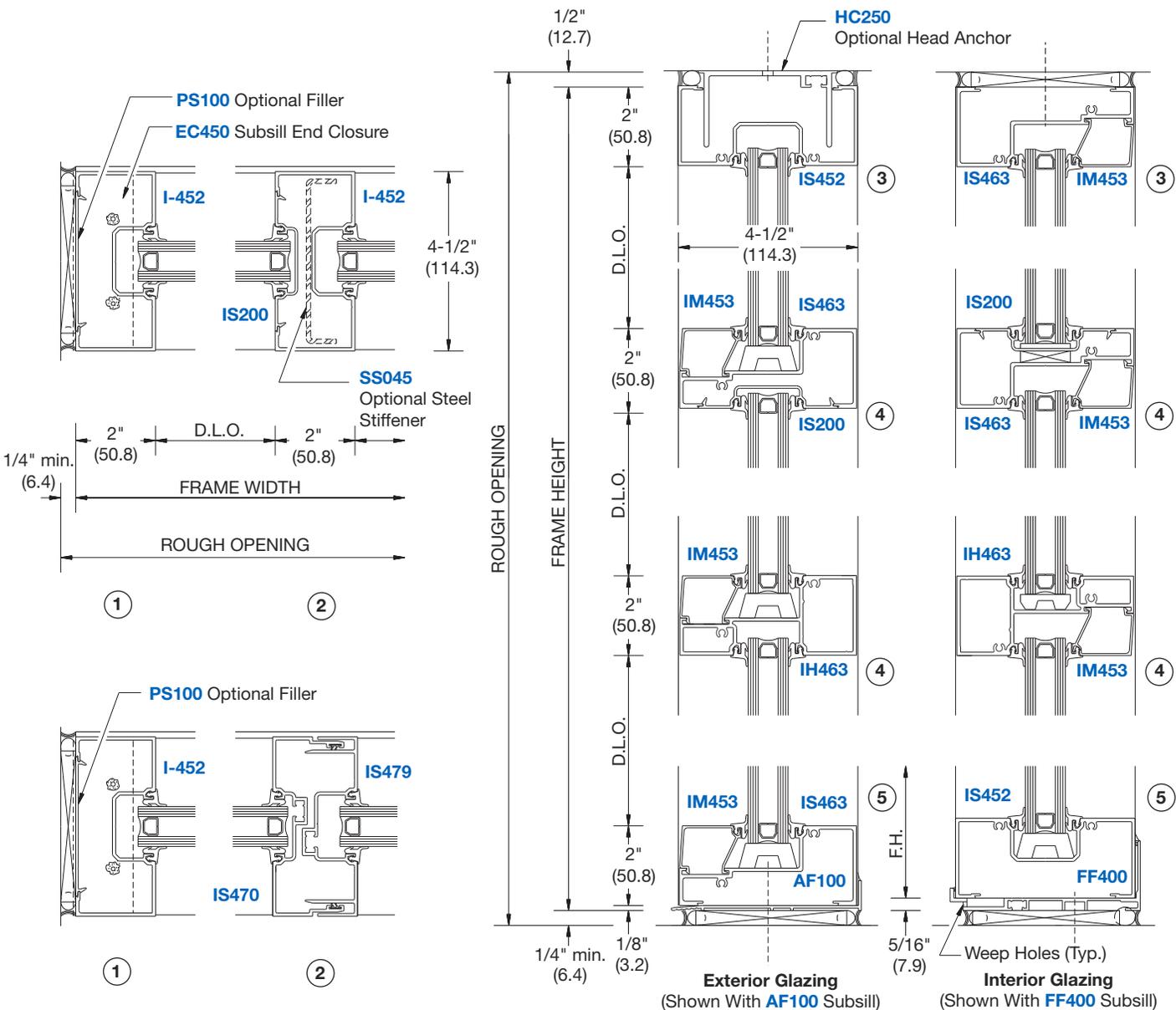
#### SCREW RACE JOINERY FOR 1" (25) GLAZING

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

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



TYPICAL ELEVATION



NOT TO SCALE

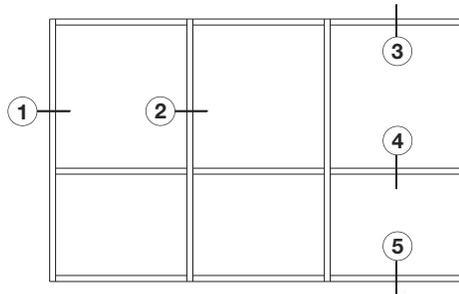
# STOREFRONTS

## Typical Details

### Center Glazed • Series 451

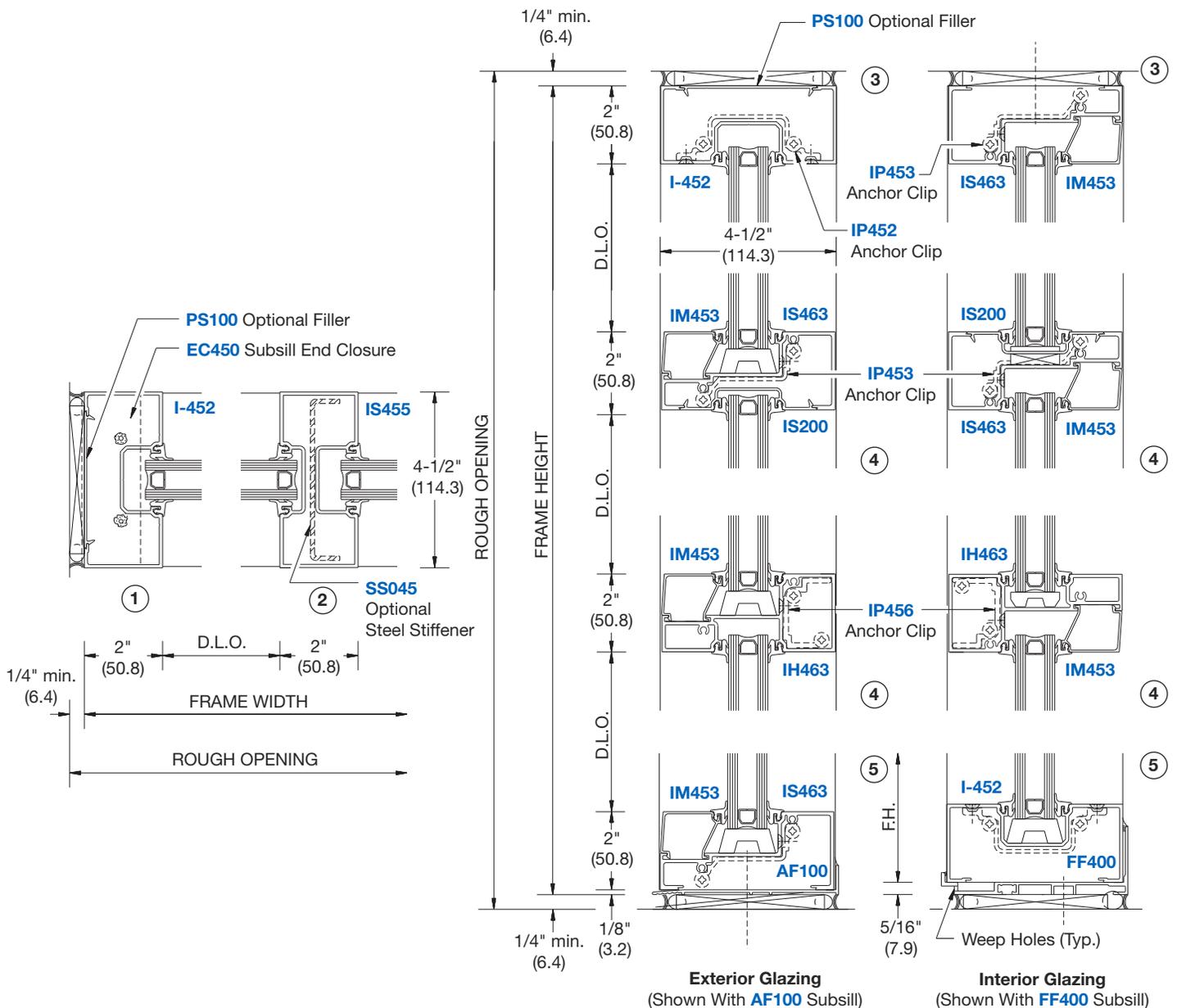
#### ANCHOR CLIP JOINERY FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

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



# STOREFRONTS

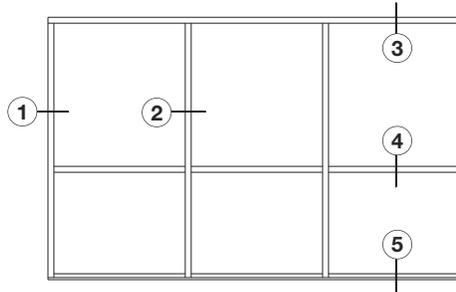
## Typical Details

### Center Glazed • Series 451-S

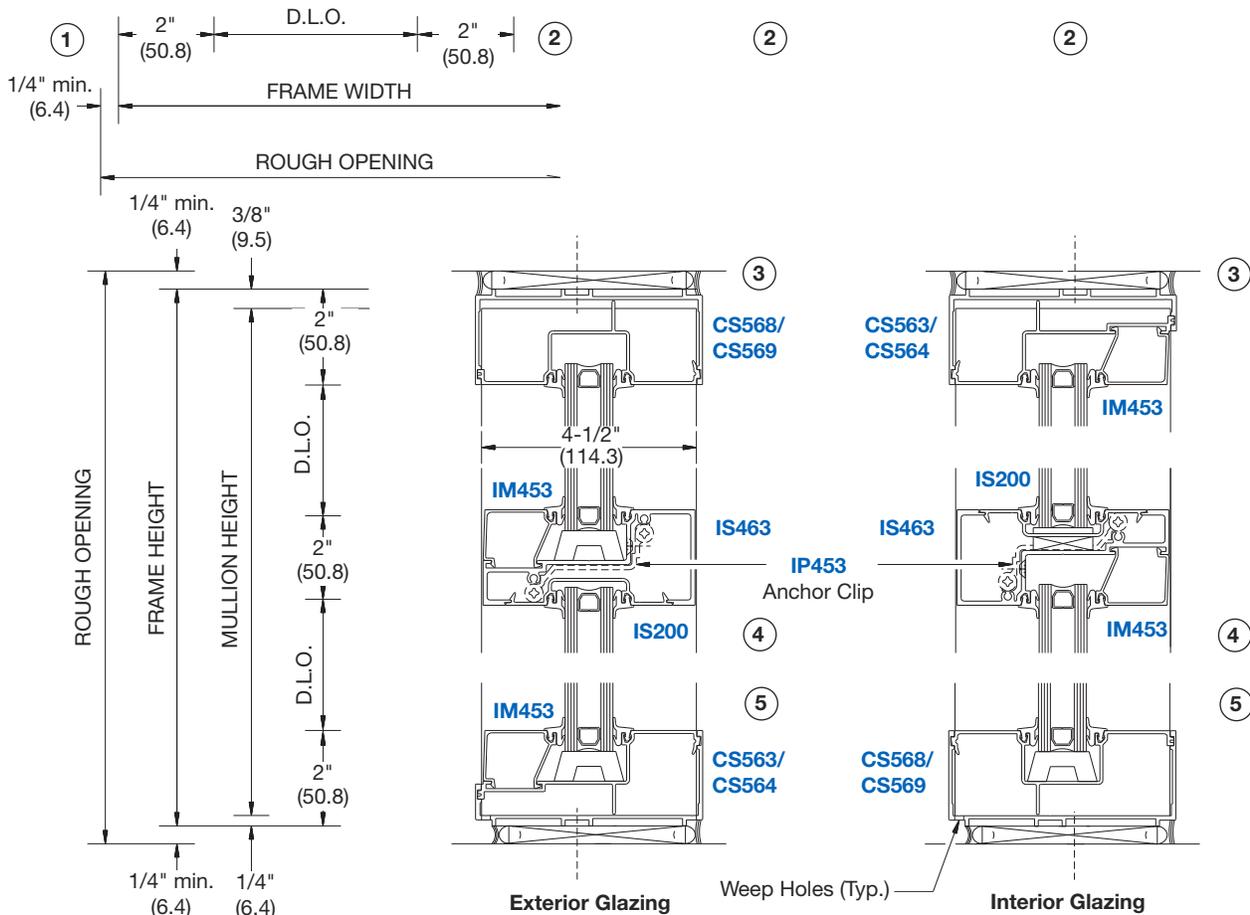
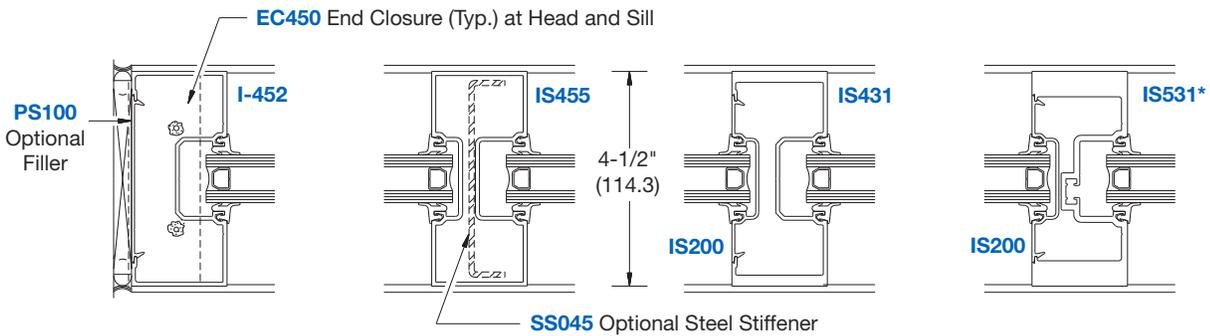
#### STACKING INSTALLATION FOR 1" (25) GLAZING

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

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



TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

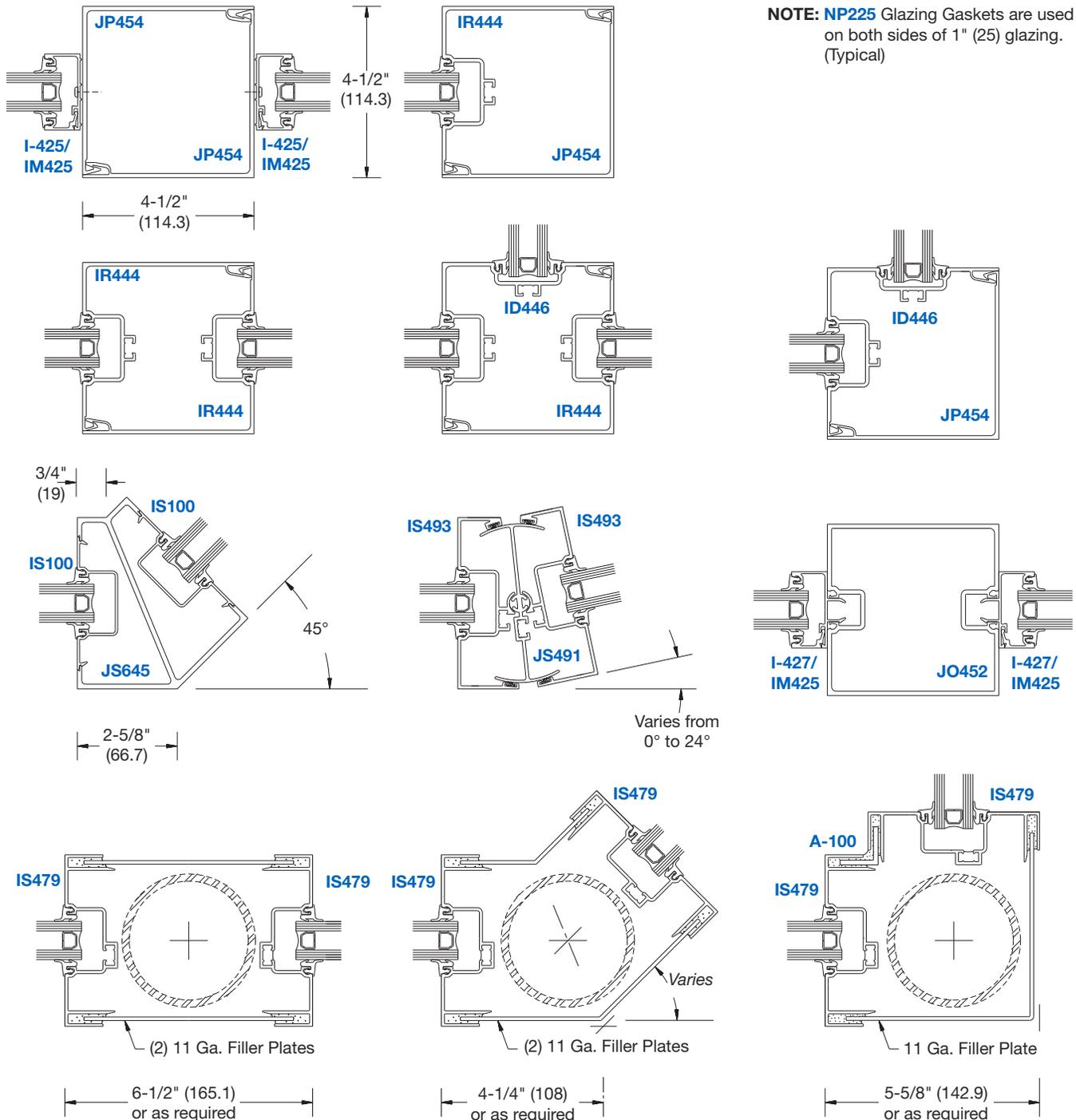
**Center Glazed**

- Series 451
- Series 451-S

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

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

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



NOT TO SCALE

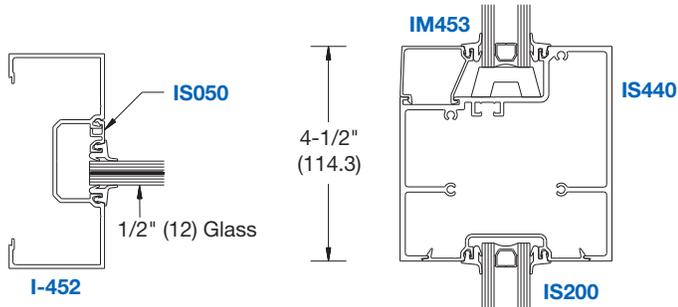
# STOREFRONTS

## Typical Details

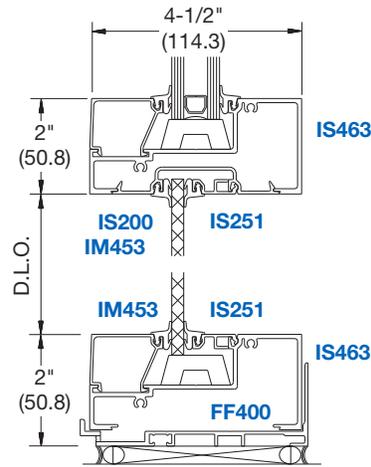
### SPECIAL GLASS ADAPTORS AND TRANSITION GLAZING USING 1/4" (6), 1/2" (12), AND 1" (25) GLAZING

**Center Glazed**  
 • Series 451  
 • Series 451-S

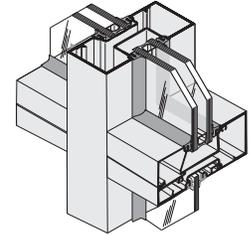
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.



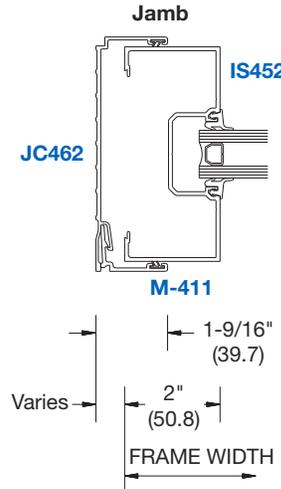
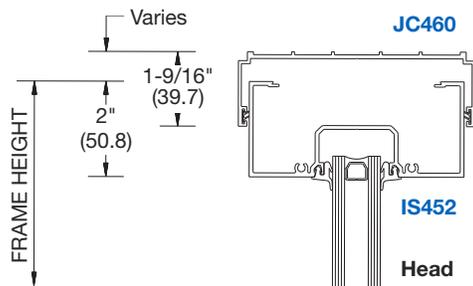
4-1/2" (114.3) high intermediate horizontal



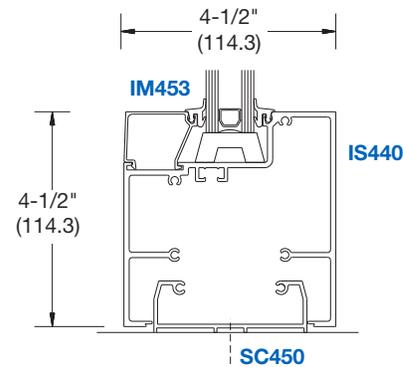
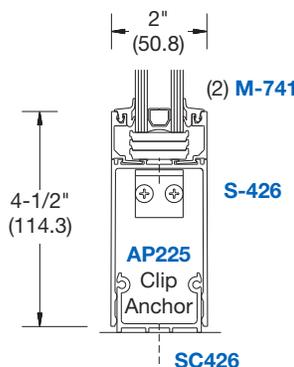
Exterior face of 1/4" (6) glazing aligns with exterior face of 1" (25) glazing



### COMPENSATING CHANNELS (FOR HEAD AND JAMBS)



### BULKHEADS (IN LIEU OF STANDARD SILLS)



NOT TO SCALE

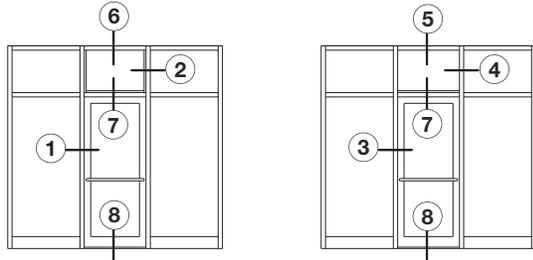
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

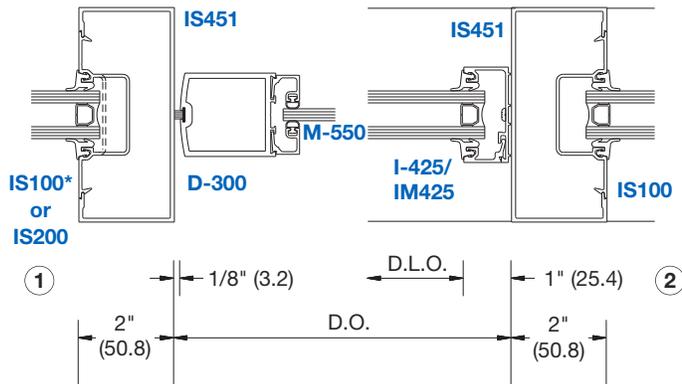
## Typical Details

### DOOR FRAMING

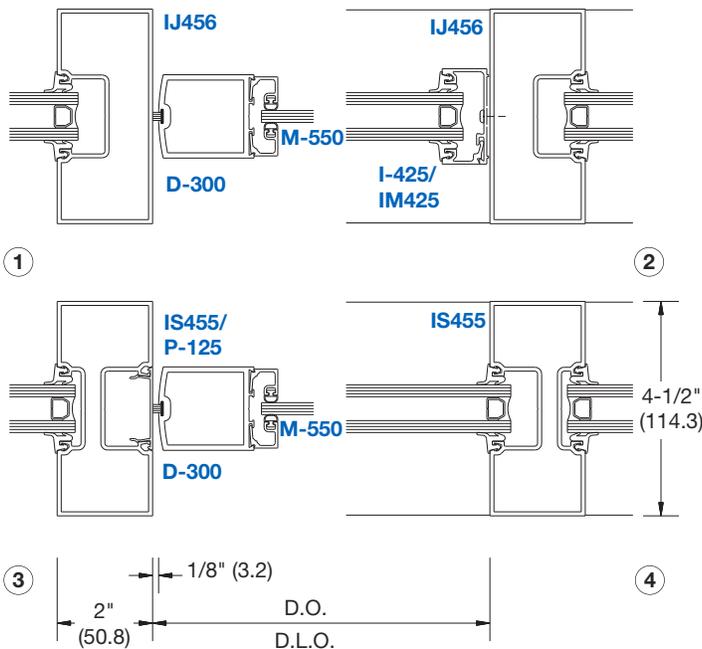
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



CENTER HUNG DOOR

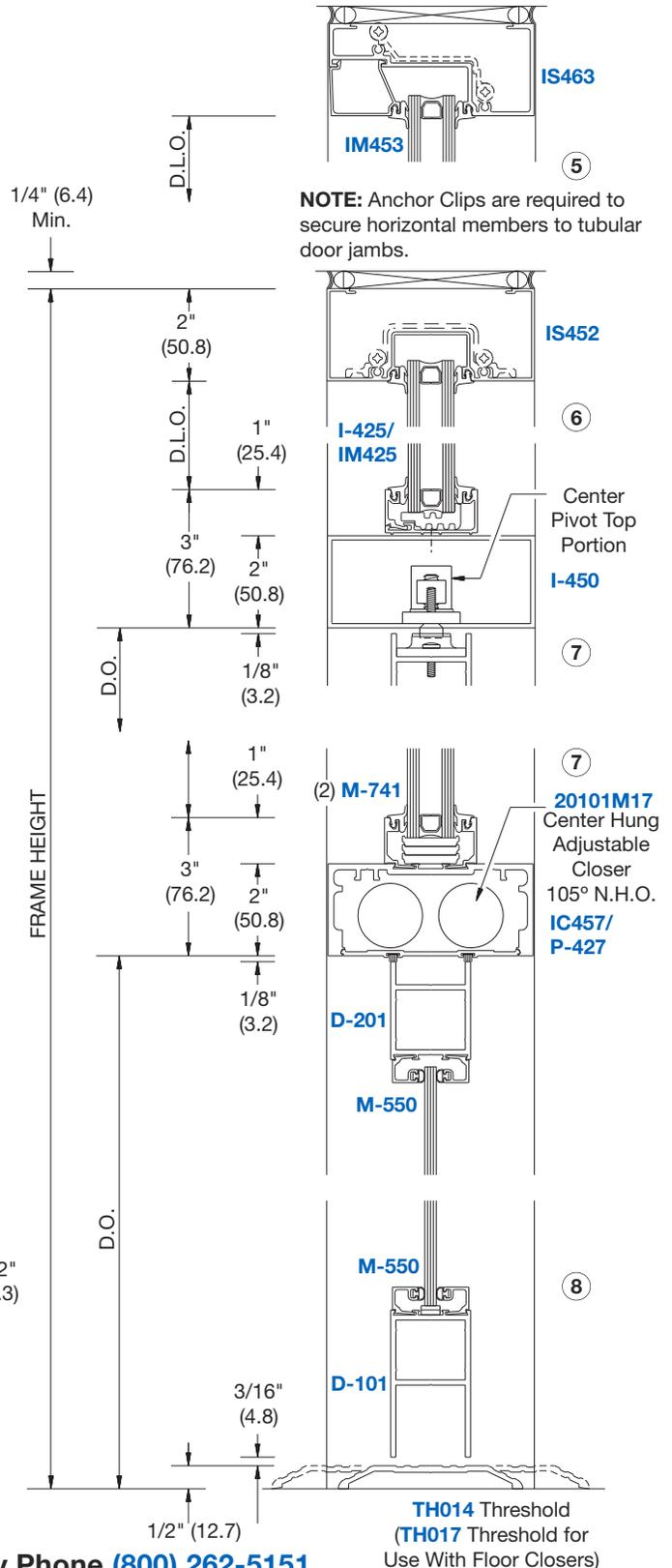


**\*NOTE:** IS100 Insert is required to install glass between doors



### Center Glazed

- Series 451
- Series 451-S



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

NOT TO SCALE

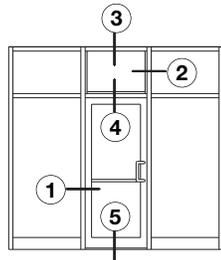
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

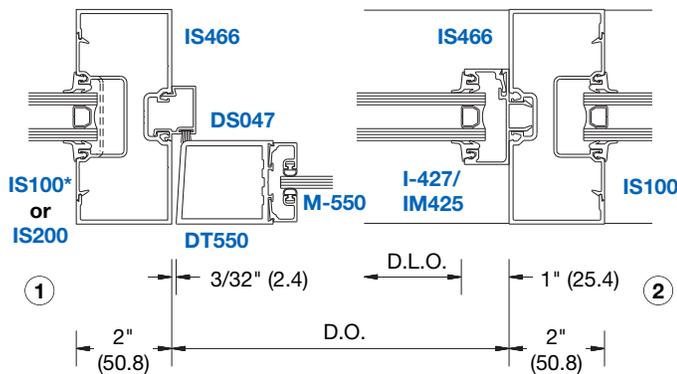
## Typical Details

### DOOR FRAMING

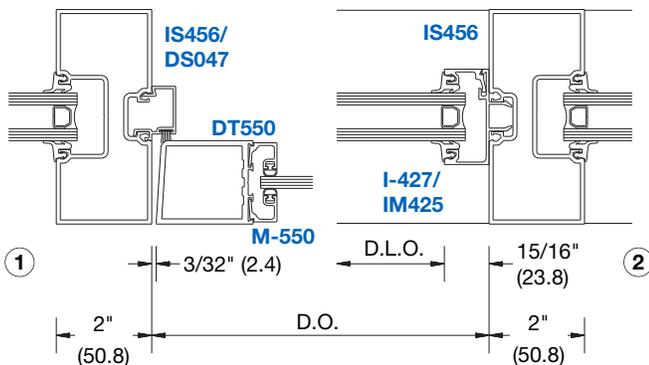
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



OFFSET HUNG DOORS



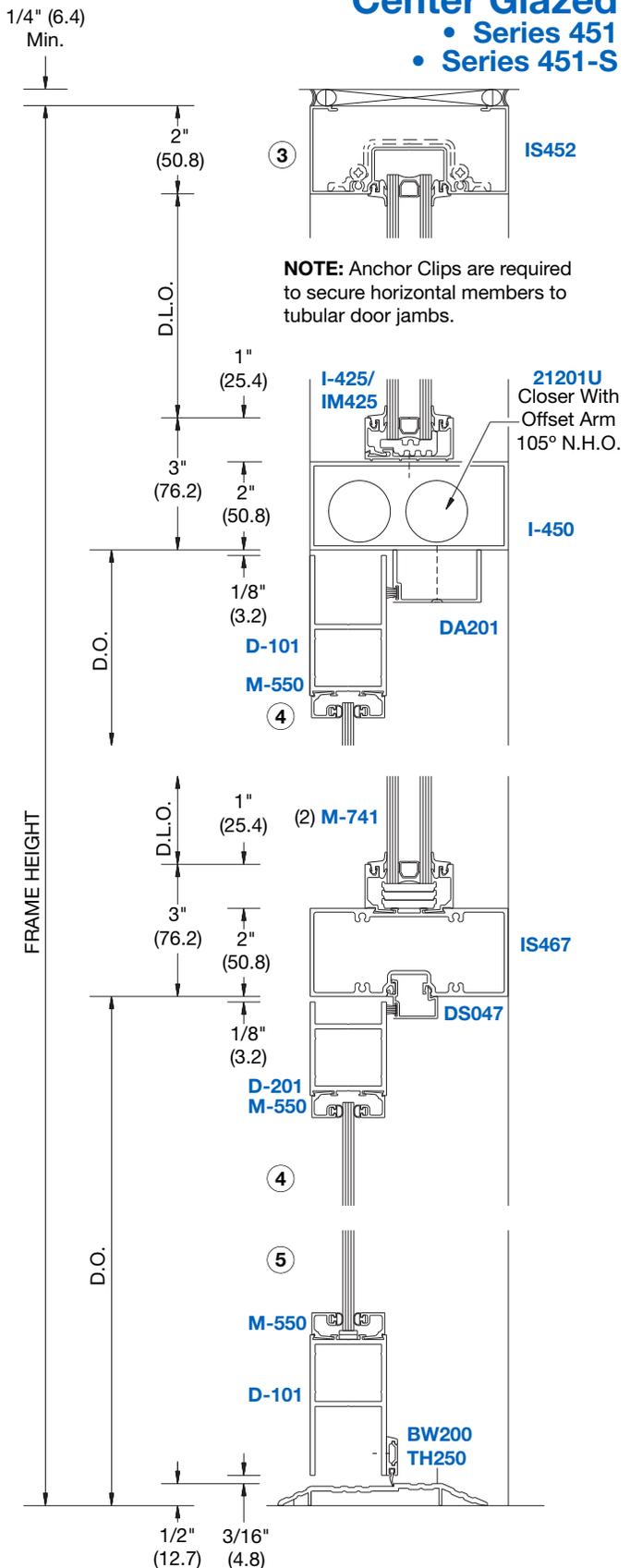
\*NOTE: IS100 Insert is required to install glass between doors



NOT TO SCALE

### Center Glazed

- Series 451
- Series 451-S



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

# STOREFRONTS

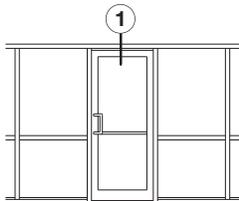
## Typical Details

### DOOR FRAMING SPECIAL CONDITIONS

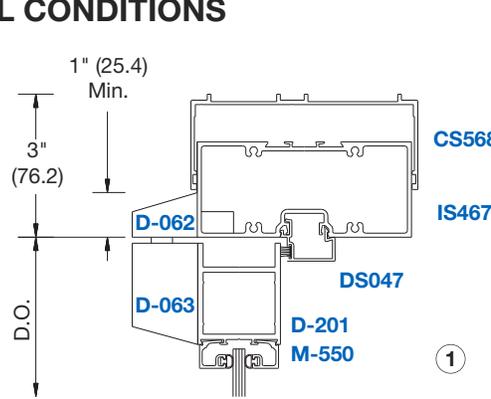
NOTE: Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

### Center Glazed

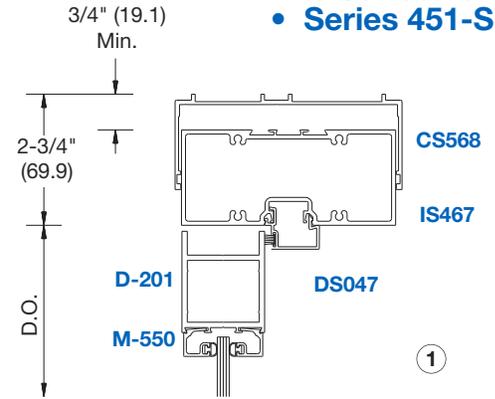
- Series 451
- Series 451-S



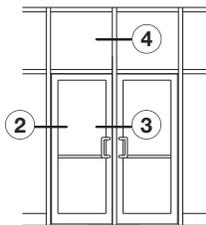
Series 451-S Door Header



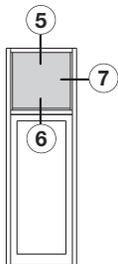
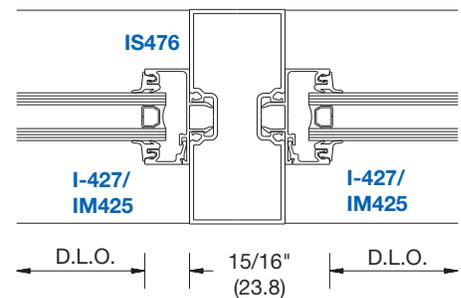
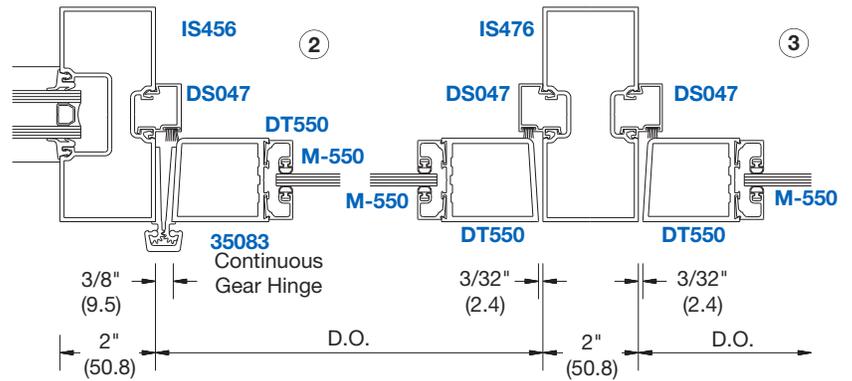
Offset Pivoted Door



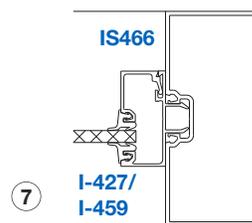
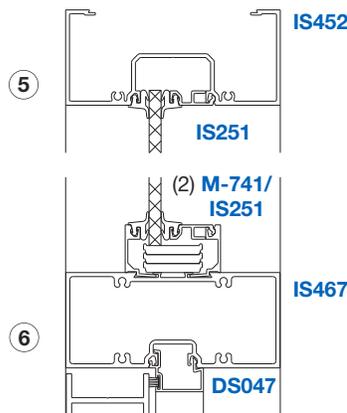
Butt Hung Door



Optional Hinge and Intermediate Door Jamb



Spandrel Transom



NOT TO SCALE

# STOREFRONTS

## Windload Charts

### Center Glazed

- Series 451
- Series 451-S

### STANDARD WALL VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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



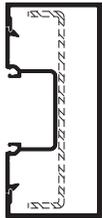
#### SS045

Steel Stiffener

$I = 1.122 (46.70 \times 10^4)$

$S = .544 (8.92 \times 10^3)$

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

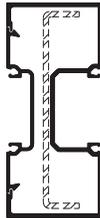


#### IS451/IS100

$I = 2.861 (119.08 \times 10^4)$

$S = 1.271 (20.84 \times 10^3)$

$I_{AL+STL} = 6.115 (254.52 \times 10^4)$   
with SS045 Steel



#### I-452/IS200

$I = 2.886 (120.12 \times 10^4)$

$S = 1.298 (21.67 \times 10^3)$

$I_{AL+STL} = 6.140 (255.56 \times 10^4)$   
with SS045 Steel

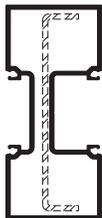


#### IS452/IS200

$I = 3.000 (124.87 \times 10^4)$

$S = 1.333 (21.85 \times 10^3)$

$I_{AL+STL} = 6.254 (260.30 \times 10^4)$   
with SS045 Steel

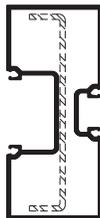


#### IS455

$I = 3.005 (125.08 \times 10^4)$

$S = 1.336 (21.89 \times 10^3)$

$I_{AL+STL} = 6.259 (260.51 \times 10^4)$   
with SS045 Steel

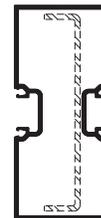


#### IS456

$I = 2.951 (122.83 \times 10^4)$

$S = 1.312 (21.50 \times 10^3)$

$I_{AL+STL} = 6.205 (258.26 \times 10^4)$   
with SS045 Steel

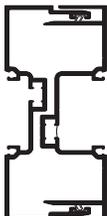


#### IS476

$I = 2.848 (118.54 \times 10^4)$

$S = 1.266 (20.75 \times 10^3)$

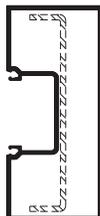
$I_{AL+STL} = 6.102 (253.98 \times 10^4)$   
with SS045 Steel



#### IS479/IS470

$I = 4.274 (177.90 \times 10^4)$

$S = 1.877 (30.76 \times 10^3)$

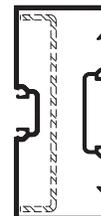


#### IJ456

$I = 2.930 (121.96 \times 10^4)$

$S = 1.302 (21.34 \times 10^3)$

$I_{AL+STL} = 6.184 (257.39 \times 10^4)$   
with SS045 Steel



#### IS466/IS200

$I = 2.914 (121.29 \times 10^4)$

$S = 1.295 (21.22 \times 10^3)$

$I_{AL+STL} = 6.168 (256.72 \times 10^4)$   
with SS045 Steel

## Windload Charts

### Center Glazed

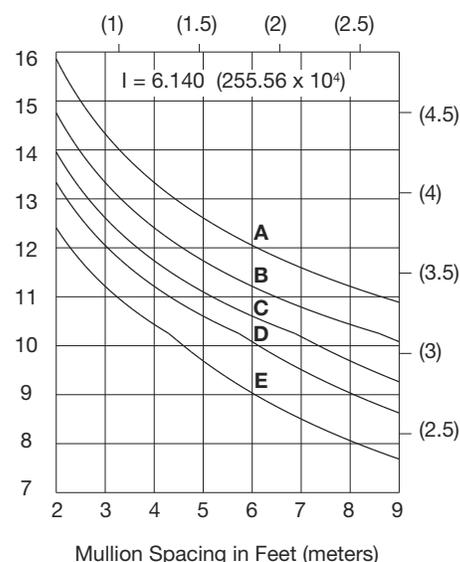
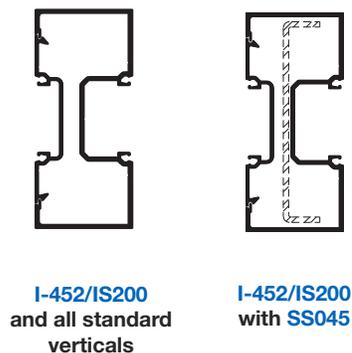
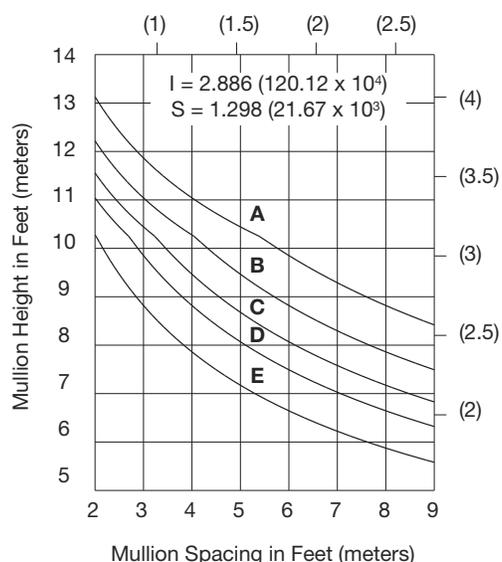
- Series 451
- Series 451-S

### STANDARD WALL VERTICAL MULLIONS FOR 1" (25) GLAZING

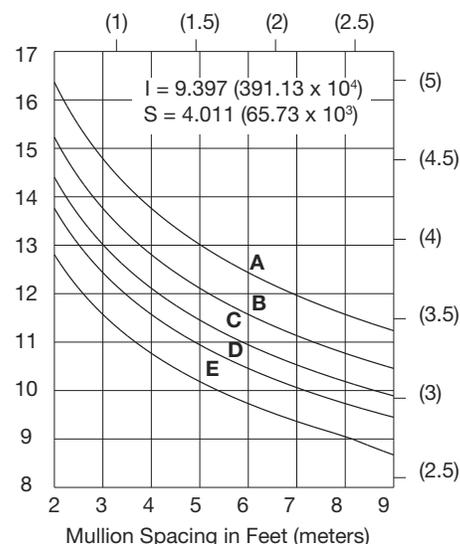
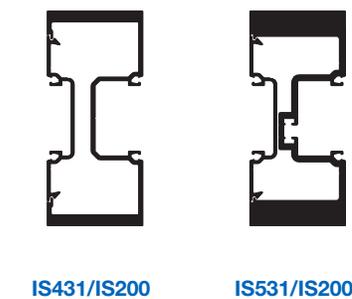
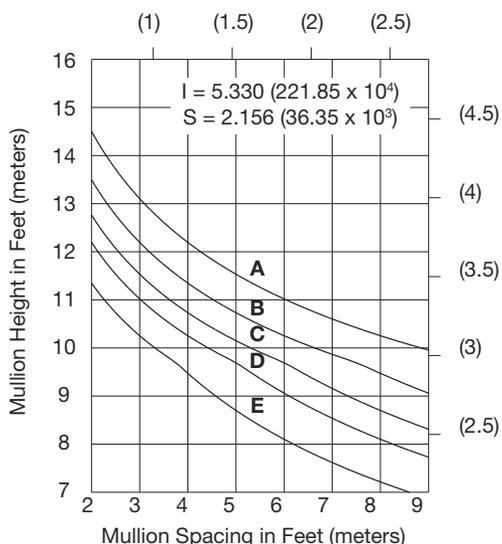
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance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

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

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



### HEAVY WALL VERTICAL MULLIONS FOR 1" (25) GLAZING



# STOREFRONTS

## Deadload Charts

**Center Glazed**  
 • Series 451  
 • Series 451-S

### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:

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



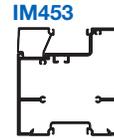
**IS463/IS200**

l<sub>yy</sub> = .359 (14.94 x 104)



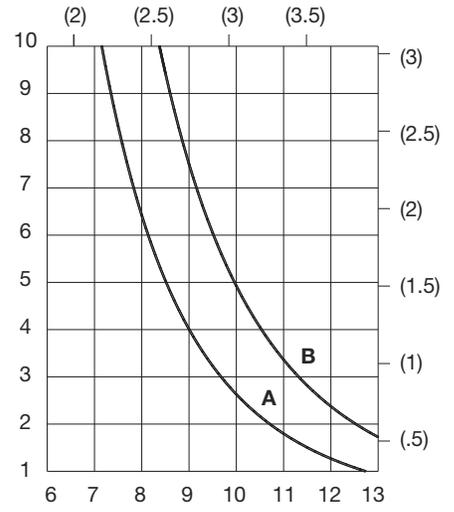
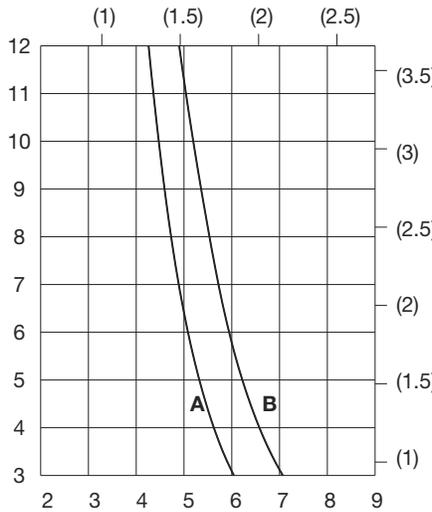
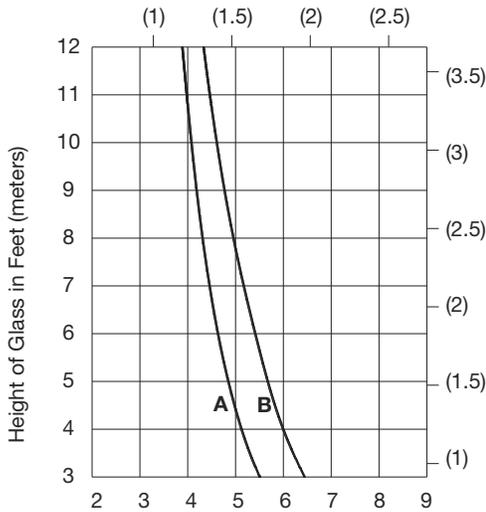
**IH463**

l<sub>yy</sub> = .522 (21.73 x 104)



**IS440/IS200**

l<sub>yy</sub> = 3.416 (142.81 x 104)



Mullion Span in Feet (meters)

## DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:

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



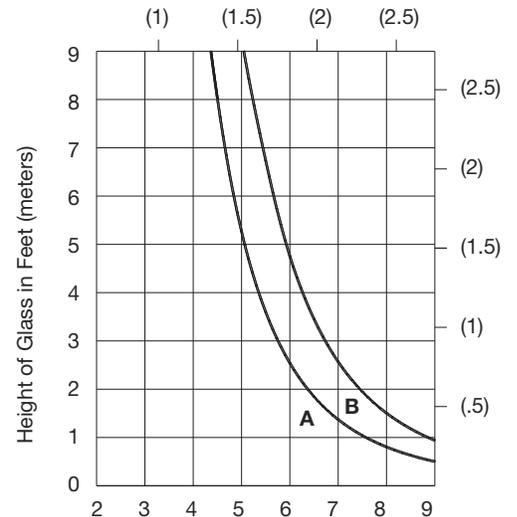
**IS467**

l<sub>yy</sub> = .899 (37.42 x 104)



**I-450**

l<sub>yy</sub> = .862 (35.88 x 104)



Mullion Span in Feet (meters)



# STOREFRONTS

## Specifications

### Thermal Center Glazed • Series IT451

#### SECTION 08 41 13 ALUMINUM STOREFRONTS

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

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cmf per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

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

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

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

The system shall perform to this criteria under a windload of *(Specify)* psf. Structural Integrity - Manufacturer shall provide a Two Year Warranty on thermal framing against failure. Thermal Performance - Series IT451 shall be tested in accordance with NFRC 100, 200, and AAMA 1503-09. Testing Procedures- ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

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

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

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

#### FINISH

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

*(Specify one of the following):*  
 \_\_\_\_ #11 Clear anodic coating  
 \_\_\_\_ #22 Dark Bronze anodic coating  
 \_\_\_\_ #33 Black anodic coating  
 A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be *(Specify a U.S. Aluminum standard color).*

#### FABRICATION

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

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

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

# STOREFRONTS

## Specifications

## Thermal Center Glazed Stacking

• Series IT451-S

### SECTION 08 41 13 ALUMINUM STOREFRONTS

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

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

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

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

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

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

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

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

#### II. PRODUCTS MATERIALS

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

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

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

#### FINISH

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

(*Specify one of the following*):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

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

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

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

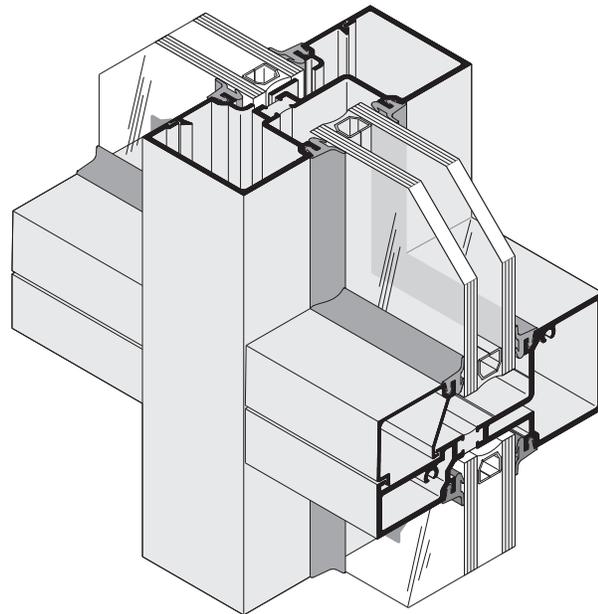
# STOREFRONTS

## Technical Data

### Thermal Center Glazed

- Series IT451
- Series IT451-S

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



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

GLASS SIZES*	
Glass Width and Glass Height	= Daylight Opening + 7/8" (22.2).

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

# STOREFRONTS

## Technical Data

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

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

#### What About Dry Shrinkage?

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

#### What About Structural Integrity?

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

#### What About CRF Values?

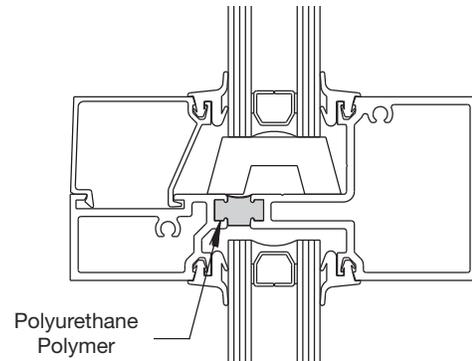
Certified thermal test reports for all U.S. Aluminum products tested in accordance with AAMA 1503.1-88 are available upon request from any of our service centers, or by calling our national toll free number at (800) 262-5151.

#### Why Take a Chance?

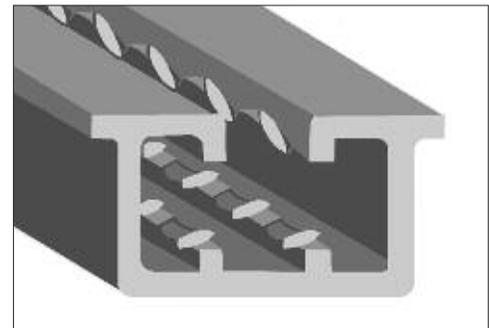
U.S. Aluminum uses the latest thermal break technology and equipment for producing polyurethane thermally broken aluminum framing systems. All thermally broken framing products are manufactured in-house by U.S. Aluminum technicians and tested in accordance with AAMA-A8-1990. Our products are backed by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

## Thermal Center Glazed

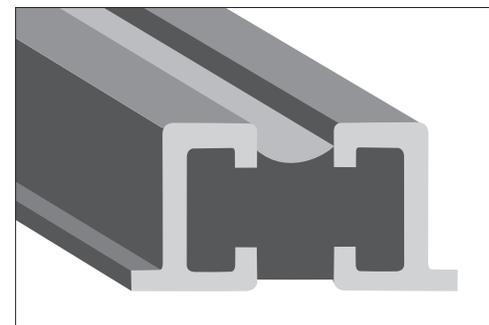
- Series IT451
- Series IT451-S



Channel before the process



Channel after being mechanically modified

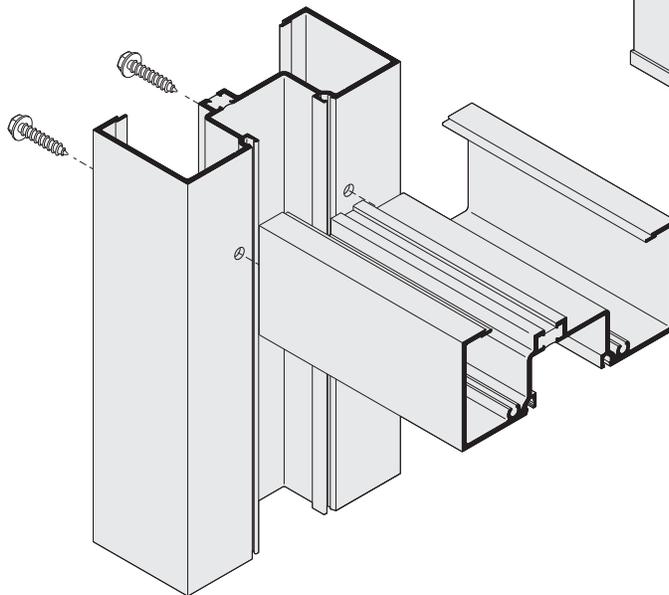


Channel with polyurethane thermal break

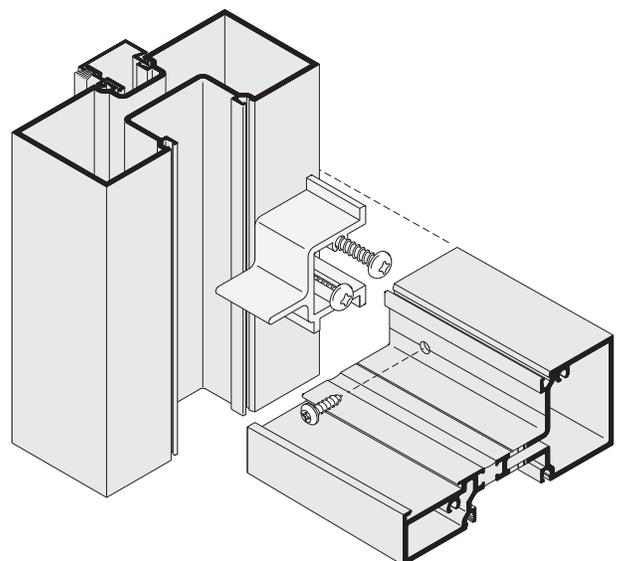
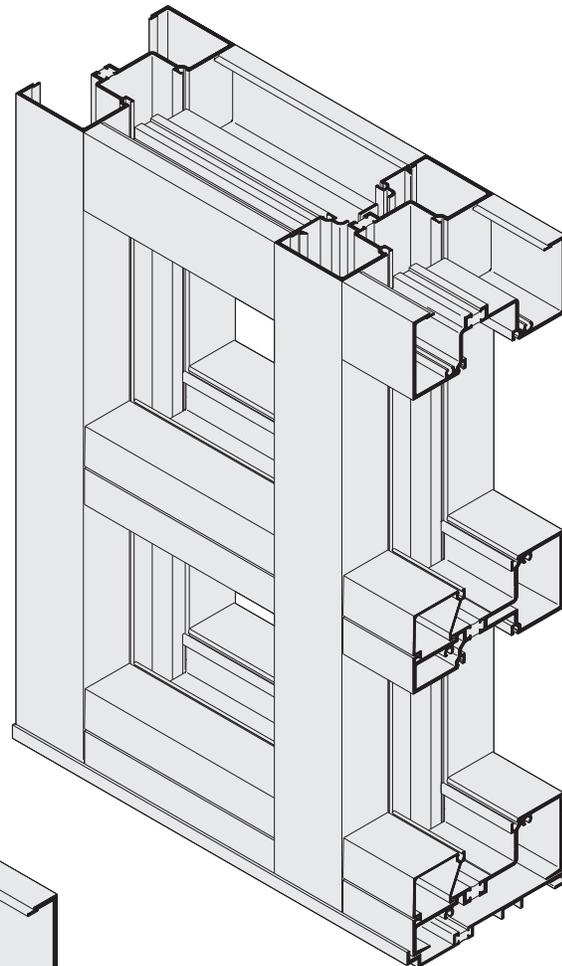
**Special Features**

**Thermal Center Glazed**  
 • Series IT451

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



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



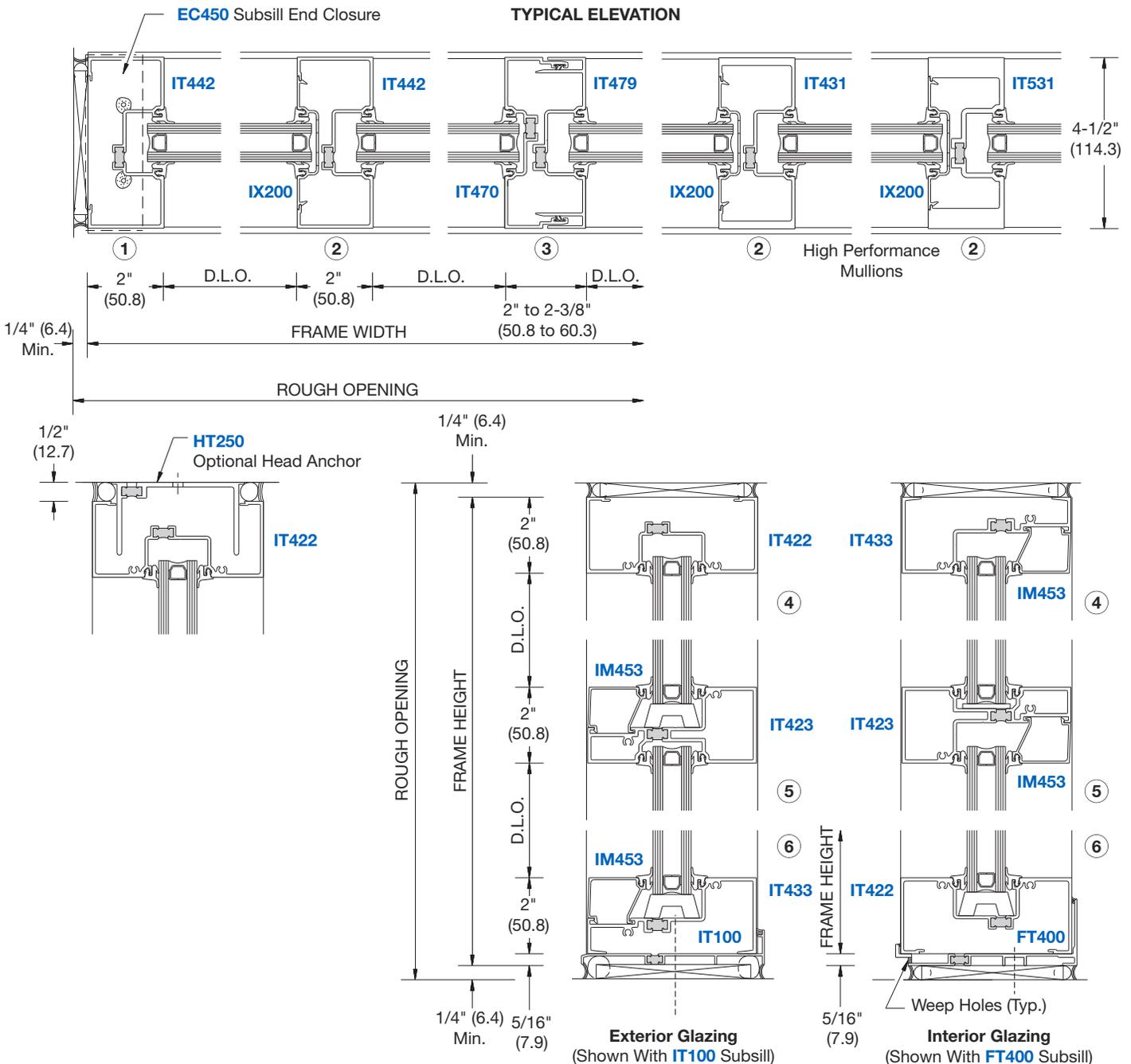
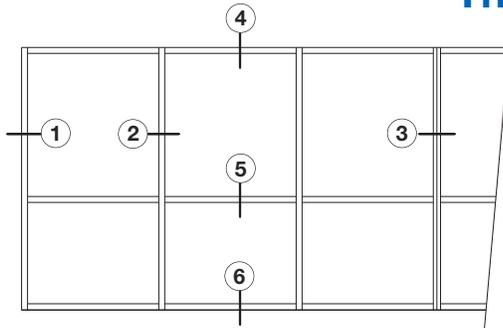
# STOREFRONTS

## Typical Details

## Thermal Center Glazed • Series IT451

### SCREW RACE JOINERY FOR 1" (25) GLAZING

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



NOT TO SCALE

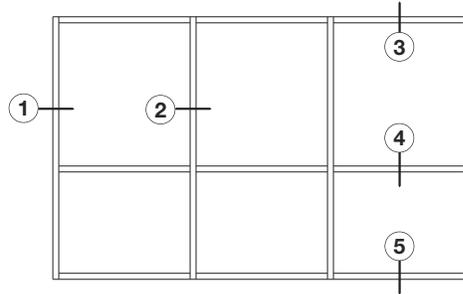
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

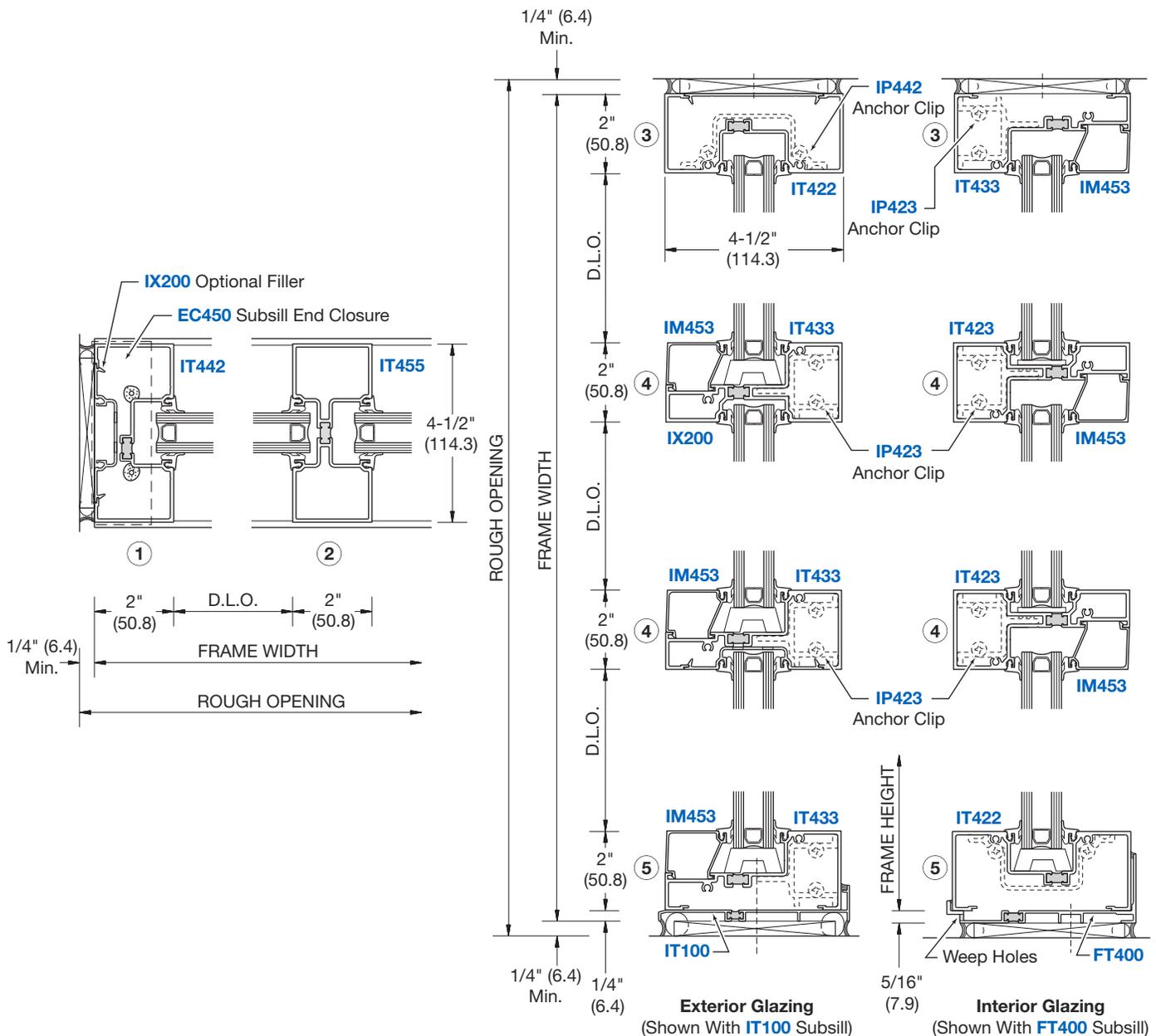
## Thermal Center Glazed • Series IT451

### ANCHOR CLIP JOINERY FOR 1" (25) GLAZING



TYPICAL ELEVATION

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



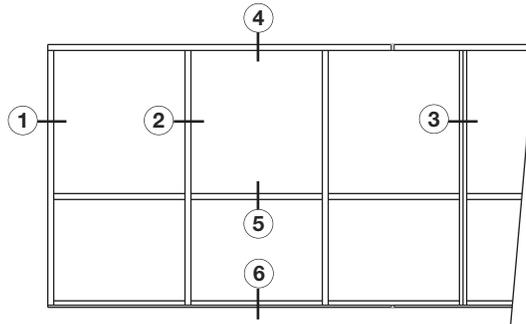
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# STOREFRONTS

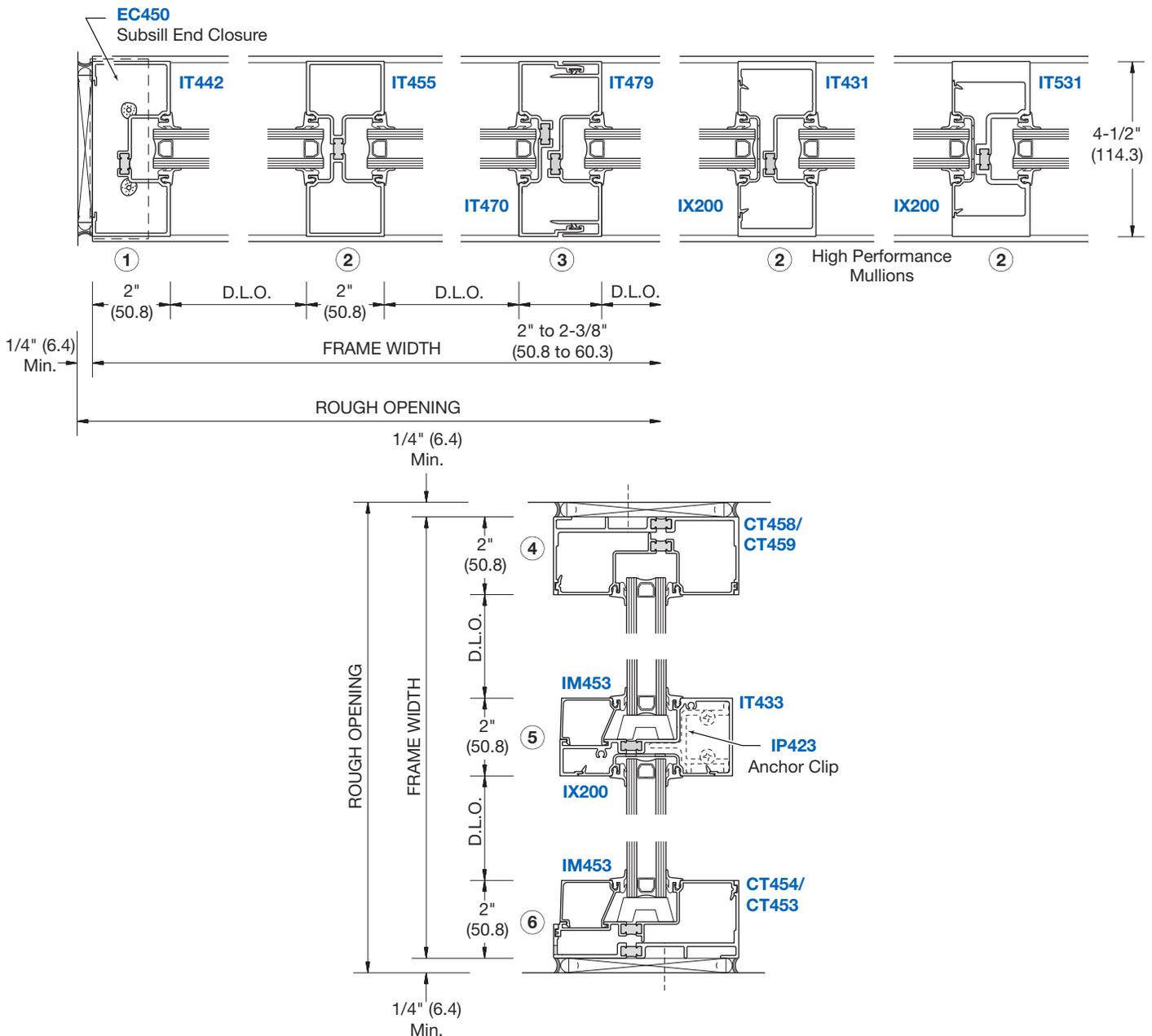
## Typical Details FOR 1" (25) GLAZING

## Thermal Center Glazed • Series IT451-S

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



TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

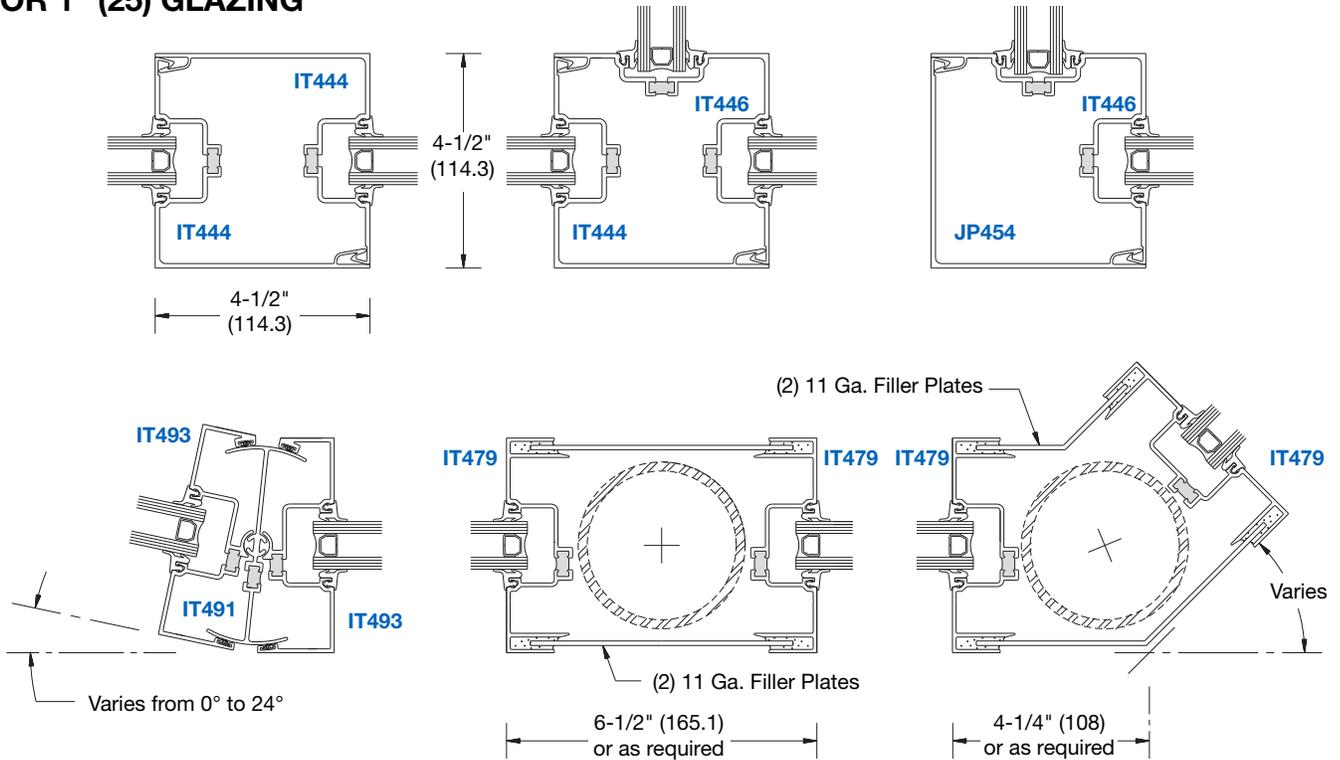
# STOREFRONTS

## Typical Details

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

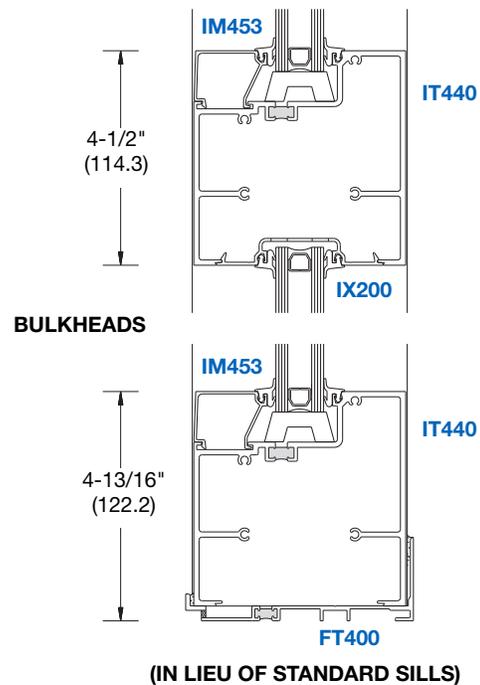
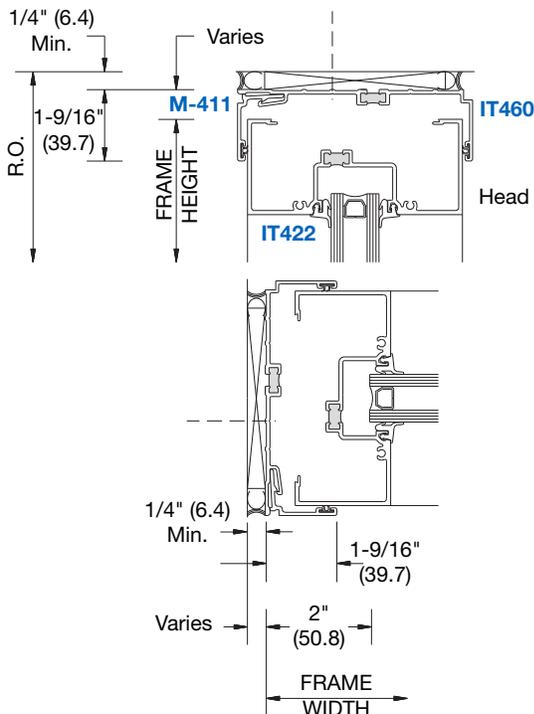
### Thermal Center Glazed

- Series IT451
- Series IT451-S



### COMPENSATING CHANNEL FOR HEAD AND JAMBS

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



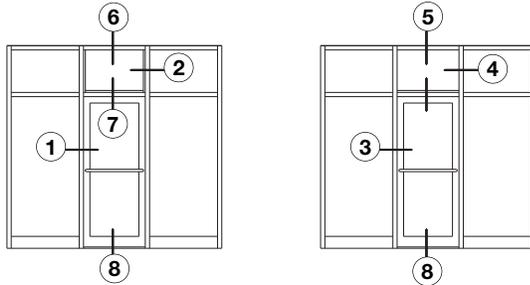
NOT TO SCALE

# STOREFRONTS

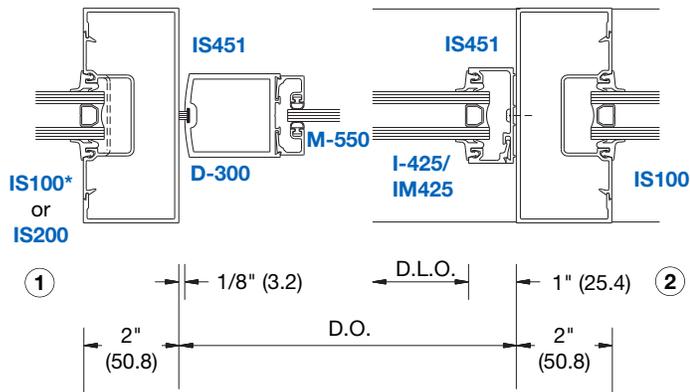
## Typical Details

### DOOR FRAMING

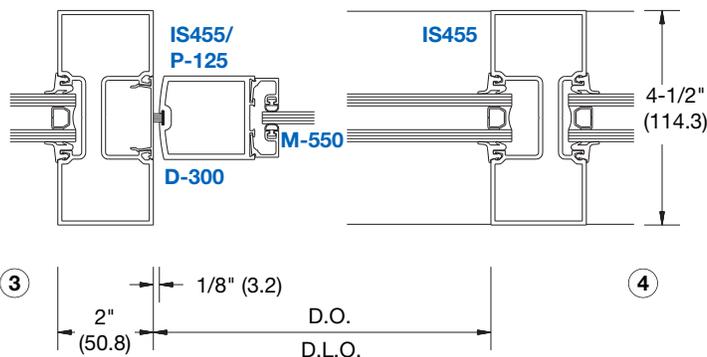
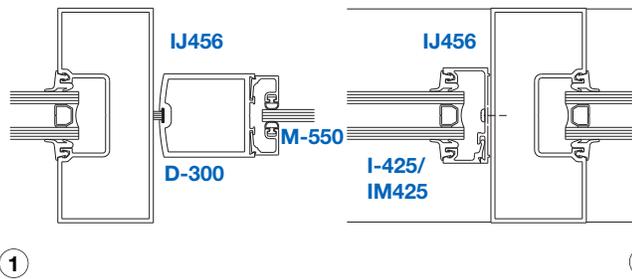
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**CENTER HUNG DOORS**



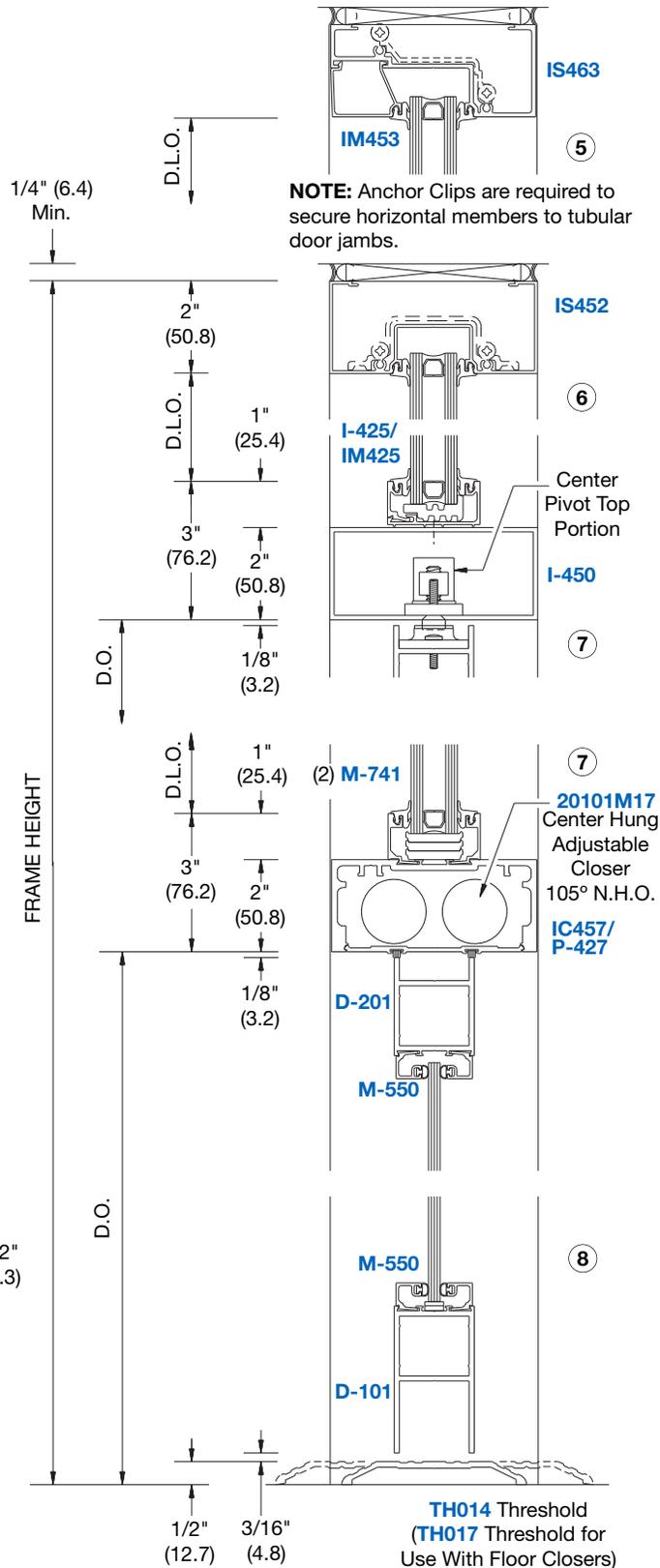
**\*NOTE:** IS100 Insert is required to install glass between doors



NOT TO SCALE

### Thermal Center Glazed

- Series IT451
- Series IT451-S

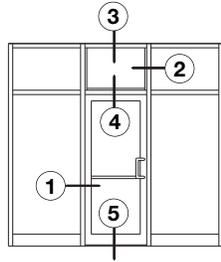


# STOREFRONTS

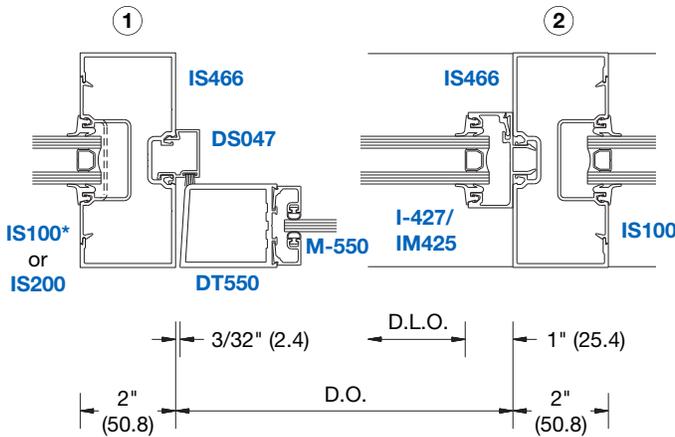
## Typical Details

### DOOR FRAMING

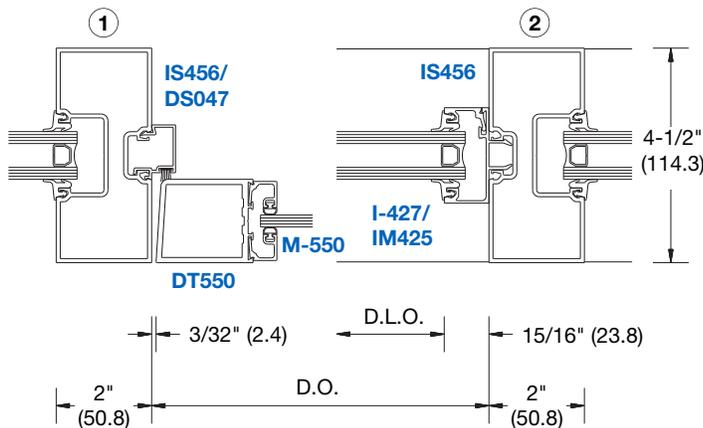
**NOTE:** Door Frames are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



OFFSET HUNG DOORS

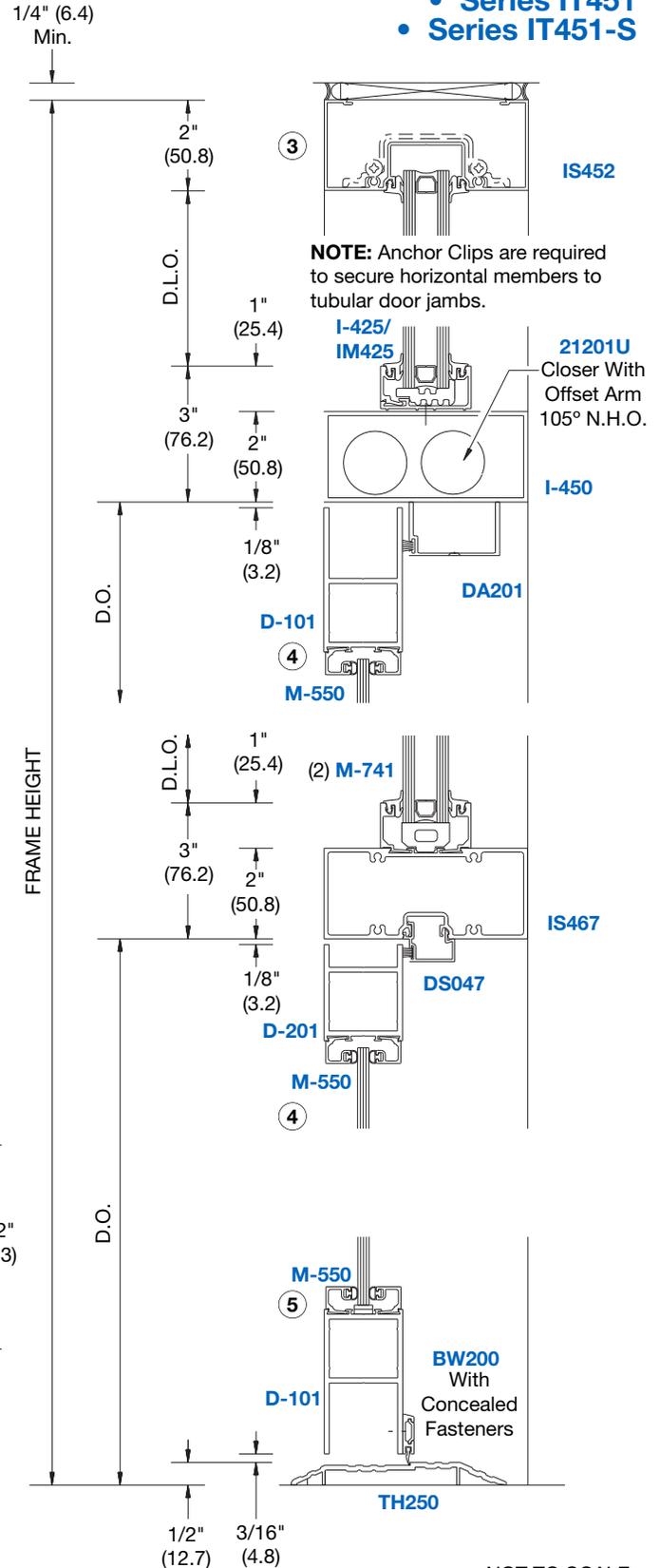


**\*NOTE:** IS100 Insert is required to install glass between doors



### Thermal Center Glazed

- Series IT451
- Series IT451-S



NOT TO SCALE

# STOREFRONTS

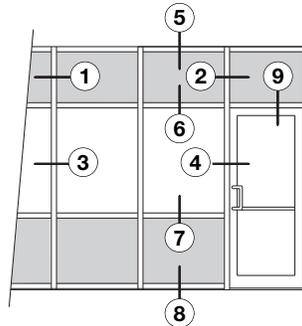
## Typical Details

## Thermal Center Glazed

- Series IT451
- Series IT451-S

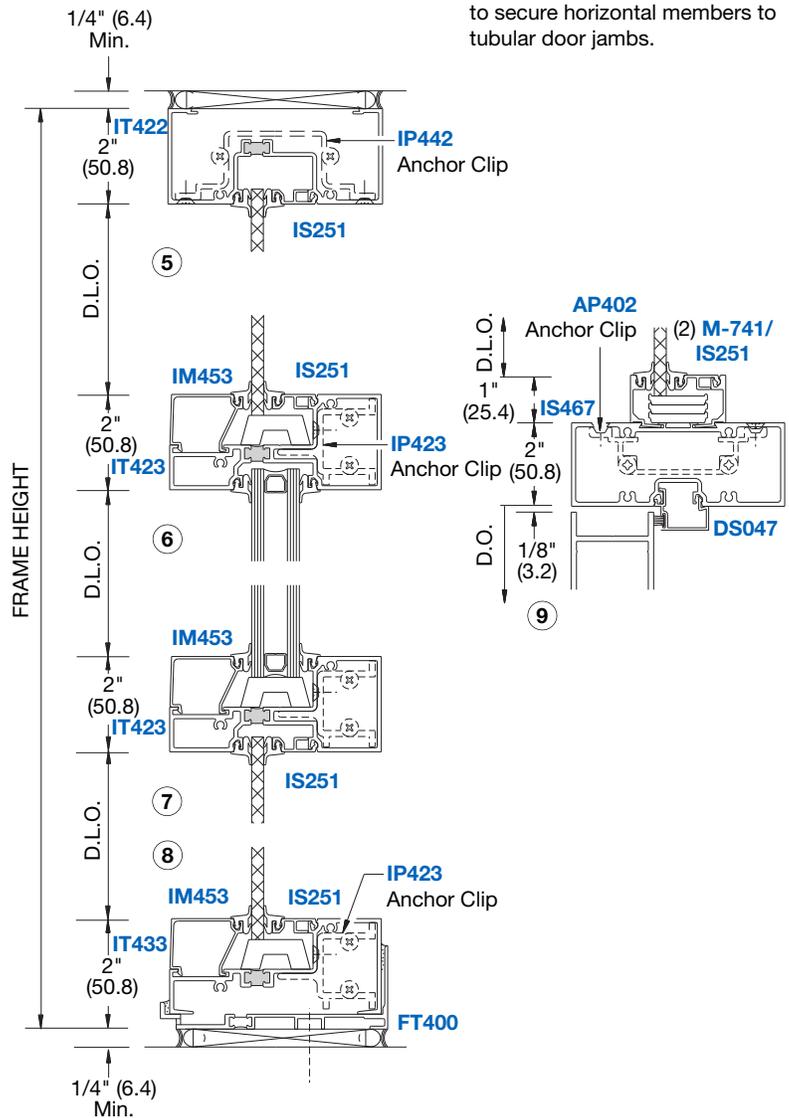
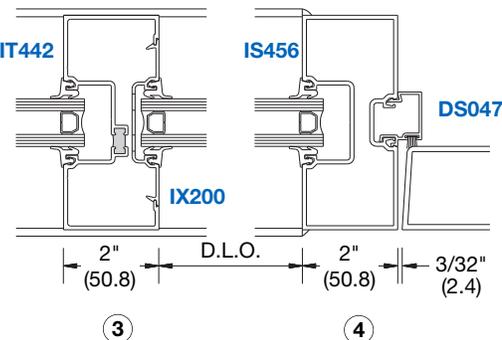
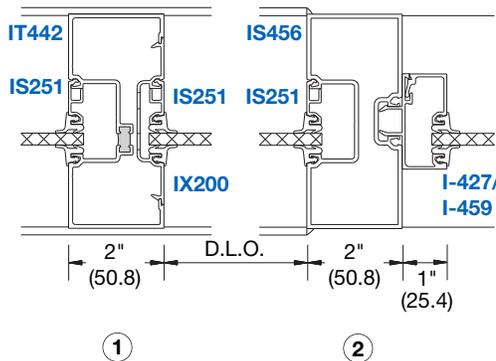
### TRANSITION GLAZING FOR 1" (25) OR 1/4" (6) GLAZING

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



TYPICAL ELEVATION

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



NOT TO SCALE

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# STOREFRONTS

## Windload Charts

### Thermal Center Glazed

- Series IT451
- Series IT451-S

### VERTICAL MULLIONS FOR 1" (25) GLAZING

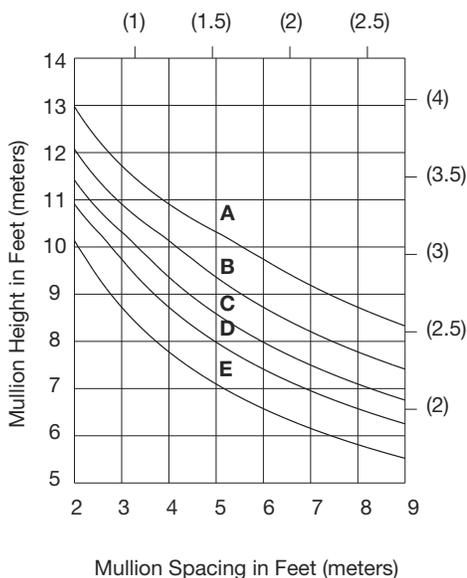
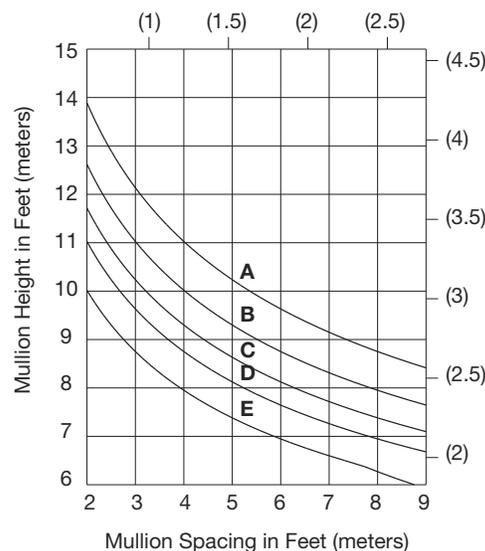
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance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

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

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



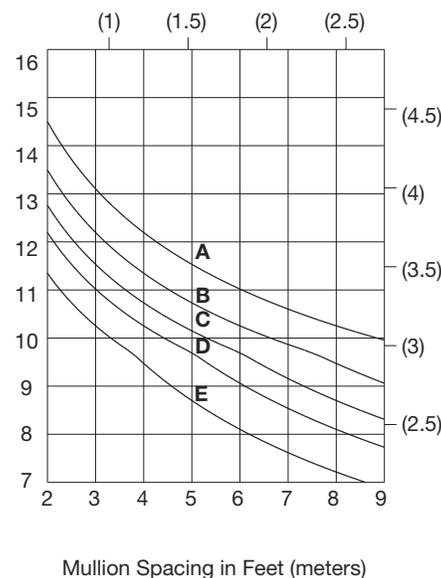
**IT455**  
 $I = 2.639 (112.09 \times 10^4)$   
 $S = 1.259 (20.63 \times 10^3)$



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



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



# STOREFRONTS

## Windload Charts

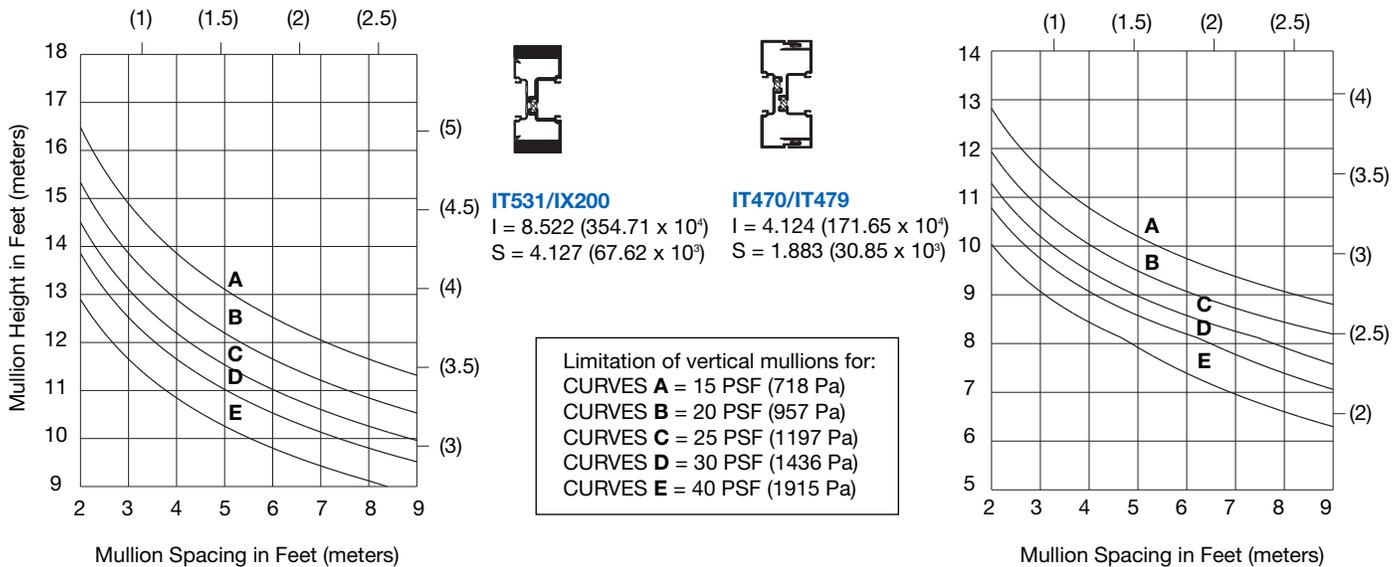
## Thermal Center Glazed

### VERTICAL MULLIONS FOR 1" (25) GLAZING

- Series IT451
- Series IT451-S

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

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



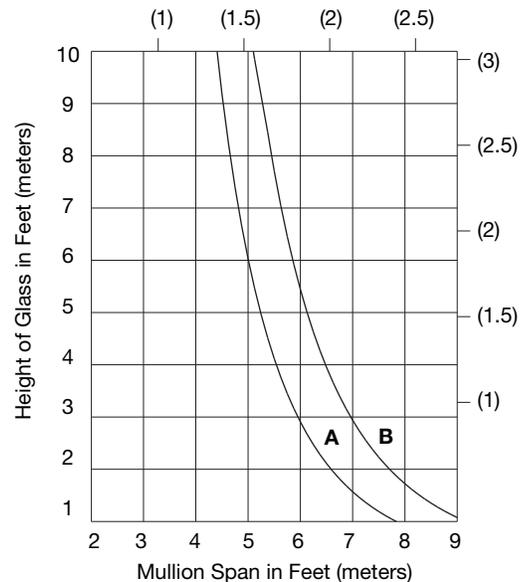
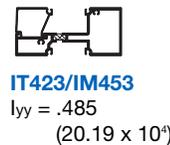
## Deadload Chart

### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>)

Glass shall rest on two setting blocks located at:

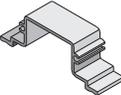
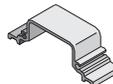
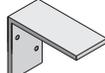
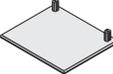
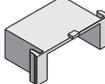
- CURVES A: 1/4 points
- CURVES B: 1/8 points or 8" (203.2) from corners, whichever is larger



# STOREFRONTS

## Accessories

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

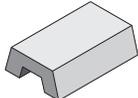
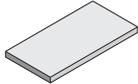
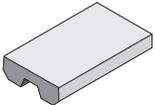
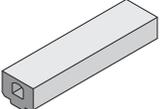
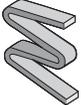
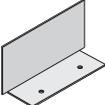
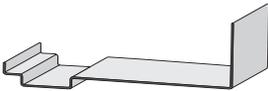
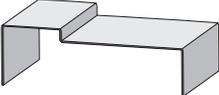
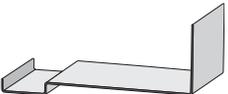
PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				451	451-S	IT451	IT451-S
ST251		Assembly Screws #10 x 1" (25) HH SMS	200	●	●	●	●
IP452		Head Anchor Clip with Screws	20	●		●	
IP453		Horizontal / Sill Anchor Clip with Screws	20	●	●		
IP456		Tubular Intermediate Horizontal Anchor Clip with Screws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

# STOREFRONTS



## Accessories

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

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

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## Table of Contents

### Flush Front™

- Series FF450
- Series FF451
- Series FT451
- Series FF600
- Series FF601
- Series FT601

SECTION B2	PAGE
<b>Series FF450, FF451, FT451, FF600, FF601, and FT601</b>	
SPECIFICATIONS .....	02-B2 and 03-B2
TECHNICAL DATA.....	04-B2
SPECIAL FEATURES.....	05-B2
<b>Series FF450</b>	
TYPICAL DETAILS .....	06-B2 thru 11-B2
WINDLOAD CHARTS .....	12-B2 and 13-B2
DEADLOAD CHARTS .....	14-B2
<b>Series FF451 and FT451</b>	
TYPICAL DETAILS .....	15-B2 thru 21-B2
WINDLOAD CHARTS .....	22-B2 and 23-B2
DEADLOAD CHARTS .....	24-B2
<b>Series FF600</b>	
TYPICAL DETAILS .....	25-B2 thru 29-B2
WINDLOAD CHARTS .....	30-B2 and 31-B2
DEADLOAD CHARTS .....	32-B2
<b>Series FF601 and FT601</b>	
TYPICAL DETAILS .....	33-B2 thru 39-B2
WINDLOAD CHARTS .....	40-B2 and 41-B2
DEADLOAD CHARTS .....	42-B2
ACCESSORIES AND GLAZING GASKETS (ALL SYSTEMS) .....	43-B2 thru 45-B2
MISCELLANEOUS FRAMING.....	46-B2 thru 48-B2

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter	Kg - kilogram
Pa - pascal	KPa - kilopascal
MPa - megapascal	

# STOREFRONTS

## Specifications

### SECTION 08 41 13 ALUMINUM FRAMED STOREFRONTS

#### Flush Front™

- Series FF450
- Series FF451
- Series FF600
- Series FF601

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
FF450	1-3/4" (44.5)	4-1/2" (114.3)	1/4" (6) or 3/8" (10)	Exterior/Interior
FF451	2" (50.8)	4-1/2" (114.3)	1" (25)	
FF600	1-3/4" (44.5)	6" (152.4)	1/4" (6) or 3/8" (10)	
FF601	2" (50.8)	6" (152.4)	1" (25)	

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331. No

water penetration at test pressure of 8 psf (384 Pa) when tested with the high performance subsill.

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

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

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

Testing Procedures - ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... *(Specify one of the following):*

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of *(Specify)*. Overall depth shall be *(Specify)*. Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

## Specifications

### Thermal Flush Front™

- Series FT451
- Series FT601

#### SECTION 08 41 13 ALUMINUM FRAMED STOREFRONTS

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
FT451	2" (50.8)	4-1/2" (114.3)	1" (25)	Exterior/Interior
FT601		6" (152.4)		

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

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

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

- Maximum deflection of L/175 of the span

- Allowable stress with a safety factor of 1.65

The system shall perform to this criteria under a windload of (*Specify*) psf. Structural Integrity - Manufacturer shall provide a Two Year Warranty on thermal framing against failure.

Thermal Performance - Series FT451/FT601 shall be tested in accordance with NFRC 100, 200, and AAMA 1503.

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

Testing Procedures -

ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper), thermally broken by a two part chemically cured high density polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

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

anodic oxide treatment to obtain... (*Specify one of the following*):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2" (50.8). Overall depth shall be (*Specify*). Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

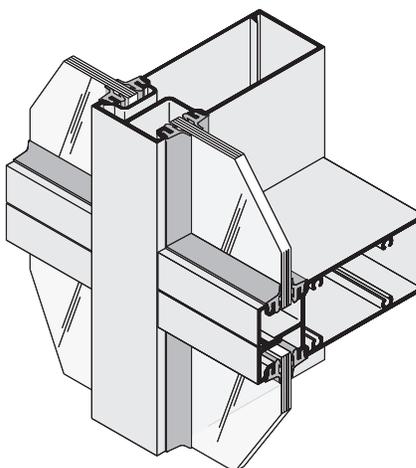
# STOREFRONTS

## Technical Data

Flush Front™ Systems feature screw race joinery and panel type installation, which allows for shop or job site fabrication. Injection molded water deflectors at intermediate horizontals, and a continuous sill gutter with factory pre-punched weep slots, ensure control of any infiltrated water. The plane of the glass may be reversed from exterior to interior or any combination to give these standard systems a custom look. Flush Front™ Series FT451 and FT601 offer improved thermal performance using the Poly-Aluminizer™ thermal break technology as described on page 44-B1. All series may be glazed from the interior or exterior using a top load E.P.D.M. glazing gasket, see page 01-B3. This multi-purpose product was also designed and tested for use as a Window Wall System, and is an ideal choice for fixed horizontal ribbon window applications. Flush Front Systems accommodate most U.S. Aluminum Entrance Doors.

### Flush Front™

- Series FF450
- Series FF451
- Series FT451
- Series FF600
- Series FF601
- Series FT601



FLUSH FRONT

SERIES	WIDTH	DEPTH	GLAZING INFILLS	APPLICATION
<b>FF450</b>	1-3/4" (44.5)	4-1/2" (114.3)	1/4" (6) or 3/8" (10)	Ground Floor to Mid-Rise Buildings. Ideal for Fixed Horizontal Ribbon Windows.
<b>FF451</b>	2" (50.8)	4-1/2" (114.3)	1" (25)	
<b>FT451 (Thermal)</b>	2" (50.8)	4-1/2" (114.3)	1" (25)	
<b>FF600</b>	1-3/4" (44.5)	6" (152.4)	1/4" (6) or 3/8" (10)	
<b>FF601</b>	2" (50.8)	6" (152.4)	1" (25)	
<b>FT601 (Thermal)</b>	2" (50.8)	6" (152.4)	1" (25)	

GLASS SIZES*	
Series FF450 and FF600 for 1/4" (6) Glass	= Daylight Opening + 5/8" (15.9)
Series FF451, FT451, FF601, and FT601 for 1" (25) Glass	= Daylight Opening + 7/8" (22.2)

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

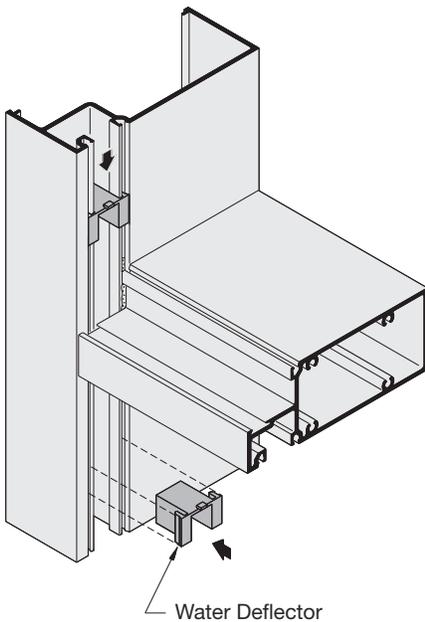
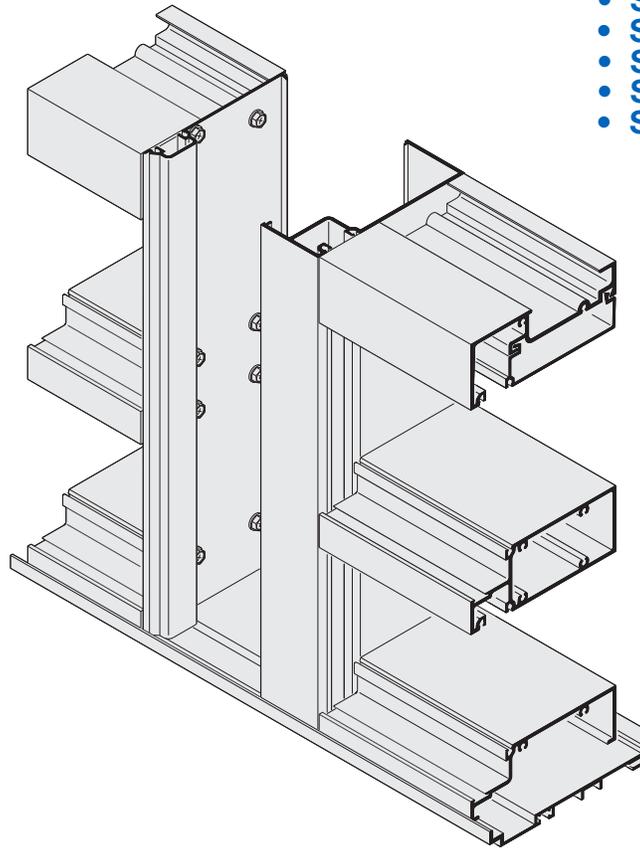
**Special Features**

Flush Front™ Systems allow the plane of the glass to be reversed from exterior to interior or any combination to give these standard systems a custom look. Flush Front™ is ideal for use in storefront and punched opening or ribbon window applications. Flush Front™ Systems accommodate most U.S. Aluminum Entrance Doors.

System features screw race joinery with split vertical mullions which allows for framing to be shop fabricated and shipped to the job site partially or totally assembled into panels. The assembled panel units are then snapped together into long runs. Subsills with factory pre-punched weep slots must be used with these systems.

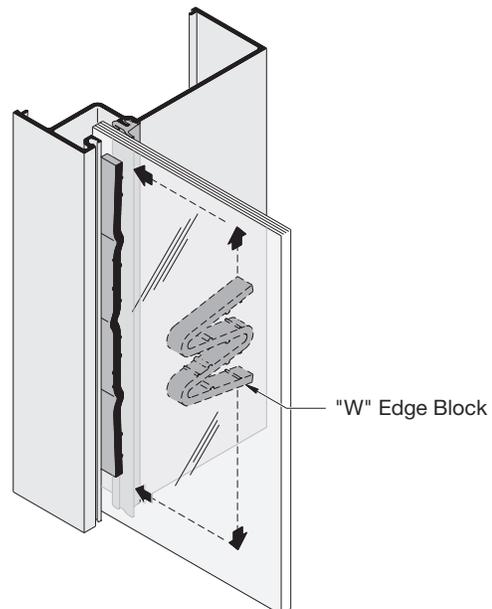
**Flush Front™**

- Series FF450
- Series FF451
- Series FT451
- Series FF600
- Series FF601
- Series FT601



Apply silicone to two sides of glazing pocket at vertical/horizontal joint and glazing reglets. Slide water deflector, down into position. Seal over top edges of water deflector, leaving a gap on outside edge allowing water to drain into subsill.

Stretch "W" Block and slide it between glass and mullion into deep glazing pocket. Push it all the way until it clears glass and locks into place. These blocks are used to prevent glass from "walking" out of the pocket caused by extreme vibration or minor earthquakes.



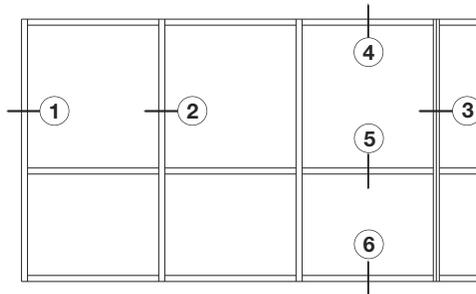
# STOREFRONTS

## Typical Details

### Flush Front™ • Series FF450

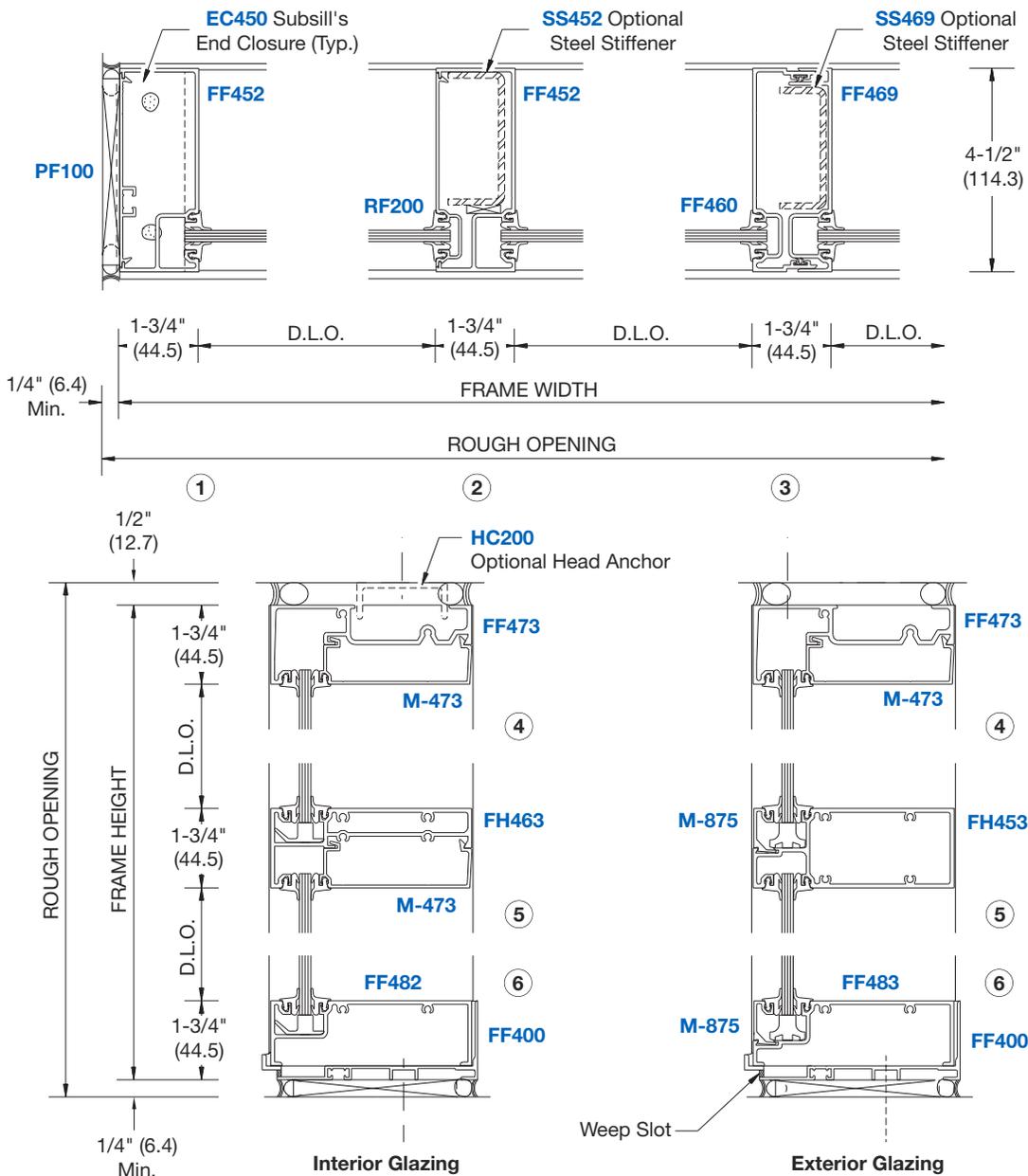
#### FLUSH OUT FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION

NOTE: NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



NOT TO SCALE

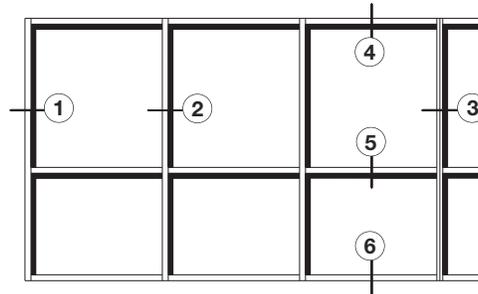
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**Flush Front™**  
 • Series FF450

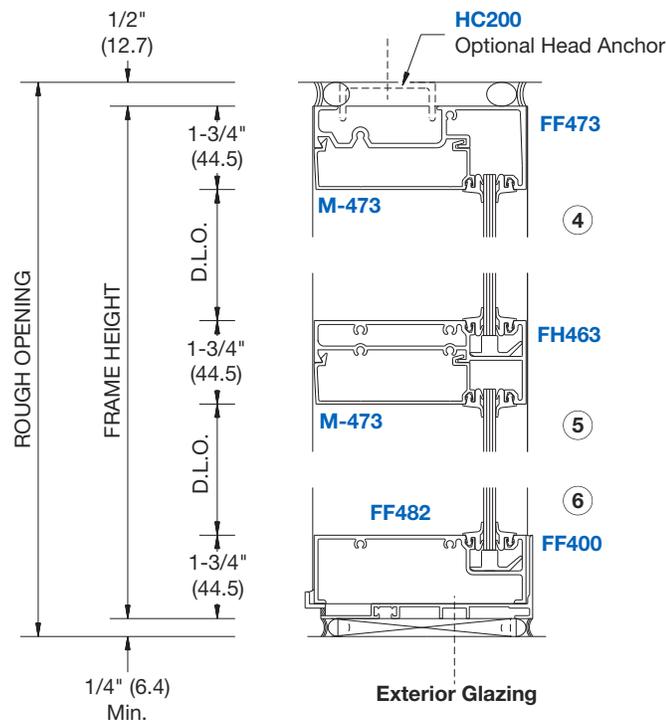
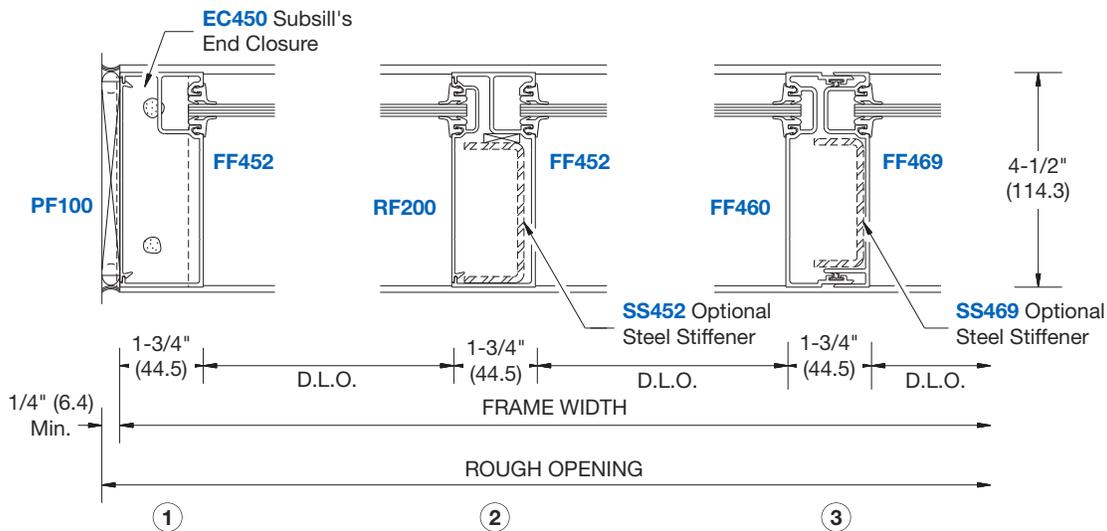
**FLUSH IN**  
**FOR 1/4" (6) OR**  
**3/8" (10) GLAZING**

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



**TYPICAL ELEVATION**

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

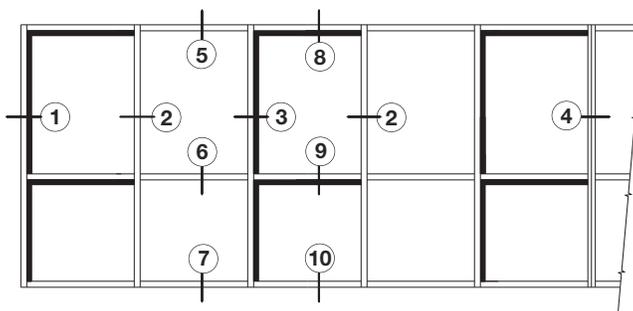
# STOREFRONTS

## Typical Details

### Flush Front™ • Series FF450

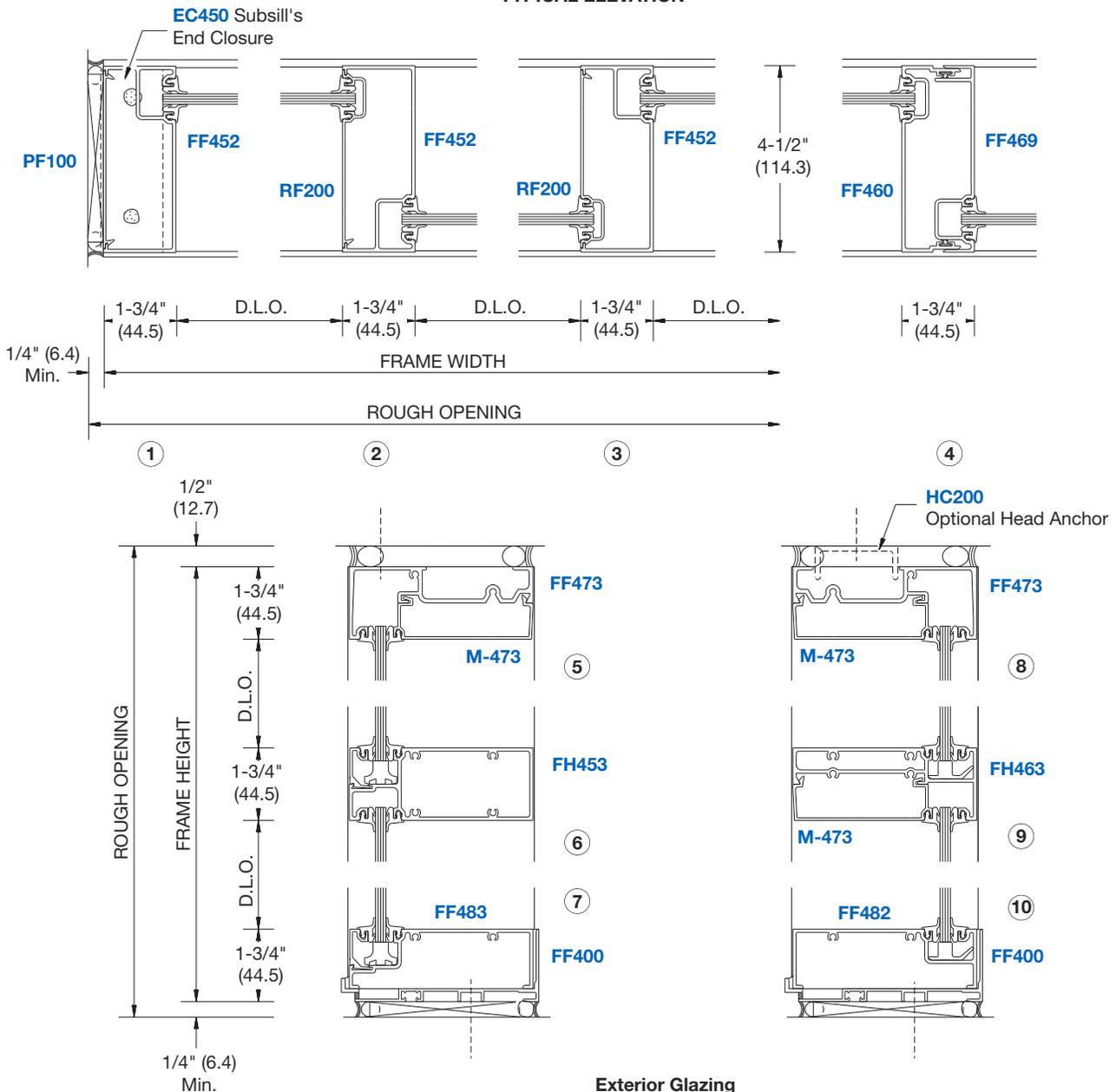
#### FLUSH IN / FLUSH OUT FOR 1/4" (6) OR 3/8" (10) GLAZING

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



**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.

TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

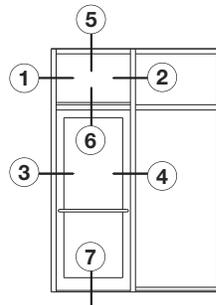
**Typical Details**

**Flush Front™**  
• Series FF450

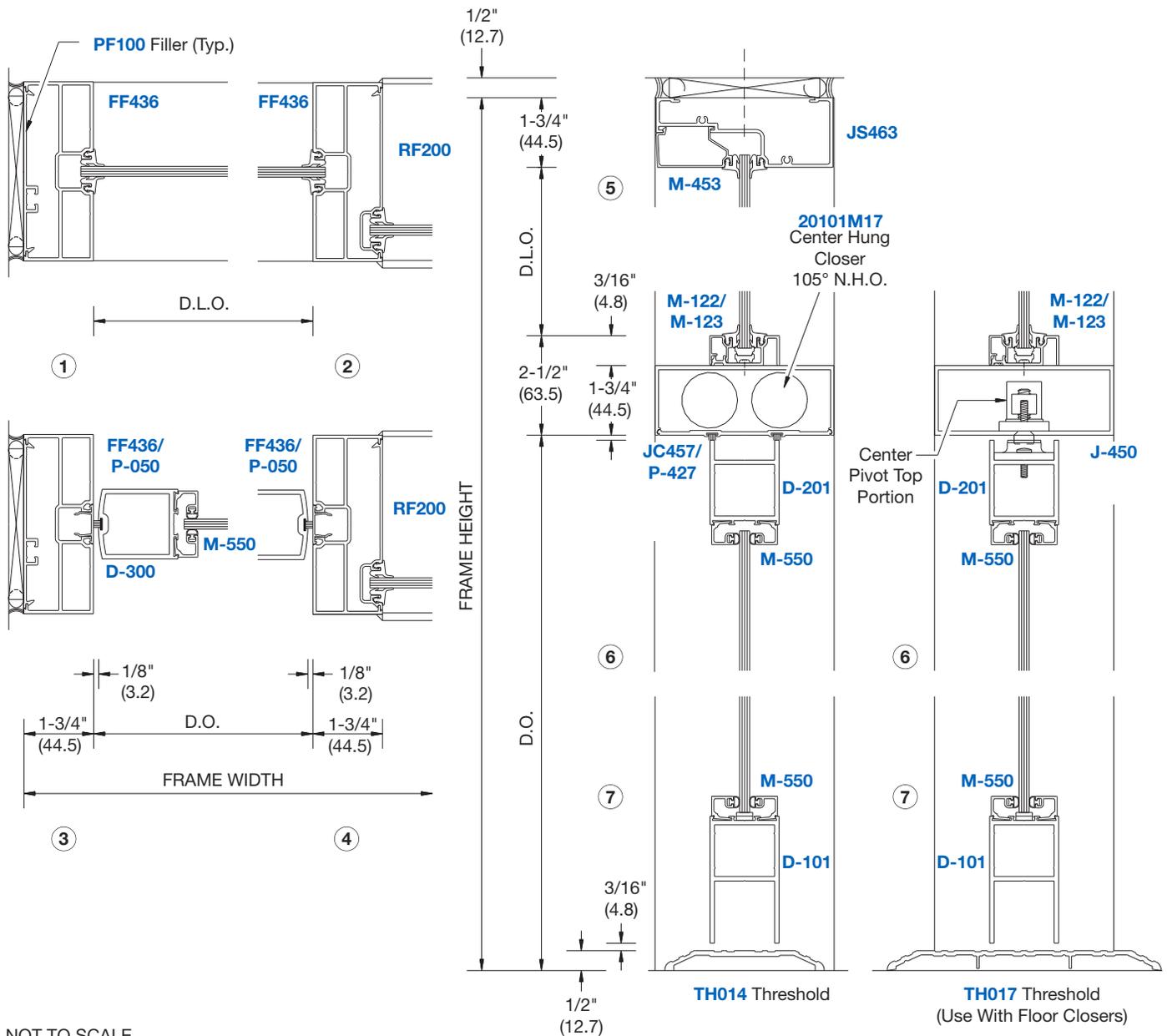
**DOOR FRAMING**

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



**CENTER HUNG DOOR**



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

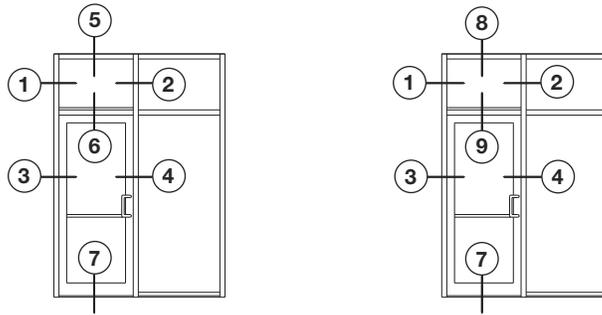
# STOREFRONTS

## Typical Details

### Flush Front™ • Series FF450

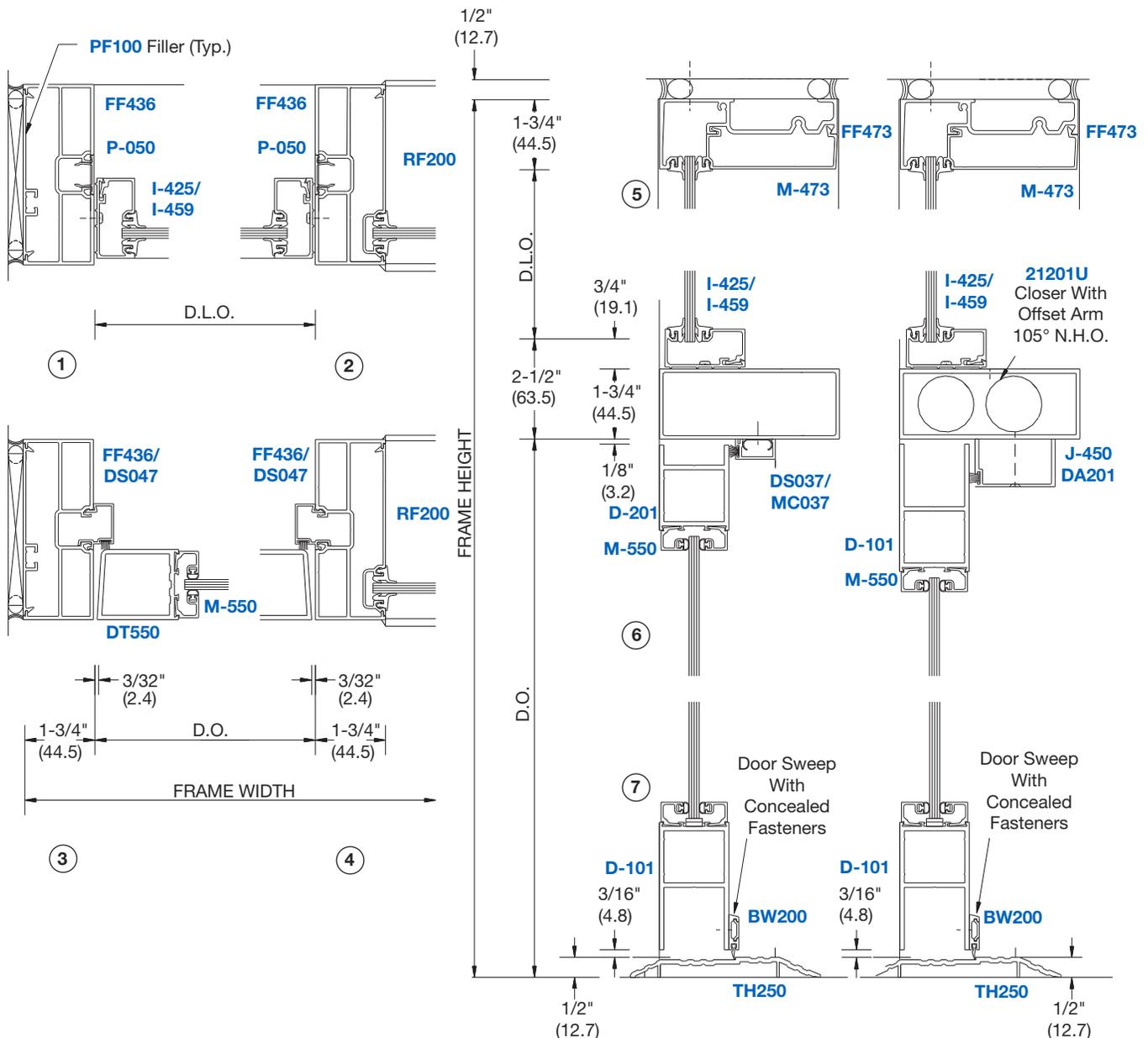
#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.

#### OFFSET HUNG DOORS



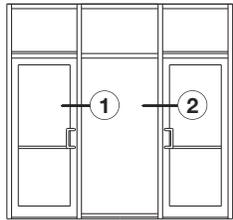
NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

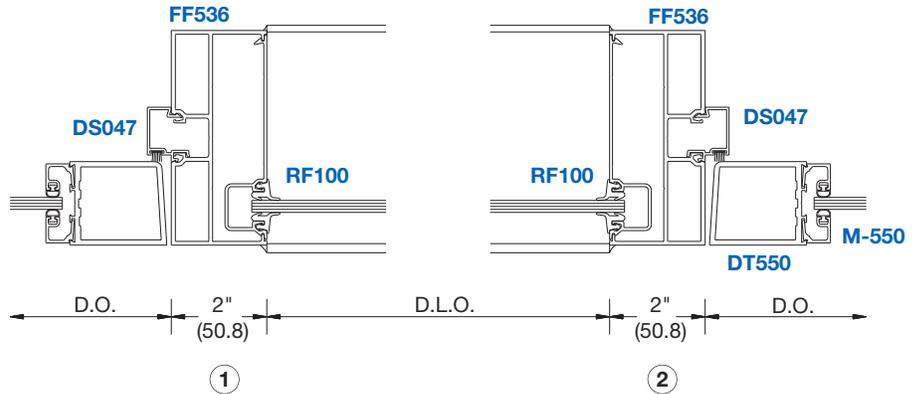
**Typical Details**

**Flush Front™**  
 • Series FF450

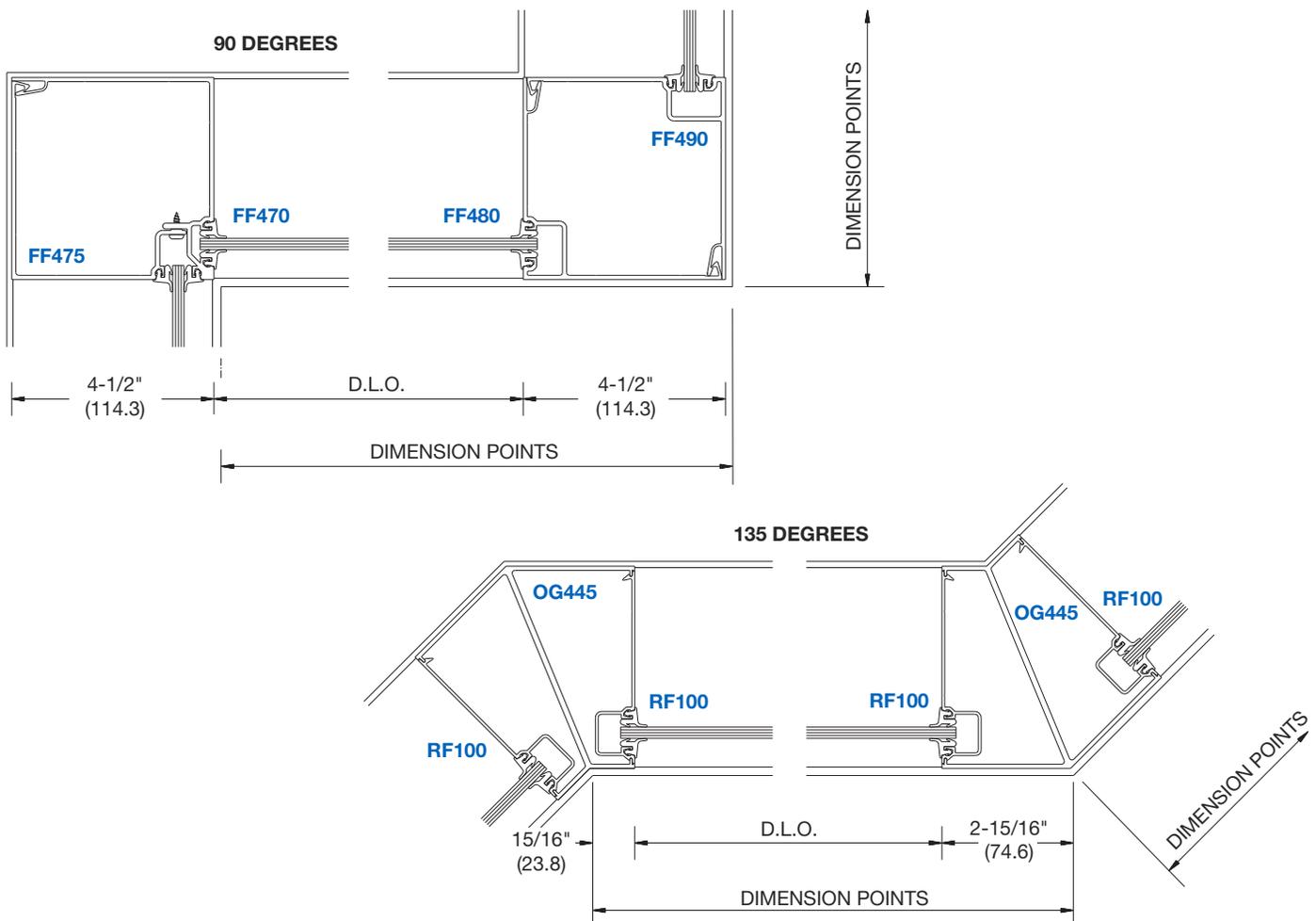
**DOOR FRAMING SPECIAL CONDITION**



**TYPICAL ELEVATION**  
 (2" Wide Door Jamb with  
**RF100** Fillers are  
 required to install glass  
 between doors)



**VERTICAL CORNER CONDITIONS  
 FOR 1/4" (6) GLAZING**



NOT TO SCALE

# STOREFRONTS

## Windload Charts

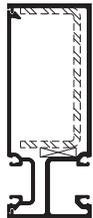
**Flush Front™**  
• Series FF450

### VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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

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



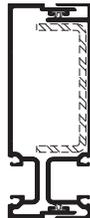
**FF452/RF200**

I = 2.899 (120.67 x 10<sup>4</sup>)  
 S = 1.165 (19.09 x 10<sup>3</sup>)

**SS452 Steel Stiffener**

I = .825 (34.34 x 10<sup>4</sup>)  
 S = .562 (9.21 x 10<sup>3</sup>)

IAL+STL = 5.292 (220.27 x 10<sup>4</sup>)



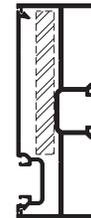
**FF460/FF469**

I = 3.632 (151.18 x 10<sup>4</sup>)  
 S = 1.481 (24.27 x 10<sup>3</sup>)

**SS469 Steel Stiffener**

I = .571 (23.77 x 10<sup>4</sup>)  
 S = .425 (6.96 x 10<sup>3</sup>)

IAL+STL = 5.288 (220.10 x 10<sup>4</sup>)



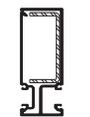
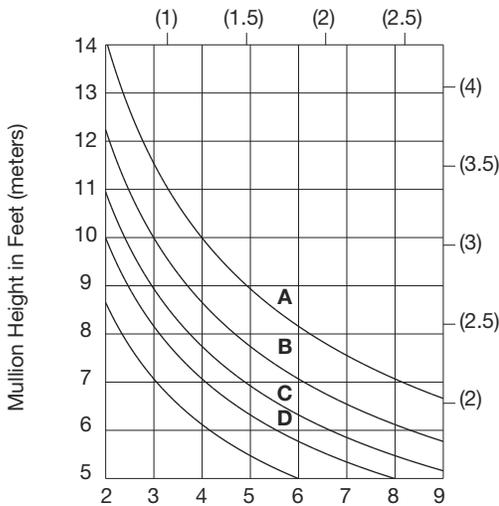
**FF436/RF200**

I = 3.251 (135.32 x 10<sup>4</sup>)  
 S = .445 (23.68 x 10<sup>3</sup>)

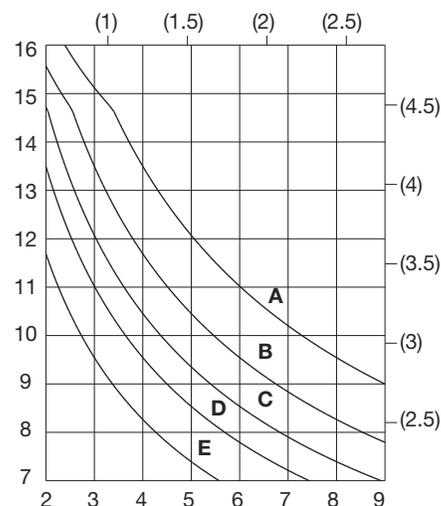
**3/8" x 3" Steel Bar**

I = .844 (35.13 x 10<sup>4</sup>)  
 S = .563 (9.23 x 10<sup>3</sup>)

IAL+STL = 5.7 (237.25 x 10<sup>4</sup>)



**FF452/RF200**



**FF452/RF200**  
With **SS452**

Mullion Spacing in Feet (meters)

## Windload Charts

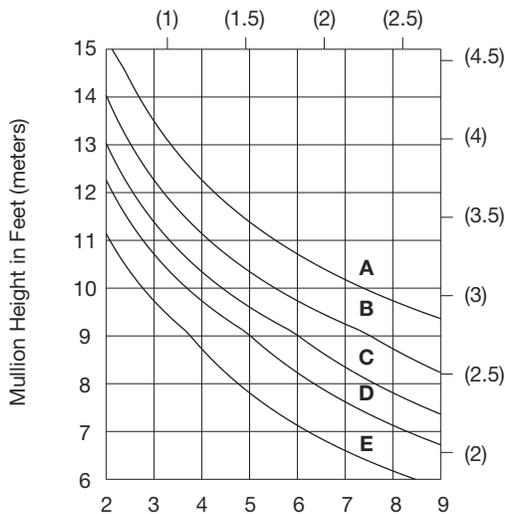
**Flush Front™**  
• Series FF450

### VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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

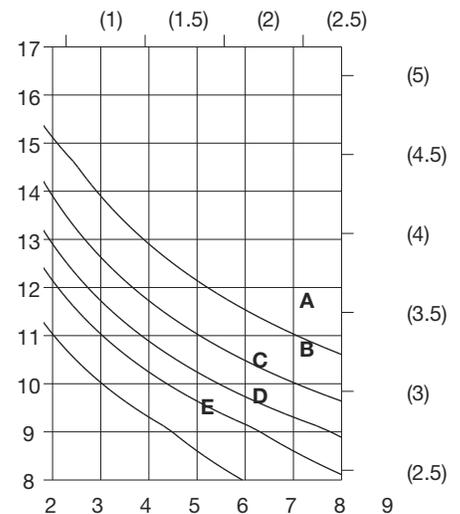
Limitation of vertical mullions for:  
 CURVES **A** = 15 PSF (718 Pa)  
 CURVES **B** = 20 PSF (957 Pa)  
 CURVES **C** = 25 PSF (1197 Pa)  
 CURVES **D** = 30 PSF (1436 Pa)  
 CURVES **E** = 40 PSF (1915 Pa)



**FF460/  
FF469**

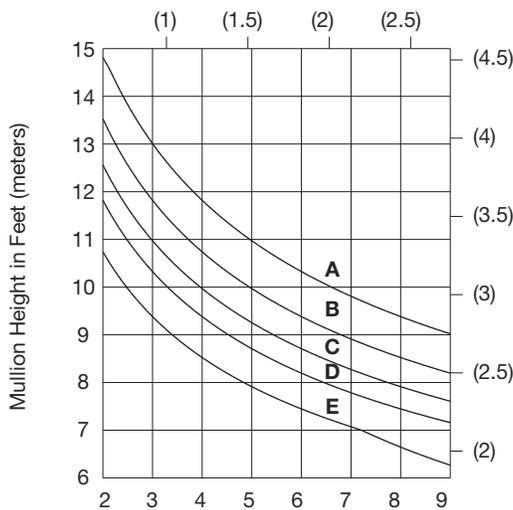


**FF436/  
FF469  
With SS469**

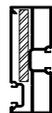


Mullion Spacing in Feet (meters)

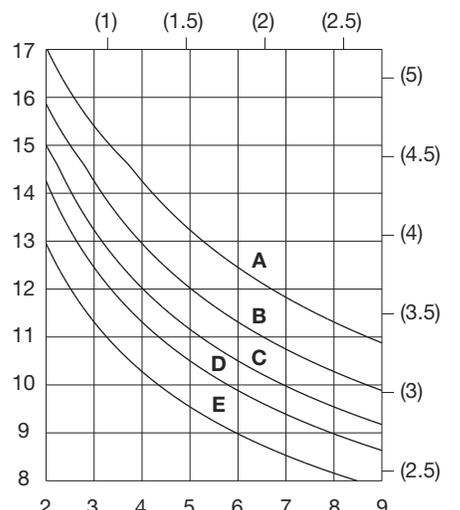
Mullion Spacing in Feet (meters)



**FF436/  
RF200**



**FF436/  
RF200  
With 3/8" x 3" Steel**



Mullion Spacing in Feet (meters)

Mullion Spacing in Feet (meters)

# STOREFRONTS

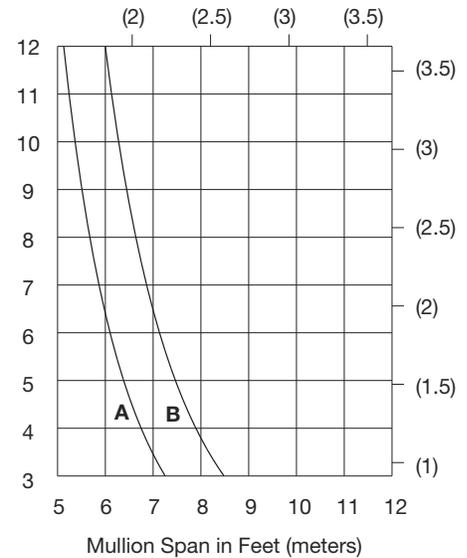
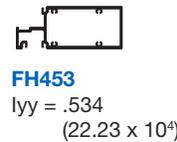
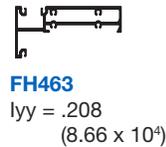
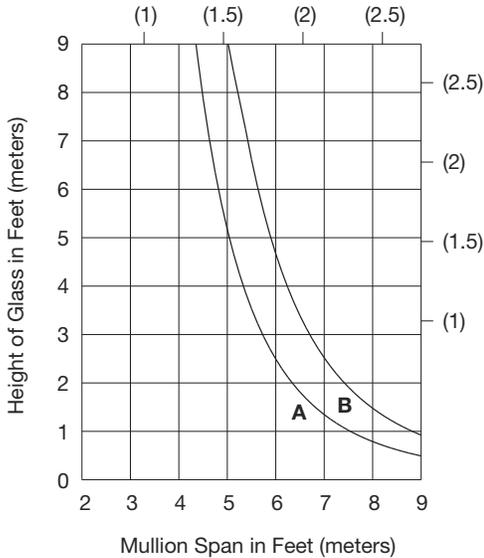
## Deadload Charts

**Flush Front™**  
• Series FF450

### INTERMEDIATE HORIZONTAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 psf (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

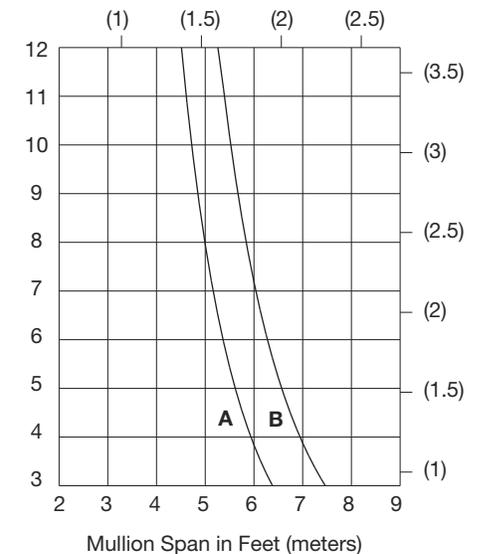
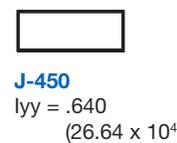
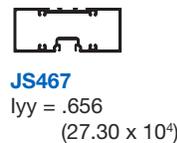
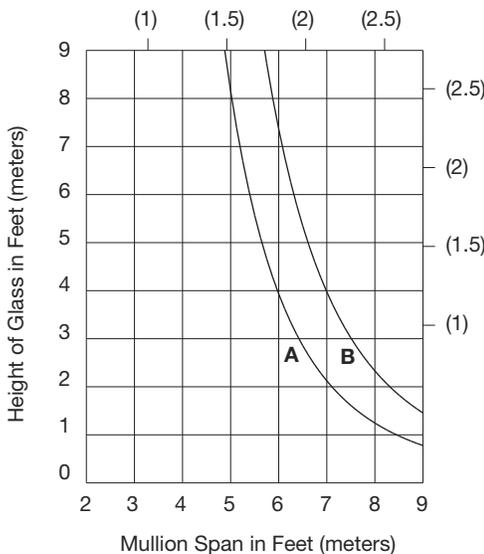
- CURVES A: 1/4 points
- CURVES B: 1/8 points or 8" (203.2) from corners, whichever is larger



### DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 3.25 psf (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:

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

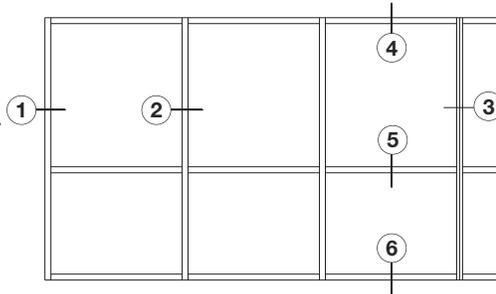


# STOREFRONTS

## Typical Details

### FLUSH OUT FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

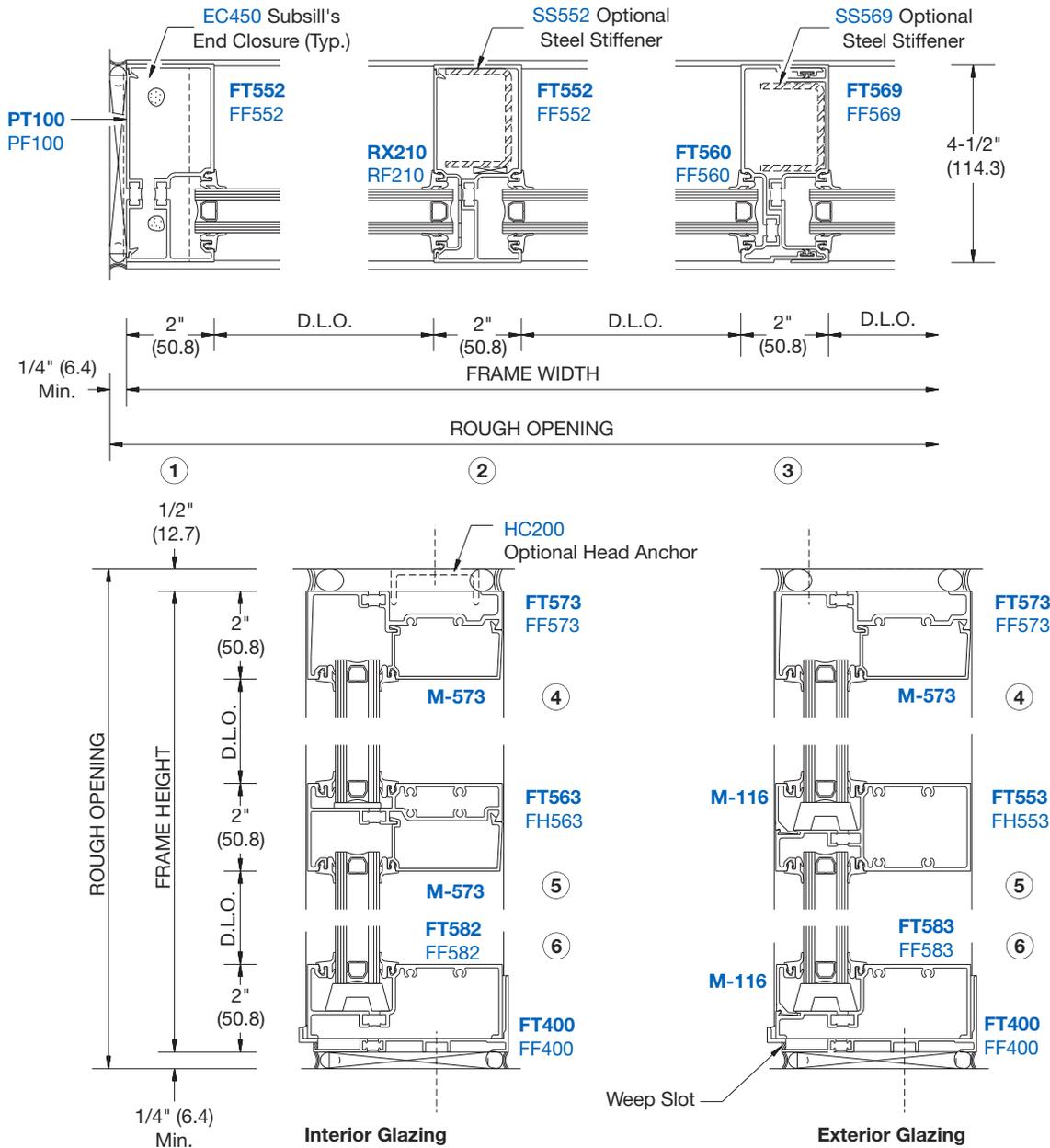
### Flush Front™

- Series FF451
- Series FT451

F T 4 0 0

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT451** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.

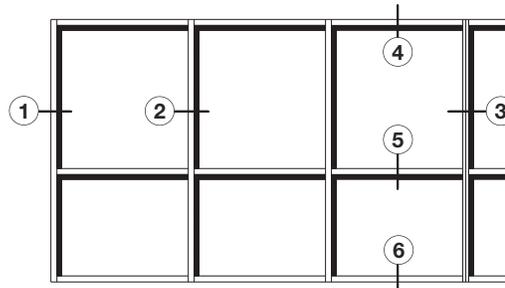


# STOREFRONTS

## Typical Details

### FLUSH IN FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

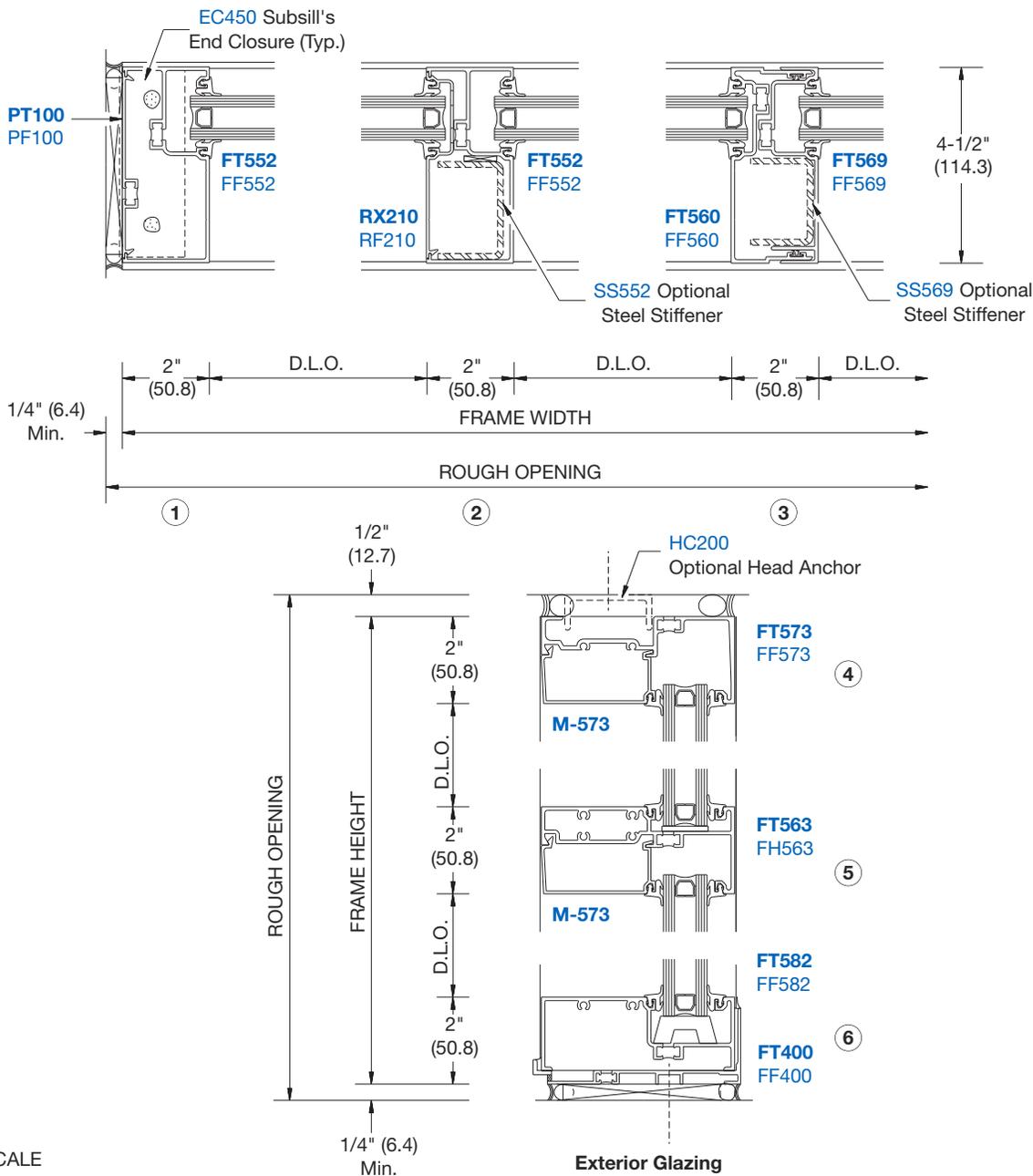
### Flush Front™

- Series FF451
- Series FT451

F	T	4	0	0
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Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT451** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



NOT TO SCALE

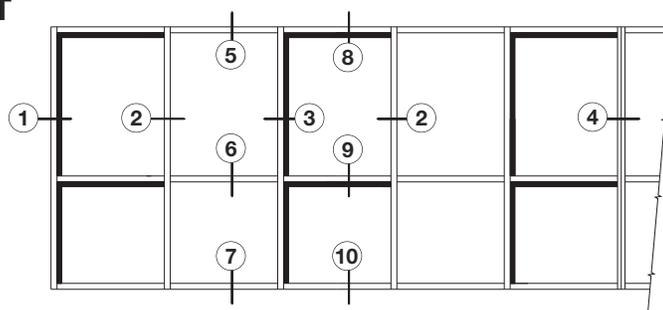
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

### FLUSH IN / FLUSH OUT FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

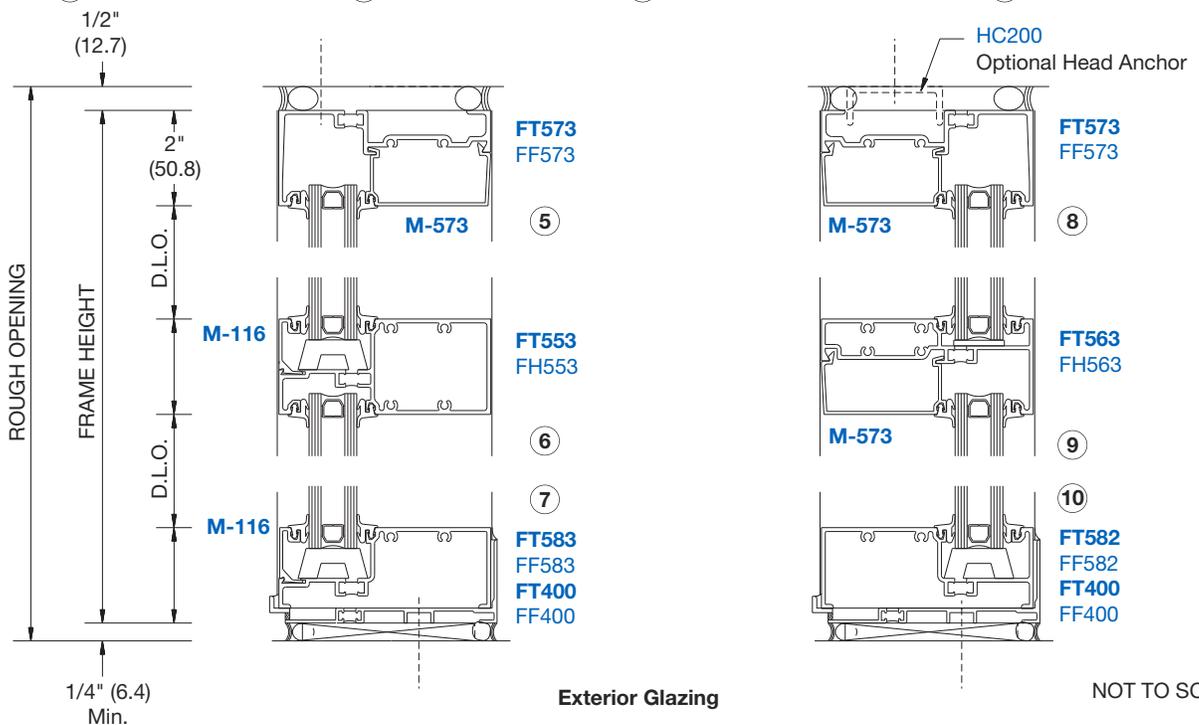
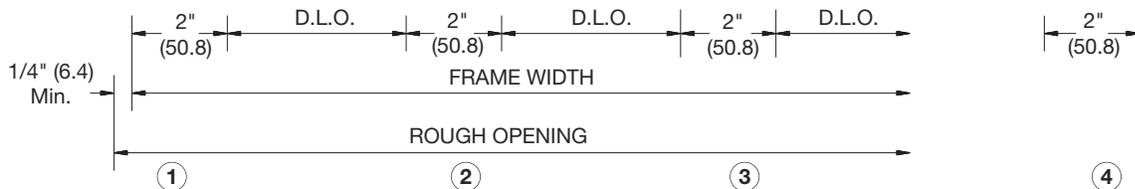
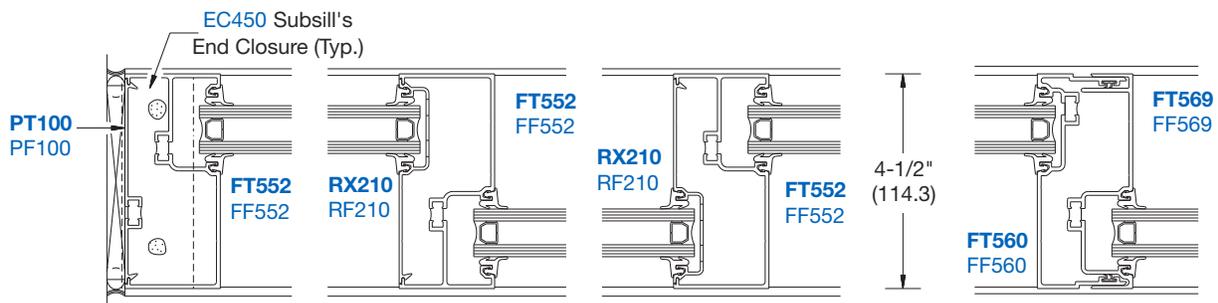
### Flush Front™

- Series FF451
- Series FT451

F T 4 0 0

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT451** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



Exterior Glazing

NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

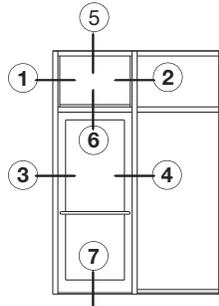
### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

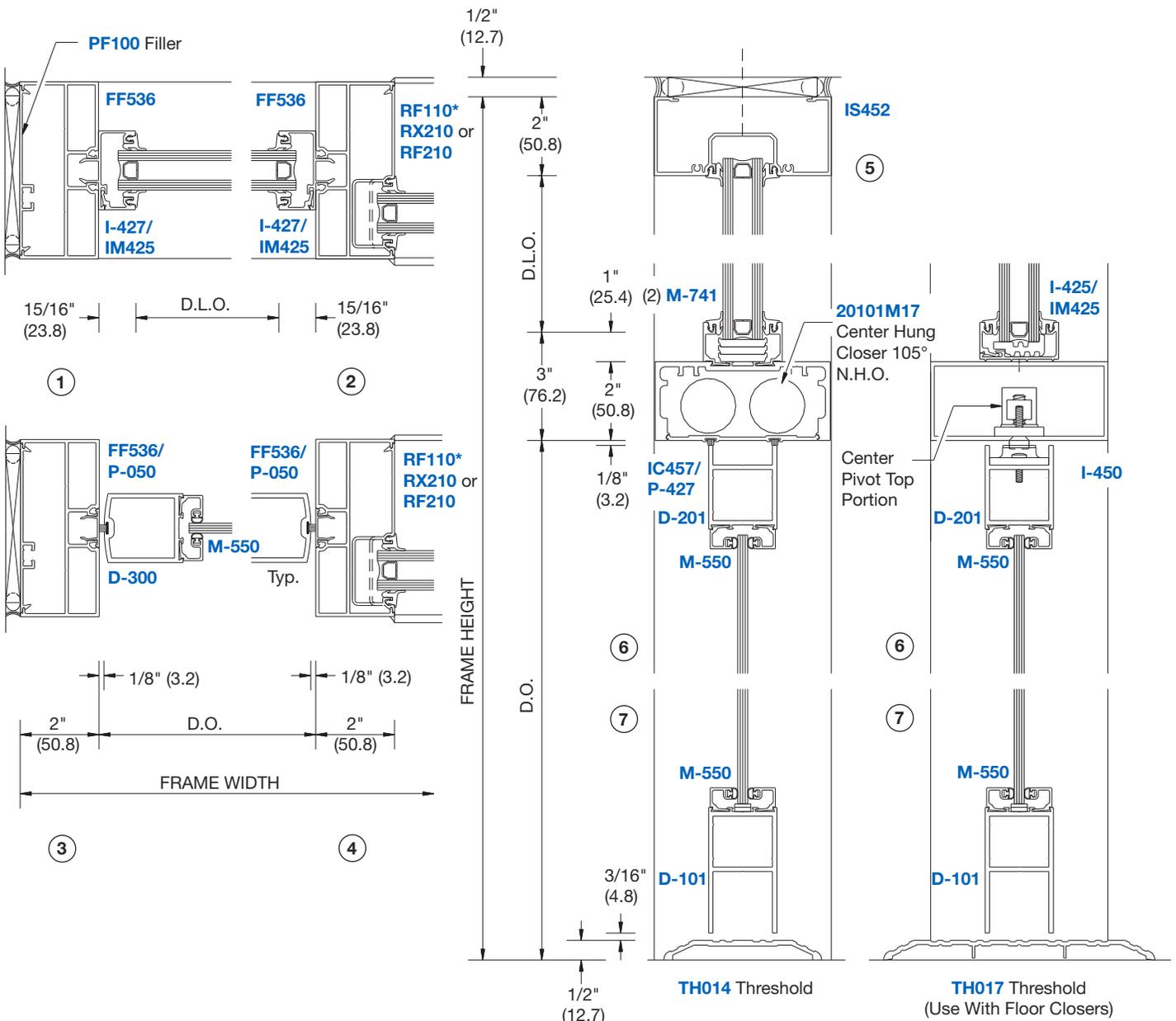
### Flush Front™

- Series FF451
- Series FT451

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



CENTER HUNG DOOR



NOT TO SCALE

\*NOTE: RF110 FILLER REQUIRED TO INSTALL GLASS BETWEEN DOORS

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

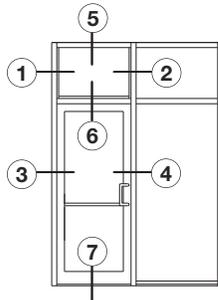
## Typical Details

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

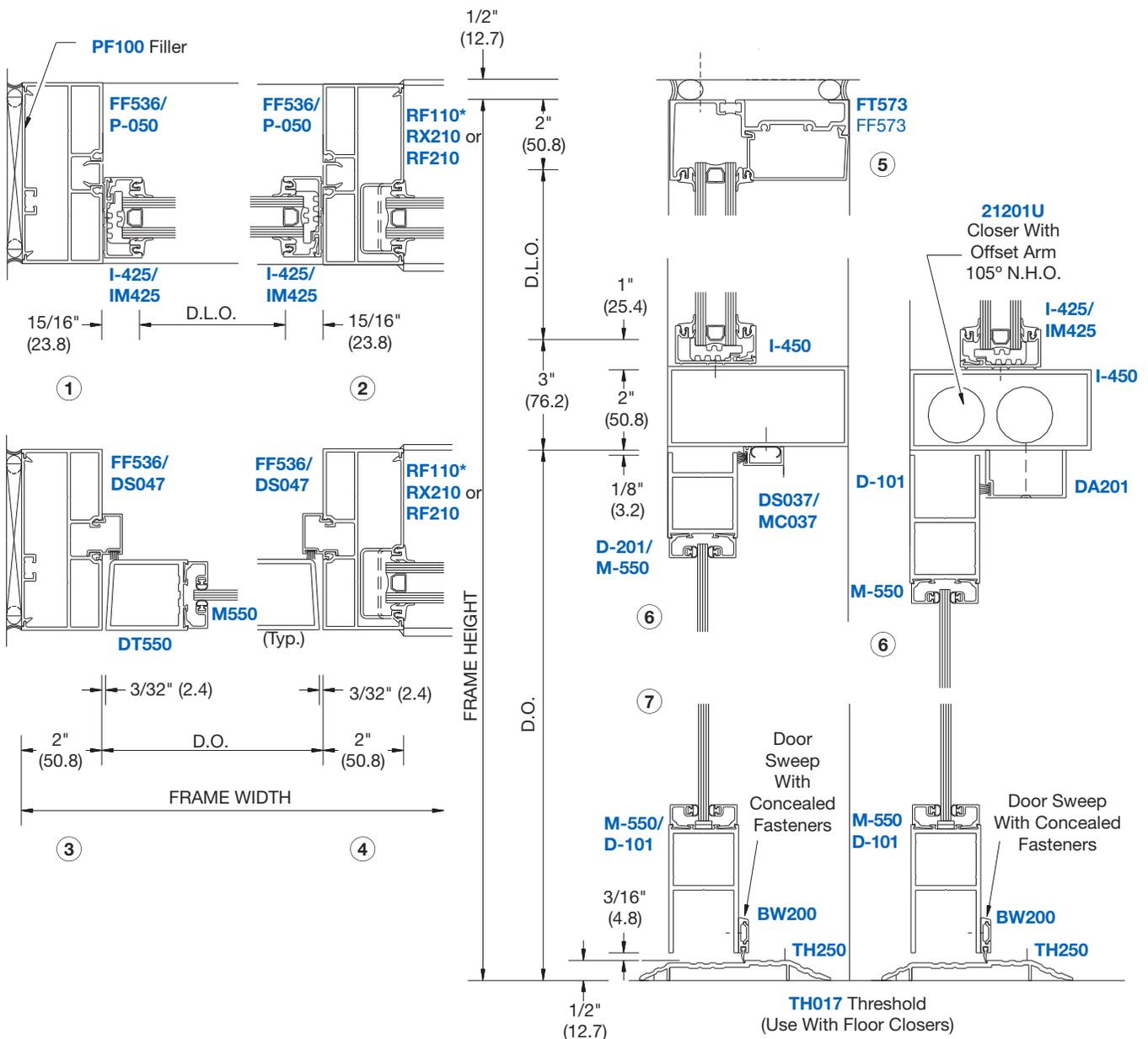
### Flush Front™

- Series FF451
- Series FT451



**OFFSET HUNG DOOR**

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



NOT TO SCALE

\*NOTE: RF110 FILLER REQUIRED TO INSTALL GLASS BETWEEN DOORS

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

### VERTICAL CORNER CONDITIONS FOR 1" (25) GLAZING

### Flush Front™

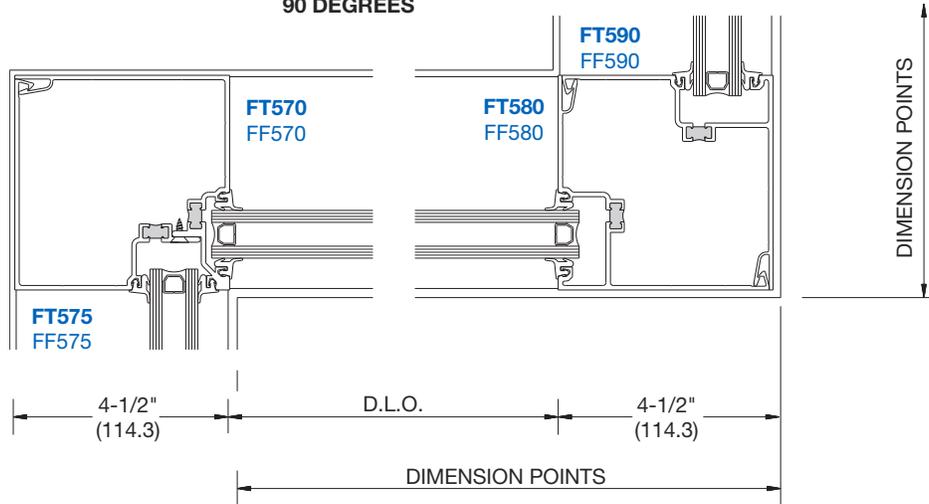
- Series FF451
- Series FT451

F	T	4	0	0
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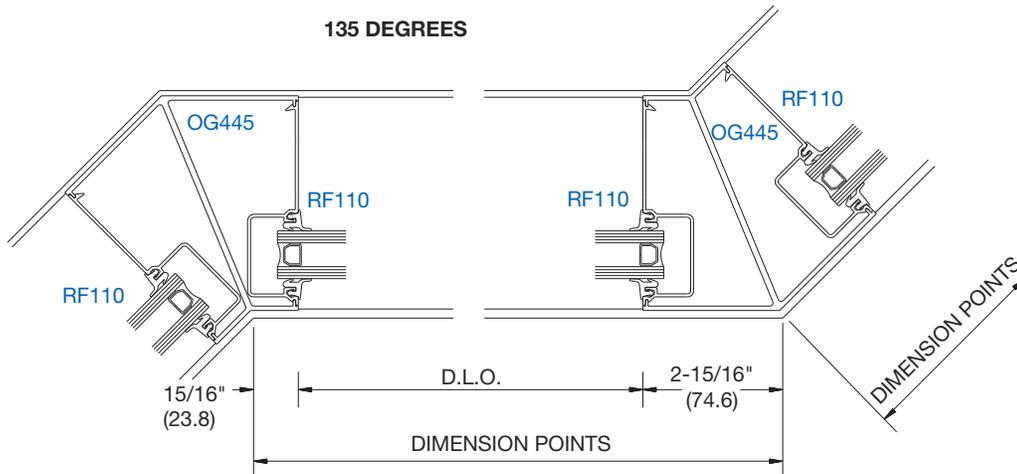
Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT451** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing  
Gaskets used on both sides of glazing throughout.

#### 90 DEGREES



#### 135 DEGREES



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

### TRANSITION GLAZING

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

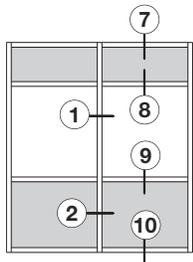
### Flush Front™

- Series FF451
- Series FT451

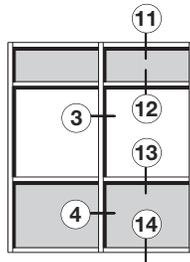
F	T	4	0	0
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Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT451** details are typically shown.

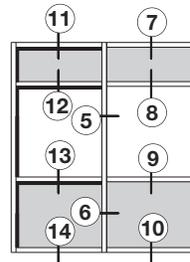
**NOTE:** **NP225** E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. **NP238** E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



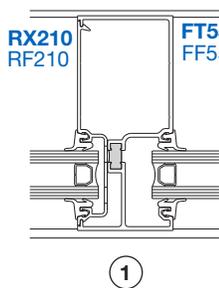
FLUSH OUT



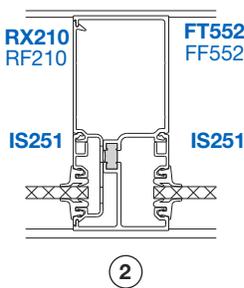
FLUSH IN



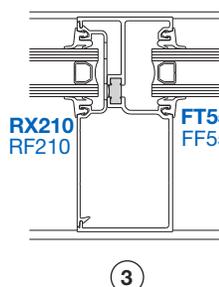
FLUSH IN / FLUSH OUT



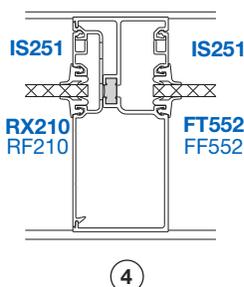
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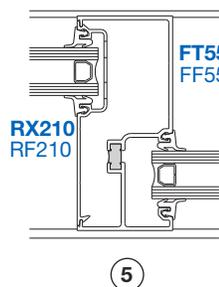
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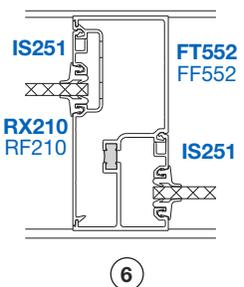
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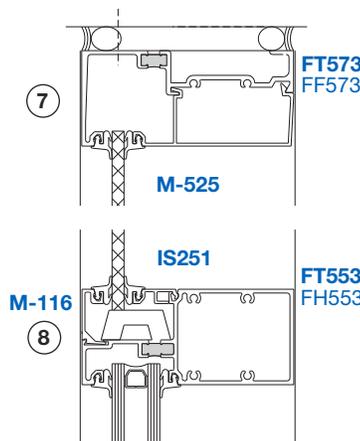
4



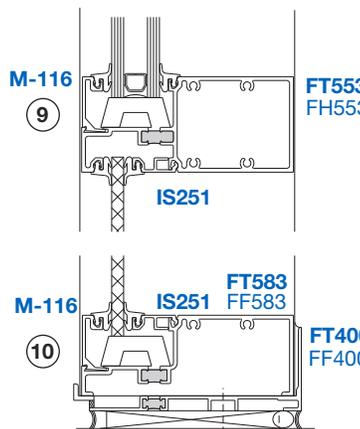
5



6



7

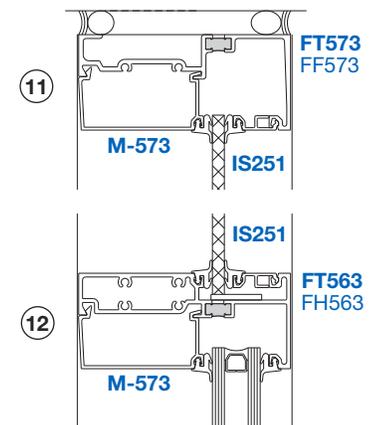


8

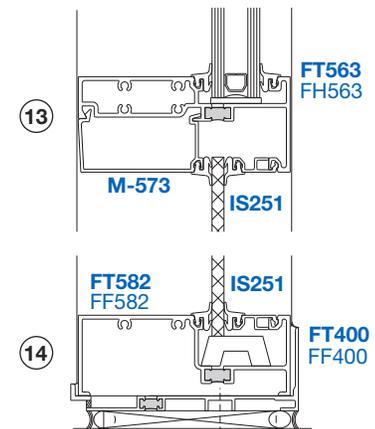


9

Exterior Glazing



11



12



13

NOT TO SCALE

# STOREFRONTS

## Windload Charts

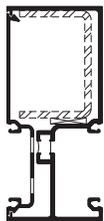
### Flush Front™

- Series FF451
- Series FT451

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

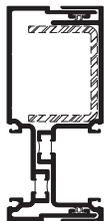
These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at [usalum.com](http://usalum.com).



**FT552/RX210** or  
**FF552/RF210**  
I = 2.906 (120.96 x 10<sup>4</sup>)  
S = 1.255 (20.56 x 10<sup>3</sup>)

**SS552** Steel Stiffener  
I = .511 (21.27 x 10<sup>4</sup>)  
S = .454 (7.44 x 10<sup>3</sup>)

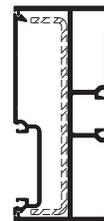
IAL+STL = 4.388 (182.64 x 10<sup>4</sup>)



**FT560/FT569** or  
**FF560/FF569**  
I = 4.047 (168.45 x 10<sup>4</sup>)  
S = 1.696 (27.79 x 10<sup>3</sup>)

**SS569** Steel Stiffener  
I = .373 (15.53 x 10<sup>4</sup>)  
S = .373 (6.11 x 10<sup>3</sup>)

IAL+STL = 5.129 (213.47 x 10<sup>4</sup>)

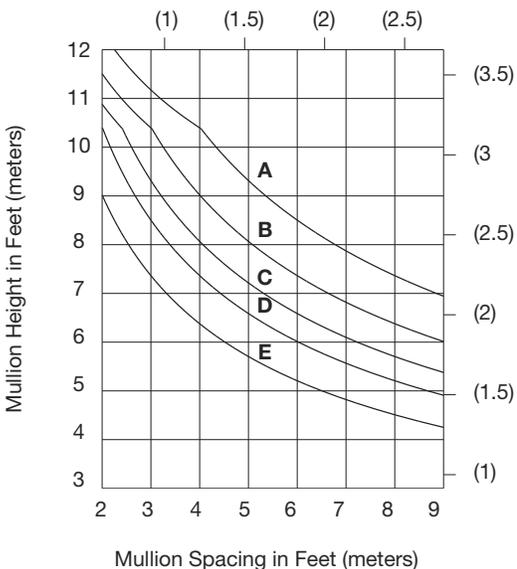


**FF536/RX210** or  
**FF536/RF210**  
I = 3.429 (142.73 x 10<sup>4</sup>)  
S = 1.524 (24.97 x 10<sup>3</sup>)

**SS045** Steel Stiffener  
I = 1.122 (46.70 x 10<sup>4</sup>)  
S = .544 (8.92 x 10<sup>3</sup>)

IAL+STL = 6.683 (278.16 x 10<sup>4</sup>)

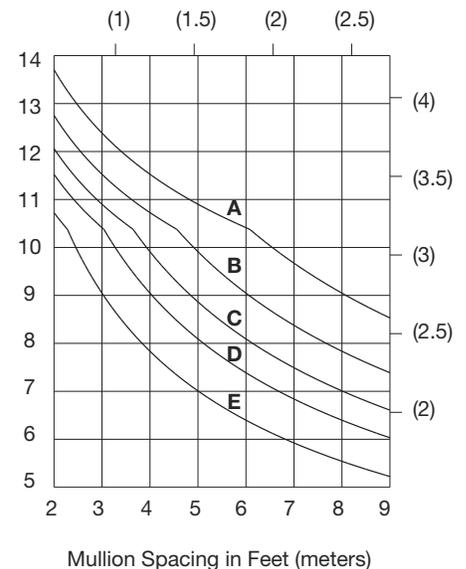
Limitation of vertical mullions for:  
CURVES **A** = 15 PSF (718 Pa)  
CURVES **B** = 20 PSF (957 Pa)  
CURVES **C** = 25 PSF (1197 Pa)  
CURVES **D** = 30 PSF (1436 Pa)  
CURVES **E** = 40 PSF (1915 Pa)



**FT552/RX210**  
**FF552/RF210**



**FT552/RX210**  
**FF552/RF210**  
With **SS552**



## Windload Charts

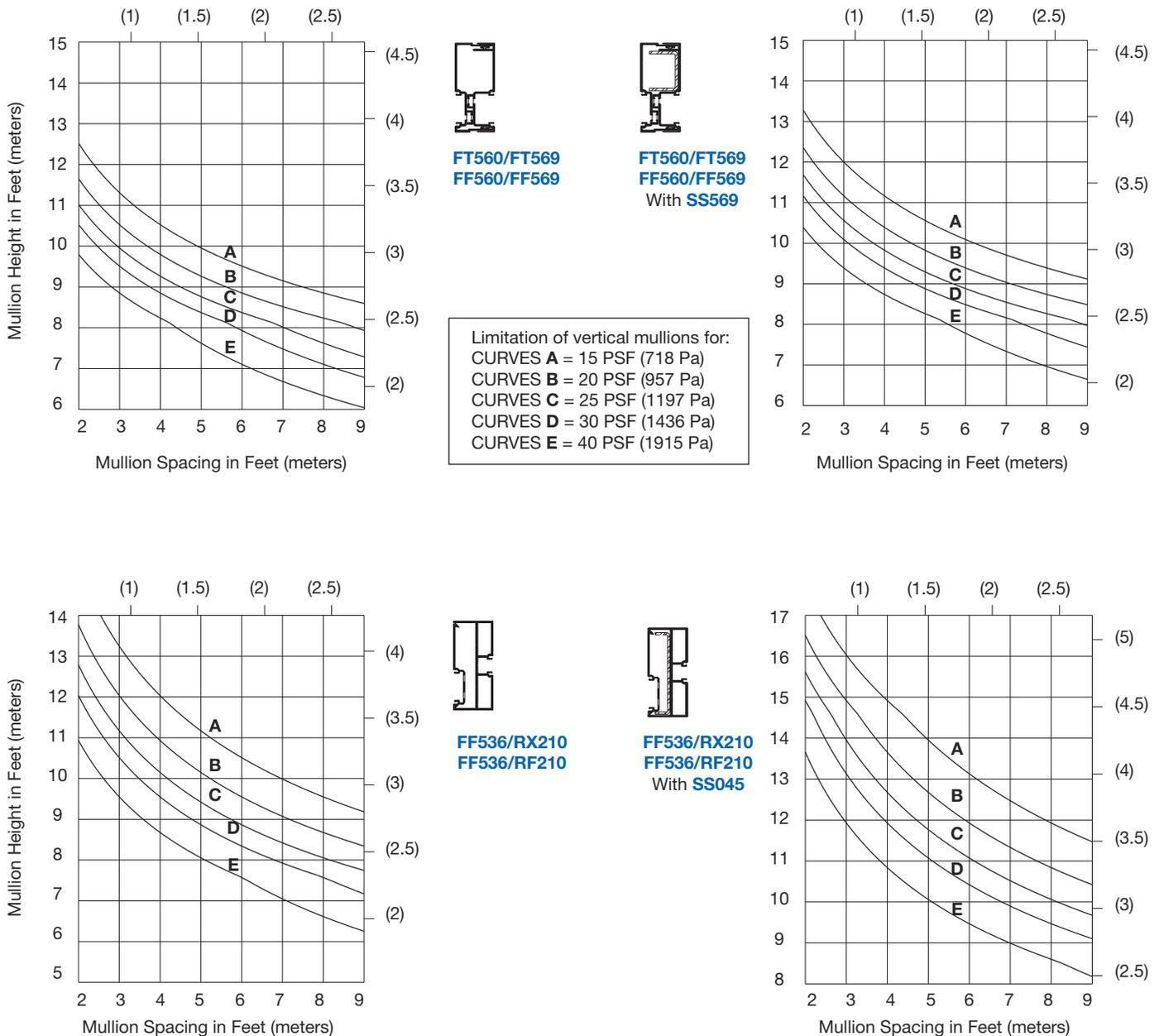
### Flush Front™

- Series FF451
- Series FT451

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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



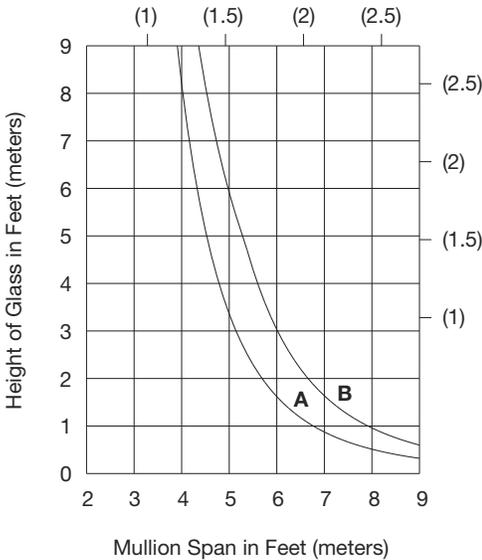
# STOREFRONTS

## Deadload Charts

**Flush Front™**  
 • Series FF451  
 • Series FT451

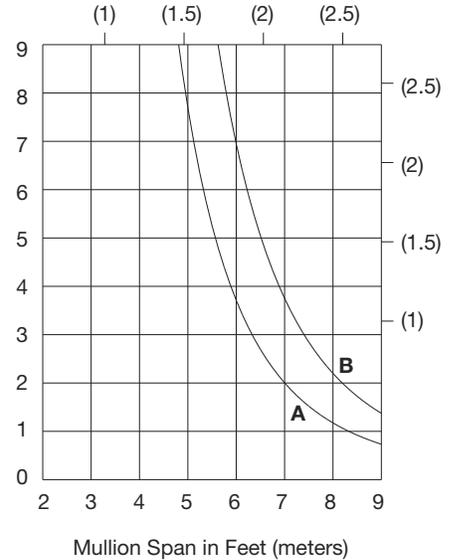
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullions and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:  
 CURVES **A**: 1/4 points  
 CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



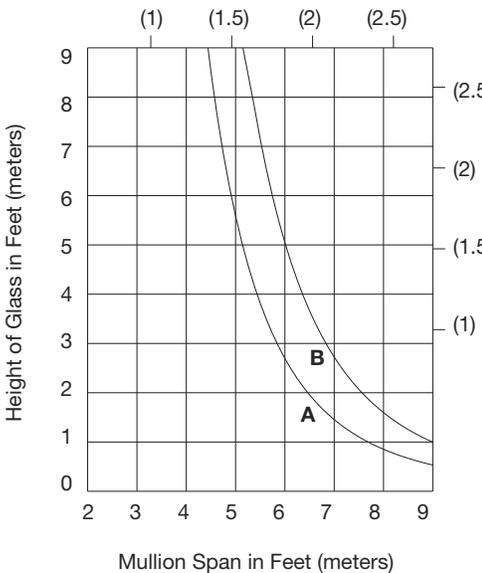
**FT563**  
**FH563**  
 $l_{yy} = .270$   
 (11.24 x 10<sup>4</sup>)

**FT553**  
**FH553**  
 $l_{yy} = .619$   
 (25.76 x 10<sup>4</sup>)



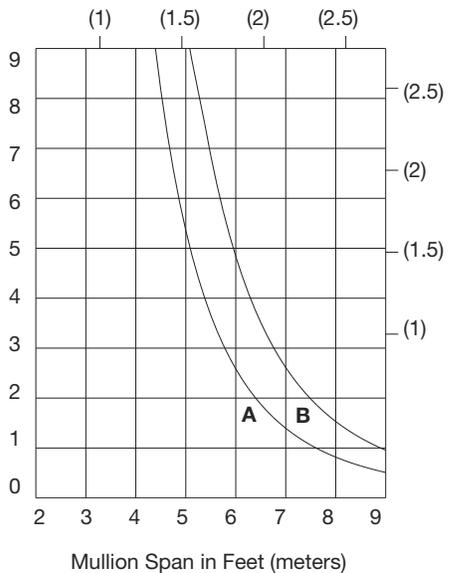
### DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:  
 CURVES **A**: 1/4 points  
 CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



**IS467**  
 $l_{yy} = .899$   
 (37.42 x 10<sup>4</sup>)

**I-450**  
 $l_{yy} = .862$   
 (35.88 x 10<sup>4</sup>)



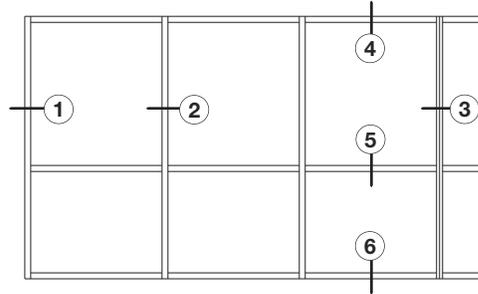
# STOREFRONTS

## Typical Details

### Flush Front™ • Series FF600

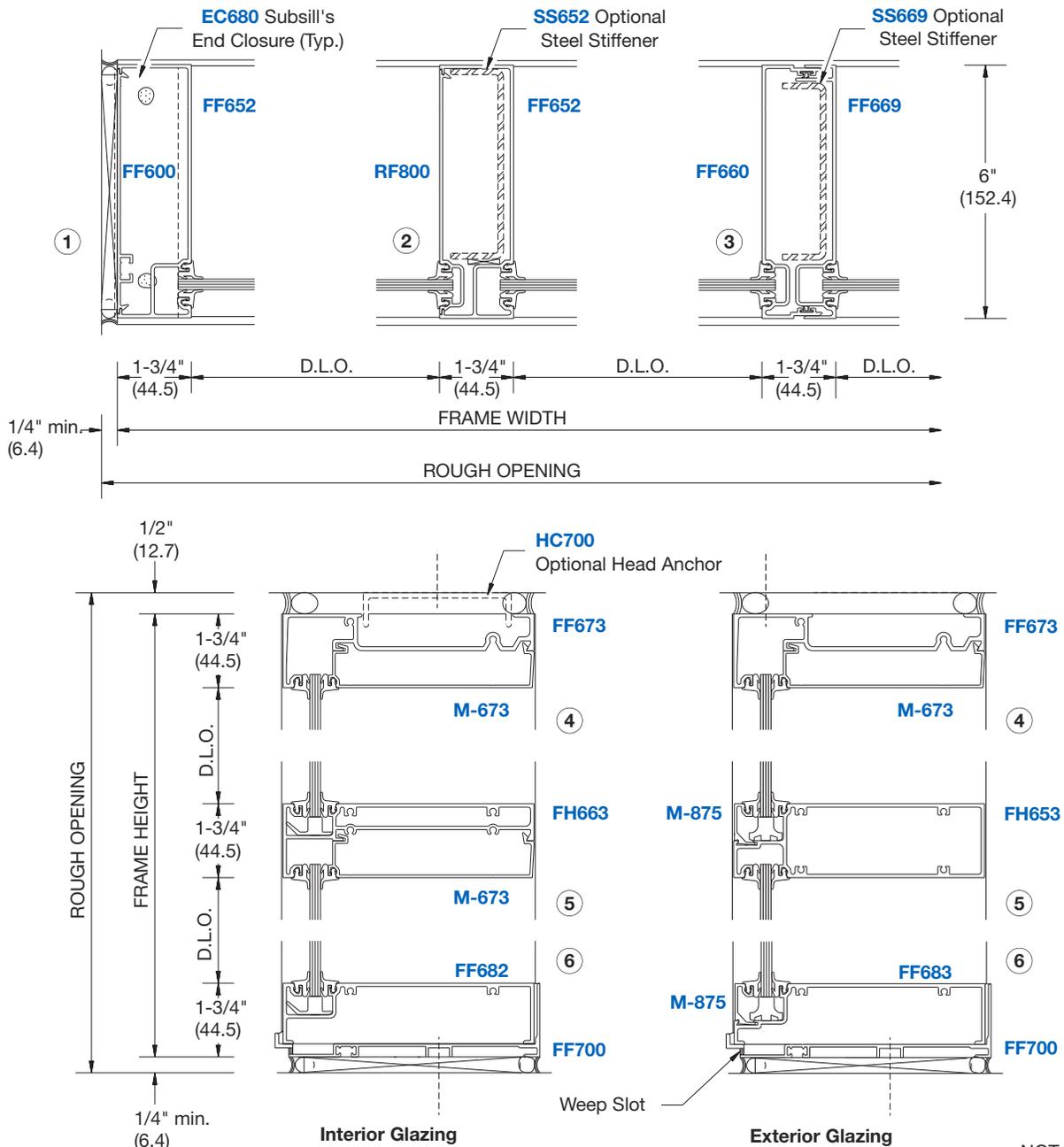
#### FLUSH OUT FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION

NOTE: NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



NOT TO SCALE

# STOREFRONTS

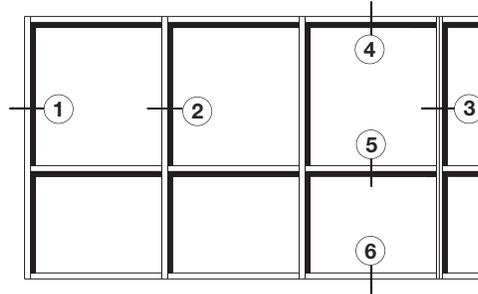
## Typical Details

### Flush Front™ • Series FF600

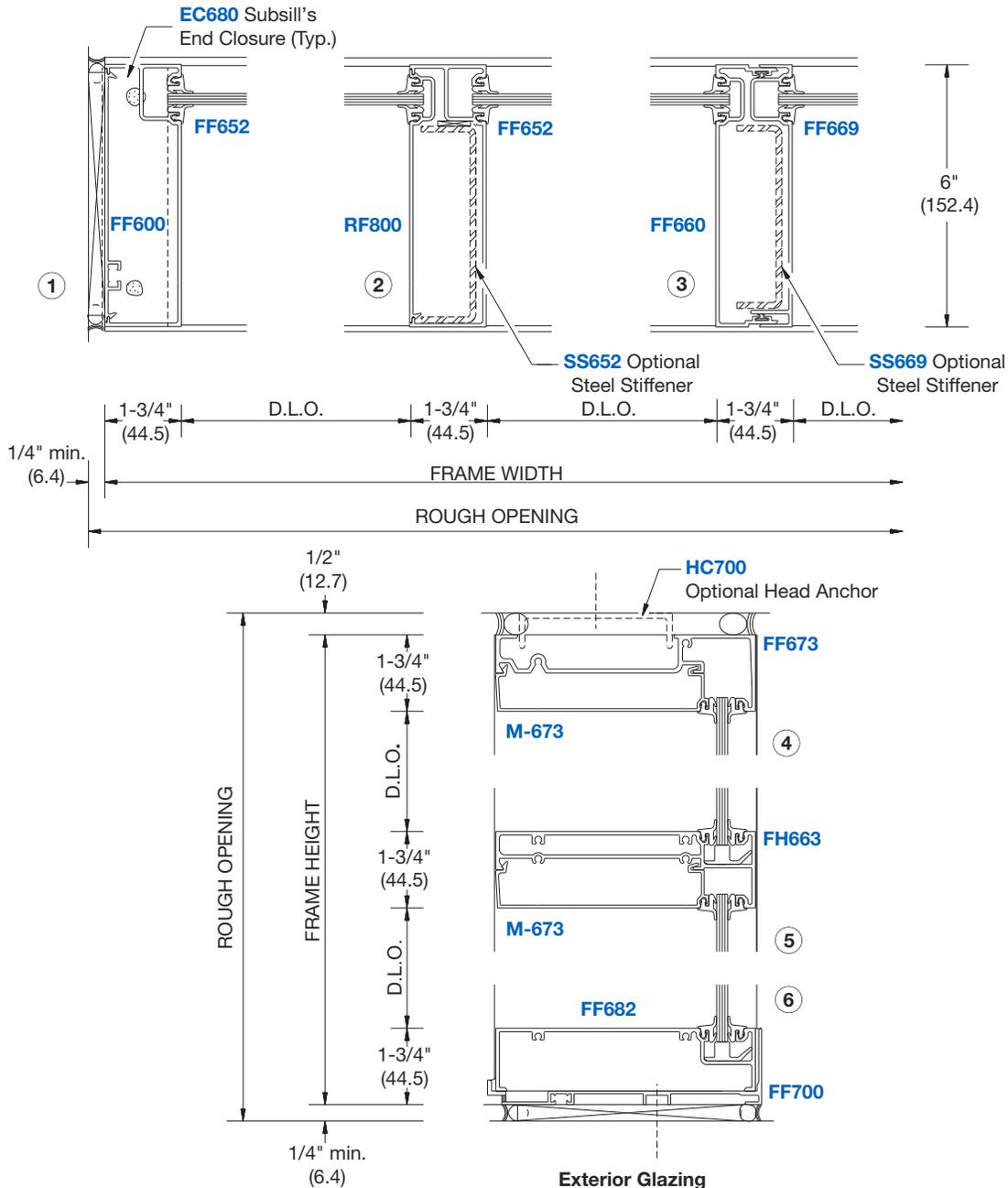
#### FLUSH IN FOR 1/4" (6) OR 3/8" (10) GLAZING

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

NOTE: NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

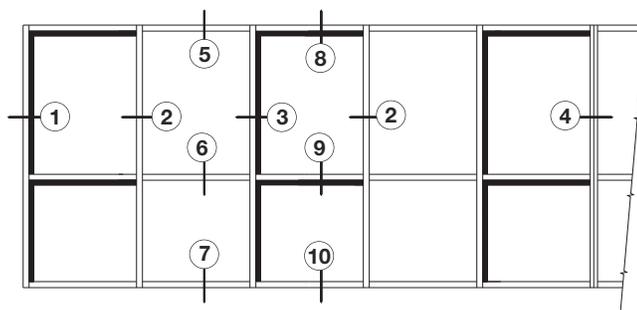
## Typical Details

### FLUSH IN / FLUSH OUT FOR 1/4" (6) OR 3/8" (10) GLAZING

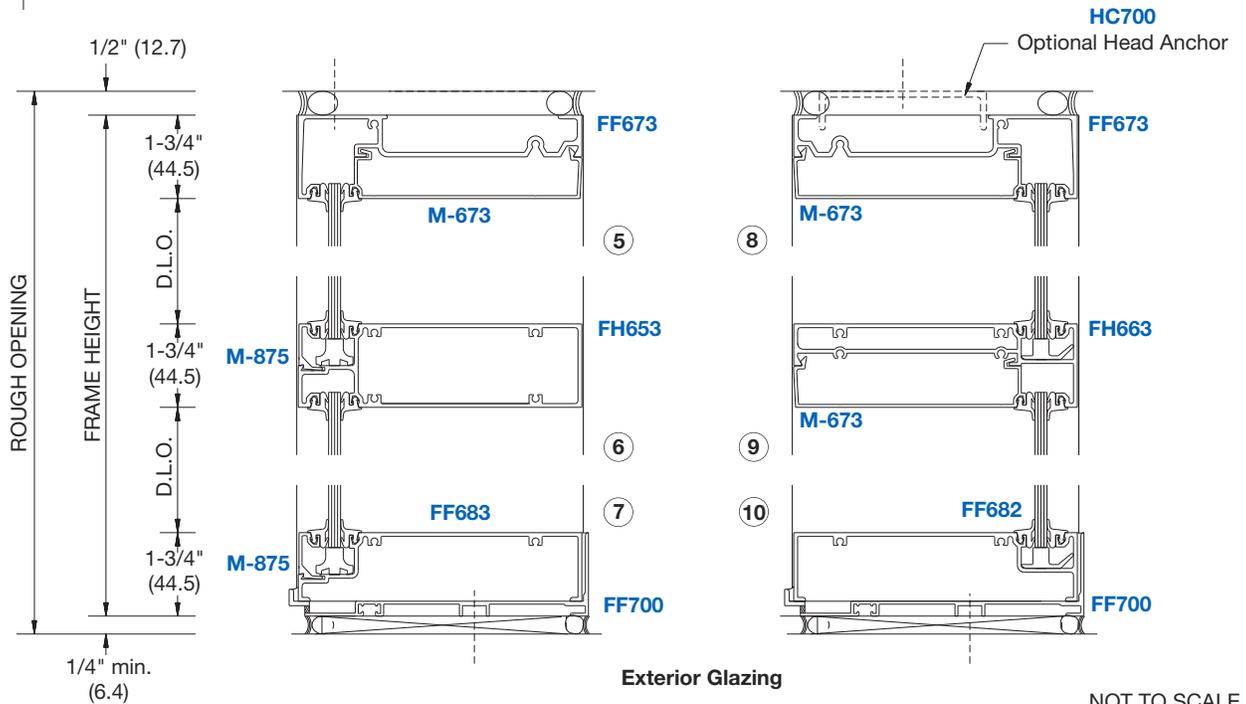
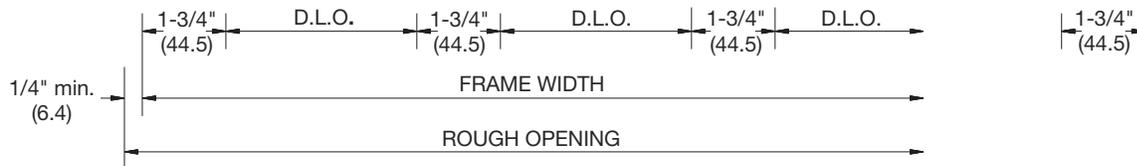
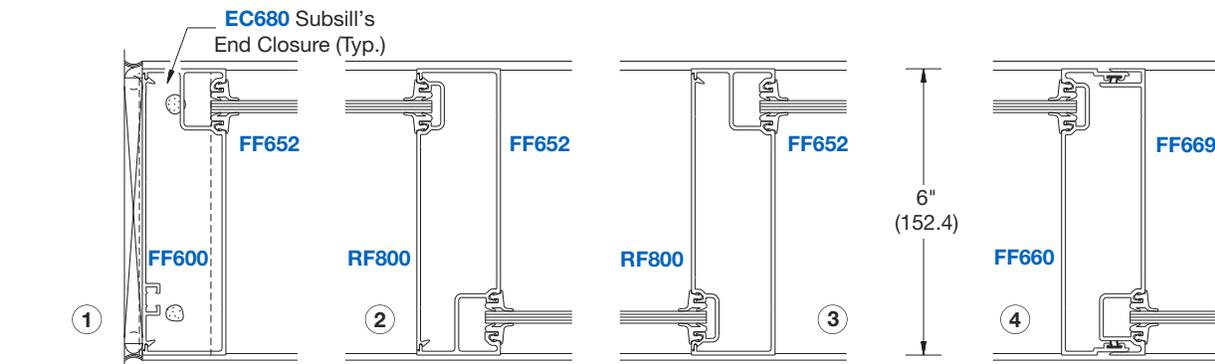
NOTE: Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

### Flush Front™ • Series FF600

NOTE: NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout. NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



TYPICAL ELEVATION



Exterior Glazing

NOT TO SCALE

# STOREFRONTS

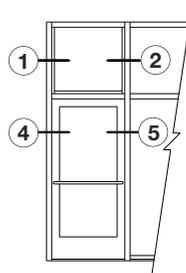
## Typical Details

### Flush Front™ • Series FF600

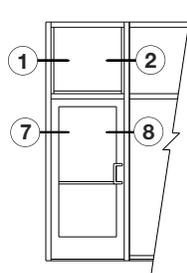
#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

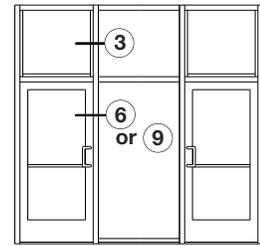
**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of 1/4" (6) glass throughout.  
NP238 E.P.D.M. Glazing Gaskets for 3/8" (10) glazing.



**CENTER HUNG DOOR**

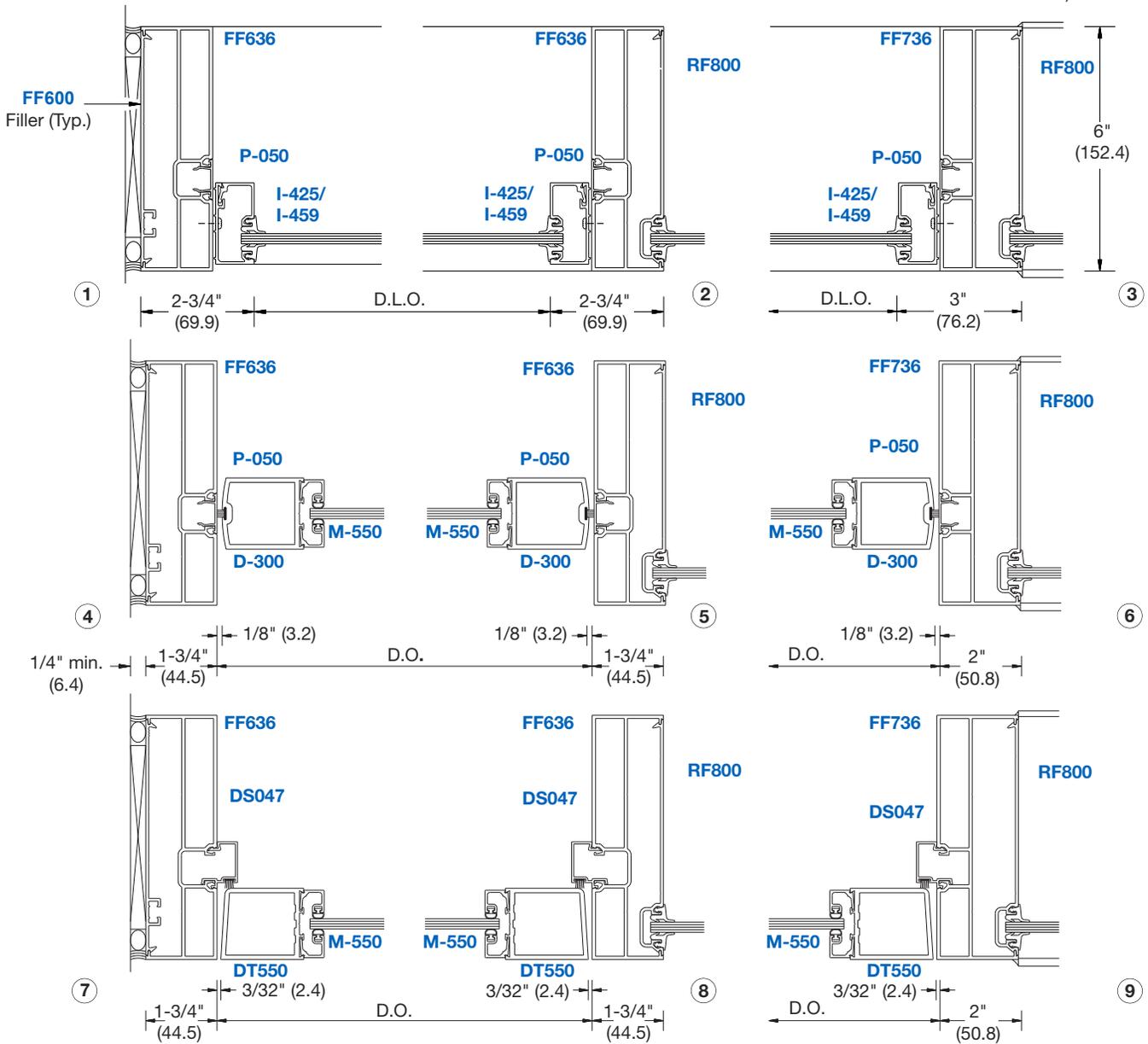


**OFFSET HUNG DOOR**



**SPECIAL JAMB CONDITION**

(2" Wide Door Jamb with RF700 fillers are required to install glass between doors.)



NOT TO SCALE

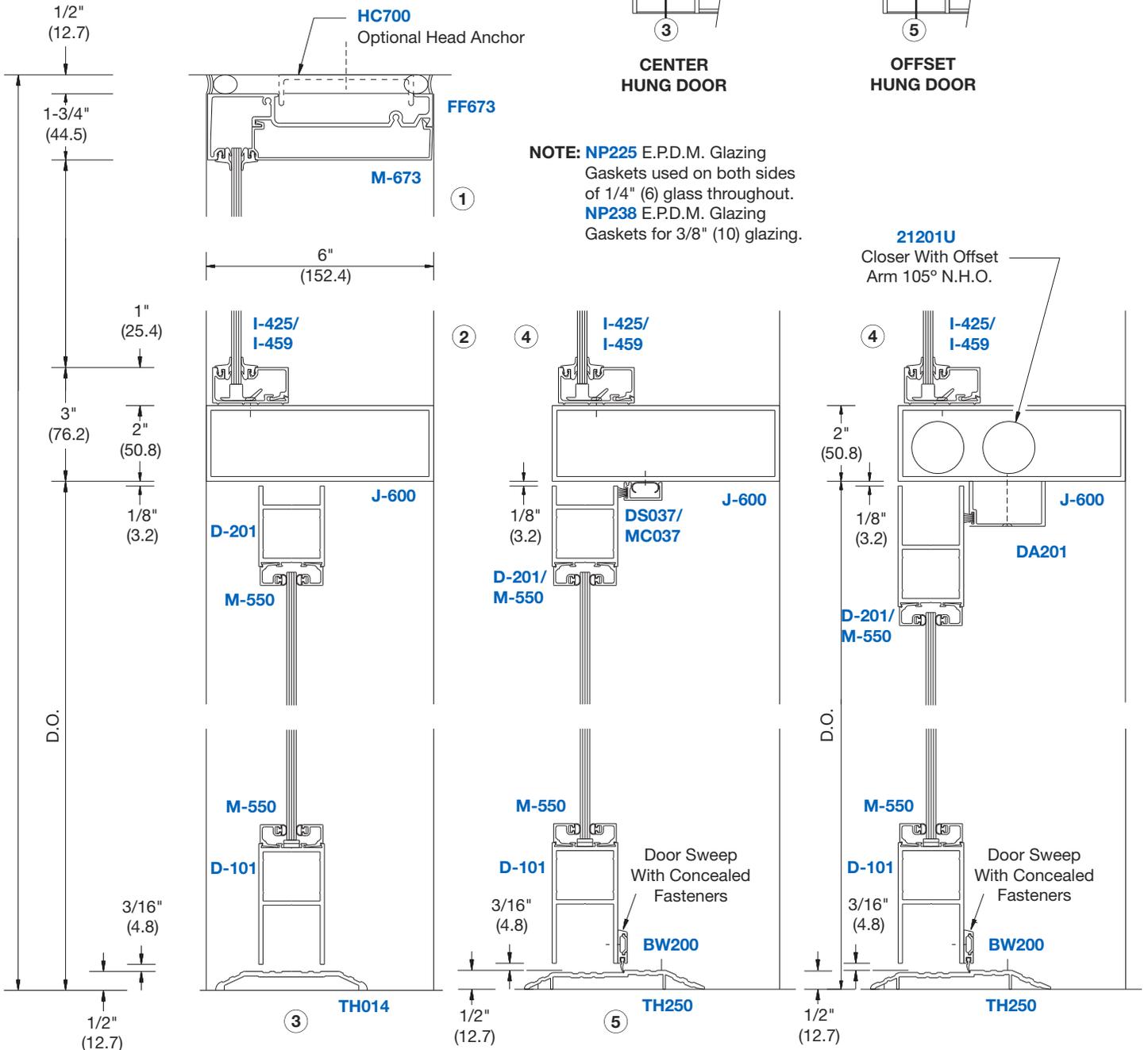
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**Flush Front™**  
• Series FF600

**DOOR FRAMING**

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

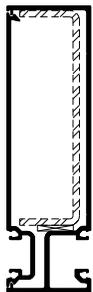
## Windload Charts

**Flush Front™**  
• Series FF600

### VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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



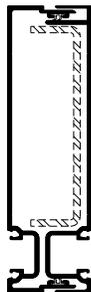
**FF652/RF800**

I = 6.139 (255.52 x 10<sup>4</sup>)  
S = 1.843 (30.20 x 10<sup>3</sup>)

**SS652 Steel Stiffener**

I = 2.334 (97.15 x 10<sup>4</sup>)  
S = 1.037 (17 x 10<sup>3</sup>)

IAL+STL = 12.908 (537.26 x 10<sup>4</sup>)



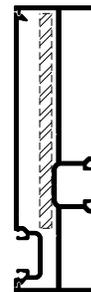
**FF660/FF669**

I = 7.513 (312.71 x 10<sup>4</sup>)  
S = 2.298 (36.35 x 10<sup>3</sup>)

**SS669 Steel Stiffener**

I = 1.714 (71.34 x 10<sup>4</sup>)  
S = .819 (13.42 x 10<sup>3</sup>)

IAL+STL = 12.484 (519.61 x 10<sup>4</sup>)



**FF636/RF800**

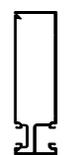
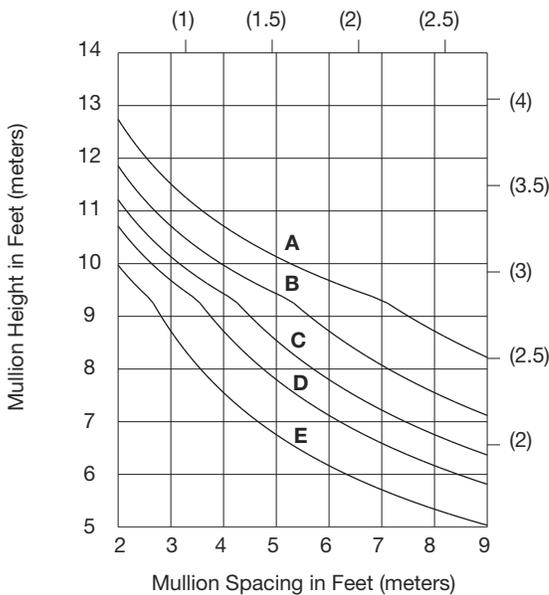
I = 7.015 (291.99 x 10<sup>4</sup>)  
S = 2.307 (37.80 x 10<sup>3</sup>)

**1/4" x 4-1/2" Steel Bar**

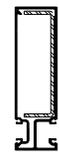
I = 1.898 (79 x 10<sup>4</sup>)  
S = .893 (14.63 x 10<sup>3</sup>)

IAL+STL = 12.519 (321.08 x 10<sup>4</sup>)

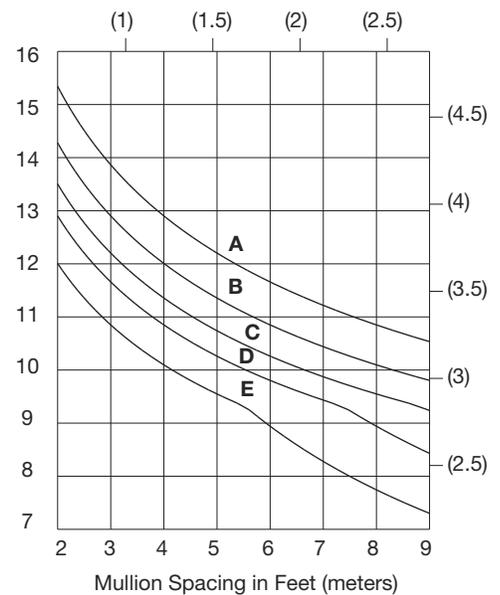
Limitation of vertical mullions for:  
CURVES **A** = 15 PSF (718 Pa)  
CURVES **B** = 20 PSF (957 Pa)  
CURVES **C** = 25 PSF (1197 Pa)  
CURVES **D** = 30 PSF (1436 Pa)  
CURVES **E** = 40 PSF (1915 Pa)



**FF652/RF800**



**FF652/RF800 With SS652**



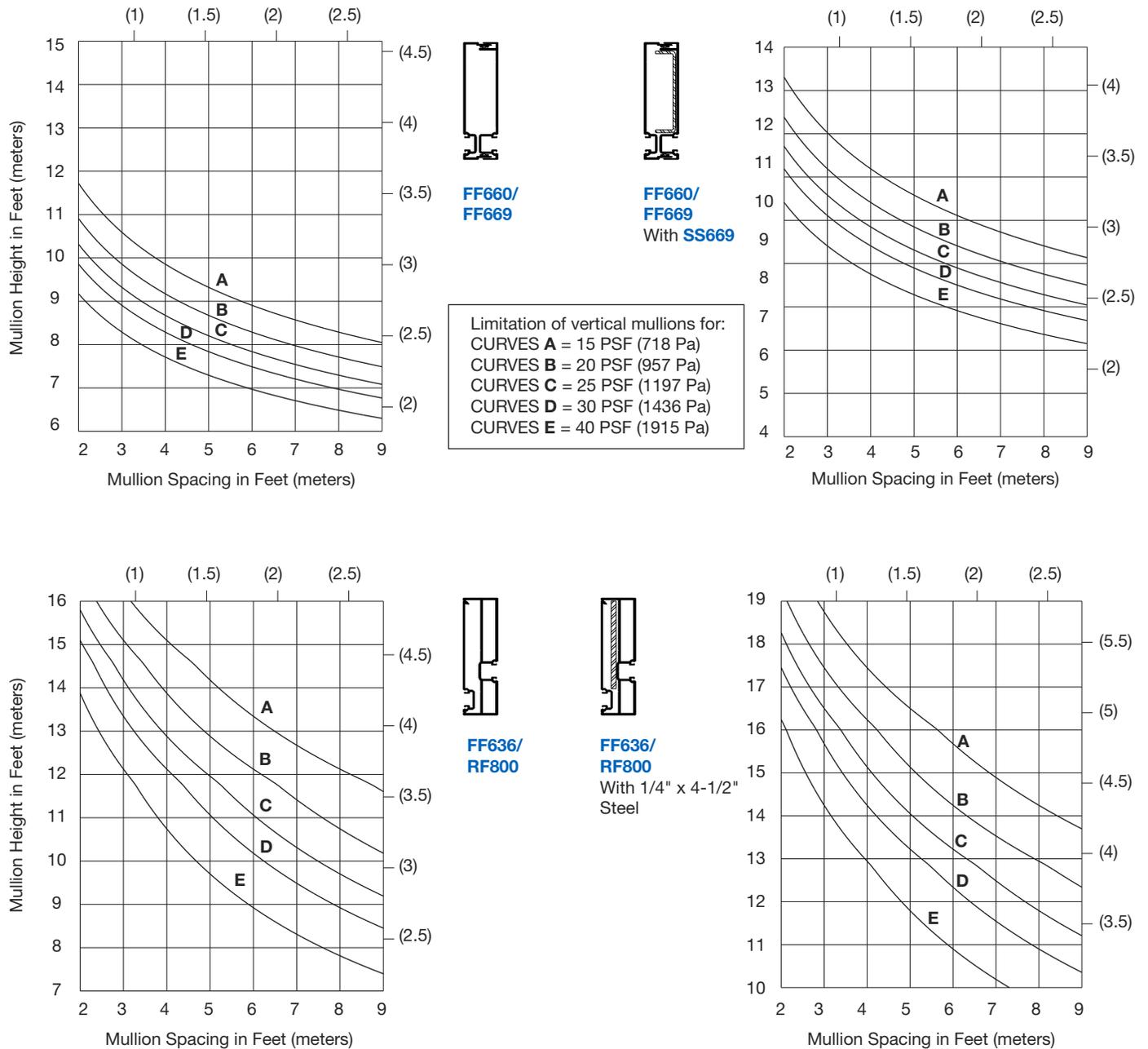
## Windload Charts

**Flush Front™**  
• Series FF600

### VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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



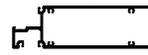
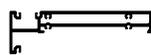
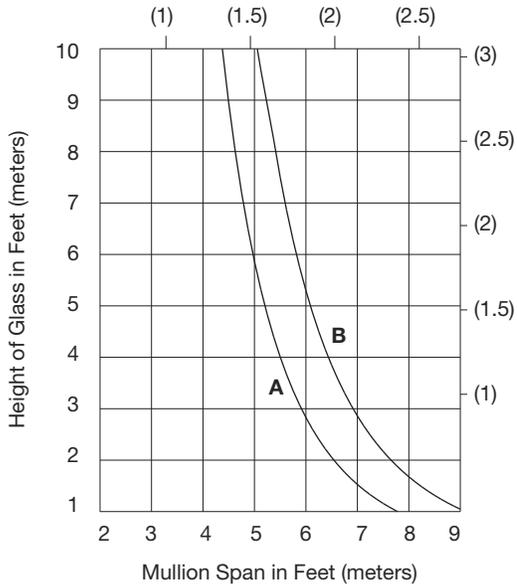
# STOREFRONTS

## Deadload Charts

**Flush Front™**  
• Series FF600

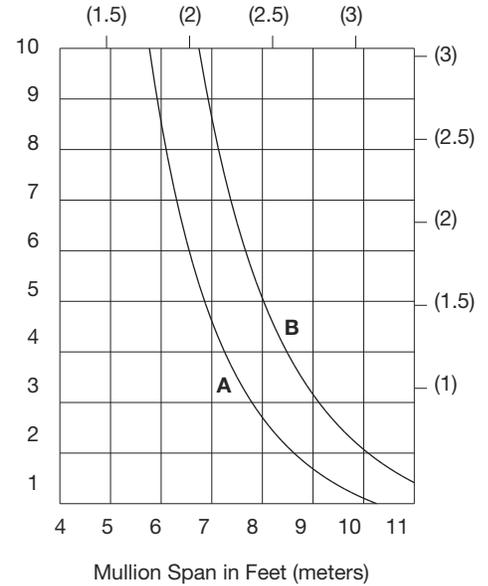
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 psf (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:  
CURVES **A**: 1/4 points  
CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



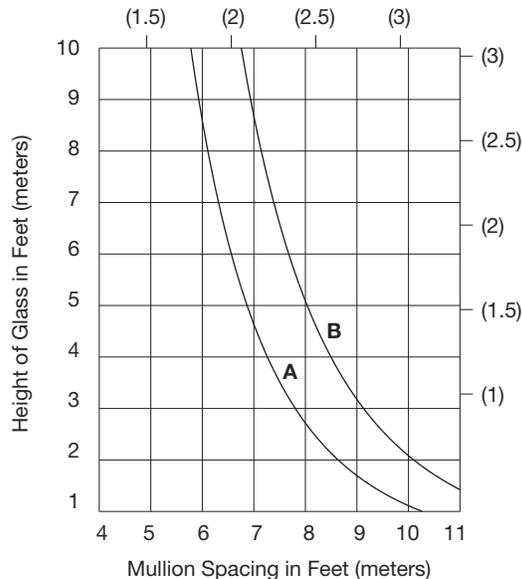
**FH663**  
I<sub>yy</sub> = .236  
(9.82 x 10<sup>4</sup>)

**FH653**  
I<sub>yy</sub> = .712  
(29.64 x 10<sup>4</sup>)



### DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 3.25 psf (15.87 Kg/m<sup>2</sup>)  
Glass shall rest on two setting blocks located at:  
CURVES **A**: 1/4 points  
CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



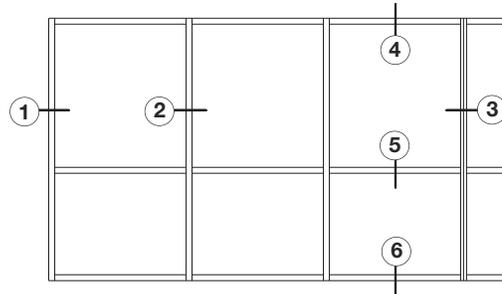
**J-600**  
I<sub>yy</sub> = 1.432 (59.60 x 10<sup>4</sup>)

# STOREFRONTS

## Typical Details

### FLUSH OUT FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

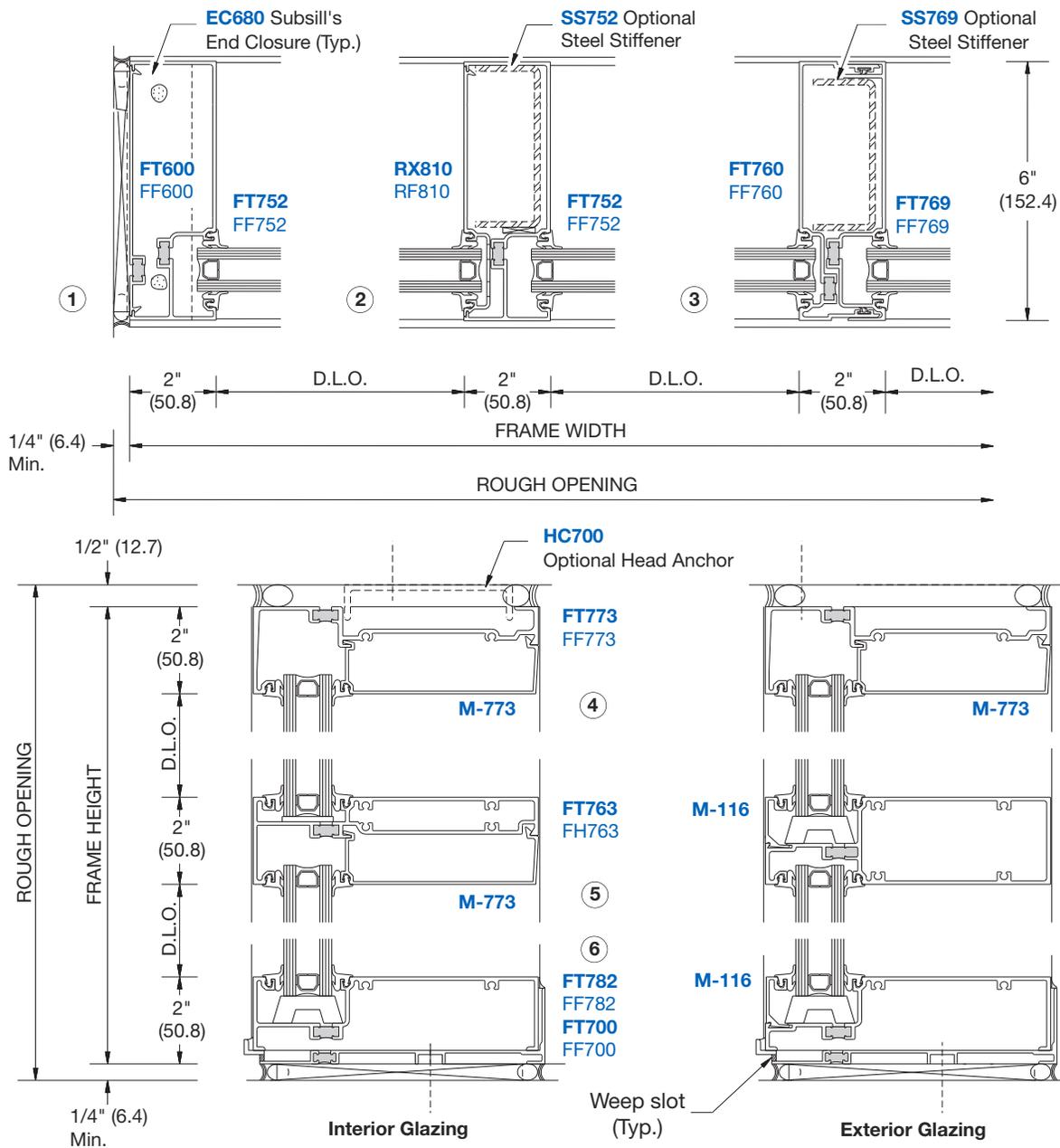
### Flush Front™

- Series FF601
- Series FT601

F	T	6	0	0
---	---	---	---	---

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT601** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.

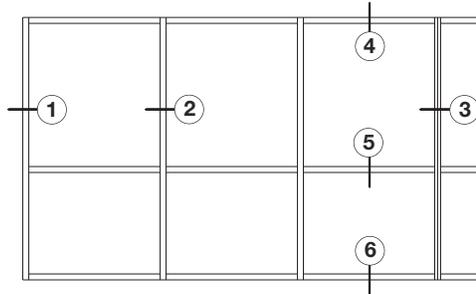


# STOREFRONTS

## Typical Details

### FLUSH IN FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

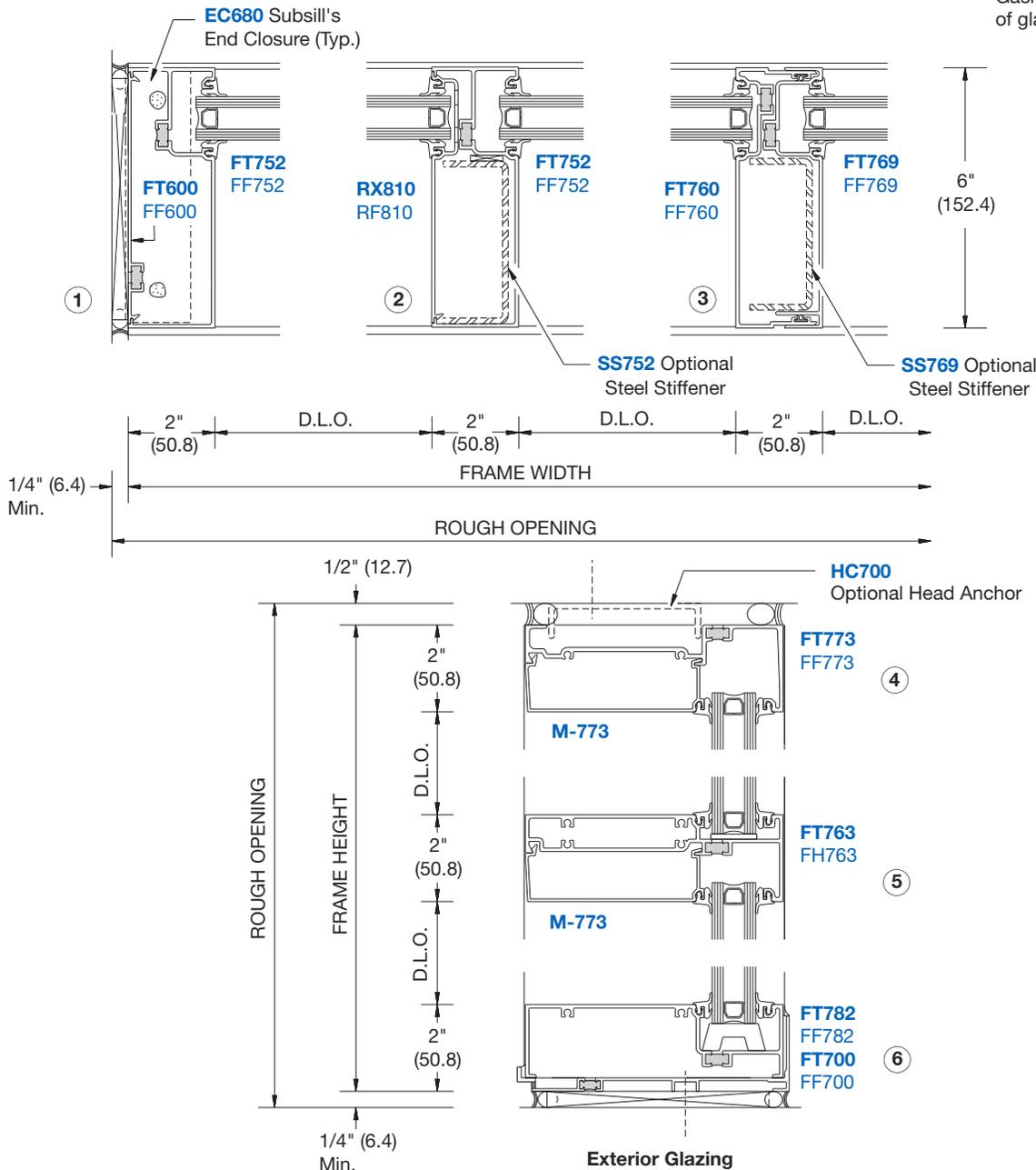
### Flush Front™

- Series FF601
- Series FT601

F	T	6	0	0
---	---	---	---	---

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT601** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



NOT TO SCALE

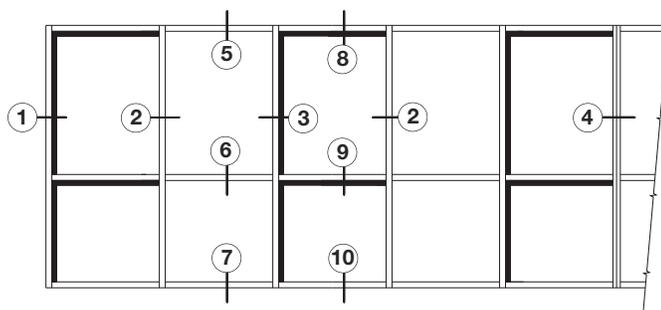
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

### FLUSH IN / FLUSH OUT FOR 1" (25) GLAZING

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



TYPICAL ELEVATION

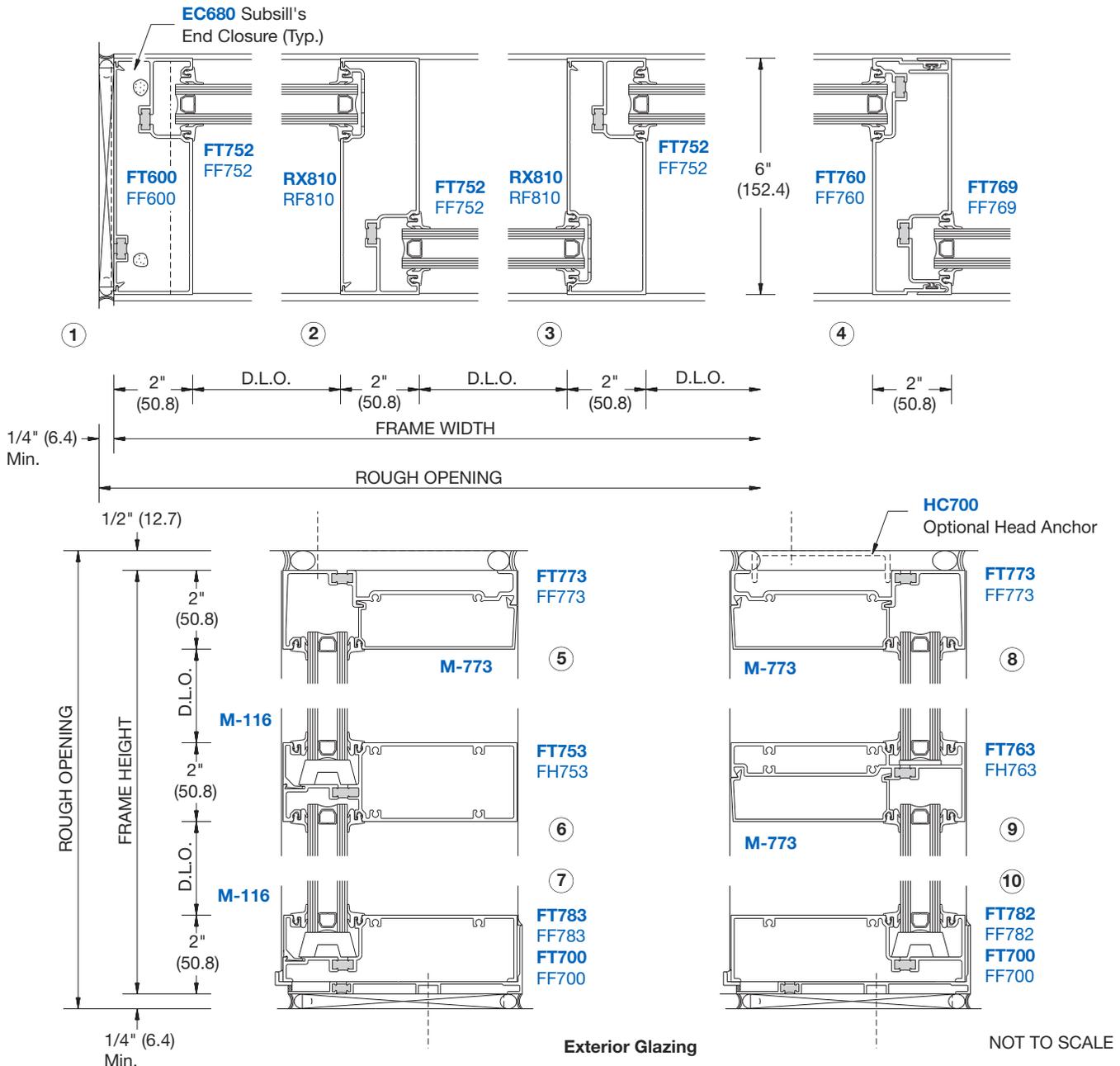
### Flush Front™

- Series FF601
- Series FT601

**F T 6 0 0**

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT601** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

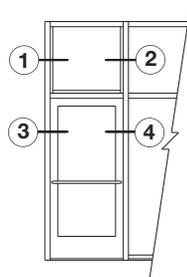
### Flush Front™

- Series FF601
- Series FT601

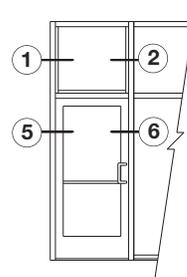
### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

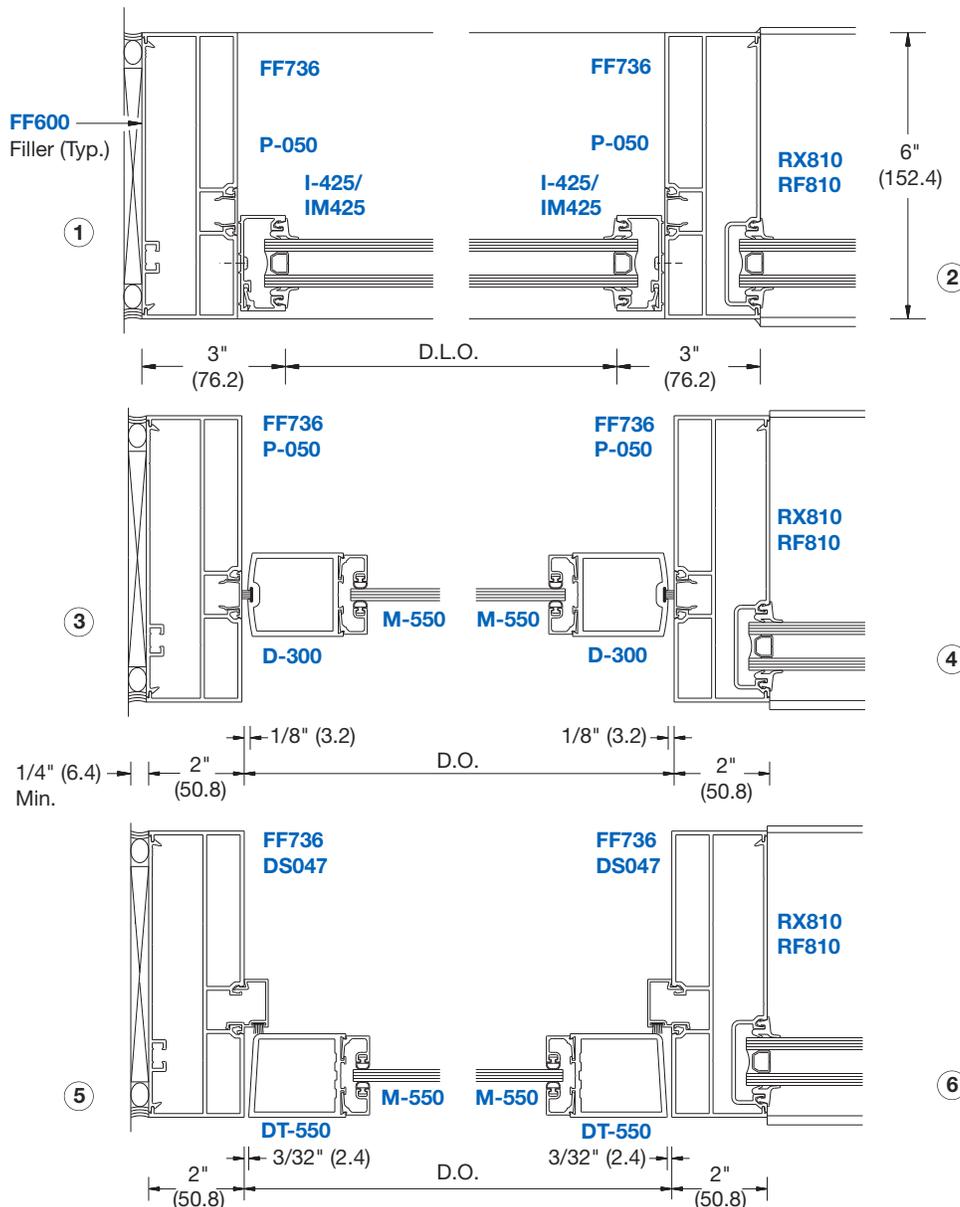
**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



CENTER HUNG DOOR



OFFSET HUNG DOOR



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

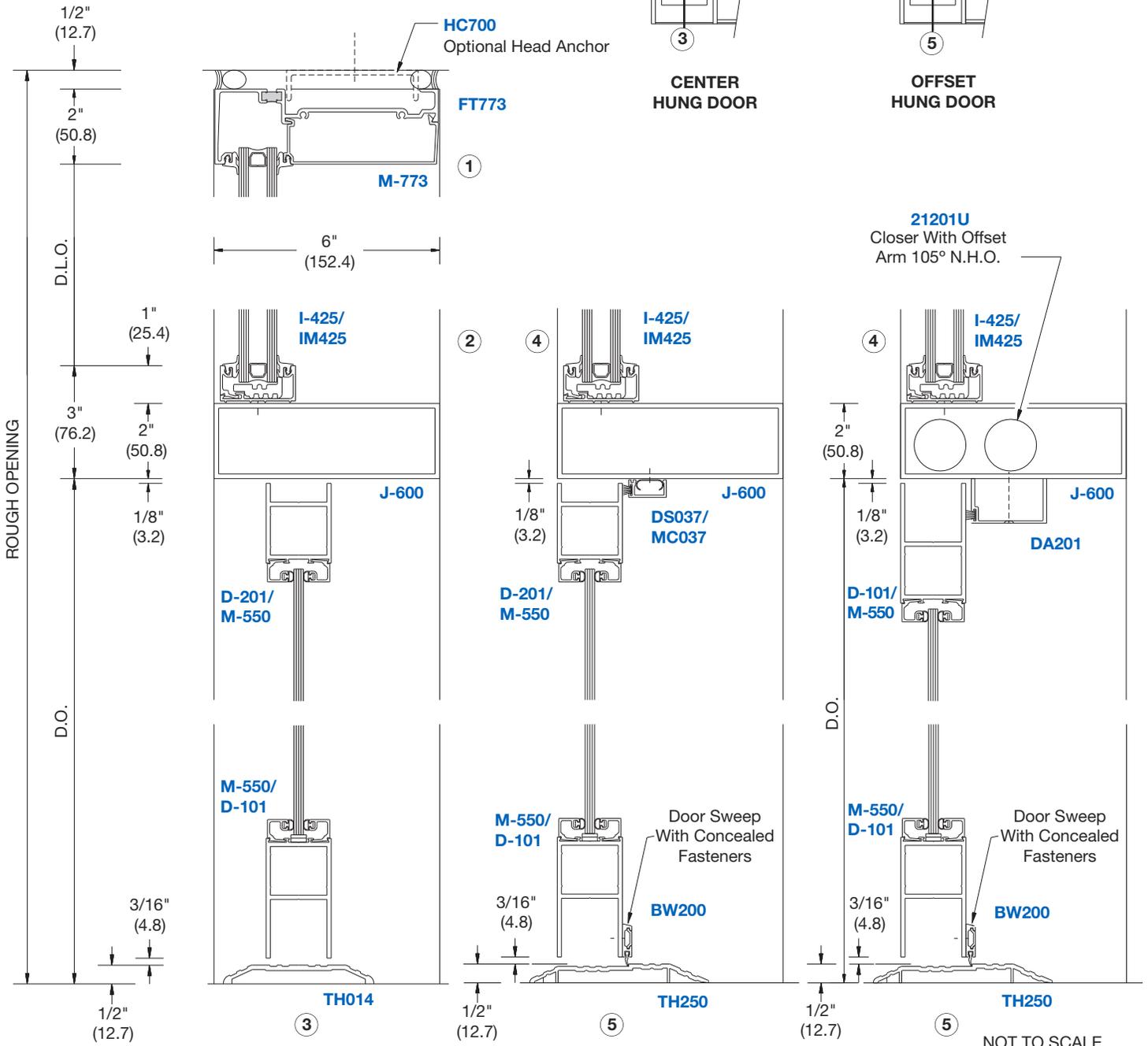
### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.

### Flush Front™

- Series FF601
- Series FT601



Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS

## Typical Details

### Flush Front™

- Series FF601
- Series FT601

### VERTICAL CORNER CONDITIONS FOR 1" (25) GLAZING

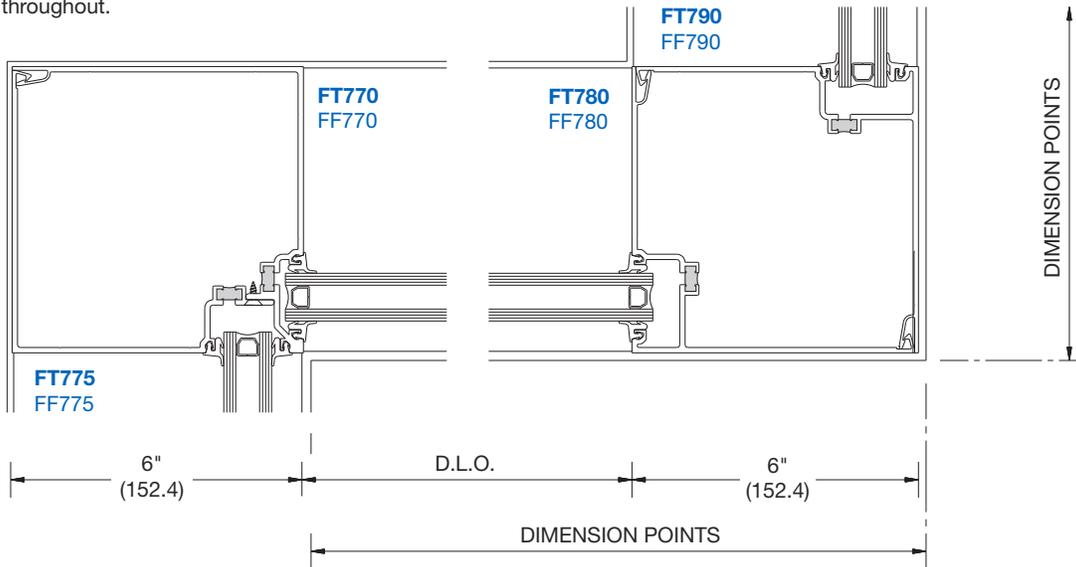
F	T	6	0	0
---	---	---	---	---

**NOTE:** Use also for Series FF600 with **IS251** Adapter for 1/4" glass

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT601** details are typically shown.

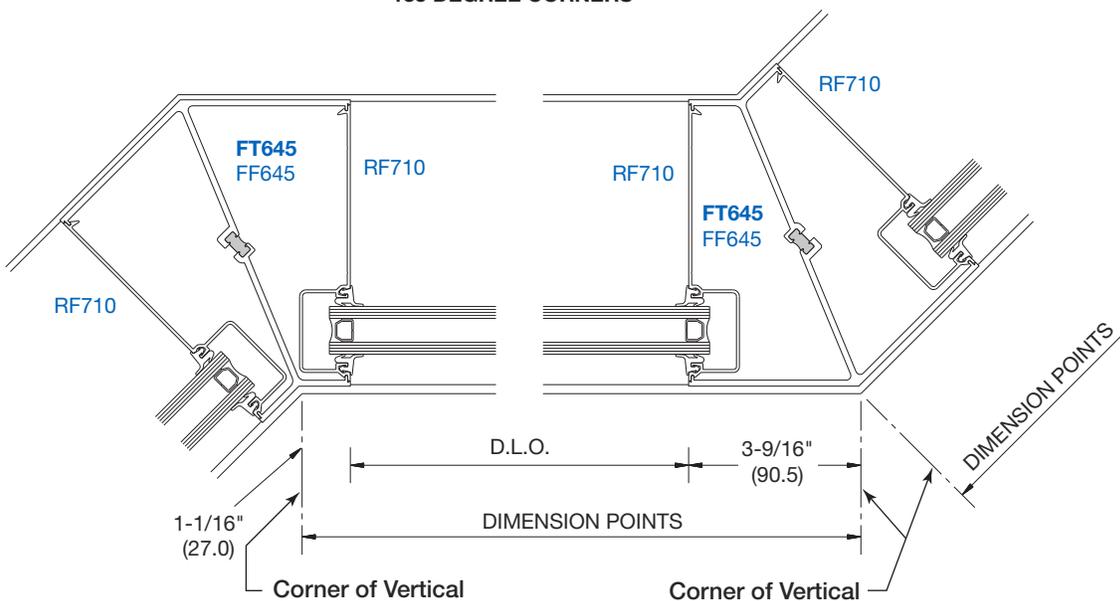
**NOTE:** **NP225** E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.

#### 90 DEGREE CORNERS



**NOTE:** Use also for Series FF600 with **RF700** Fillers for 1/4" glass

#### 135 DEGREE CORNERS



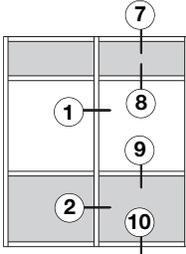
NOT TO SCALE

# STOREFRONTS

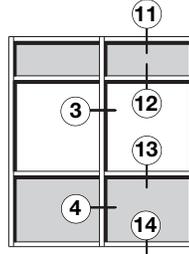
## Typical Details

### TRANSITION GLAZING FOR 1" (25) AND 1/4" (6) GLAZING

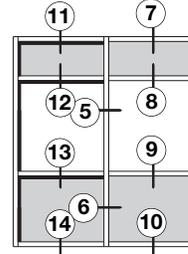
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.



**FLUSH-OUT**



**FLUSH-IN**



**FLUSH-IN / FLUSH-OUT**

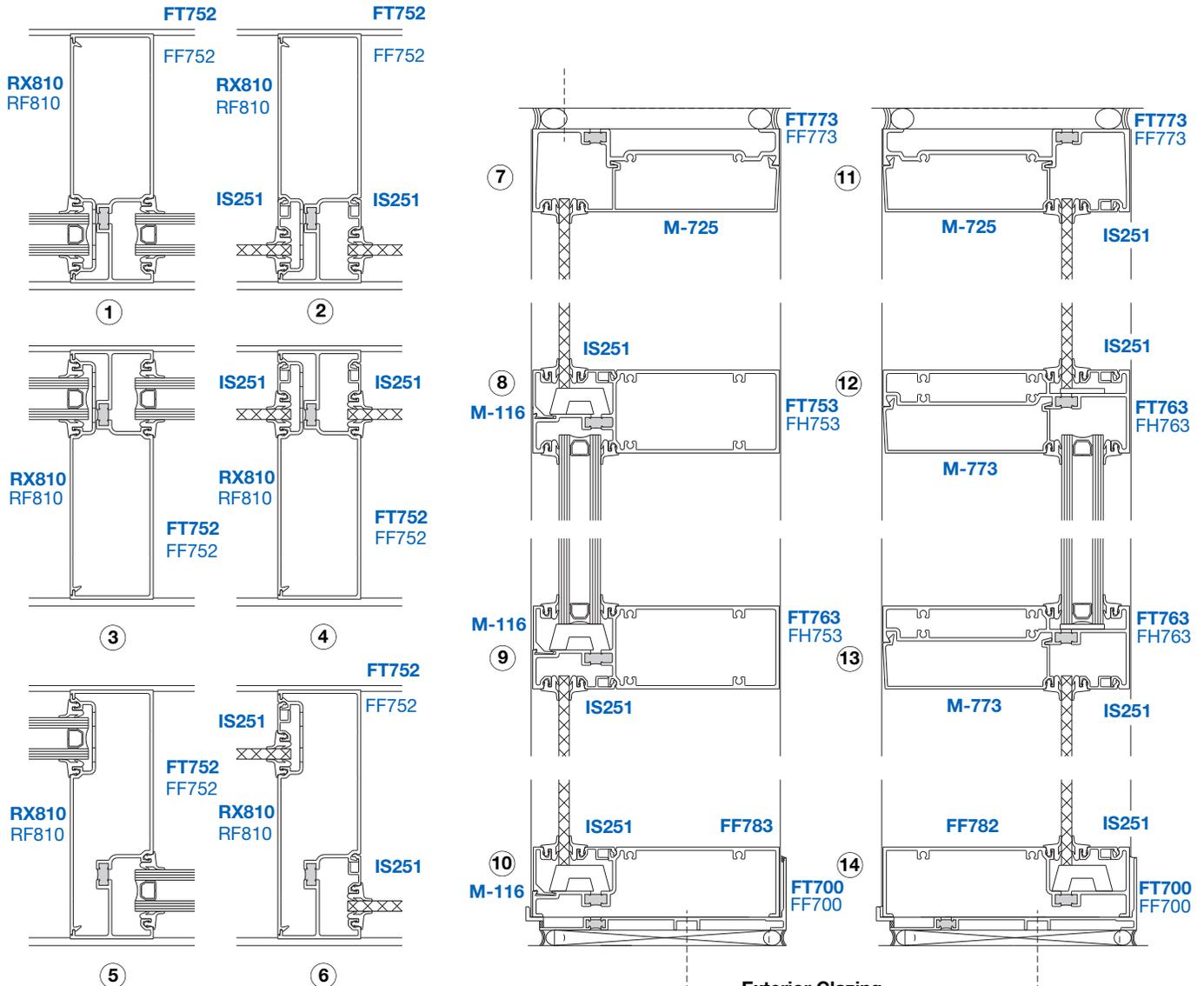
## Flush Front™

- Series FF601
- Series FT601

F	T	6	0	0
---	---	---	---	---

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **FT601** details are typically shown.

**NOTE:** NP225 E.P.D.M. Glazing Gaskets used on both sides of glazing throughout.



Exterior Glazing

NOT TO SCALE

# STOREFRONTS

## Windload Charts

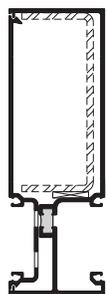
### Flush Front™

- Series FF601
- Series FT601

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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



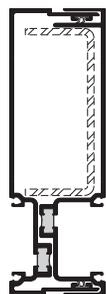
**FT752/RX810** or  
**FF752/RF810**

I = 6.024 (250.74 x 10<sup>4</sup>)  
S = 1.888 (30.93 x 10<sup>3</sup>)

**SS752** Steel Stiffener

I = 1.711 (71.22 x 10<sup>4</sup>)  
S = .923 (15.13 x 10<sup>3</sup>)

I<sub>AL</sub>+I<sub>STL</sub> = 10.986 (457.28 x 10<sup>4</sup>)



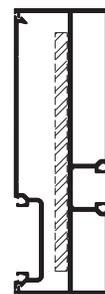
**FT760/FT769** or  
**FF760/FF769**

I = 8.346 (347.39 x 10<sup>4</sup>)  
S = 2.587 (42.39 x 10<sup>3</sup>)

**SS769** Steel Stiffener

I = 1.403 (58.4 x 10<sup>4</sup>)  
S = .802 (13.14 x 10<sup>3</sup>)

I<sub>AL</sub>+I<sub>STL</sub> = 12.415 (516.74 x 10<sup>4</sup>)



**FF736/RX810** or  
**FF736/RF810**

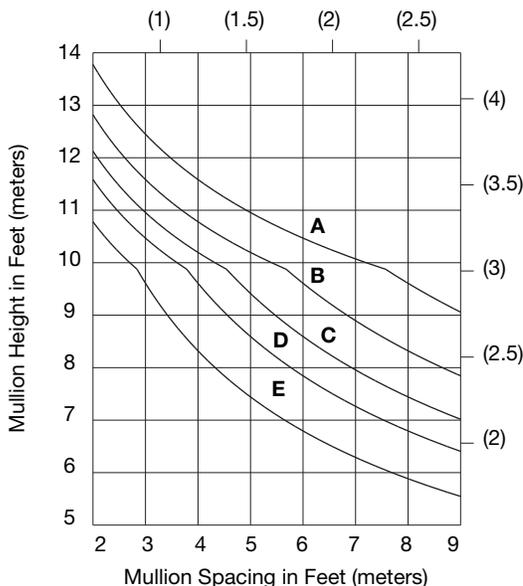
I = 7.175 (298.65 x 10<sup>4</sup>)  
S = 2.364 (38.74 x 10<sup>3</sup>)

1/4" x 5" Steel Bar

I = 2.604 (108.39 x 10<sup>4</sup>)  
S = 1.302 (21.34 x 10<sup>3</sup>)

I<sub>AL</sub>+I<sub>STL</sub> = 14.727 (612.97 x 10<sup>4</sup>)

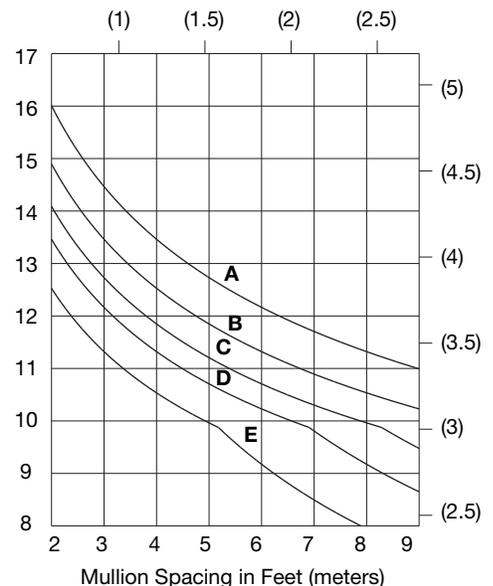
Limitation of vertical mullions for:  
CURVES **A** = 15 PSF (718 Pa)  
CURVES **B** = 20 PSF (957 Pa)  
CURVES **C** = 25 PSF (1197 Pa)  
CURVES **D** = 30 PSF (1436 Pa)  
CURVES **E** = 40 PSF (1915 Pa)



**FT752/RX810**  
**FF752/RF810**



**FT752/RX810**  
**FF752/RF810**  
With **SS752**



## Windload Charts

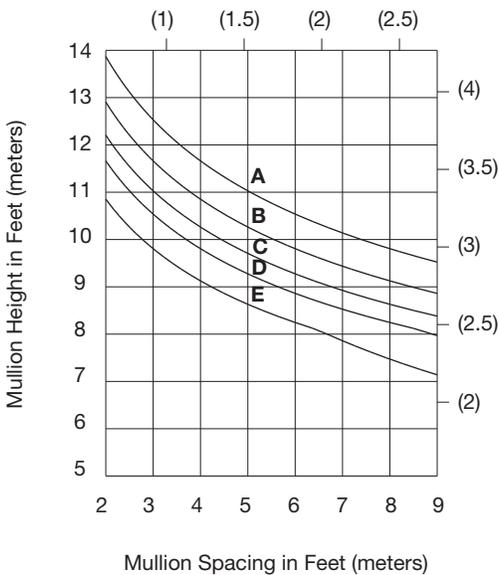
### Flush Front™

- Series FF601
- Series FT601

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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

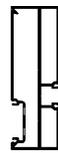
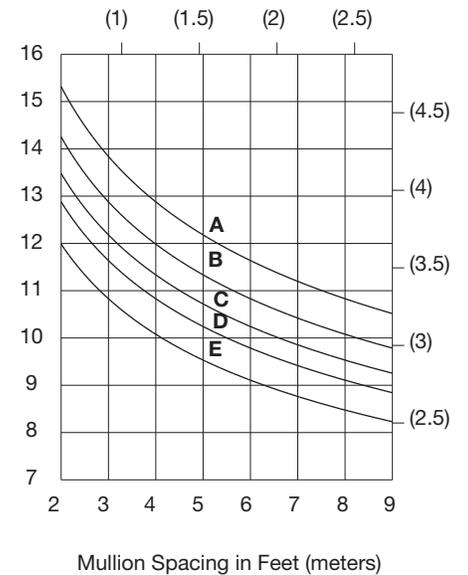


**FT760/FT769  
FF760/FF769**

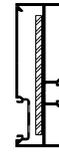


**FT760/FT769  
FF760/FF769  
With SS769**

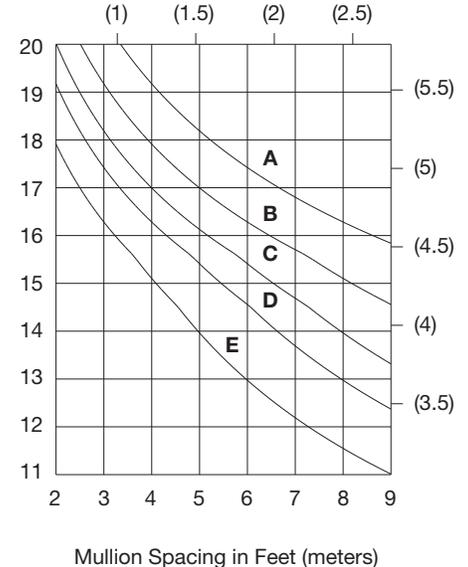
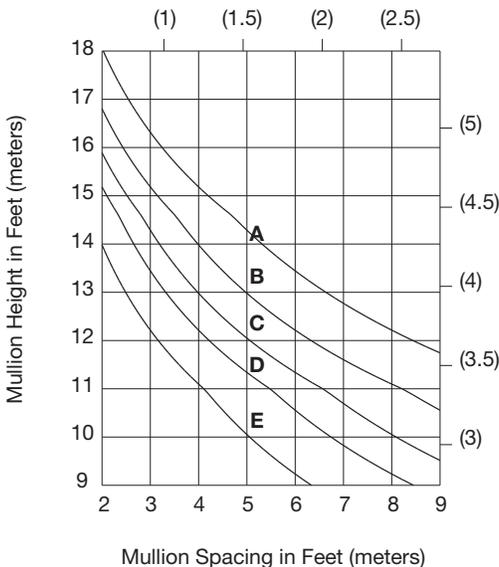
Limitation of vertical mullions for:  
 CURVES **A** = 15 PSF (718 Pa)  
 CURVES **B** = 20 PSF (957 Pa)  
 CURVES **C** = 25 PSF (1197 Pa)  
 CURVES **D** = 30 PSF (1436 Pa)  
 CURVES **E** = 40 PSF (1915 Pa)



**FF736/RX810  
FF736/RF810**



**FF736/RX810  
FF736/RF810  
With 1/4" x 5"  
Steel Bar**



# STOREFRONTS

## Deadload Charts

### Flush Front™

- Series FF601
- Series FT601

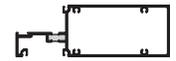
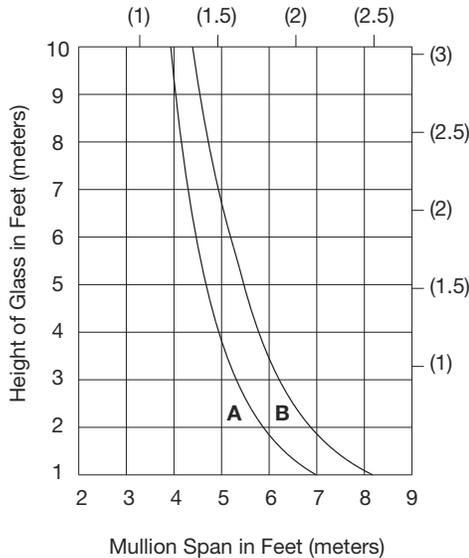
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>)

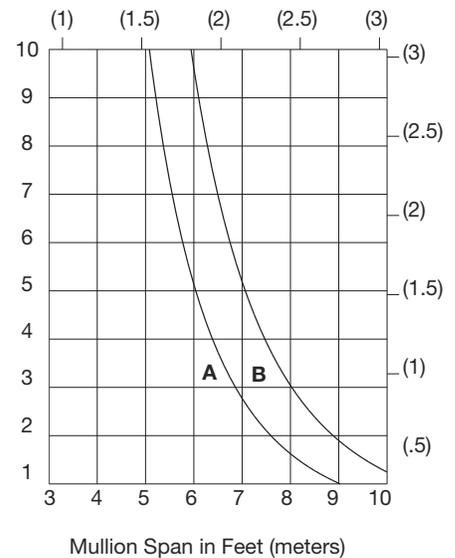
Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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



**FT753**  
**FH753**  
 $I_{yy} = .856$   
(35.63 x 10<sup>4</sup>)



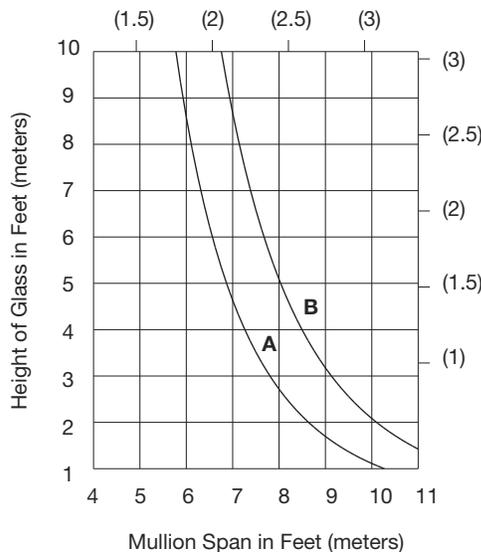
### DOOR HEADERS

Deadload charts for door headers are based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>)

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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



# STOREFRONTS

## Accessories

### Flush Front™

- Series FF450
- Series FF451
- Series FT451
- Series FF600
- Series FF601
- Series FT601

B

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED					
				FF450	FF451	FT451	FF600	FF601	FT601
EC450		End Dam	20	●	●	●			
EC680		End Dam	20				●	●	●
SV400		Splice Sleeve	10	●	●	●			
SV700		Splice Sleeve	10				●	●	●
CP450		Closure Plate for Verticals	20	●			●		
CP550		Closure Plate for Verticals	20		●	●		●	●
WD160		Water Deflector for Shallow Pocket	50	●			●		
WD150		Water Deflector for Deep Pocket	50	●			●		
WD210		Water Deflector for Shallow Pocket	50		●	●		●	●
WD200		Water Deflector for Deep Pocket	50		●	●		●	●

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STOREFRONTS



## Accessories

### Flush Front™

- Series FF450
- Series FF451
- Series FT451
- Series FF600
- Series FF601
- Series FT601

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED					
				FF450	FF451	FT451	FF600	FF601	FT601
SB141		Setting Block for Interior Glazing	100	●			●		
SB140		Setting Block for Exterior Glazing	100	●			●		
SB240		Setting Block for Interior Glazing	100		●	●		●	●
SB200		Setting Block for Exterior Glazing	100		●	●		●	●
WB452		"W" Edge Block	50	●	●	●	●	●	●
HC200		Optional Head Anchor	30	●	●	●			
HC700		Optional Head Anchor	30				●	●	●
DJ452		Drill Jig	1	●					
DJ552		Drill Jig	1		●	●			
DJ652		Drill Jig	1				●		
DJ752		Drill Jig	1					●	●

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Accessories

## Glazing Gaskets

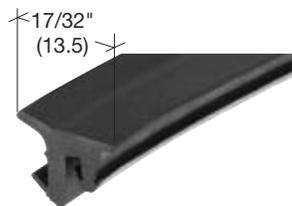
### GLAZING GASKET CHART FOR STOREFRONT PRODUCTS

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



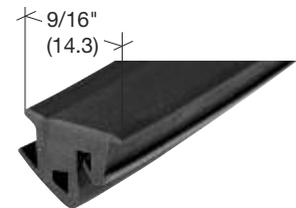
PART NO.	COLOR	TYPE	ROLL LENGTH
NP225	Black	Interior/ Exterior	500' (152.4 m)

Minimum order: 1 roll.



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

Minimum order: 1 roll.

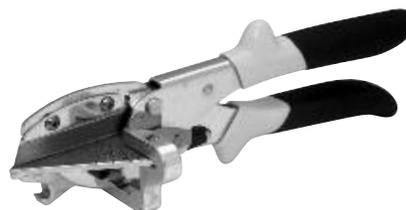


PART NO.	COLOR	TYPE	ROLL LENGTH
NP218	Black	Exterior Heavy Gasket	250' (76.2 m)

Minimum order: 1 roll.

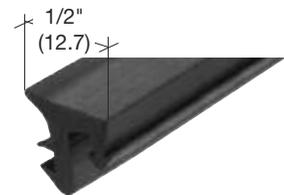
### Adjustable Multi-Cutter Tool

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



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

Minimum order: 1 each or 1 pack.



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

Minimum order: 1 roll.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

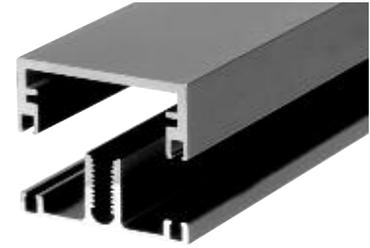
# STOREFRONTS

## Typical Details

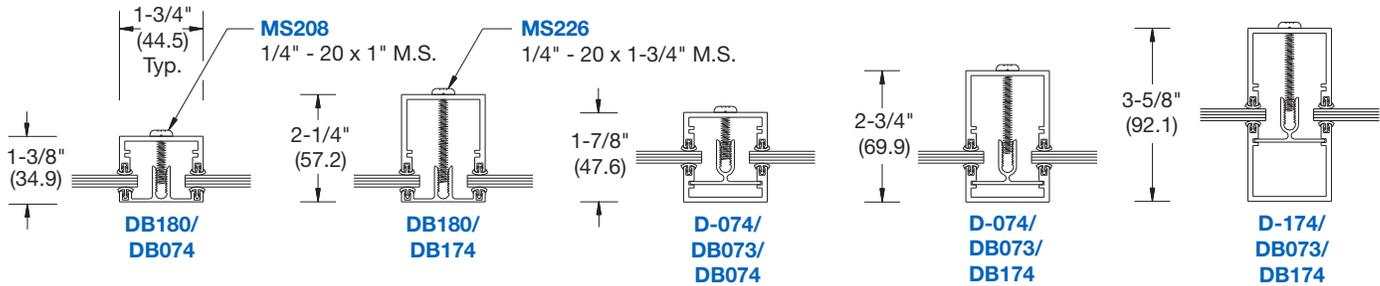
## Miscellaneous Framing

### DIVISION BARS

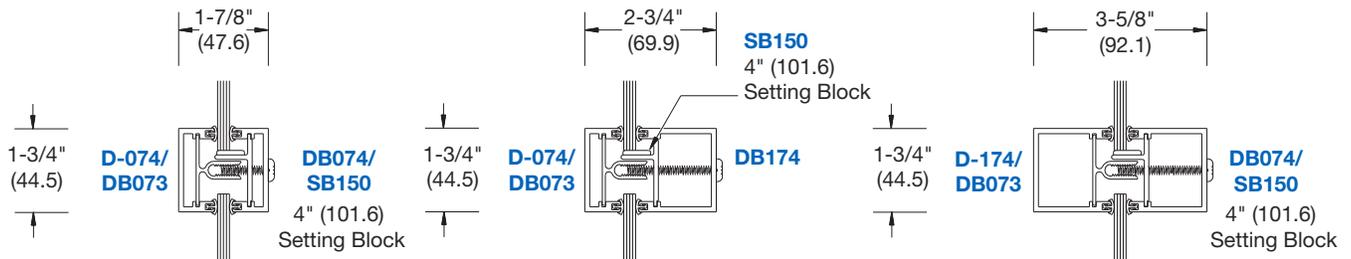
SHOWN WITH 1/4" (6) GLAZING TYPICAL



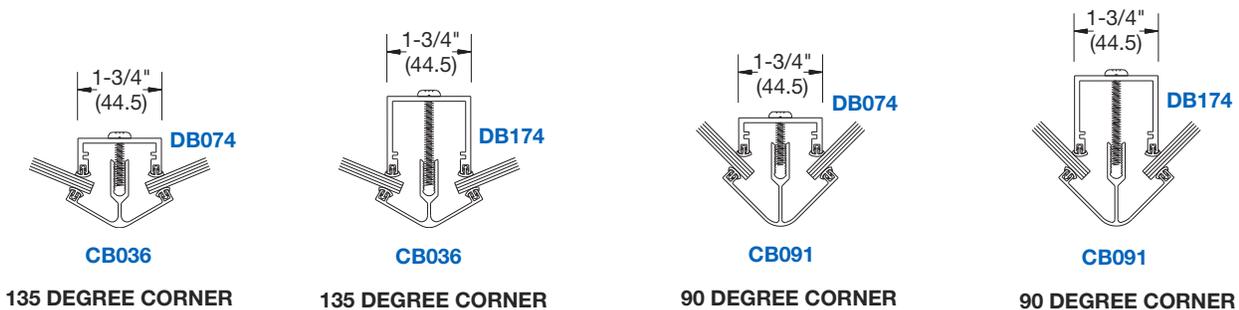
#### VERTICAL MEMBERS



#### HORIZONTAL MEMBERS



#### CORNER MEMBERS



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

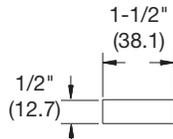
NOT TO SCALE

# STOREFRONTS

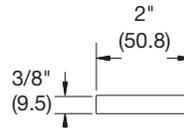
## Typical Details

## Miscellaneous Framing

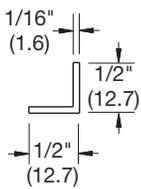
### BARS AND ANGLES



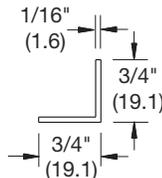
**B-150**



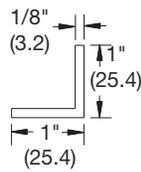
**B-237**



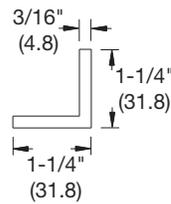
**A-050**



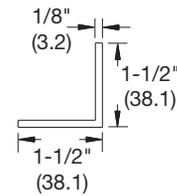
**AL075**



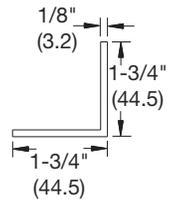
**A-100**



**A-125**

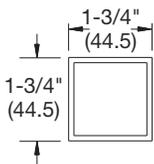


**A-150**

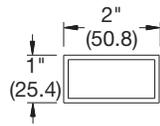


**A-175**

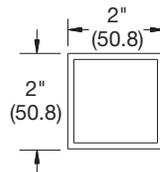
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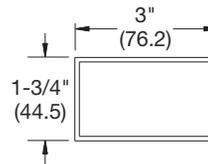
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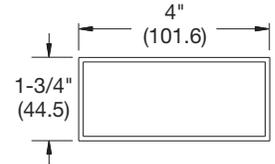
**J-200**



**J-220**

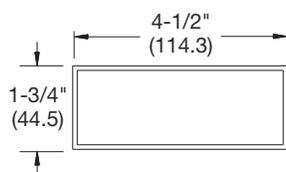


**J-300**



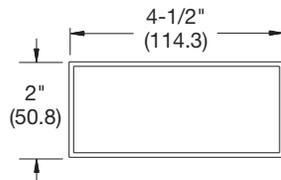
**J-400**

24' (7.3 m)



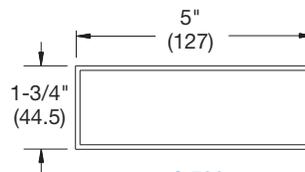
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24' (7.3 m)



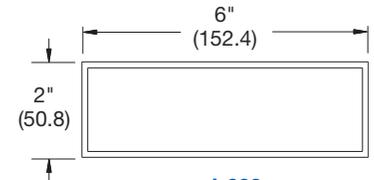
**I-450**

24' (7.3 m)



**J-500**

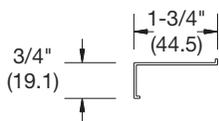
24' (7.3 m)



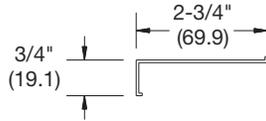
**J-600**

24' (7.3 m)

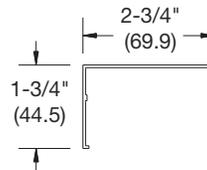
### SILL COVERS AND JAMB MOLDINGS



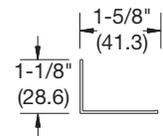
**SC100**



**SC200**



**SC400**



**SJ300**

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

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# STOREFRONTS



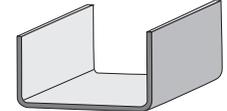
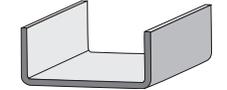
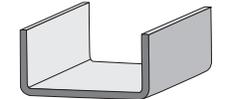
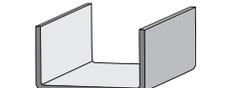
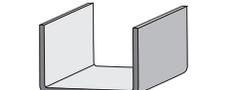
## Accessories

## Steel Stiffeners and Drill Jigs

### STEEL STIFFENERS\*

PRIMED HOT ROLLED COMMERCIAL QUALITY, ASTM A-559

### DRILL JIGS

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

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

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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



# C

## WINDOW WALLS

- BG Systems
  - Top Notch Systems
  - OS-2 Systems
  - Accessory Hardware
- 

Toll Free Phone Service  
**(800) 262-5151**

Toll Free Fax Service  
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[usalum.com](http://usalum.com)



Medical Office Building  
Whittier, CA

U.S. Aluminum offers Window Wall systems that are ideal for low to high-rise structures. Our BG System is designed for three types of configuration; two-sided structural silicone support, captured glazing or a combination of the two. A thermally broken version, the BT Series, is also available.

The Top Notch and OS-2 Systems offer a shallow face reveal to create a flush exterior appearance. These systems are designed for labor saving stacking type installations, and incorporate internal water deflectors to allow infiltrated water to be drained. Top Notch also offers a thermally broken version, the TT Series. Glazing options for all series are 1/4" (6) and 1" (25).

## SYSTEM

## PAGES

- **BG Systems** .....01-C1 thru 25-C1
- **Top Notch Systems** .....01-C2 thru 14-C2
- **OS-2 Systems** .....01-C3 thru 50-C3
- **Accessory Hardware** .....01-C4 thru 07-C4

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

Toll Free Phone (800) 262-5151

Toll Free Fax (866) 262-3299

Contact us through our web site at [usalum.com](http://usalum.com)

## Table of Contents

## BG and BT Systems

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

### SECTION C1

### PAGE

SPECIFICATIONS .....	02-C1 and 03-C1
TECHNICAL DATA.....	04-C1
SPECIAL FEATURES .....	05-C1
<b>Series BG450</b>	
TYPICAL DETAILS .....	06-C1 thru 09-C1
<b>Series BG520</b>	
TYPICAL DETAILS .....	10-C1 thru 13-C1
<b>Series BG525 and BT525</b>	
TYPICAL DETAILS .....	14-C1 thru 16-C1
<b>Series BG600 and BT600</b>	
TYPICAL DETAILS .....	17-C1 thru 20-C1
WINDLOAD CHARTS .....	21-C1
DEADLOAD CHARTS .....	22-C1
STRUCTURAL SILICONE CHART .....	23-C1
ACCESSORIES.....	24-C1 and 25-C1

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:  
 m - meter                                      Kg - kilogram  
 Pa - pascal                                      KPa - kilopascal  
 MPa - megapascal

# WINDOW WALLS

## Specifications

### SECTION 08 43 13 ALUMINUM FRAMED STOREFRONTS

### BG Systems

- Series BG450
- Series BG520
- Series BG525
- Series BG600

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
BG450	2-1/4" (57.2)	4-1/2" (114.3)	1/4" (6)	Exterior/Interior
BG520	2-1/4" (57.2)	5-1/4" (133.4)	1/4" (6)	Exterior/Interior
BG525	2-1/4" (57.2)	5-1/4" (133.4)	1" (25)	Exterior/Interior
BG600	2-1/4" (57.2)	6" (152.4)	1" (25)	Exterior/Interior

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 12 psf (574 Pa).

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

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

The system shall perform to this criteria under a windload of (*Specify*) psf. Stress on structural silicone should not exceed 20 psi (138 KPa).

Testing Procedures -

ASTM 283, E 331, and E 330 -

Laboratory performance testing.

AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

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

(*Specify one of the following*):

\_\_\_ #11 Clear anodic coating

\_\_\_ #22 Dark Bronze anodic coating

\_\_\_ #33 Black anodic coating

A Fluoropolymer paint coating

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

#### FABRICATION

The framing system shall provide

continuous head and sill channels spliced together with extruded aluminum sleeves as required for thermal expansion. The sill member shall provide a continuous gutter for exterior weepage through elongated baffled weep holes. Back portion of sill channel should provide a dry gutter for fastening to structure. Sealing of fasteners is not required. Vertical mullions shall be stacked into head and sill channels without mechanical fastening to provide for metal expansion and building deflection. System shall provide for transition glazing from 1" (25) to 1/4" (6) with glass remaining in same exterior plane. Reusable twist-in temporary plastic glass retainers should be used during structural silicone curing period. Overall depth shall be a nominal dimension of (*Specify*). Horizontal members shall be 2-1/4" (57.2) high.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

## Specifications

## Thermal BT Systems

- Series BT525
- Series BT600

### SECTION 08 43 13 ALUMINUM FRAMED STOREFRONTS

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
BT525	2-1/4" (57.2)	5-1/4" (133.4)	1" (25)	Exterior/Interior
BT600	2-1/4" (57.2)	6" (152.4)	1" (25)	Exterior/Interior

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

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

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 12 psf (574 Pa).

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

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

The system shall perform to this criteria under a windload of (*Specify*) psf. Stress on structural silicone should not exceed 20 psi (138 KPa). Thermal Performance - Series BT525/ BT600 shall be tested in accordance with AAMA 1503.1-88. Testing Procedures - ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper), thermally broken by a two part chemically cured high density polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... (*Specify one of the following*):

- \_\_\_\_\_ #11 Clear anodic coating
- \_\_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_\_ #33 Black anodic coating
- A Fluoropolymer paint coating

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

#### FABRICATION

The framing system shall provide continuous head and sill channels spliced together with extruded aluminum sleeves as required for thermal expansion. The sill member shall provide a continuous gutter for exterior weepage through elongated baffled weep holes. Back portion of sill channel should provide a dry gutter for fastening to structure. Sealing of fasteners is not required. Vertical mullions shall be stacked into head and sill channels without mechanical fastening to provide for metal expansion and building deflection. System shall provide for transition glazing from 1" (25) to 1/4" (6) with glass remaining in same exterior plane. Overall depth shall be a nominal dimension of (*Specify*). Horizontal members shall be 2-1/4" (57.2) high.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

# WINDOW WALLS

## Technical Data

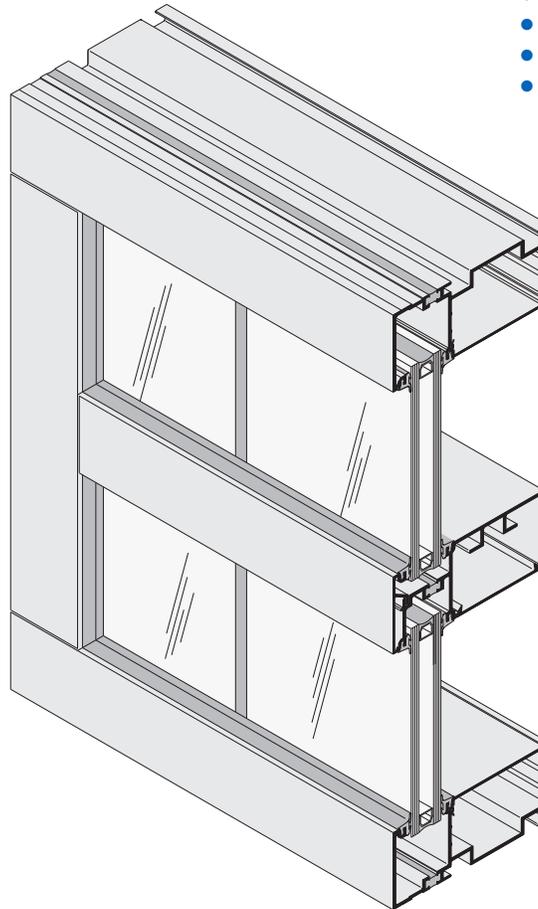
## BG and BT Systems

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

BG Systems are ideal for a low to mid-rise structural silicone glazed fixed horizontal ribbon window. These systems were designed for three types of configuration: two-sided structural silicone support; captured glazing; a combination of these two configurations.

Designed for stacking installation, these systems may be glazed from the interior or exterior. BT (Thermal) Series features the Poly-Aluminizer™ Thermal Break Technology as described on page 44-B1.

Dual or two-tone colors can be achieved by specifying different finishes for the optional exterior face covers and interior mullions.



SERIES	WIDTH	HEAD/SILL DEPTH	GLAZING INFILLS	APPLICATION
<b>BG450</b>	2-1/4" (57.2)	4-1/2" (114.3)	1/4" (6)	Low to Mid-Rise Fixed Horizontal Ribbon Windows.
<b>BG520</b>	2-1/4" (57.2)	5-1/4" (133.4)	1/4" (6)	
<b>BT525</b>	2-1/4" (57.2)	5-1/4" (133.4)	1" (25)	
<b>BG525</b>	2-1/4" (57.2)	5-1/4" (133.4)	1" (25)	
<b>BG600</b>	2-1/4" (57.2)	6" (152.4)	1" (25)	
<b>BT600</b>	2-1/4" (57.2)	6" (152.4)	1" (25)	

### GLASS SIZES\*

Glass Width = Daylight Opening + Glass Bites (See details)

Glass Height = Daylight Opening + 7/8" (22.2)

\* This formula does not take into account glass tolerances. Consult glass manufacturer before ordering glass.

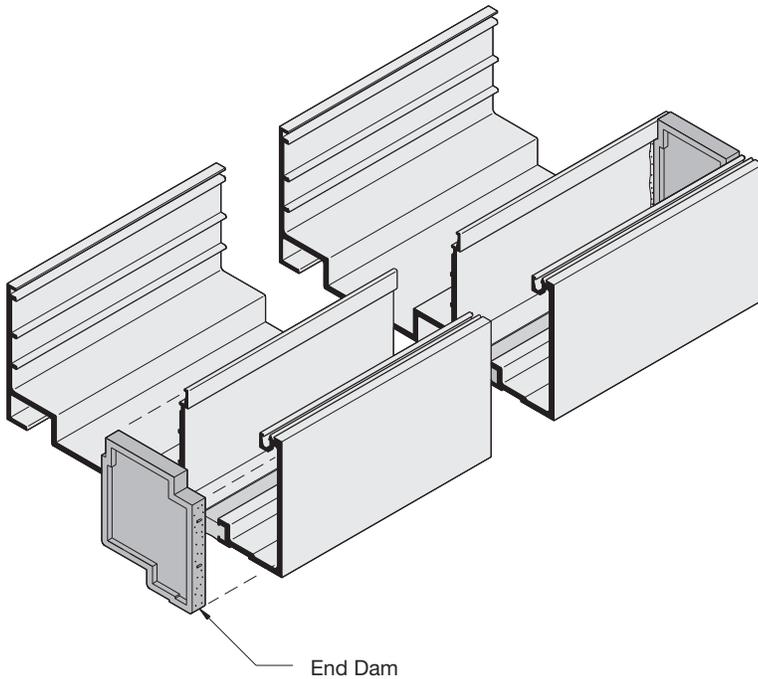
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# WINDOW WALLS

## Special Features

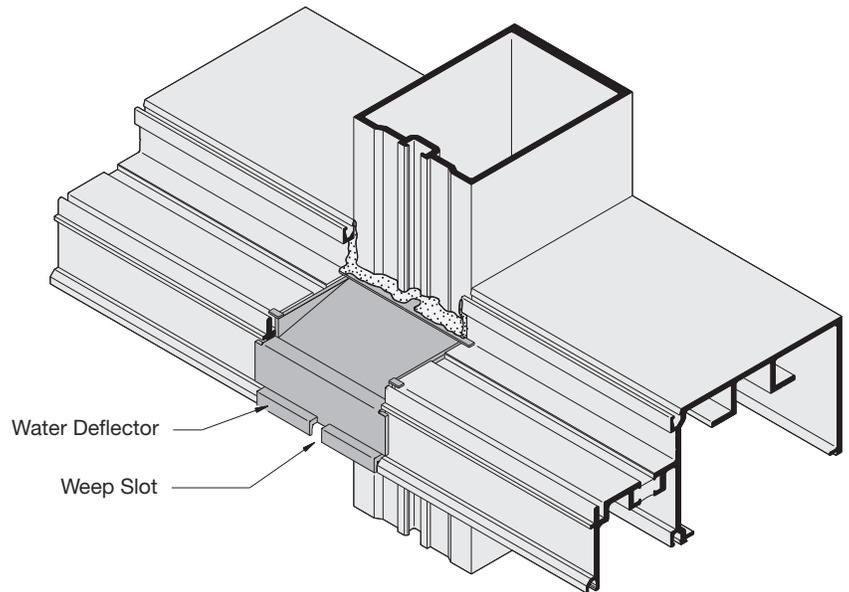
### BG and BT Systems

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

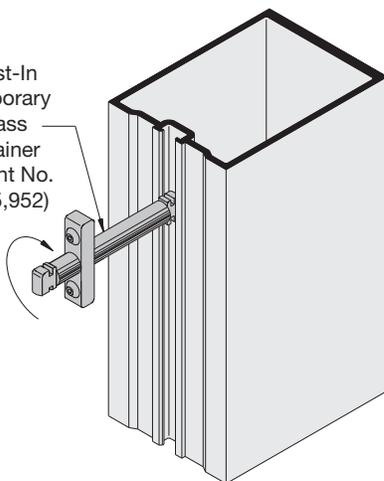


The sill channel provides a continuous gutter for exterior weepage through elongated baffled weep holes. Injection Molded End Dams are provided for sealing the gutter ends. Back portion of the channel remains dry where sill is anchored to the structure. Sill is shown. Head is similar.

A uniquely designed Injection Molded Water Deflector is used for weeping infiltrated water to the exterior at the intersection of the intermediate horizontal and vertical mullions. The Contoured Water Deflector allows for an uninterrupted gasket seal at the intersection of intermediate horizontal and vertical mullions.



Twist-In  
 Temporary  
 Glass  
 Retainer  
 (Patent No.  
 D295,952)



Reusable Twist-In Temporary Glass Retainers hold the glass in place during the structural silicone curing period. The plastic retainer is designed to work for both 1" (25) and 1/4" (6) infills.

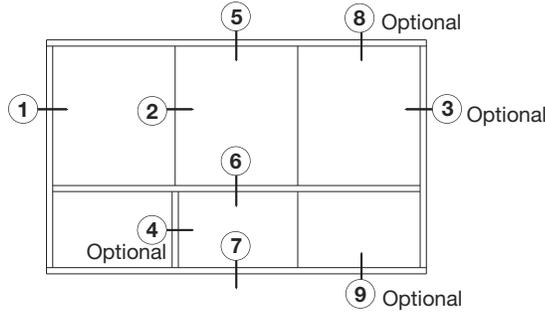
# WINDOW WALLS

## Typical Details

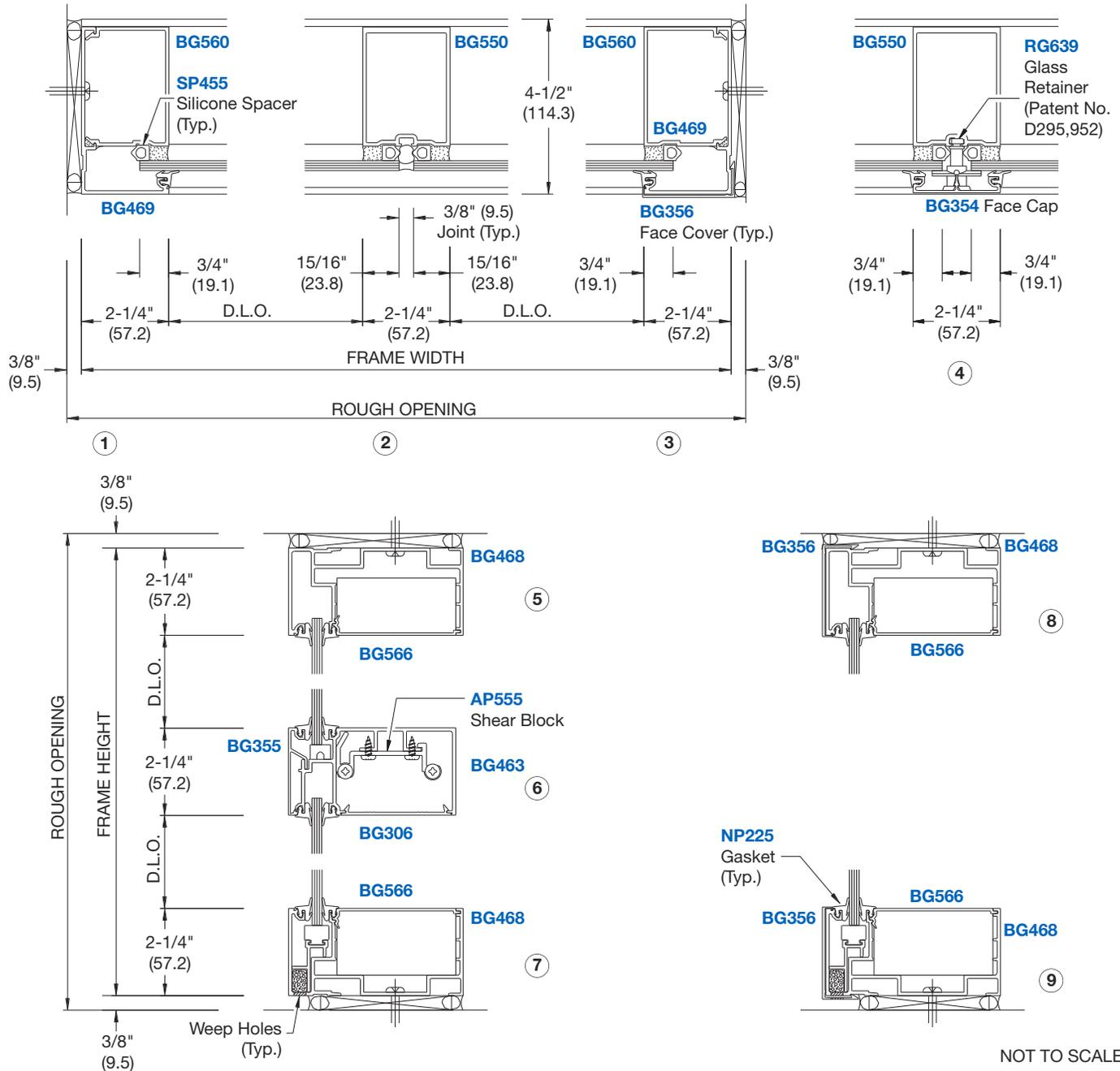
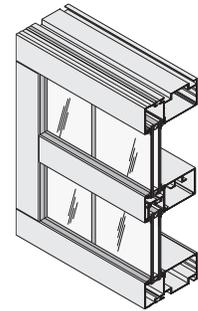
### BG Systems • Series BG450

#### FOR 1/4" (6) GLAZING

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



TYPICAL ELEVATION



NOT TO SCALE

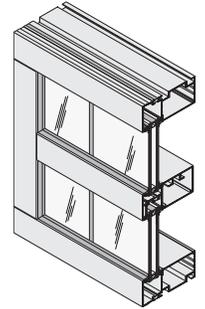
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

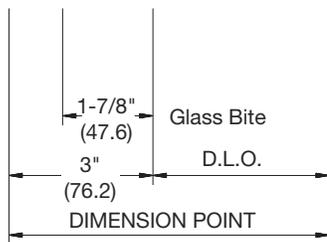
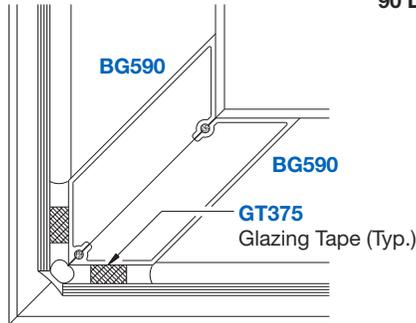
**BG Systems**  
 • Series BG450

**CORNER CONDITIONS FOR 1/4" (6) GLAZING**

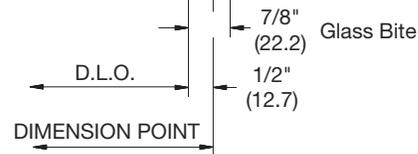
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.



**90 DEGREE CORNERS**

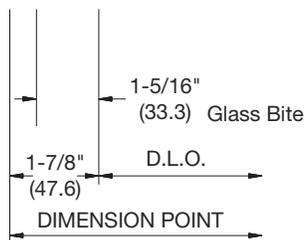
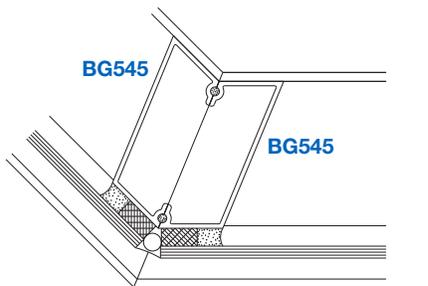


**Outside Corner**

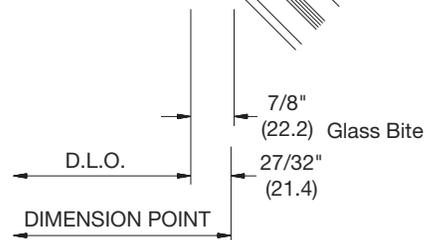
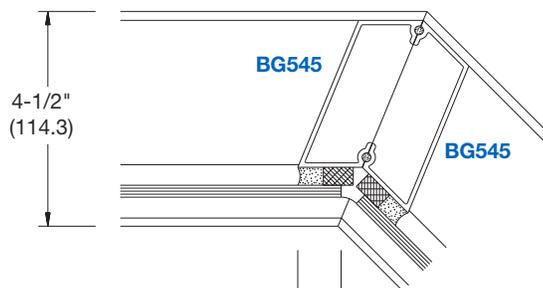


**Inside Corner**

**135 DEGREE CORNERS**



**Outside Corner**



**Inside Corner**

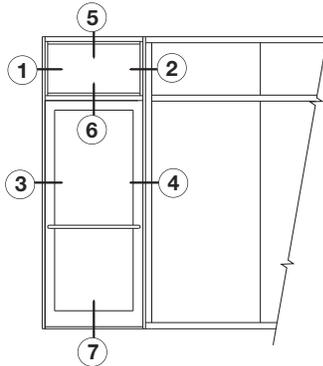
# WINDOW WALLS

## Typical Details

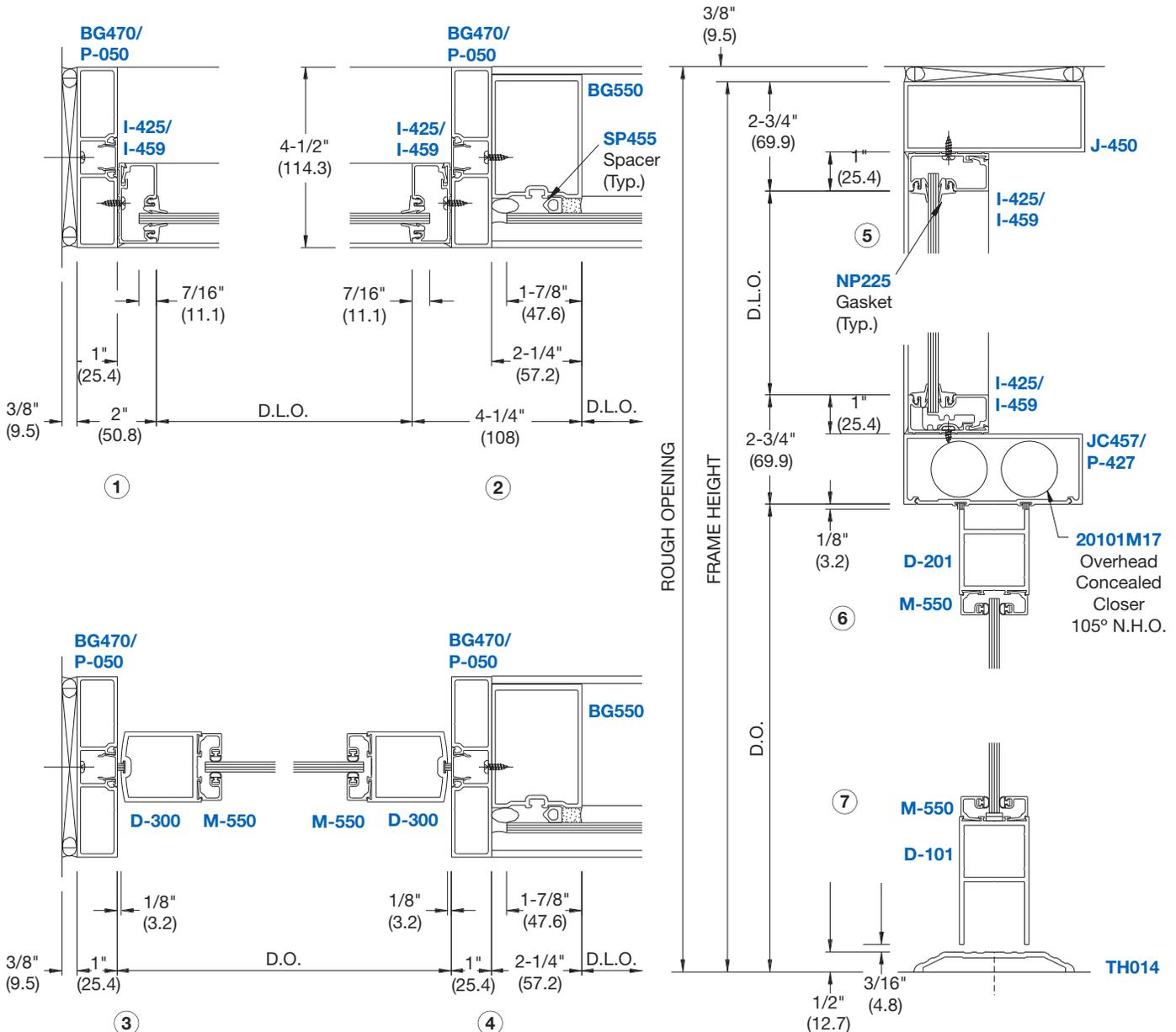
**BG Systems**  
• Series BG450

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**CENTER HUNG DOOR**



NOT TO SCALE

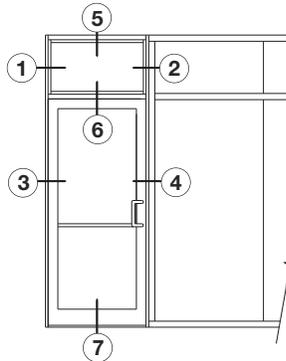
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

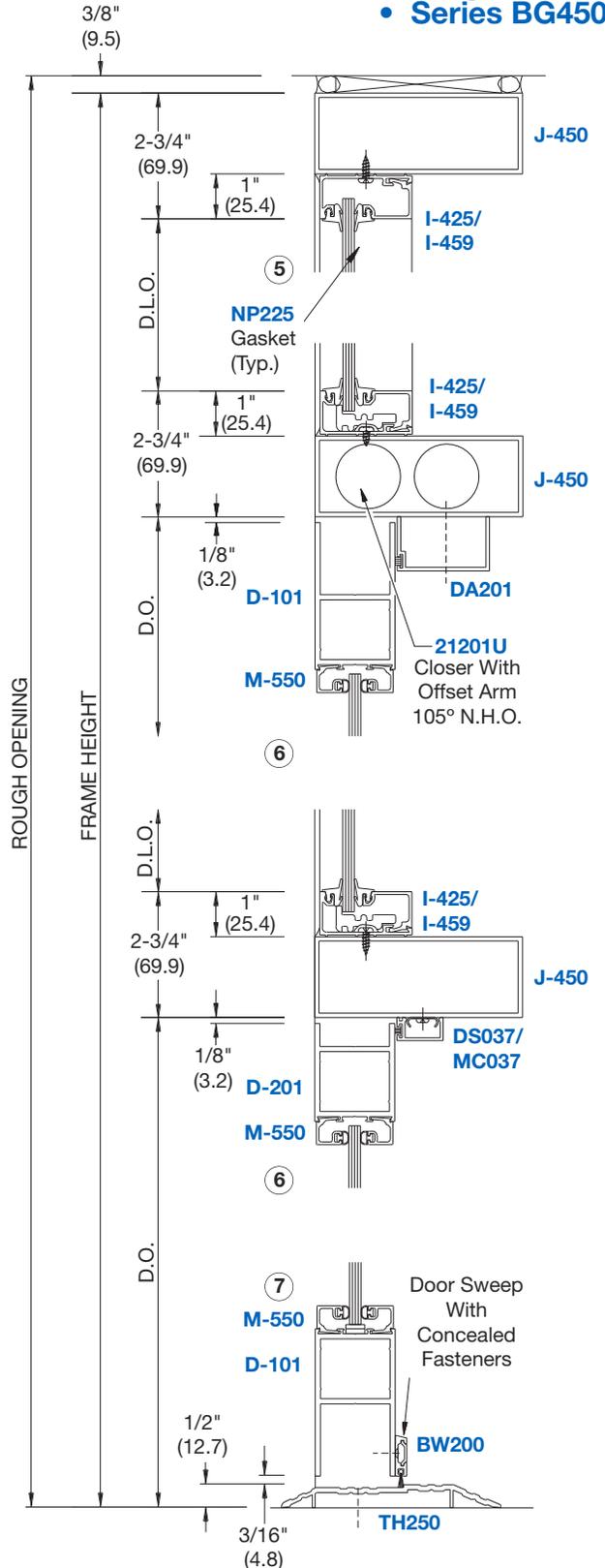
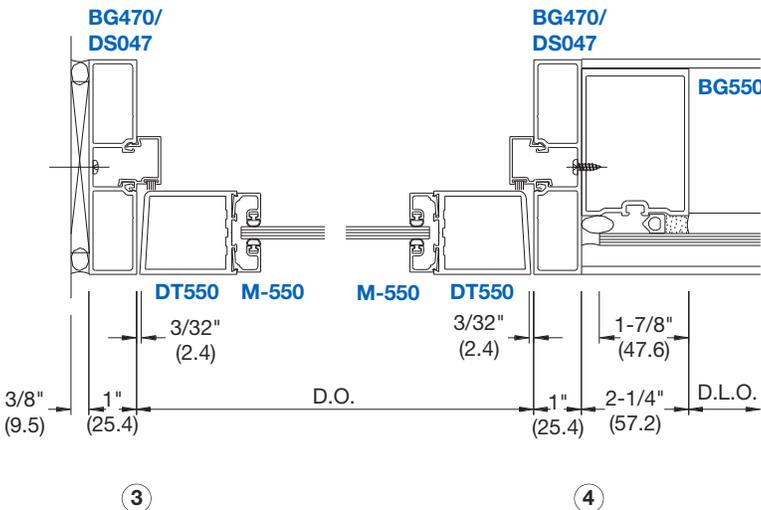
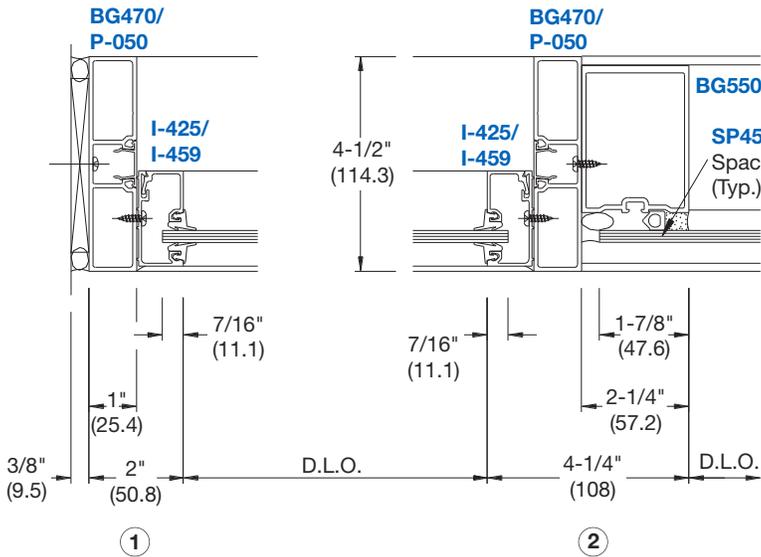
**BG Systems**  
• Series BG450

**DOOR FRAMING**

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**OFFSET HUNG DOOR**



# WINDOW WALLS

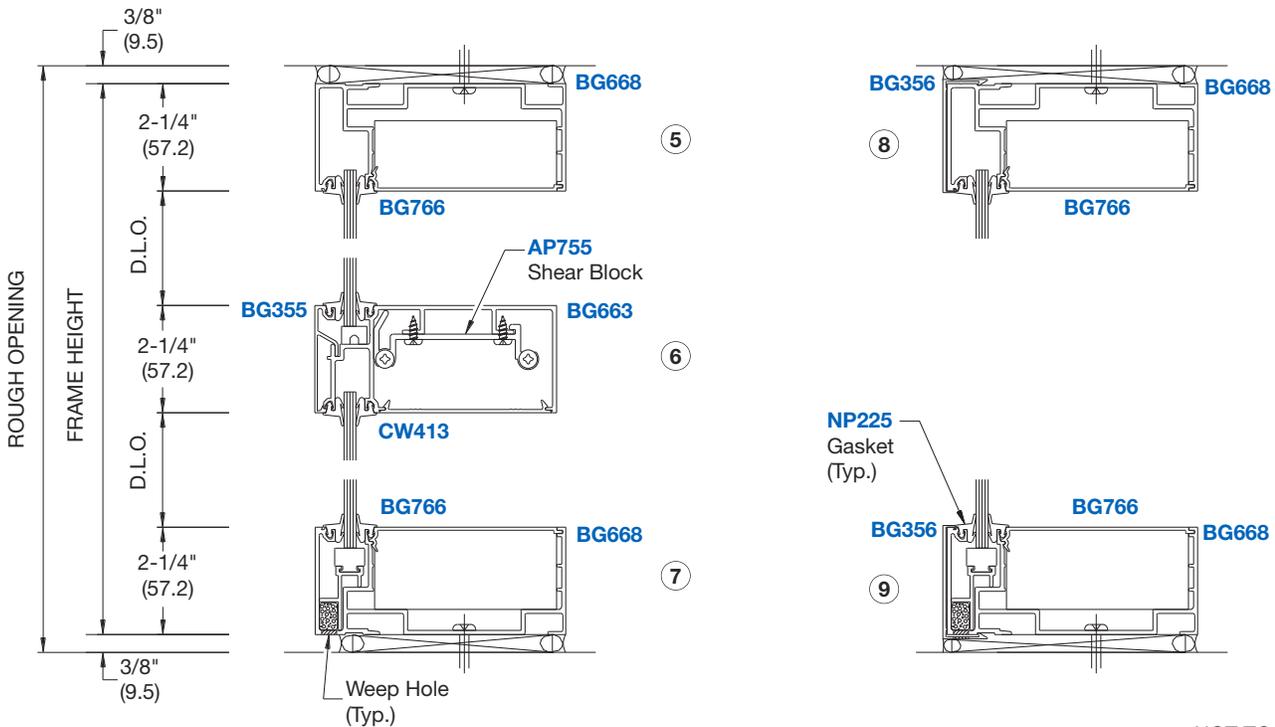
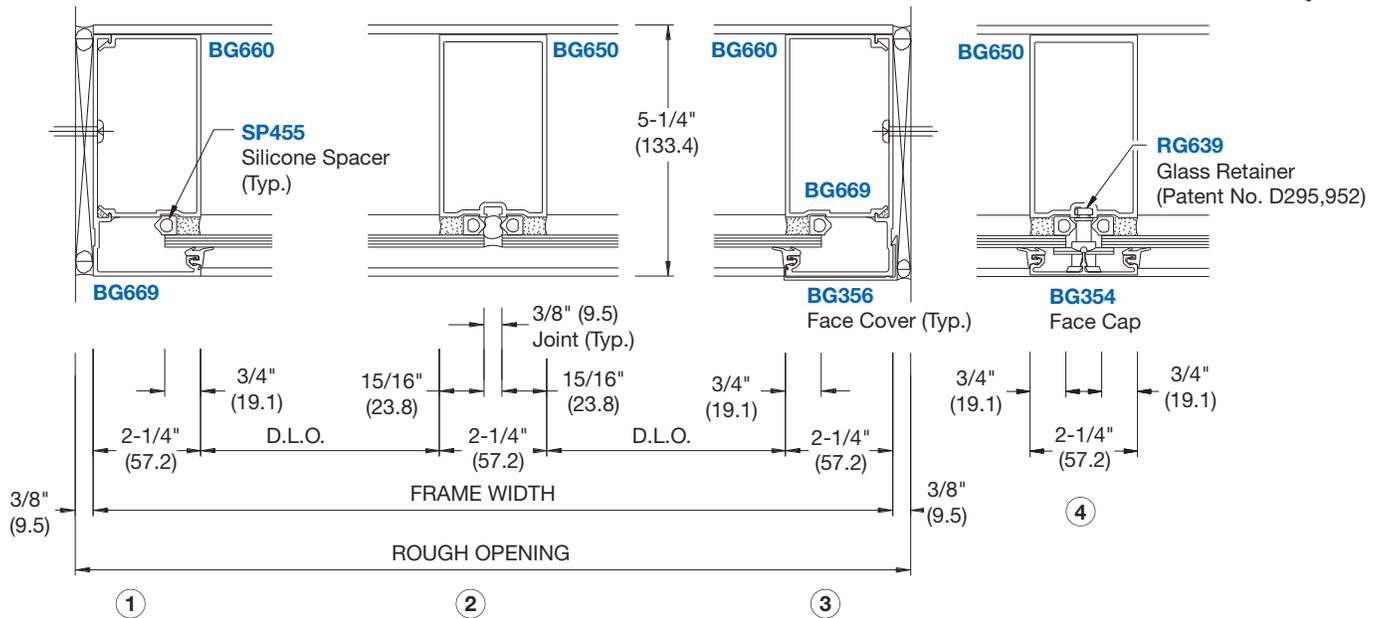
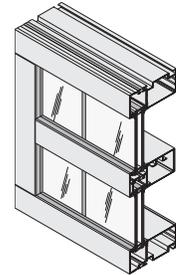
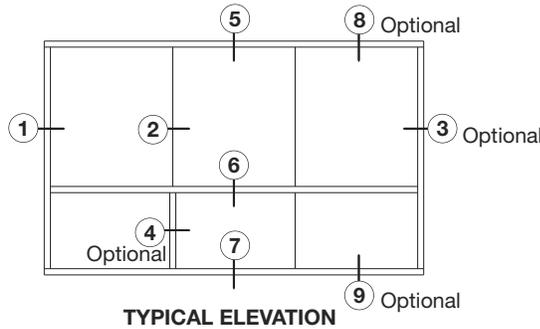


## Typical Details

**BG Systems**  
• Series BG520

### FOR 1/4" (6) GLAZING

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



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

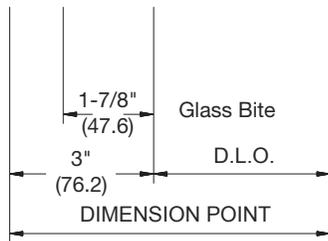
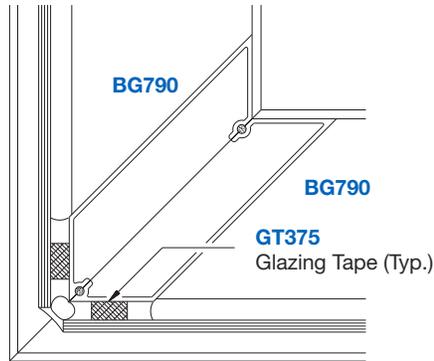
**Typical Details**

**BG Systems**  
 • Series BG520

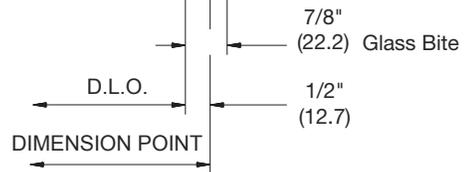
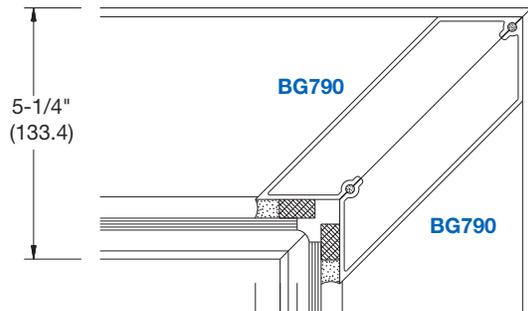
**CORNER CONDITIONS  
 FOR 1/4" (6) GLAZING**

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

**90 DEGREE CORNERS**

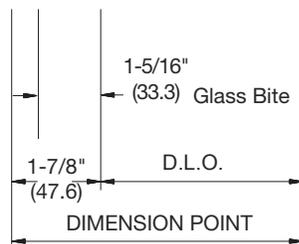
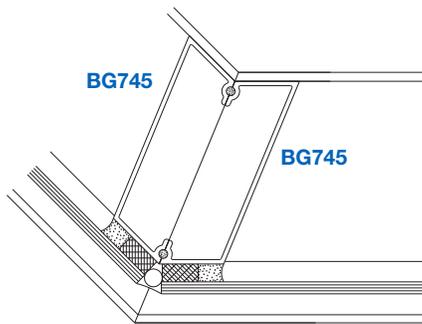


**Outside Corner**

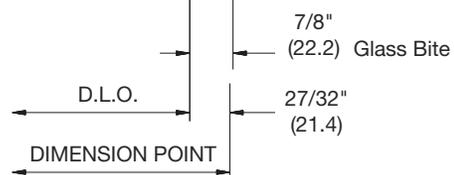
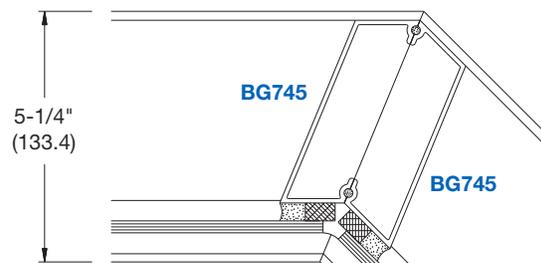


**Inside Corner**

**135 DEGREE CORNERS**



**Outside Corner**



**Inside Corner**

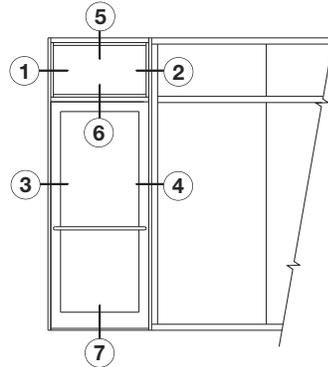
# WINDOW WALLS

## Typical Details

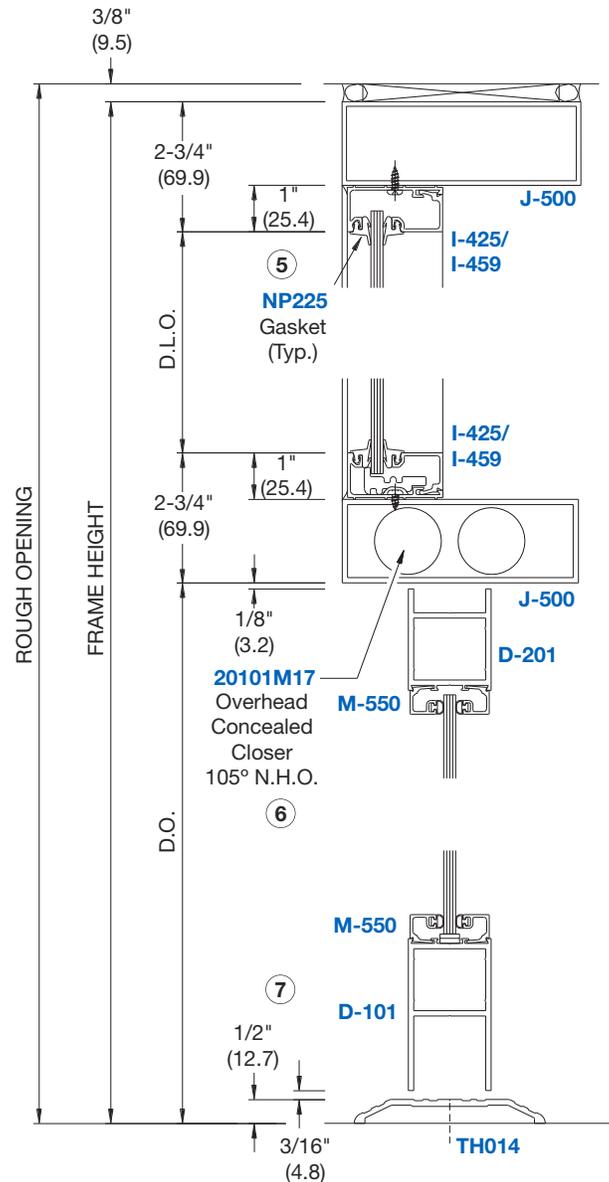
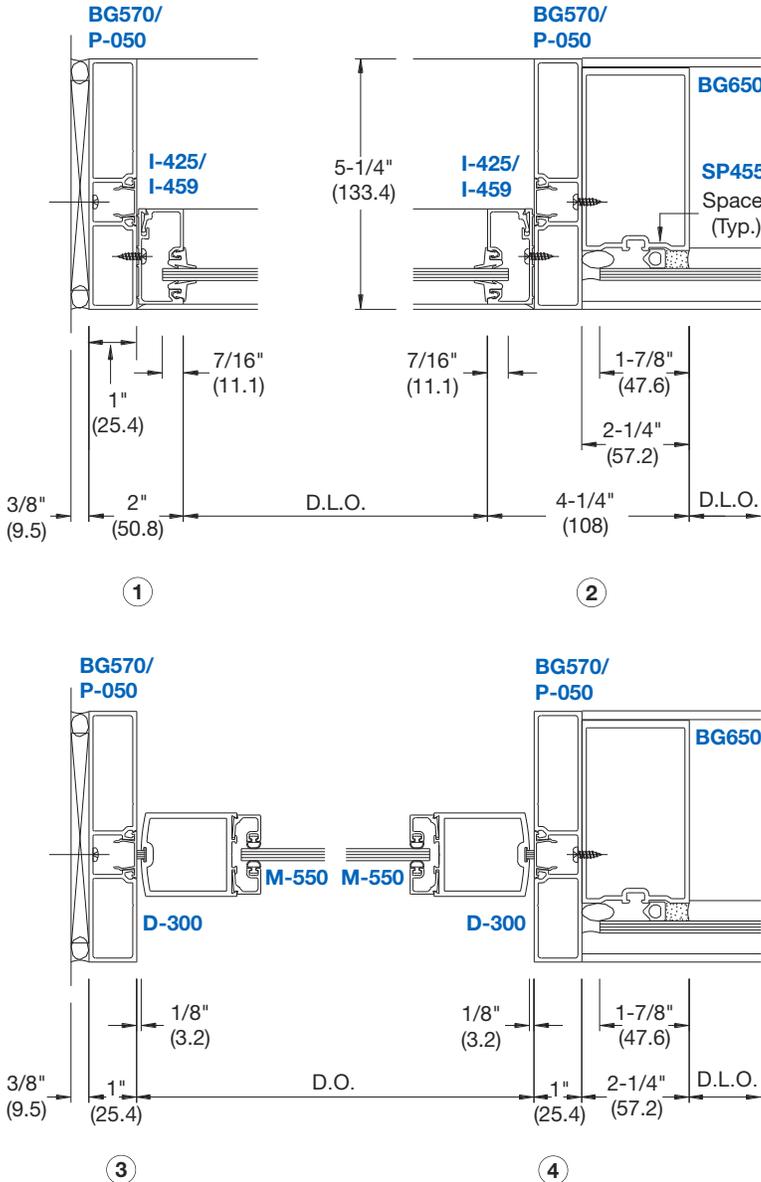
**BG Systems**  
• Series BG520

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



CENTER HUNG DOOR



NOT TO SCALE

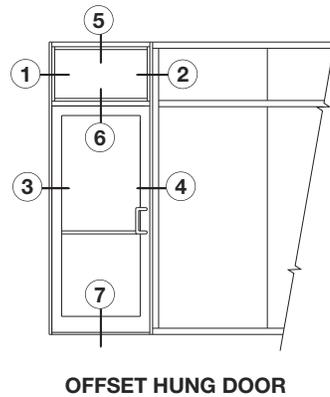
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

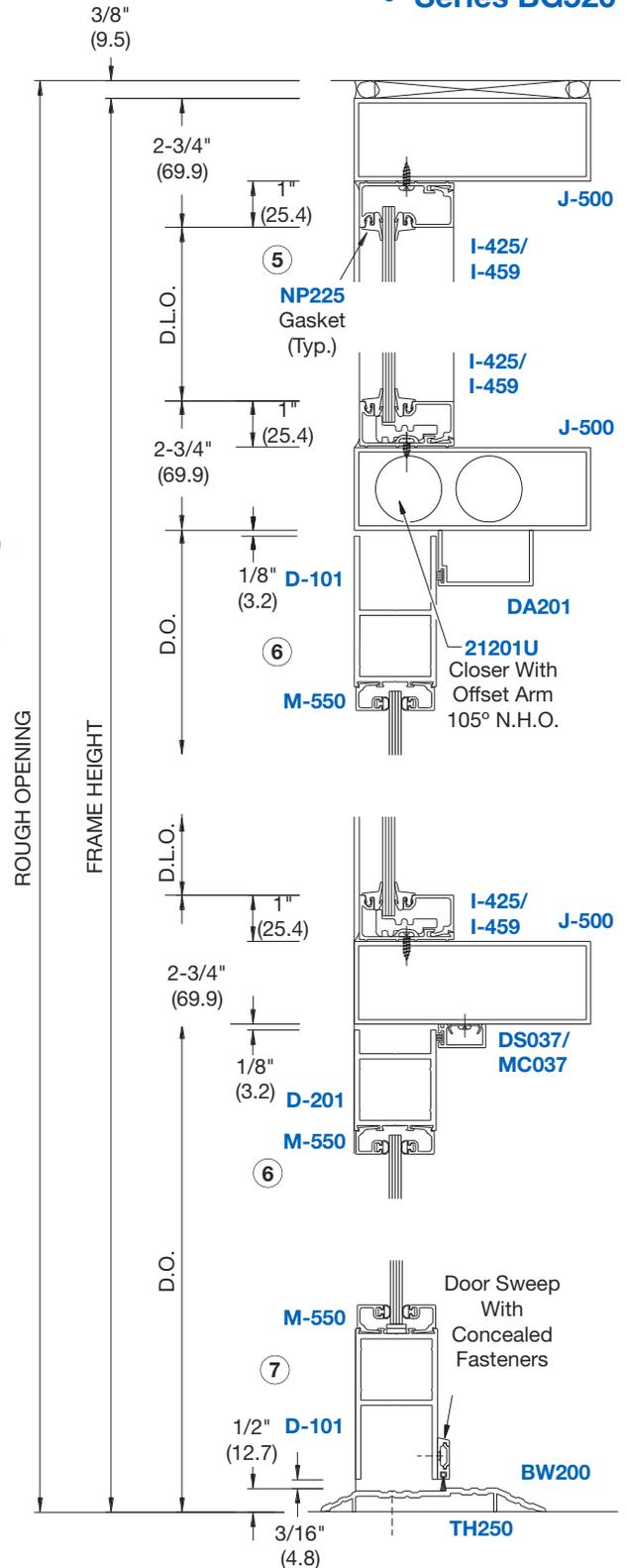
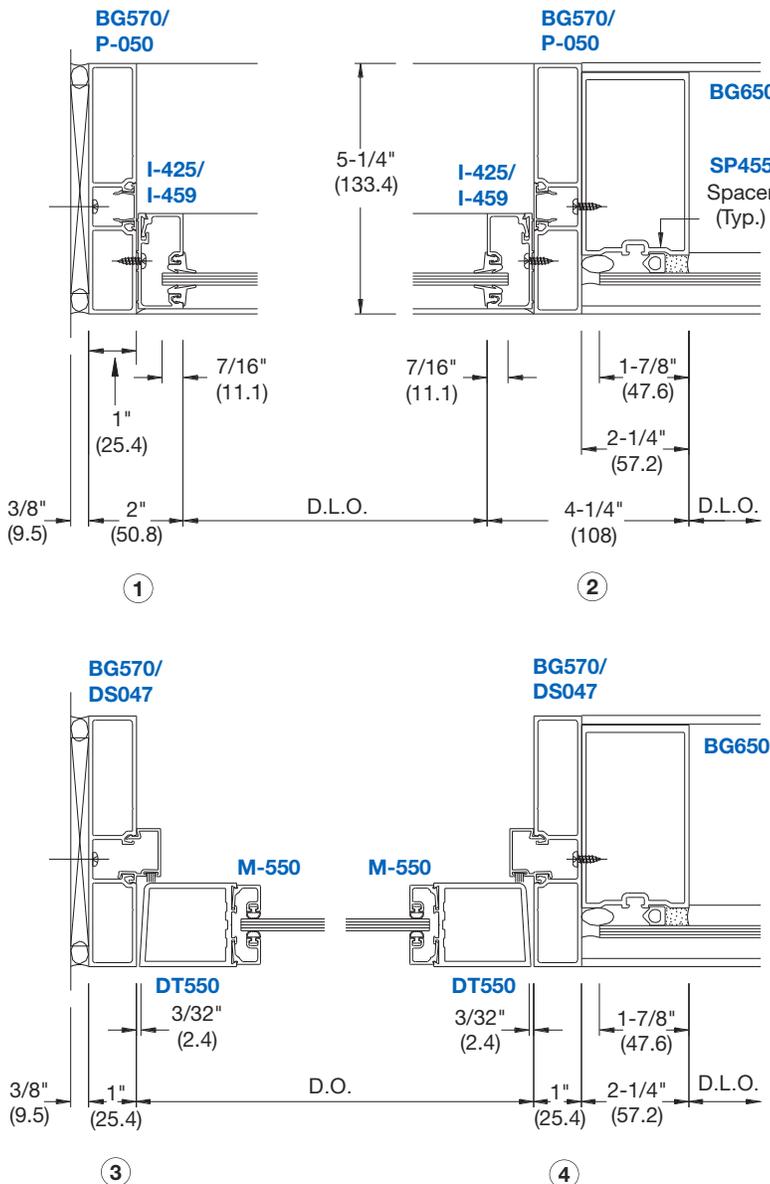
## Typical Details

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**BG Systems**  
• Series BG520



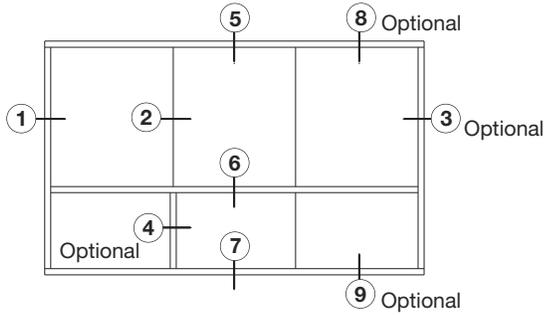
NOT TO SCALE

# WINDOW WALLS

## Typical Details

### FOR 1" (25) GLAZING

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



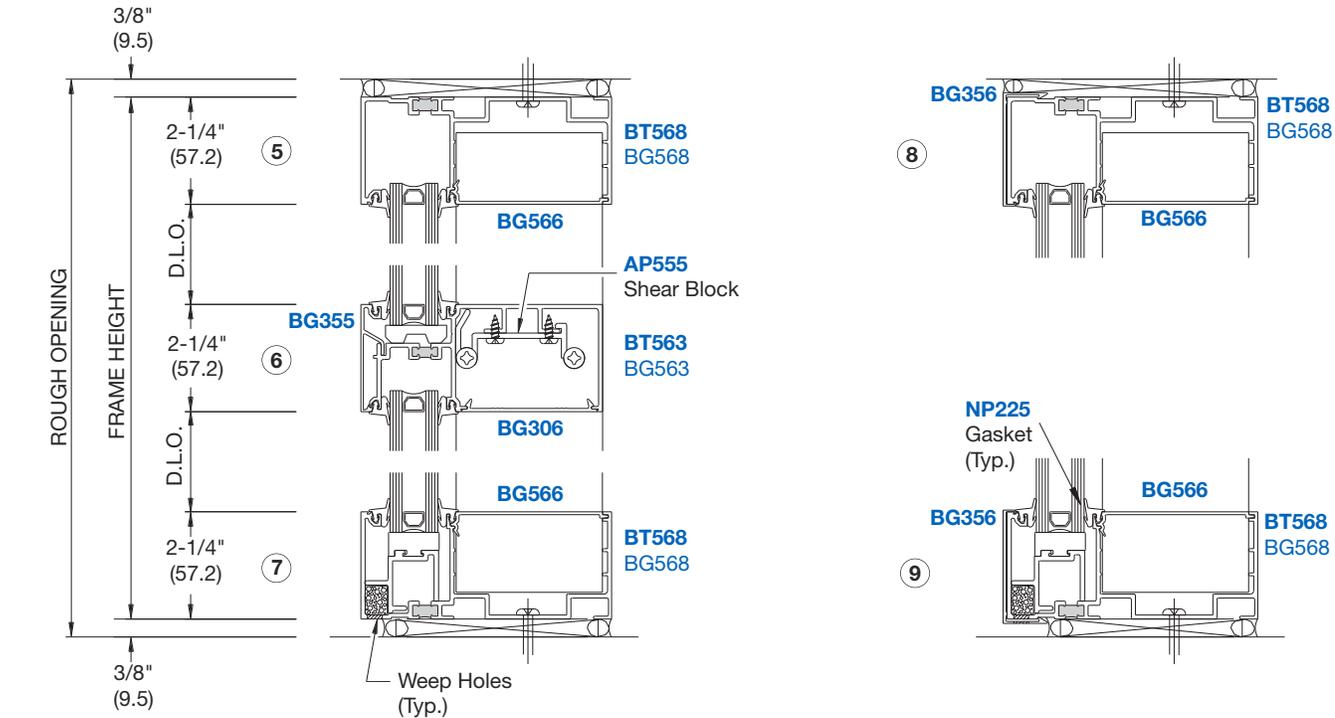
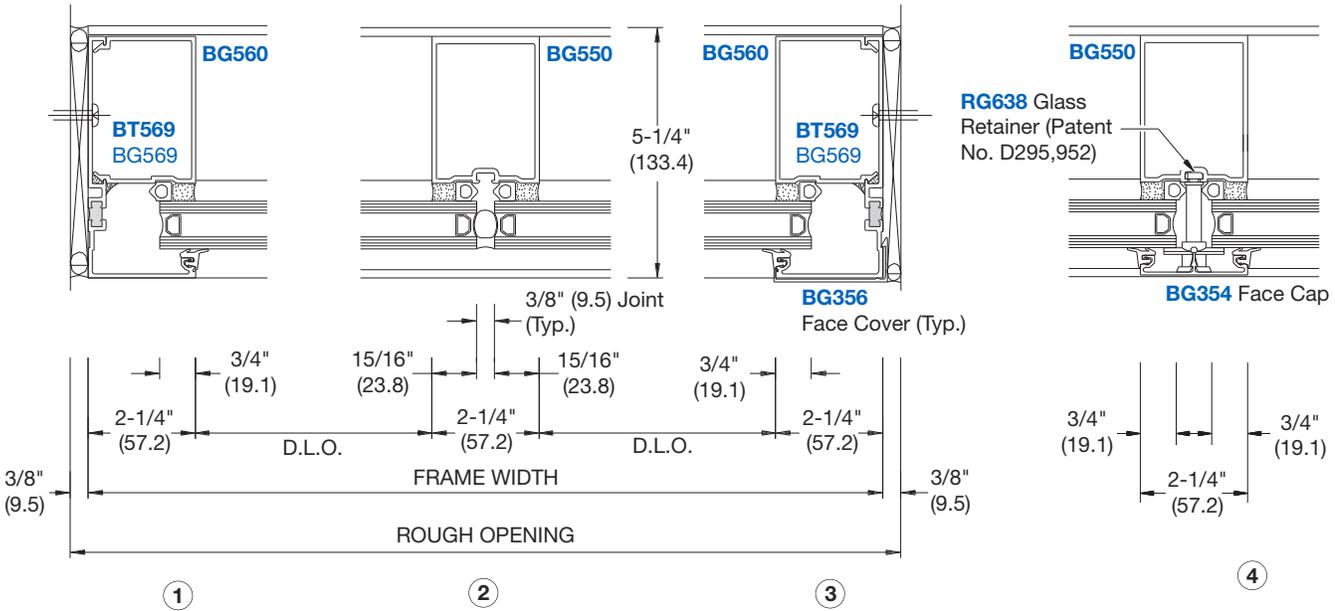
TYPICAL ELEVATION

### BG Systems

- Series BT525
- Series BG525

<b>B</b>	<b>T</b>	<b>5</b>	<b>6</b>	<b>9</b>
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Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. Series **BT525** details are typically shown.



NOT TO SCALE

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

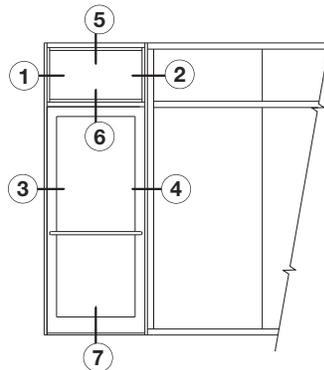
## Typical Details

### BG and BT Systems

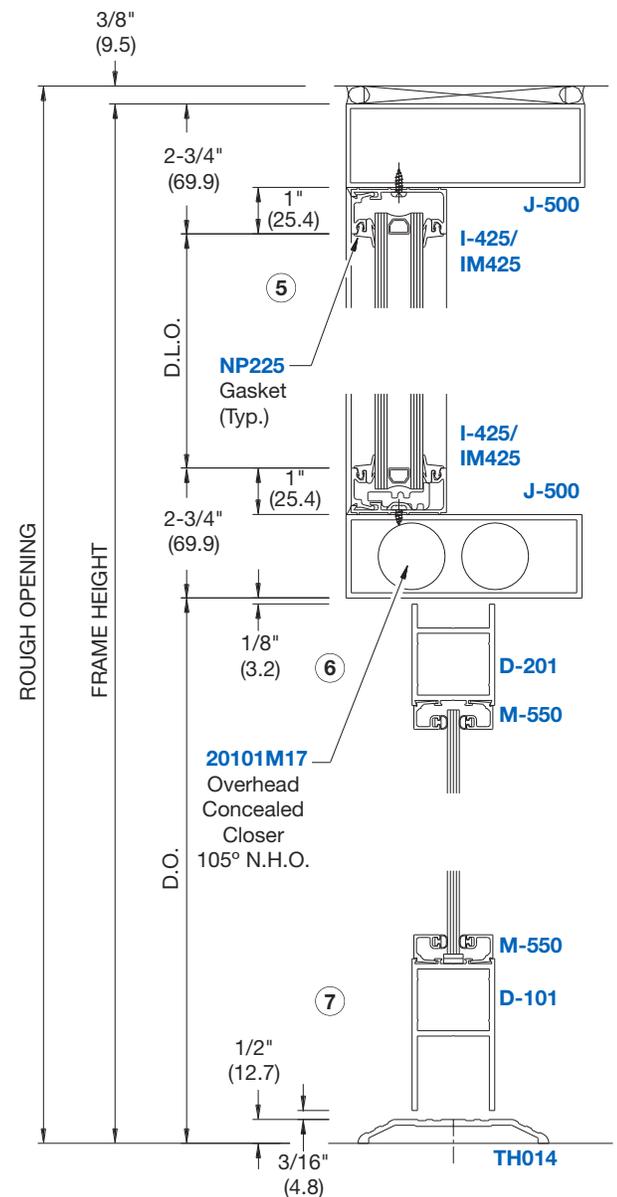
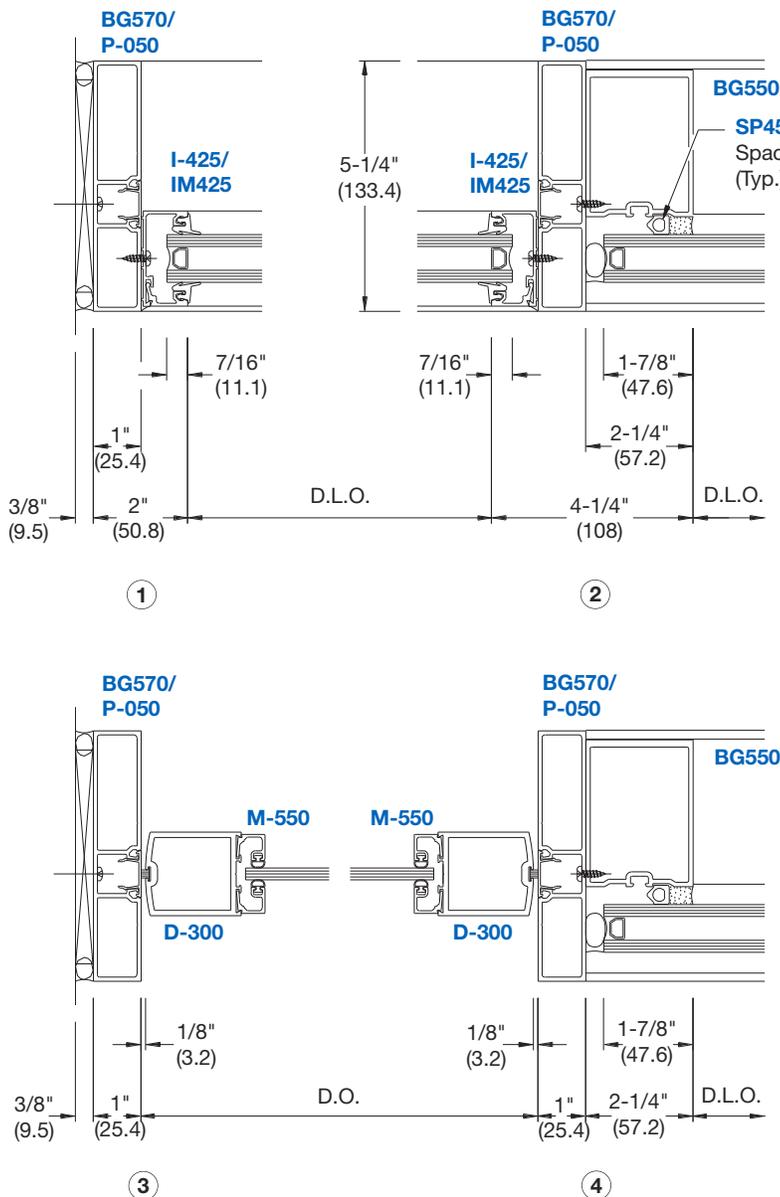
- Series BT525
- Series BG525

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



CENTER HUNG DOOR



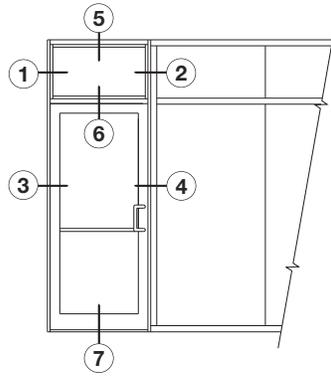
NOT TO SCALE

# WINDOW WALLS

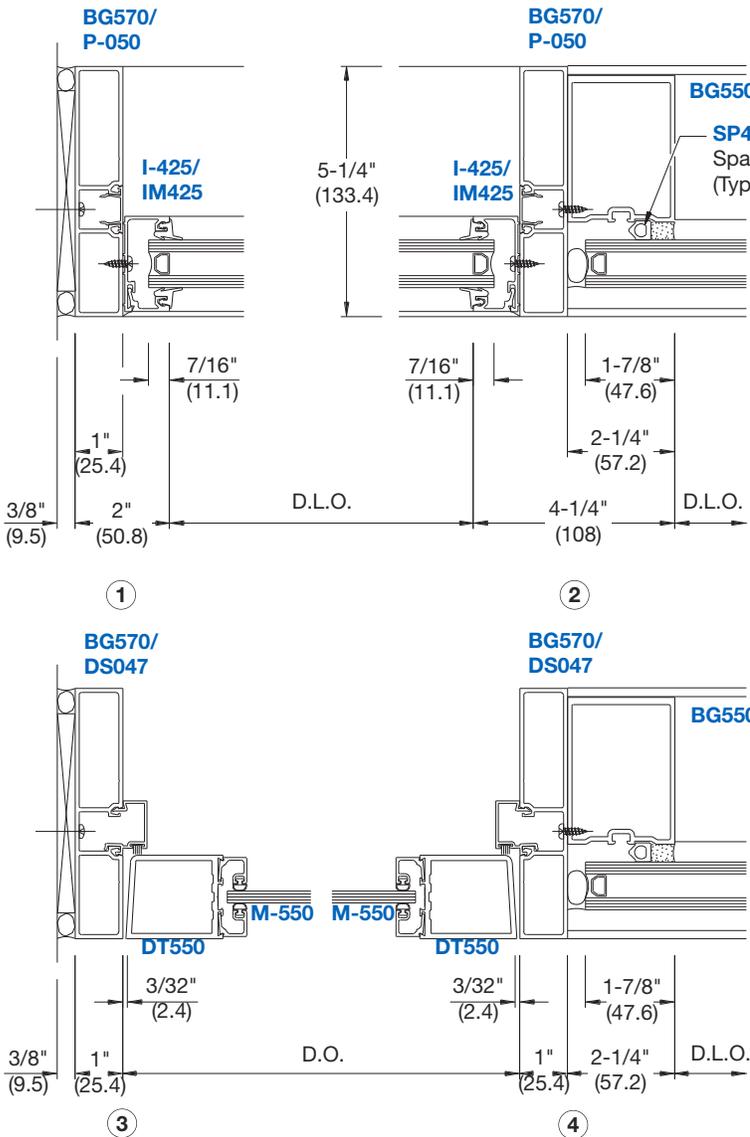
## Typical Details

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



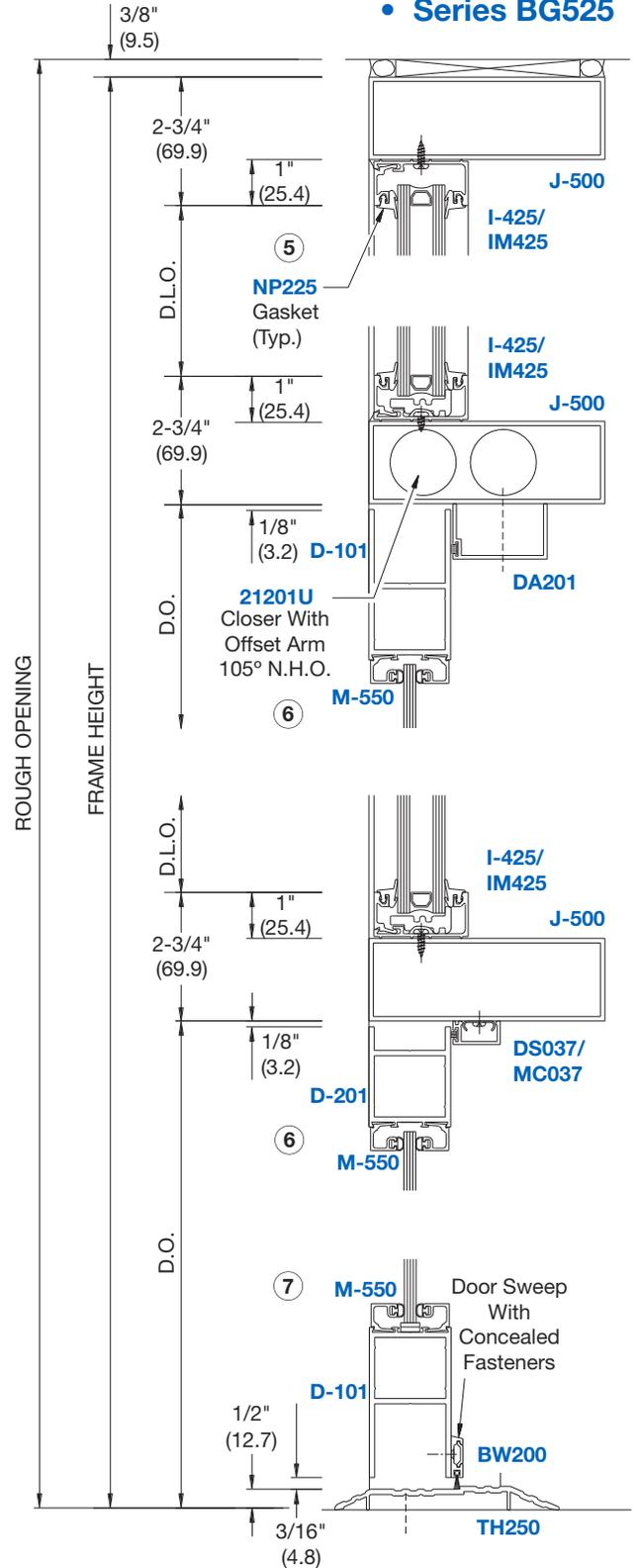
**OFFSET HUNG DOOR**



NOT TO SCALE

### BG and BT Systems

- Series BT525
- Series BG525



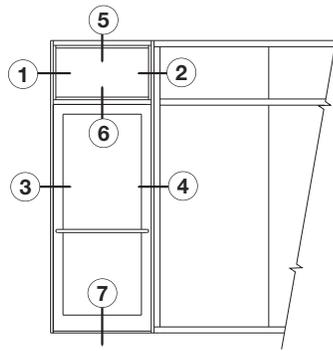


# WINDOW WALLS

## Typical Details

### DOOR FRAMING

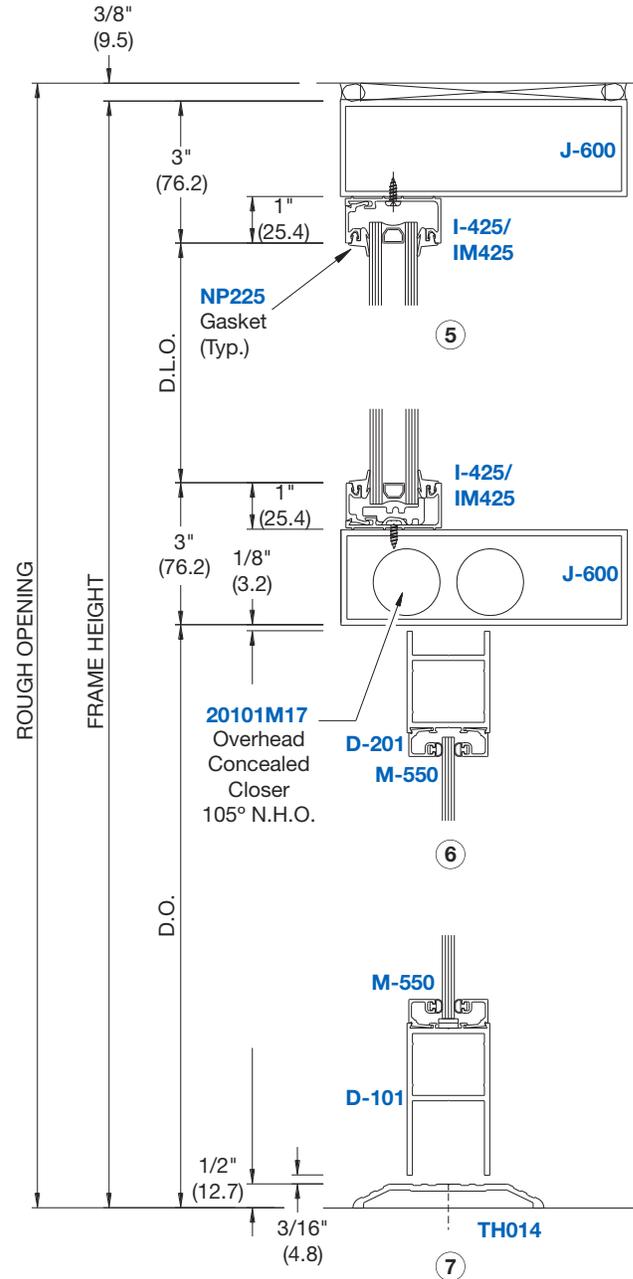
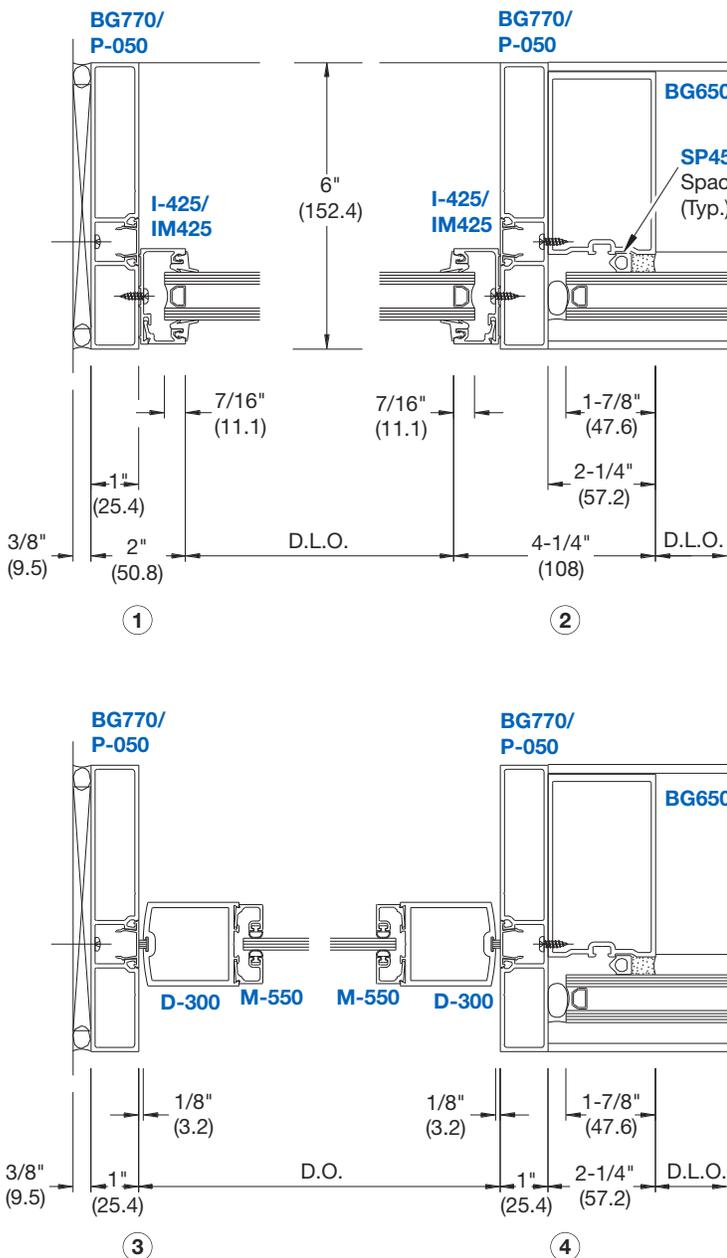
**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



CENTER HUNG DOOR

### BG and BT Systems

- Series BT600
- Series BG600



NOT TO SCALE

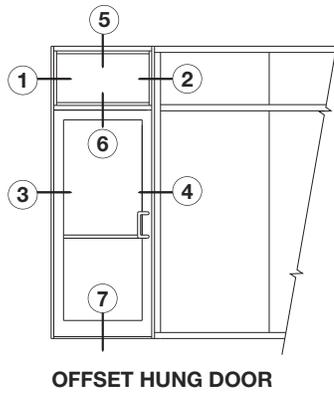
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Typical Details

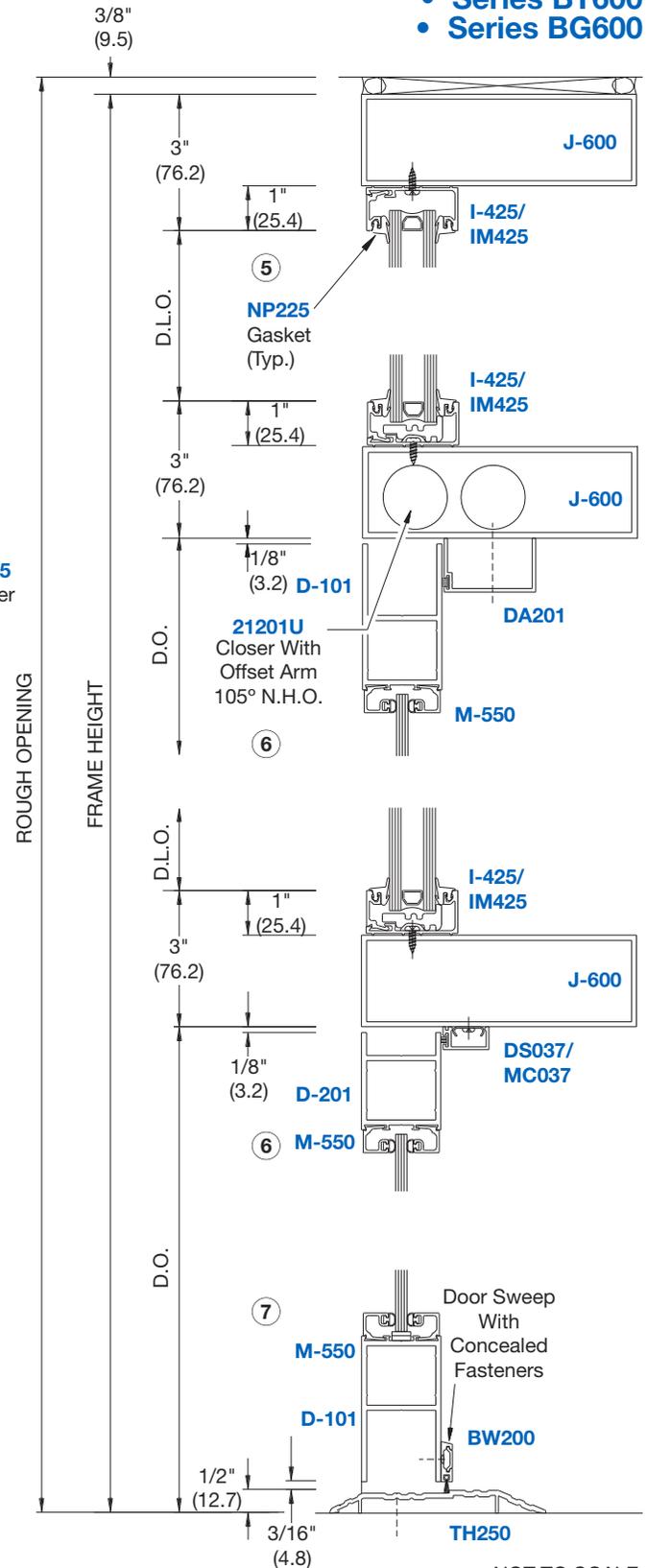
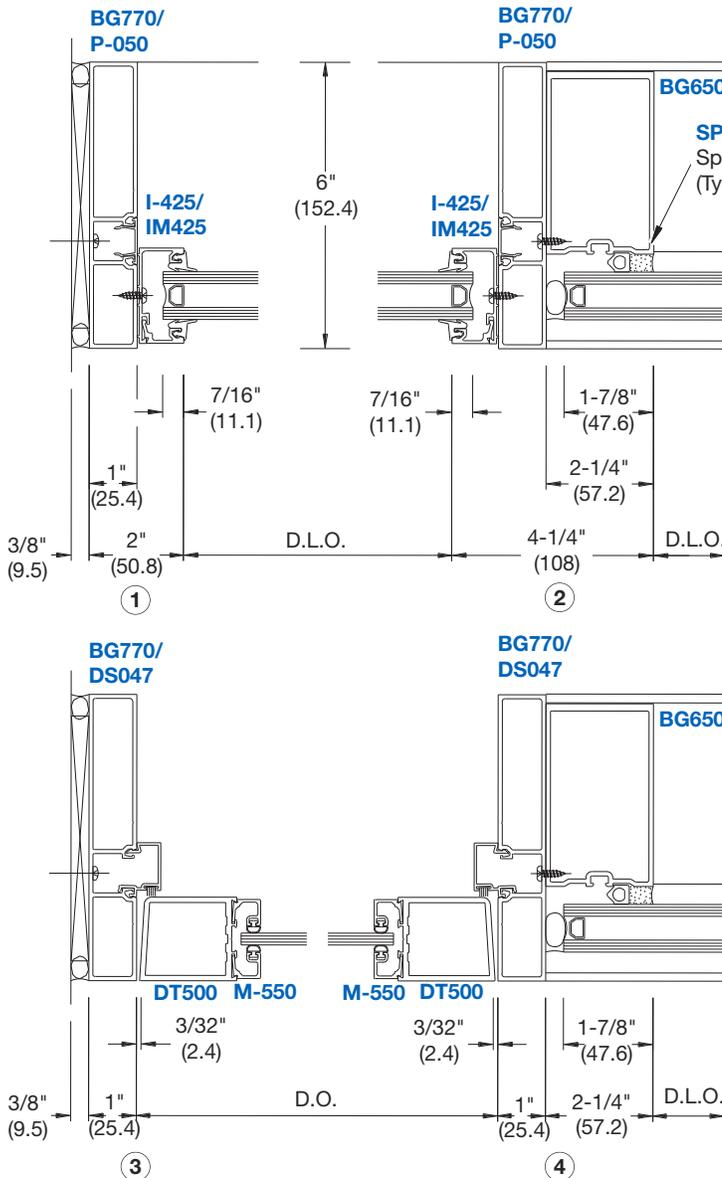
### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



### BG and BT Systems

- Series BT600
- Series BG600



NOT TO SCALE

# WINDOW WALLS

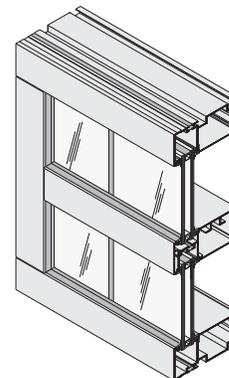
## Typical Details

### BG and BT Systems

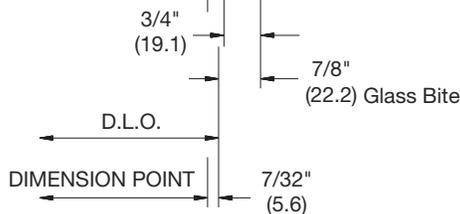
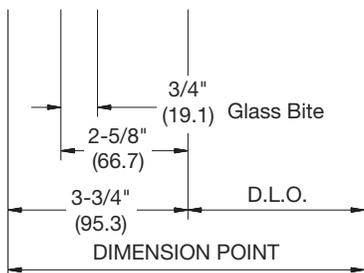
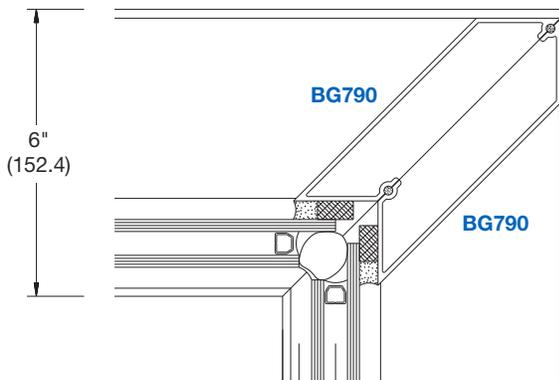
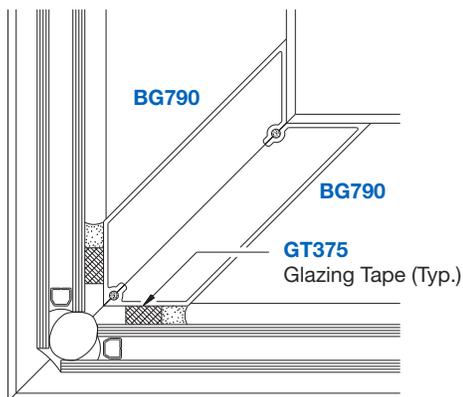
- Series BT600
- Series BG600

### CORNER CONDITIONS FOR 1" (25) GLAZING

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



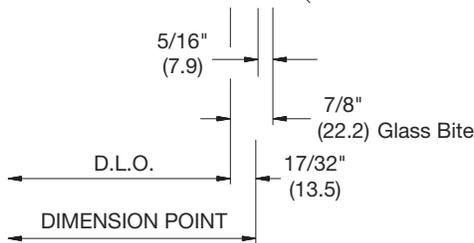
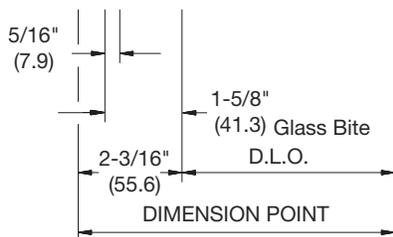
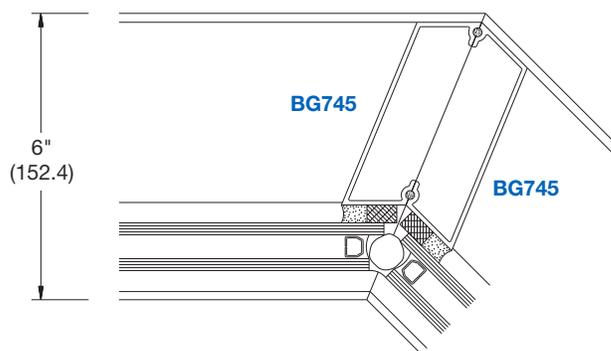
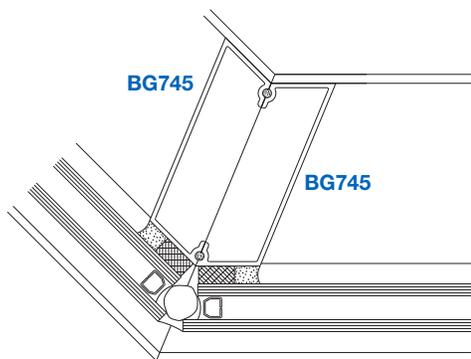
#### 90 DEGREE CORNERS



Outside Corner

Inside Corner

#### 135 DEGREE CORNERS



Outside Corner

Inside Corner

NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Windload Charts

## BG and BT Systems

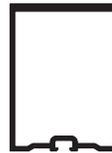
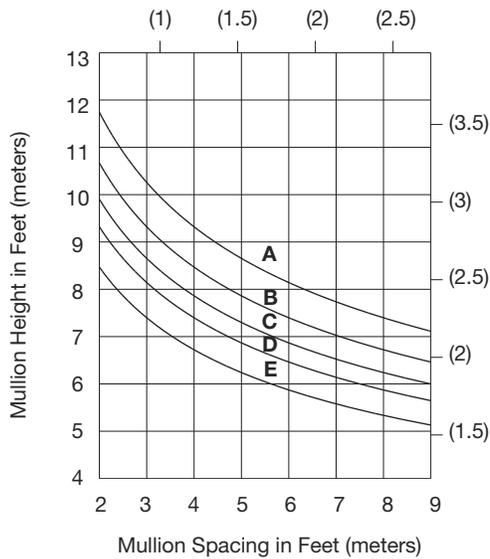
### VERTICAL MULLIONS FOR 1/4" (6) AND 1" (25) GLAZING

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

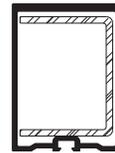
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance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

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

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



BG550

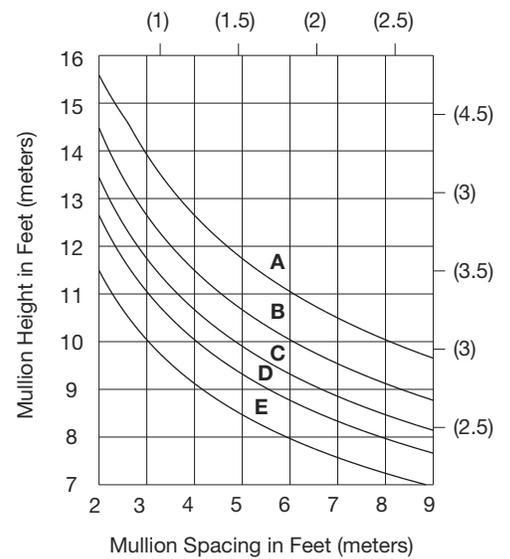


BG550 with SS550

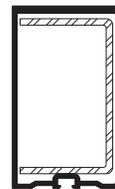
$I = 1.594 (66.3 \times 10^4)$   
 $S = .965 (15.81 \times 10^3)$

Steel Stiffener  
 $I = .824 (34.3 \times 10^4)$   
 $S = .659 (10.81 \times 10^3)$

$I_{AL+STL} = 3.984 (165.81 \times 10^4)$



BG650

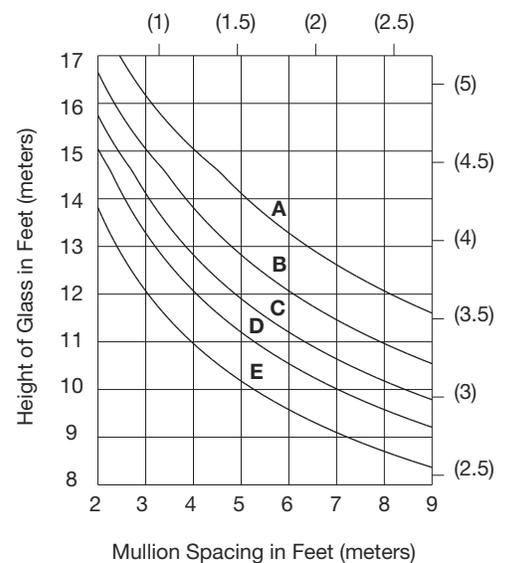
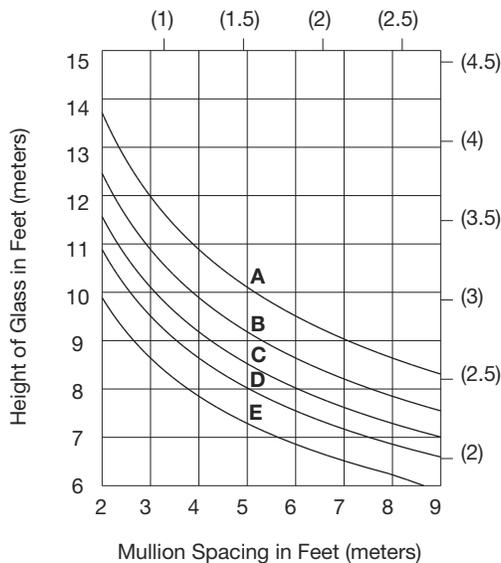


BG650 with SS650

$I = 2.539 (105.68 \times 10^4)$   
 $S = 1.229 (20.1 \times 10^3)$

Steel Stiffener  
 $I = 1.510 (62.9 \times 10^4)$   
 $S = 1.229 (15.74 \times 10^3)$

$I_{AL+STL} = 6.918 (287.95 \times 10^4)$



# WINDOW WALLS

## Deadload Charts

### HORIZONTAL MULLIONS FOR 1/4" (6) AND 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum deflection at the center point of the horizontal mullion and on a glass weight of 3.25 psf (15.87 Kg/m<sup>2</sup>) for 1/4" (6) glass and 6.5 psf (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

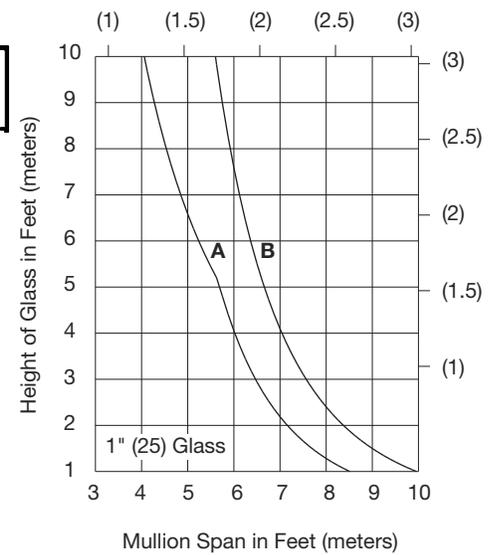
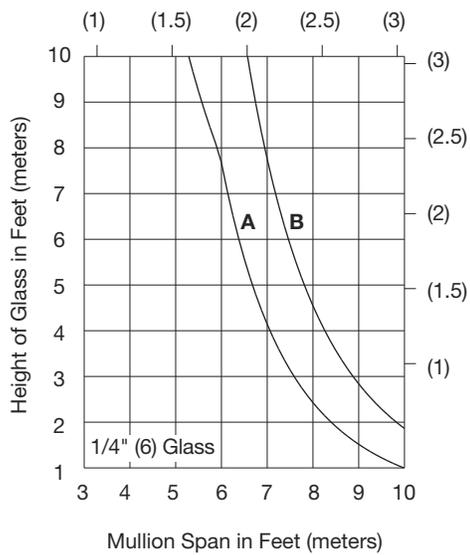
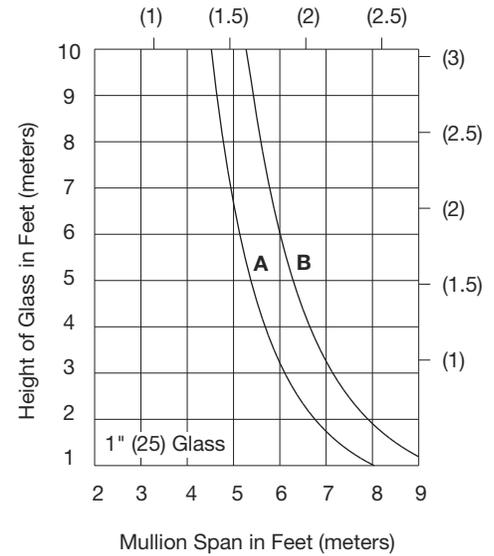
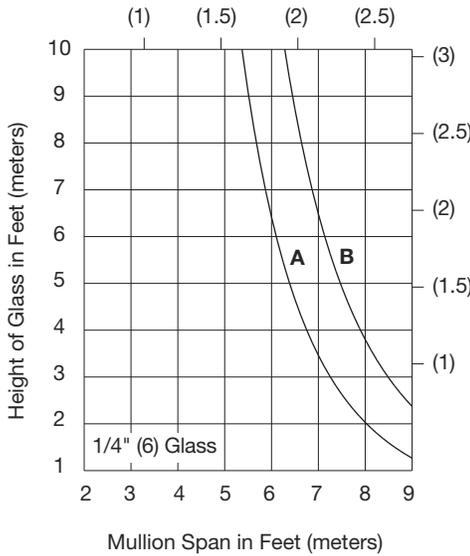
Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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

### BG and BT Systems

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600



# WINDOW WALLS

## Structural Silicone Chart

### BG and BT Systems

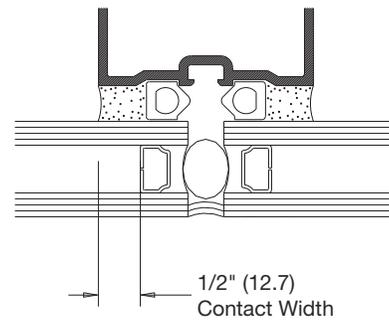
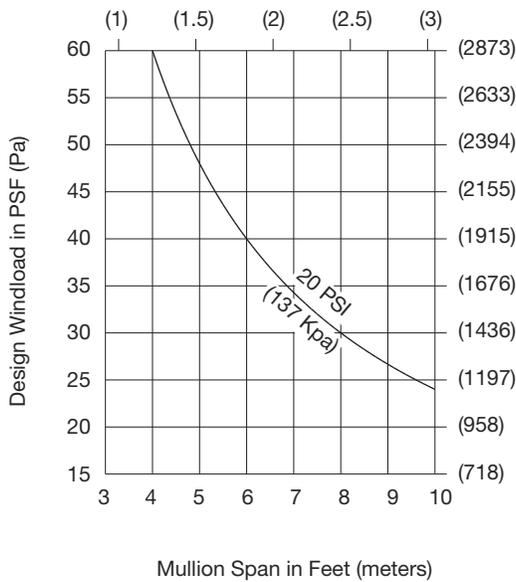
- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

For structural silicone glazing the stress on the silicone must not exceed 20 psi (137 Kpa) for a 6:1 safety factor.

Series BG450, BG520, BG525, BT525, BG600, and BT600 offer contact width of 1/2" (12.7).

**NOTE:** The maximum shorter span of glass may be the width or the height dimension.  
 EG. for 5' x 7' (1.52 m x 2.13 m) check 5' (1.52 m)  
 for 7' x 5' (2.13 m x 1.52 m) check 5' (1.52 m)

THESE LIMITATIONS ARE RELATED ONLY TO THE SILICONE JOINT CAPABILITY. ALUMINUM MEMBERS SHOULD ALSO BE CHECKED FOR WINDLOAD AND DEADLOAD.



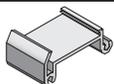
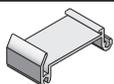
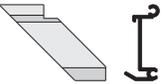
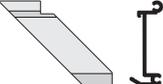
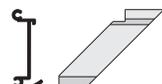
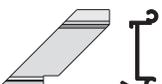
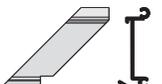
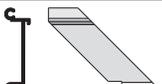
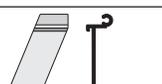
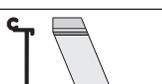
# WINDOW WALLS

## Accessories

## BG and BT Systems

Series BG450 and BG520 Accepts 1/4" (6) Glazing Only.  
 Series BG525/BT525 and BG600/BT600 Accepts 1" (25)  
 and 1/4" (6) Transition Glazing.

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

PART NO.	DESCRIPTION	PKG. QTY.	WHERE USED				PART NO.	DESCRIPTION	PKG. QTY.	WHERE USED			
			BG450	BG525 BT525	BG520	BG600 BT600				BG450	BG525 BT525	BG520	BG600 BT600
AP555	 Anchor Clip at Intermediate Horizontal with screws	20	●	●			AP755	 Anchor Clip at Intermediate Horizontal with screws	20			●	●
AP556L *	 Left Anchor Clip - I.S. 90° with screws	4	●	●			AP756L #	 Left Anchor Clip - I.S. 90° with screws	4			●	●
AP556R *	 Right Anchor Clip - I.S. 90° with screws	4	●	●			AP756R #	 Right Anchor Clip - I.S. 90° with screws	4			●	●
AP557L *	 Left Anchor Clip - O.S. 90° with screws	4	●	●			AP757L #	 Left Anchor Clip - O.S. 90° with screws	4			●	●
AP557R *	 Right Anchor Clip - O.S. 90° with screws	4	●	●			AP757R #	 Right Anchor Clip - O.S. 90° with screws	4			●	●
AP558L *	 Left Anchor Clip - I.S. 135° with screws	4	●	●			AP758L #	 Left Anchor Clip - I.S. 135° with screws	4			●	●
AP558R *	 Right Anchor Clip - I.S. 135° with screws	4	●	●			AP758R #	 Right Anchor Clip - I.S. 135° with screws	4			●	●
AP559L *	 Left Anchor Clip - O.S. 135° with screws	4	●	●			AP759L #	 Left Anchor Clip - O.S. 135° with screws	4			●	●
AP559R *	 Right Anchor Clip - O.S. 135° with screws	4	●	●			AP759R #	 Right Anchor Clip - O.S. 135° with screws	4			●	●

\* Made From Extrusion AR595

# Made From Extrusion AR755

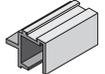
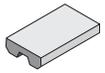
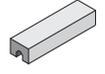
# WINDOW WALLS

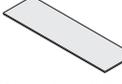
## Accessories

Series BG450 and BG520 Accepts 1/4" (6) Glazing Only.  
 Series BG525/BT525 and BG600/BT600 Accepts 1" (25)  
 and 1/4" (6) Transition Glazing.

## BG and BT Systems

- Series BG450
- Series BG520
- Series BG525
- Series BT525
- Series BG600
- Series BT600

PART NO.	DESCRIPTION	PKG. QTY.	WHERE USED			
			BG450	BG525 BT525	BG520	BG600 BT600
BG325	 Setting Chair for Sill	50	●		●	
BG334	 Setting Chair for Sill	50		●		●
RG637	 Temporary Glazing Retainer	50	●	●	●	●
RG638	 Thermal Clip - 1" (25) Glazing Patent No. D295,952	50		●		●
RG639	 Thermal Clip - 1/4" (6) Glazing Patent No. D295,952	50	●		●	
SB110	 Setting Block - 1" (25) Glazing	100		●		●
SB125	 Setting Block - 1/4" (6) Glazing	100	●		●	
SB325	 Setting Block at Sill 1/4" (6) Glazing	50	●		●	
SB334	 Setting Block at Sill 1" (25) Glazing	50		●		●
SD455	 End Dam - Head and Sill	20	●		●	
NP225	 Standard Gasket for 4-1/2" (114.3) System	500' Roll	●	●	●	●
SP455	 Structural Silicone Spacer	250' Roll	●	●	●	●

PART NO.	DESCRIPTION	PKG. QTY.	WHERE USED			
			BG450	BG525 BT525	BG520	BG600 BT600
SD525	 End Dam - Head and Sill	20		●		●
SS550	 Steel Stiffener for BG550	16' Stock Length	●	●		
SS650	 Steel Stiffener for BG650	16' Stock Length			●	●
UB625	 Weep Baffle - Sill Can	100	●	●	●	●
WD454	 Water Deflector at Corners	8	●		●	
WD455	 Water Deflector at Horizontal	50	●		●	
WD456	 Water Deflector at Jamb	20	●		●	
WD524	 Water Deflector at Corners	8		●		●
WD525	 Water Deflector at Horizontal	50		●		●
WD526	 Water Deflector at Jamb	20		●		●
GT375	 Adhesive Spacer Tape (Silicone compatible)	25' Roll	●	●	●	●

# WINDOW WALLS

## Table of Contents

## Top Notch System

- Series TN451
- Series TT451
- Series TN601
- Series TT601

### SECTION C2

### PAGE

SPECIFICATIONS .....	02-C2
TECHNICAL DATA.....	03-C2
SPECIAL FEATURES .....	04-C2
TYPICAL DETAILS .....	05-C2 and 06-C2
OPTIONAL DETAILS .....	07-C2
WINDLOAD AND DEADLOAD CHARTS.....	08-C2 thru 11-C2
STRUCTURAL SILICONE CHART .....	12-C2
ACCESSORIES.....	13-C2 and 14-C2



Project: Office Building, Las Vegas, NV

Due to the diversity in state/provincial, local, and federal laws, and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter                      Kg - kilogram  
Pa - pascal                      KPa - kilopascal  
MPa - megapascal

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## Specifications

### Top Notch System

#### SECTION 08 43 13 ALUMINUM FRAMED STOREFRONTS

- Series TN451 • Series TT451
- Series TN601 • Series TT601

SERIES	FACE WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	GLAZING METHOD
TN451/TT451	2-1/4" (57.2)	4-1/2" (114.3)	1" (25)	Interior
TN601/TT601	2-1/4" (57.2)	6" (152.4)	1" (25)	Interior

#### I. GENERAL DESCRIPTION

Work Included: Furnish all necessary materials, labor, and equipment for the complete installation of aluminum framing as shown on the drawings and specified herein.

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series (*Specify*) TN451, TT451, TN601, and TT601 Systems as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331:

- No water penetration at test pressure of 10 psf (480 Pa) TN451 and TT451.
- No water penetration at test pressure of 12 psf (576 Pa) TN601 and TT601

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

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

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

Testing Procedures - ASTM 283, E 331, and E 330 - Laboratory Performance Testing. AAMA 503-08 - Newly Installed Storefronts. AAMA 511-08 - Installed Storefronts After 6 Months.

#### II. PRODUCTS/MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions and glass spacers shall be extruded silicone compatible E.P.D.M.

All materials that come in contact with the silicone should be tested for compatibility. Samples of aluminum vertical mullions should be submitted to the silicone manufacturer for adhesion evaluation.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain (*Specify one of the following*):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The window wall system shall provide continuous head and sill members with vertical mullions screw spline attached at head and sill to form multi-light units. Horizontal mullions shall be shear block attached to vertical mullions. Expansion mullions connect units to form continuous ribbon windows and to accommodate thermal expansion. Water penetration above the window wall may be collected in head member and weeped to exterior (by others). Infiltrated water in the system is to be weeped through weep holes at head and sill.

The framing system shall provide for flush glazing on all four sides. Optional Structural Silicone Glazed mullions are also available. Vertical and horizontal framing members shall have a nominal face dimension of 2-1/4" (57.2). Overall depth of system shall be (*specify*). Entrance framing members shall be compatible with window wall system in appearance.

#### III. EXECUTION/INSTALLATION

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

#### PROTECTION AND CLEANING

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

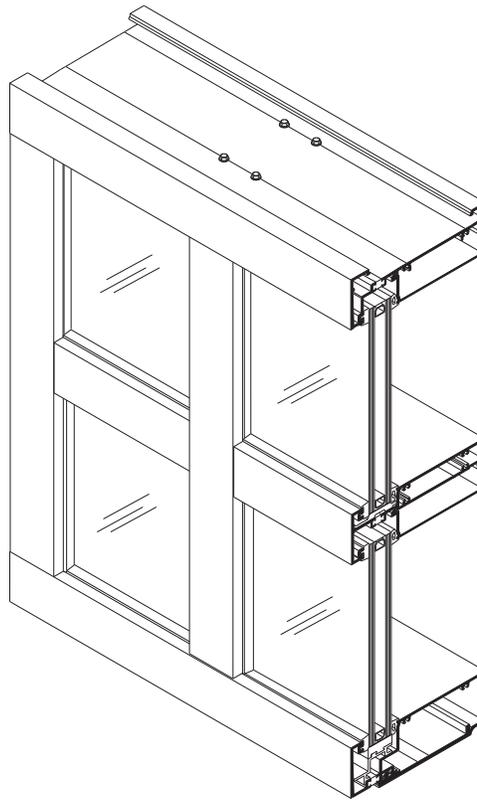
# WINDOW WALLS

## Technical Data

### Top Notch System

- Series TN451 • Series TT451
- Series TN601 • Series TT601

The Top Notch Systems offer a shallow face reveal that creates a flush exterior appearance. These systems are designed for labor saving stacking type installations that requires glazing from the interior. Series TN451 and TT451 utilize Top Load Gaskets. Series TN601 and TT601 utilize wedge-type molded corner exterior sponge gaskets for superior air and water performance. Internal water deflectors at intermediate horizontal to vertical intersections allow infiltrated water to be drained into a continuous sill gutter and weeped to the exterior. Vertical mullions for structural silicone glazing are also available. The Top Notch Systems are designed for fixed horizontal window wall or punched opening applications.



SERIES	WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	APPLICATION
TN451/TT451	2-1/4" (57.2)	4-1/2" (114.3)	1" (25)	Horizontal Interior Glazed Window Walls for Low to Mid-Rise Buildings.
TN601/TT601	2-1/4" (57.2)	6" (152.4)	1" (25)	

#### GLASS SIZES\*

Glass Width and Glass Height = Daylight Opening + 7/8" (22.2).

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

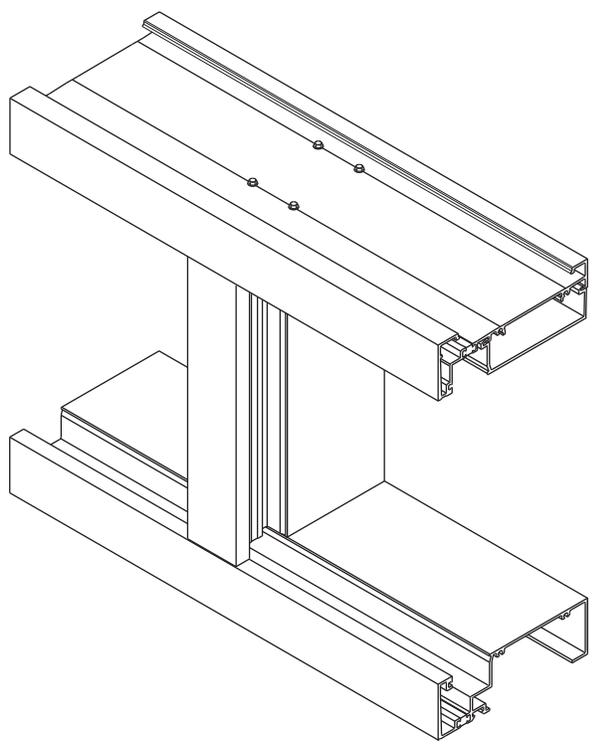
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# WINDOW WALLS

## Special Features

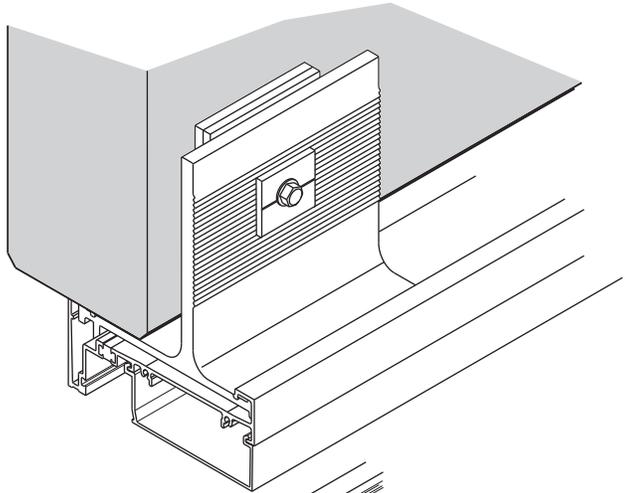
### Top Notch System

- Series TN451
- Series TT451
- Series TN601
- Series TT601

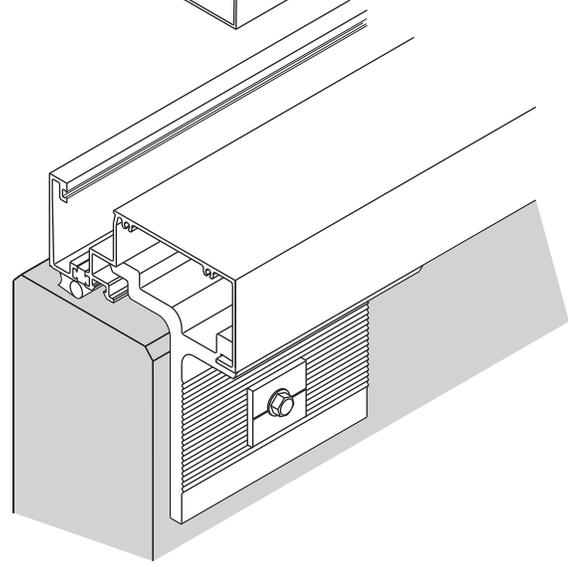
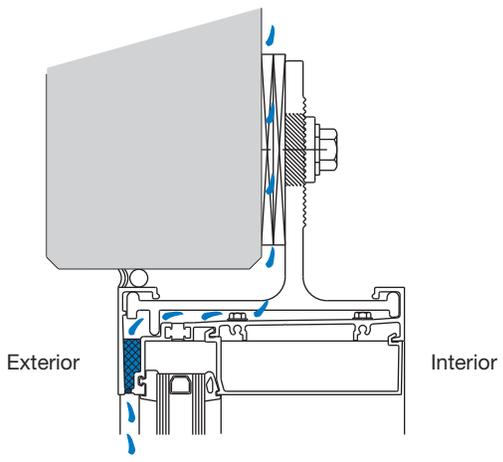


The Top Notch Systems feature continuous head and sill members for superior water control in ribbon window and punched opening applications. Frame assembly is simplified by the use of screw spline joinery and one piece mullions. Labor savings are achieved by allowing installation of completely assembled frame units.

Various anchoring methods are available to accommodate a multitude of building conditions. Please consult factory for special conditions.



Secondary water drainage control is achieved with weep holes/slots in head and sill members.

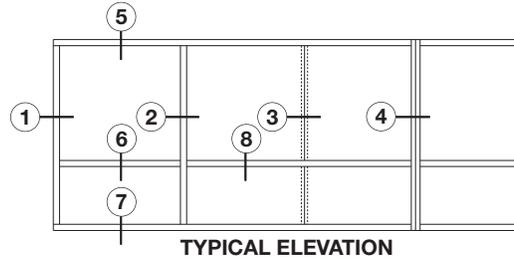


# WINDOW WALLS

## Typical Details

### FOR 1" (25) GLAZING

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

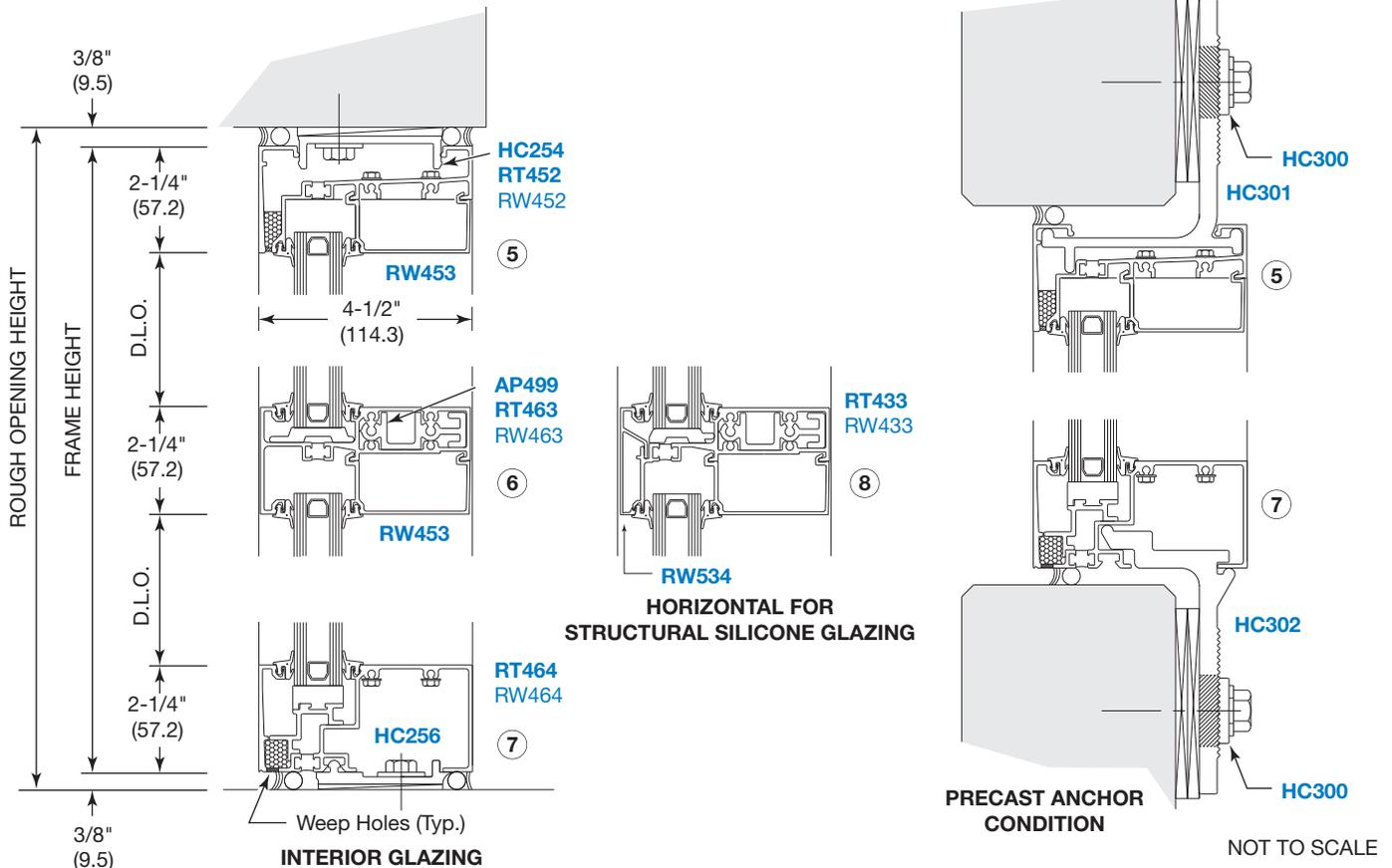
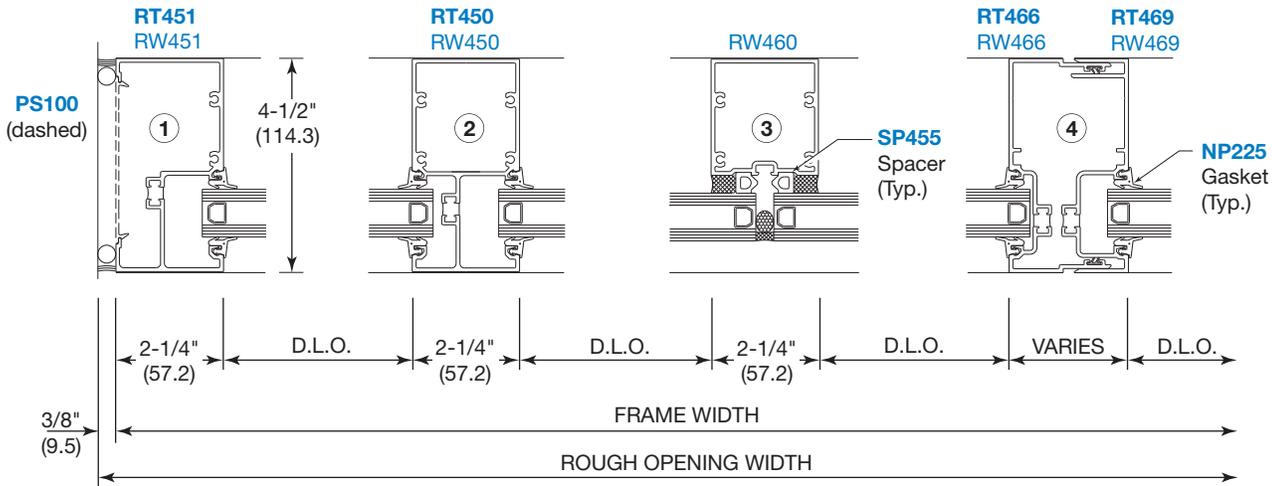


### Top Notch System

- Series TN451
- Series TT451

R	T	4	5	1
---	---	---	---	---

Part Number prefix ending in "T" represents **THERMALLY BROKEN** parts. Thermal parts are in bold print.



# WINDOW WALLS

## Typical Details

### FOR 1" (25) GLAZING

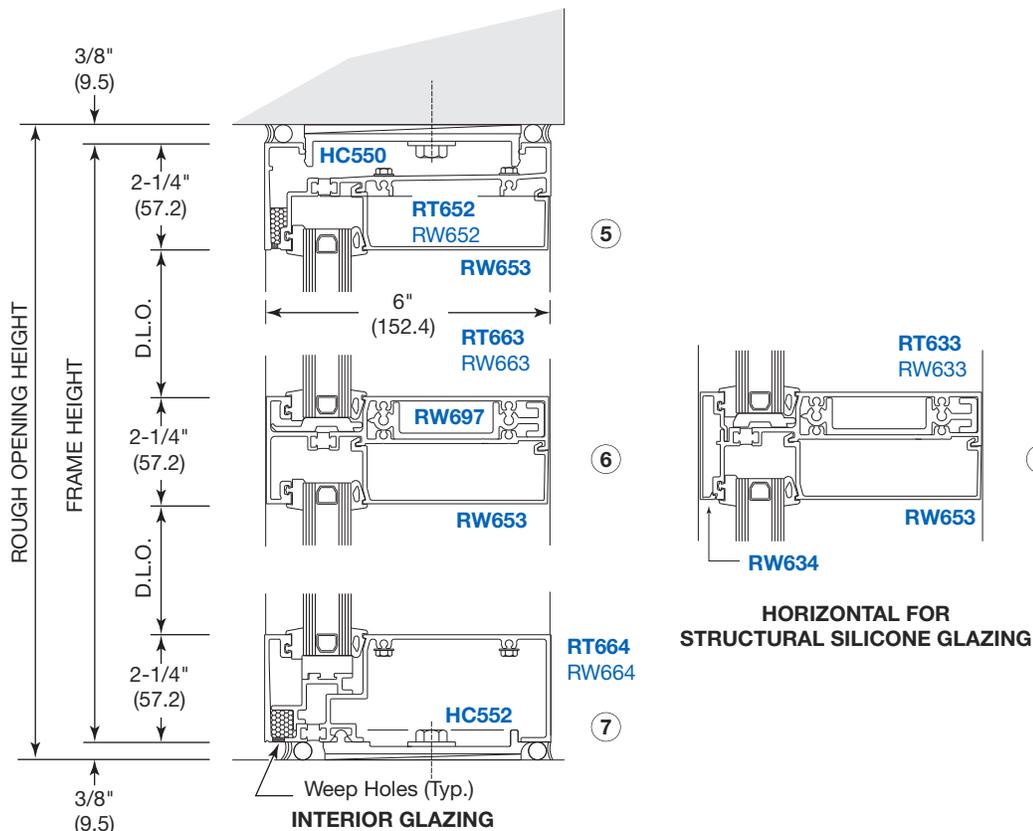
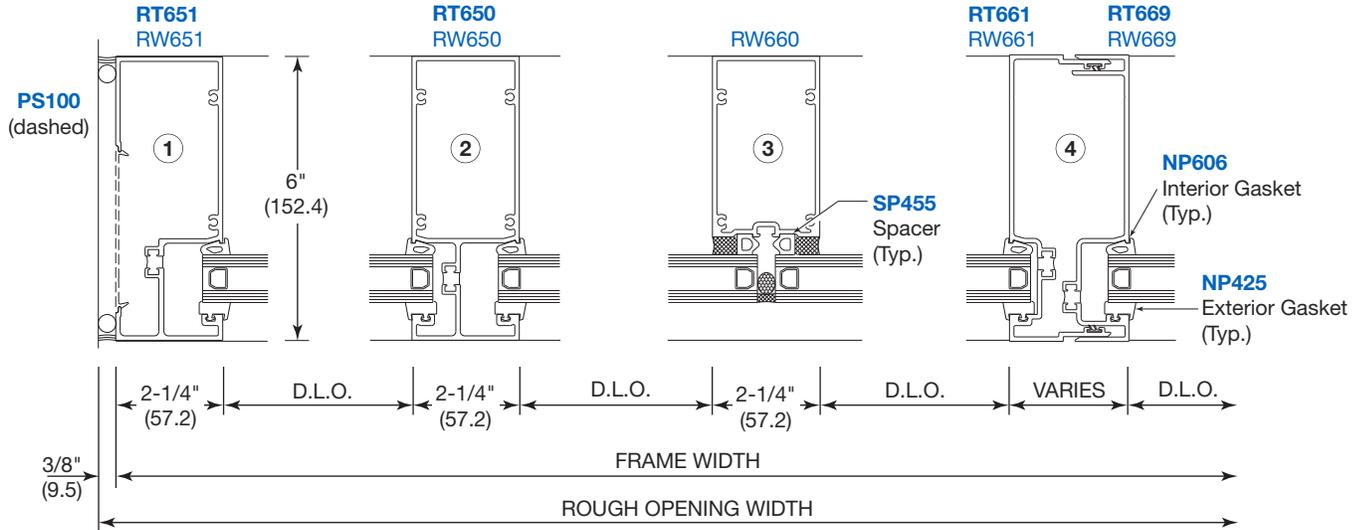
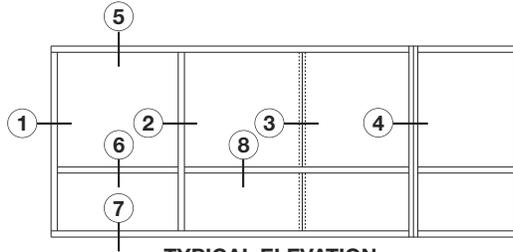
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

### Top Notch System

- Series TN601
- Series TT601

R	T	6	5	1
---	---	---	---	---

Part Number prefix ending in "T" represents **THERMALLY BROKEN** parts. Thermal parts are in bold print.



NOT TO SCALE

# WINDOW WALLS

## Optional Details

### FOR 1" (25) GLAZING

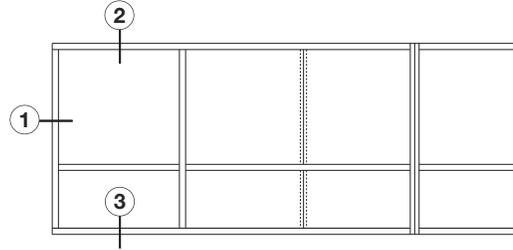
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

### Top Notch System

- Series TN451
- Series TT451
- Series TN601
- Series TT601

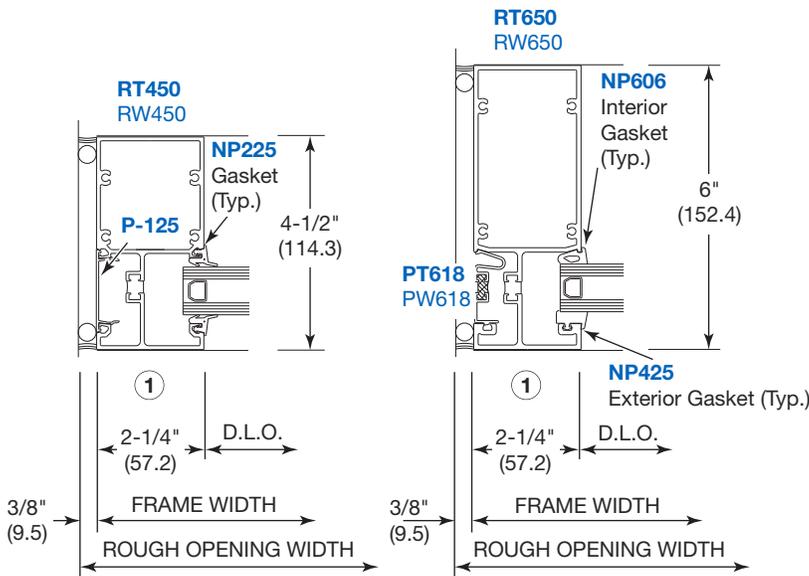
R	T	6	5	1
---	---	---	---	---

Part Number prefix ending in "T" represents **THERMALLY BROKEN** parts. Thermal parts are in bold print.

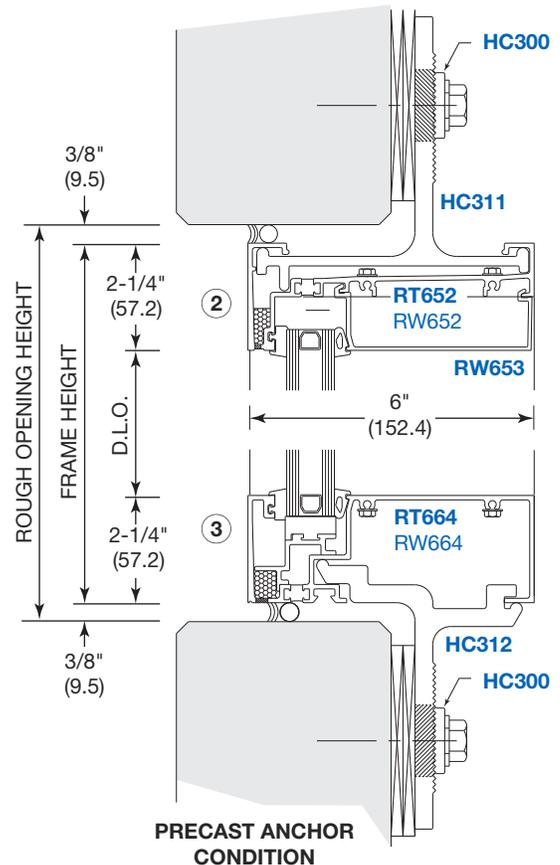


TYPICAL ELEVATION

#### OPTIONAL WALL JAMB CONDITIONS



#### OPTIONAL PRECAST ANCHORING



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## Windload Charts

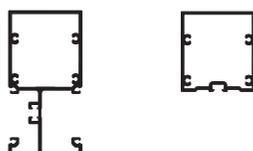
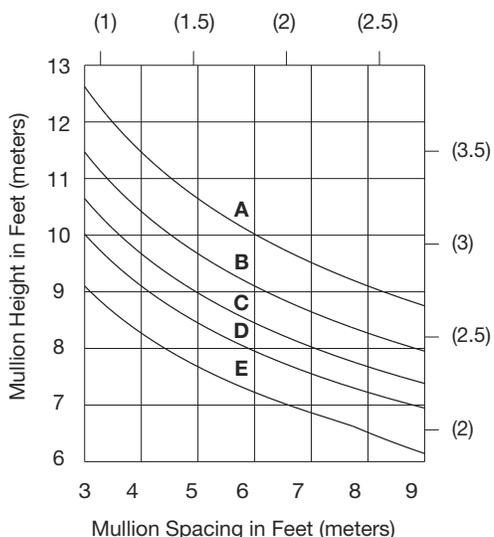
### Top Notch System

- Series TN451
- Series TT451

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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

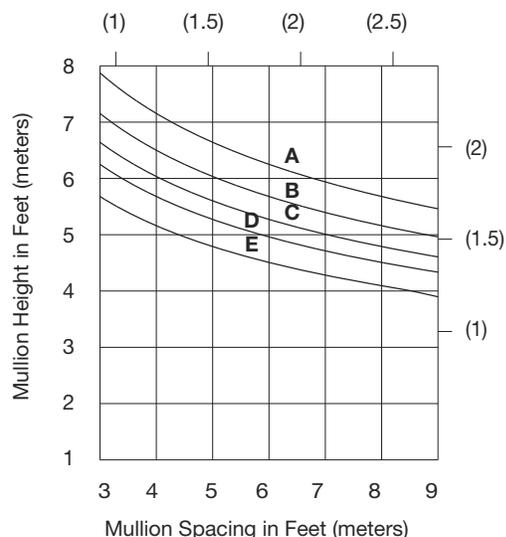


**RT450**  
**RW450**

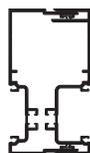
$I = 2.969$   
( $123.78 \times 10^4$ )  
 $S = 1.387$   
( $22.73 \times 10^3$ )

**RW460**

$I = 0.721$   
( $29.64 \times 10^4$ )  
 $S = 0.558$   
( $9.14 \times 10^3$ )

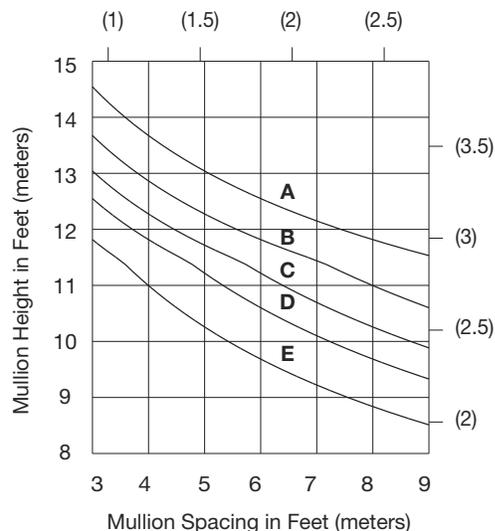


Limitation of vertical mullions for:  
 CURVES **A** = 15 PSF (718 Pa)  
 CURVES **B** = 20 PSF (957 Pa)  
 CURVES **C** = 25 PSF (1197 Pa)  
 CURVES **D** = 30 PSF (1436 Pa)  
 CURVES **E** = 40 PSF (1915 Pa)



**RT466 RT469**  
**RW466 RW469**

$I = 4.493$  ( $187.01 \times 10^4$ )  
 $S = 1.915$  ( $31.9 \times 10^3$ )



# WINDOW WALLS

## Deadload Charts

## Top Notch System

- Series TN451
- Series TT451

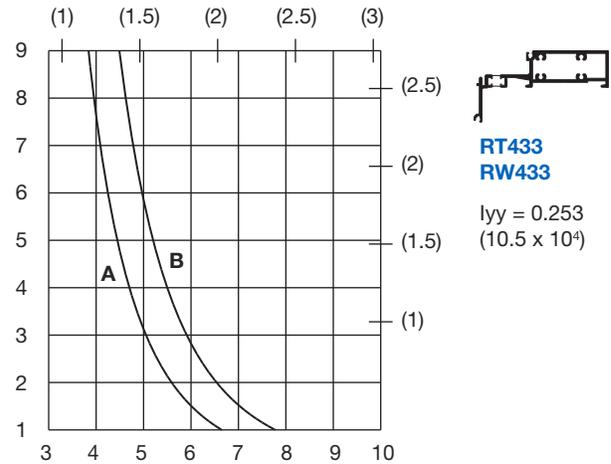
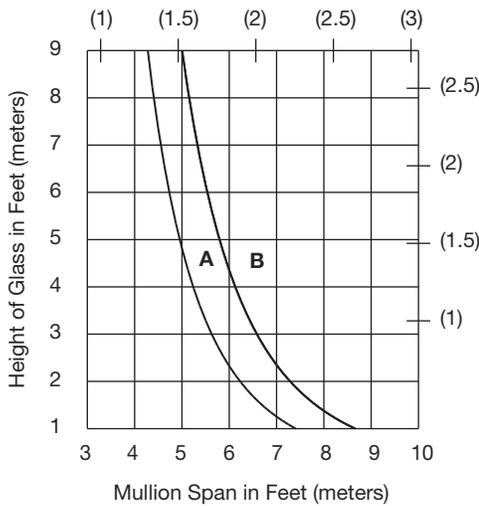
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum deflection at the center point of the horizontal mullion and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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



Project: M2i Lofts, San Diego, CA

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Windload Charts

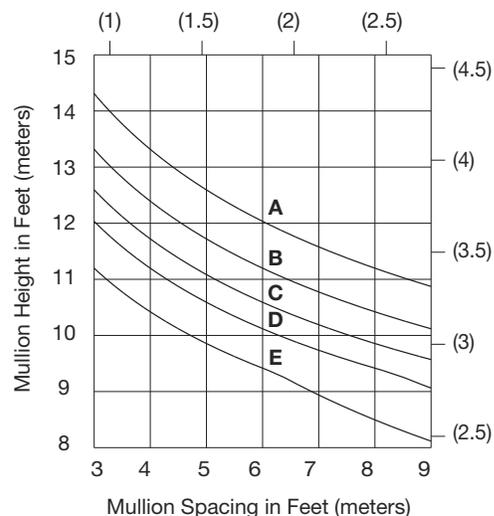
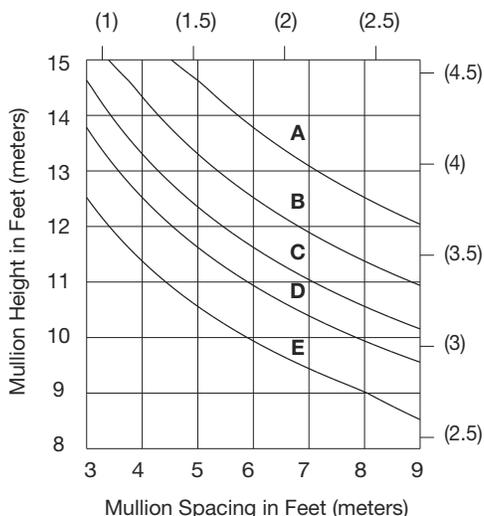
### Top Notch System

- Series TN601
- Series TT601

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

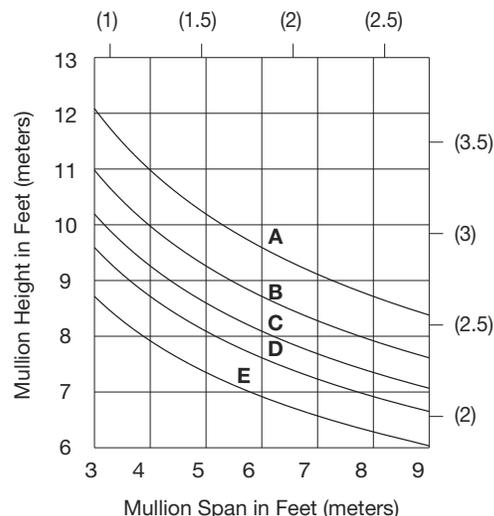
These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at [usalum.com](http://usalum.com).



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



I = 2.606 (108.47 x 10<sup>4</sup>)  
 S = 1.298 (21.27 x 10<sup>3</sup>)



# WINDOW WALLS

## Deadload Charts

## Top Notch System

- Series TN601
- Series TT601

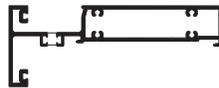
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum deflection at the center point of the horizontal mullion and on a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

Glass shall rest on two setting blocks located at:

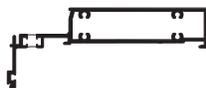
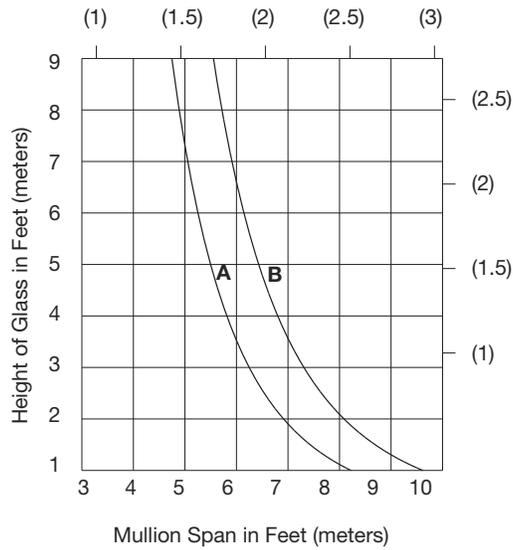
CURVES A: 1/4 points

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



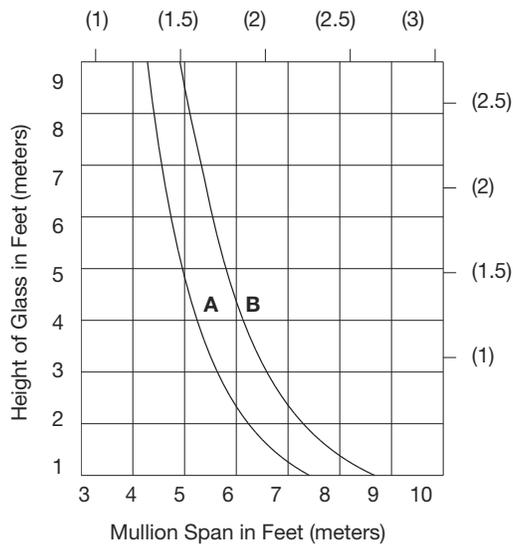
**RT663**  
**RW663**

$I_{yy} = 0.558$   
( $23.23 \times 10^4$ )



**RT633**  
**RW633**

$I_{yy} = 0.389$   
( $16.19 \times 10^4$ )



# WINDOW WALLS

## Structural Silicone Chart

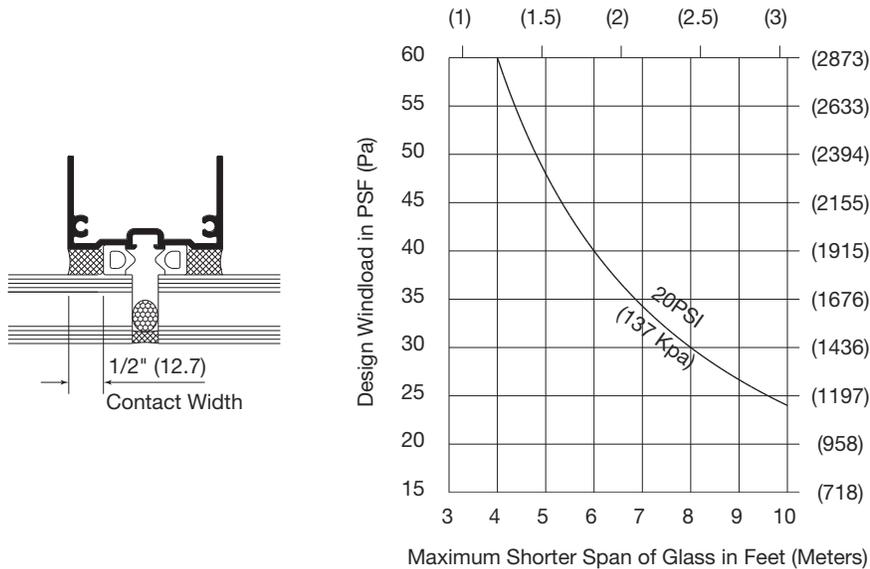
## Top Notch System

- Series TN451
- Series TT451
- Series TN601
- Series TT601

For structural silicone glazing the stress on the silicone must not exceed 20 psi (137 Kpa) for a 6:1 safety factor.

**NOTE:** The maximum shorter span of glass may be the width or the highest dimension.  
 EG. for 5' x 7' (1.52 m x 2.13 m) check 5' (1.52 m)  
 for 7' x 5' (2.13 m x 1.52 m) check 5' (1.52 m)

THESE LIMITATIONS ARE RELATED ONLY TO THE SILICONE JOINT CAPABILITY.  
 ALUMINUM MEMBERS SHOULD ALSO BE CHECKED FOR WINDLOAD AND DEADLOAD.



Project: Corporate Business Center, Plano, TX

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# WINDOW WALLS



## Accessories

### Top Notch System

- Series TN451 • Series TT451
- Series TN601 • Series TT601

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				TN451	TT451	TN601	TT601
VS200		Vinyl Used at Expansion Mullion	500' Roll	●	●	●	●
NP225		Standard Gasket for 4-1/2" (114.3) System	500' Roll	●	●		
SP455		Structural Silicone Spacer	250' Roll	●	●	●	●
NP425	 NP425 NP606	Exterior Sponge and Interior Wedge Gasket	500' Roll			●	●
NP606							
UB625		Weep Baffle	100	●	●	●	●
WB600	 WB600 WB452	Standard "W" Edge Block	50	●	●	●	●
WB452		"W" Edge Block for Expansion Mullion	50	●	●	●	●
SB334	 SB334 SB633 SB576	1" (25.4) Setting Block at 4-1/2" (114.3) System for Sill, I.G. Horizontal and O.G. Horizontal	50				
SB633			50	●	●		
SB576			50				
SB334	 SB334 SB633 SB663	1" (25.4) Setting Block at 6" (152.4) System for Sill, I.G. Horizontal and O.G. Horizontal	50				
SB633			50		●		●
SB663			50				
RW467		Setting-Chair for 1" (25) Glass; 4" (101.6) Long	50	●	●		
RW667		Setting-Chair for 1" (25) Glass; 4" (101.6) Long	50			●	●
AP499		1" (25.4) Shear Block at 4-1/2" (114.3) System	50	●	●		
AP699		1" (25.4) Shear Block at 6" (152.4) System	50			●	●
BA431	 BA451 (Head) BA431 (Sill)	EVA Foam Baffle	50	●			
BA451			50		●	●	●

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Accessories

### Top Notch System

- Series TN451 • Series TT451
- Series TN601 • Series TT601

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED			
				TN451	TT451	TN601	TT601
HC301	<p>HC301 or HC311</p> <p>HC302 or HC312</p>	Precast Head Anchor	10	●	●		
HC311		Precast Head Anchor	10			●	●
HC302		Precast Sill Anchor	10	●	●		
HC312		Precast Sill Anchor	10			●	●
HC300		Anchor Bearing Plate	10	●	●	●	●
EC455	<p>EC455 EC664</p>	End Dam	20	●	●		
EC664		End Dam	20			●	●
WD650		Water Diverter Deep Pocket	50			●	●
WT660		Water Diverter BG Mullion	50			●	●
WD669		Water Diverter Female Expansion Mullion	50			●	●
WD652		Water Diverter Shallow Pocket	50			●	●
WD661		Water Diverter Male Expansion Mullion	50			●	●
WD200		Water Diverter Deep Pocket	50	●	●		
WD525		Water Diverter BG Mullion	50	●	●		
WD210		Water Diverter Shallow Pocket	50	●	●		
DJ456		Drill Jig	1	●	●	●	●

# WINDOW WALLS

## Table of Contents

### OS-2 Systems

- Series OS175 & OS175SG
- Series OS450 & OS450SG
- Series OS451 & OS451SG
- Series OS600 & OS600SG
- Series OS601 & OS601SG

## SECTION C3

## PAGE

SPECIFICATIONS .....	02-C3 and 03-C3
SPECIAL FEATURES .....	04-C3 and 05-C3
TECHNICAL DATA .....	06-C3 and 07-C3

### **Series OS175 and OS175SG**

TYPICAL DETAILS .....	08-C3
WINDLOAD AND DEADLOAD CHARTS .....	09-C3

### **Series OS450 and OS450SG**

TYPICAL DETAILS .....	10-C3 thru 15-C3
WINDLOAD CHARTS .....	16-C3 and 17-C3
DEADLOAD CHARTS .....	18-C3

### **Series OS451 and OS451SG**

TYPICAL DETAILS .....	19-C3 thru 26-C3
WINDLOAD CHARTS .....	27-C3 and 28-C3
DEADLOAD CHARTS .....	29-C3

### **Series OS600 and OS600SG**

TYPICAL DETAILS .....	30-C3 thru 35-C3
WINDLOAD CHARTS .....	36-C3 and 37-C3
DEADLOAD CHARTS .....	38-C3

### **Series OS601 and OS601SG**

TYPICAL DETAILS .....	39-C3 thru 46-C3
WINDLOAD CHARTS .....	47-C3 and 48-C3
DEADLOAD CHARTS .....	49-C3
STRUCTURAL SILICONE CHART .....	50-C3

Due to the diversity in state/provincial, local, and federal laws, and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter	Kg - kilogram
Pa - pascal	KPa - kilopasc
MPa - megapascal	

## Specifications

### SECTION 08 43 13 ALUMINUM FRAMED STOREFRONTS

### OS-2 Systems

- Series OS175
- Series OS450
- Series OS451
- Series OS600
- Series OS601

SERIES	FACE WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	GLAZING METHOD
OS175	2" (50.8)	2" (50.8)	1/4" (6) or 3/8" (10)	Exterior
OS450	2" (50.8)	4-3/4" (120.7)	1/4" (6) or 3/8" (10)	Exterior/Interior
OS451			1" (25)	
OS600	2" (50.8)	6-1/4" (158.8)	1/4" (6) or 3/8" (10)	
OS601			1" (25)	

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series *(Specify)* OS-2 Systems as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

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

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

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

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

Testing Procedures -

ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed OS systems. AAMA 511-08 - Installed OS systems after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

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

*(Specify one of the following):*

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide continuous head and sill channels spliced together with formed brake metal sleeves at center of vertical mullions as required for thermal expansion and to ensure a continuous sill gutter to handle infiltrated water. The sill channel shall provide for exterior weepage through 1/4" (6.4) diameter weep holes located at approximately 6" (152.4) on each side of vertical mullions. The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2" (50.8). Overall depth shall be 2" (50.8), 4-3/4" (120.7) or 6-1/4" (158.8). Entrance framing members shall be compatible with glass framing in appearance.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

# WINDOW WALLS

## Specifications

### SECTION 08 43 13 ALUMINUM FRAMED STOREFRONTS

### OS-2 Systems

- Series OS175SG
- Series OS450SG
- Series OS451SG
- Series OS600SG
- Series OS601SG

SERIES	FACE WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	GLAZING METHOD
OS175SG	2" (50.8)	2" (50.8)	1/4" (6) or 3/8" (10)	Exterior
OS450SG	2" (50.8)	4-3/4" (120.7)	1/4" (6) or 3/8" (10)	
OS451SG			1" (25)	
OS600SG	2" (50.8)	6-1/4" (158.8)	1/4" (6) or 3/8" (10)	
OS601SG			1" (25)	

#### I. GENERAL DESCRIPTION

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

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series (*Specify*) OS-2 Structural Silicone Glazed Systems as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** shall be tested in accordance with ASTM E 283. Infiltration shall not exceed .06 cfm per square foot (.0003m<sup>3</sup>/sm<sup>2</sup>) of fixed area when tested at 6.24 psf (300 Pa).

**Water Infiltration:** shall be tested in accordance with ASTM E 331. No water penetration at test pressure of 8 psf (383 Pa).

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

- Maximum deflection of L/175 of the span

- Allowable stress with a safety factor of 1.65

The system shall perform to this criteria under a windload of (*Specify*) psf. Stress on structural silicone should not exceed 20 psi (138 KPa.) Testing Procedures - ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed OS systems. AAMA 511-08 - Installed OS systems after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions and glass spacers shall be extruded silicone compatible E.P.D.M. All materials that come in contact with the silicone should be tested for compatibility. Samples of aluminum vertical mullions should be submitted to the silicone manufacturer for adhesion evaluation.

#### FINISH

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

(*Specify one of the following:*)

- \_\_\_ #11 Clear anodic coating
- \_\_\_ #22 Dark Bronze anodic coating
- \_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide continuous head and sill channels spliced together with extruded aluminum sleeves as required for thermal expansion. The sill member shall provide a continuous gutter for exterior weepage through elongated baffled weep holes.

Vertical mullions shall be stacked into head and sill channels without mechanical fastening to provide for metal expansion and building deflection. System shall be designed for exterior glazing. System shall provide for transition glazing from 1" (25) to 1/4" (6) with glass remaining in same exterior plane. Reusable twist-in temporary plastic glass retainers should be used during structural silicone curing period. Overall depth shall be a nominal dimension of 2" (50.8), 4-3/4" (120.7) or 6-1/4" (158.8).

#### III. EXECUTION INSTALLATION

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

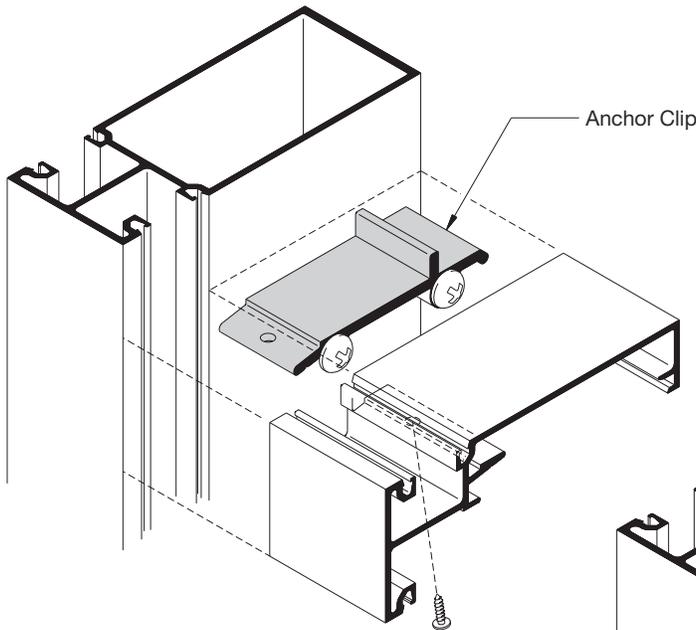
#### PROTECTION AND CLEANING

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

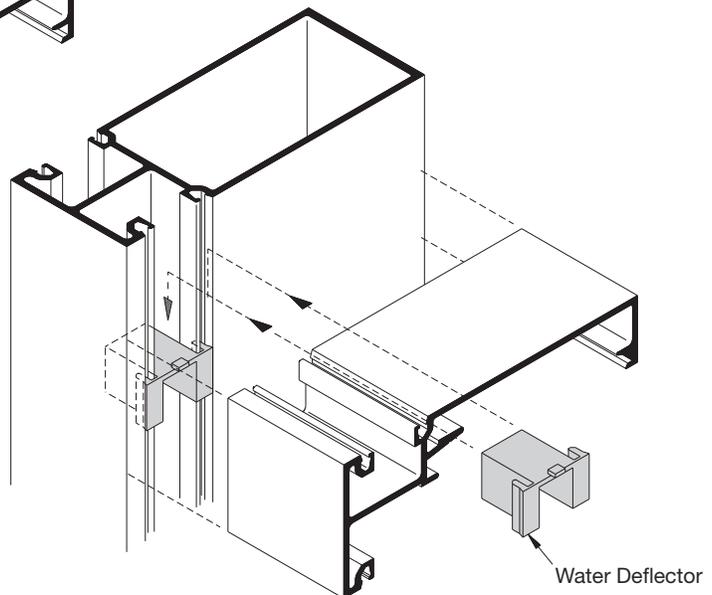
**Special Features**

**OS-2 Systems**

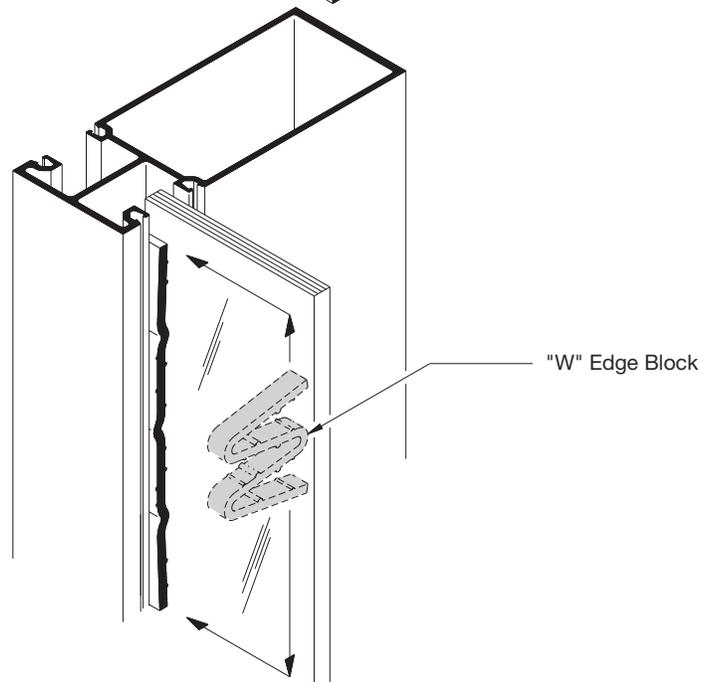
- Series OS175
- Series OS450
- Series OS451
- Series OS600
- Series OS601



The Intermediate Horizontal is rolled over an Extruded Aluminum Clip attached to the Vertical Mullion. The Horizontal is then attached to the Clip with concealed fasteners, creating a strong, tight joint.



Apply Silicone to two sides of the Glazing Pocket at Vertical/Horizontal Joint and Glazing Reglets. Slide Water Deflector down into position. Seal over top edges of the Water Deflector, leaving a gap on the outside edge, allowing water to drain into Subsill.



Stretch "W" Edge Block and slide it between Glass and Mullion into Deep Glazing Pocket. Push it all the way in until it clears Glass and locks into place. These Blocks are used to prevent Glass from "walking" out of the Pocket caused by extreme vibration or minor earthquake.

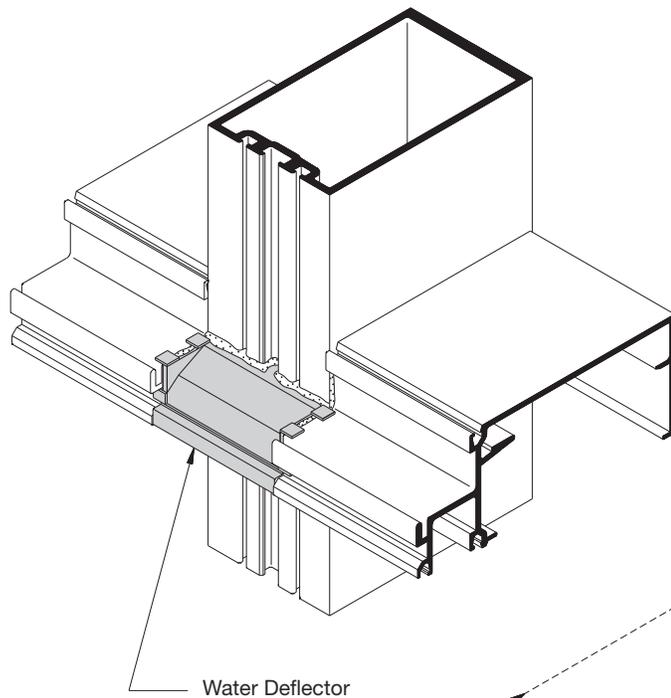
# WINDOW WALLS

## Special Features

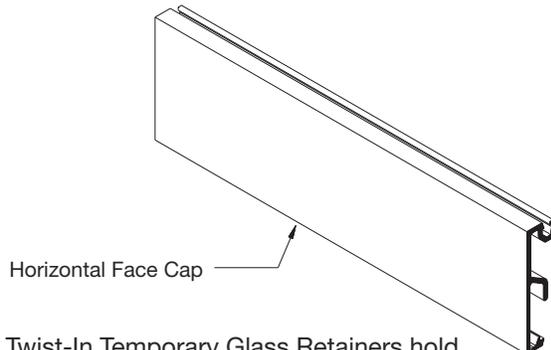
### STRUCTURAL SILICONE GLAZING

### OS-2 Systems

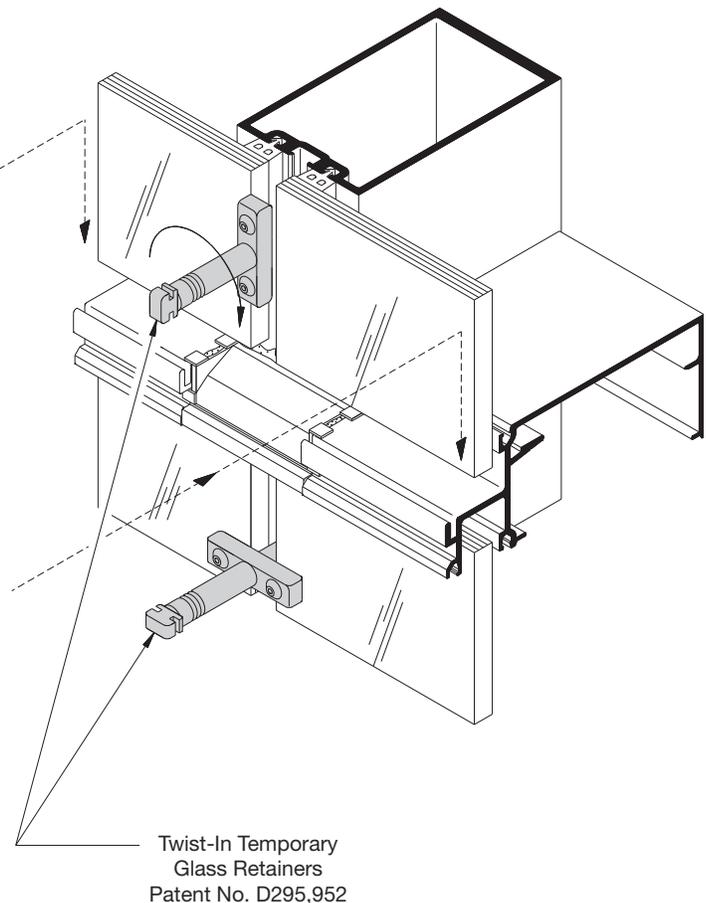
- Series OS175SG
- Series OS450SG
- Series OS451SG
- Series OS600SG
- Series OS601SG



A uniquely designed injection molded Water Deflector is used for weeping infiltrated water to the exterior at the intersection of the Intermediate Horizontal and Vertical Mullions. The contoured Water Deflector Allows for an uninterrupted Gasket seal at the intersection of Intermediate Horizontal and Vertical Mullions.



Reusable Twist-In Temporary Glass Retainers hold the Glass in place during the Structural Silicone curing period. The Retainer is designed to work for both 1" (25) and 1/4" (6) Infills. Horizontal Face Caps run continuous.



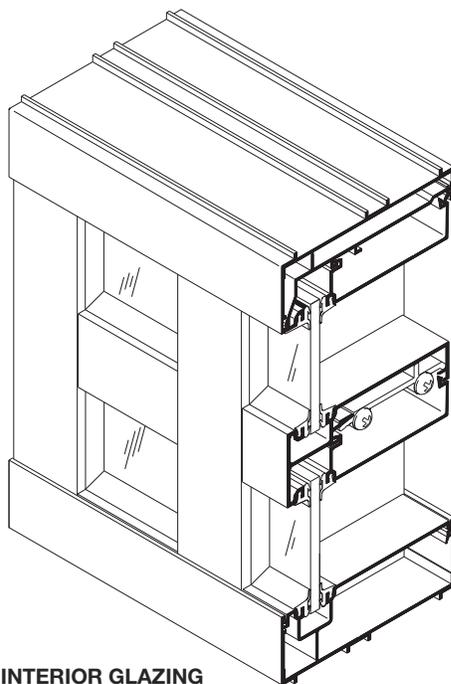
# WINDOW WALLS

## Technical Data

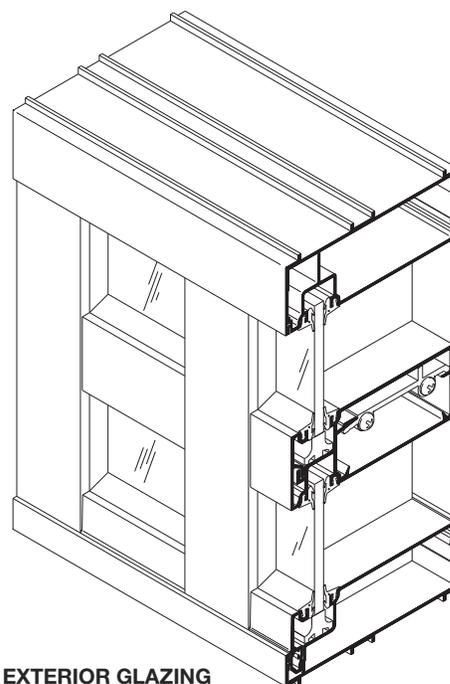
Offset Glazed Systems offer a shallow face reveal which creates a flush exterior appearance. The OS-2 Systems were designed for labor saving stacking type installations, and may be interior or exterior glazed using top load E.P.D.M. Glazing Gaskets. Internal Water Deflectors at intersections of Intermediate Horizontal and Vertical Mullions allow infiltrated water to be drained into a continuous sill gutter and weeped to the exterior. Optional Vertical Mullions for structural silicone glazing are available. This multi-purpose product was also designed for use as a storefront system, and is an ideal choice for fixed horizontal ribbon window applications. OS-2 Systems accommodate most U.S. Aluminum Entrance Doors.

## OS-2 Systems

- Series OS175
- Series OS450
- Series OS451
- Series OS600
- Series OS601



INTERIOR GLAZING  
INSTALLATION



EXTERIOR GLAZING  
INSTALLATION

SERIES	WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	APPLICATION
OS175	2" (50.8)	2" (50.8)	1/4" (6) or 3/8" (10)	Ground Floor to Mid-Rise Buildings. Ideal for Fixed Horizontal Ribbon Window Applications.
OS450	2" (50.8)	4-3/4" (120.7)	1/4" (6) or 3/8" (10)	
OS451	2" (50.8)	4-3/4" (120.7)	1" (25)	
OS600	2" (50.8)	6-1/4" (158.8)	1/4" (6) or 3/8" (10)	
OS601	2" (50.8)	6-1/4" (158.8)	1" (25)	

GLASS SIZES*
Glass Width = Daylight Opening + 5/8" (15.9) (OS175, OS450, and OS600) = Daylight Opening + 7/8" (22.2) (OS451 and OS601)
Glass Height = Daylight Opening + 5/8" (15.9) (OS175, OS450, and OS600) = Daylight Opening + 7/8" (22.2) (OS451 and OS601)

\* These formulae do not take into account glass tolerances. Consult glass manufacturer before ordering glass.

# WINDOW WALLS

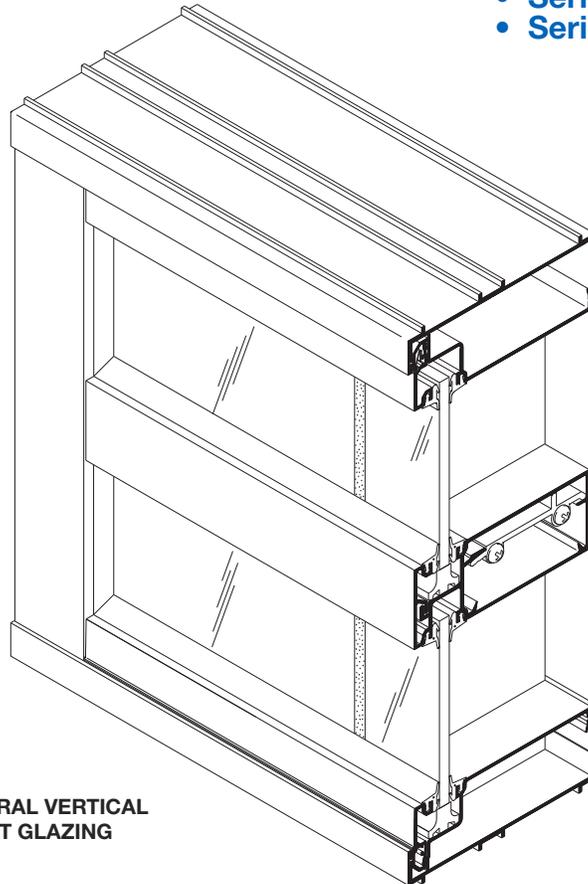
## Technical Data

### STRUCTURAL SILICONE GLAZING

Verticals for Structural Silicone Glazing create the look of a true glass wall with the same labor saving installation. Horizontal framing members run continuous between wall jambs to accomplish a horizontal band appearance. Glazing is performed from the exterior.

### OS-2 Systems

- Series OS175SG
- Series OS450SG
- Series OS451SG
- Series OS600SG
- Series OS601SG



STRUCTURAL VERTICAL  
OFFSET GLAZING

For Installation Instructions,  
please visit [usalum.com](http://usalum.com)

SERIES	WIDTH	HEAD/SILL DEPTH	GLAZING INFILL	APPLICATION
OS175SG	2" (50.8)	2" (50.8)	1/4" (6) or 3/8" (10)	Ground Floor to Mid-Rise Buildings. Ideal for Fixed Horizontal Ribbon Window Applications.
OS450SG	2" (50.8)	4-3/4" (120.7)	1/4" (6) or 3/8" (10)	
OS451SG	2" (50.8)	4-3/4" (120.7)	1" (25)	
OS600SG	2" (50.8)	6-1/4" (158.8)	1/4" (6) or 3/8" (10)	
OS601SG	2" (50.8)	6-1/4" (158.8)	1" (25)	

#### GLASS SIZES\*

Glass Width = Refer to "SG" Typical Details for Glass Bites

Glass Height = Daylight Opening + 5/8" (15.9) (OS450SG)  
= Daylight Opening + 7/8" (22.2) (OS451SG)

\* These formulae do not take into account glass tolerances.  
Consult glass manufacturer before ordering glass.

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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

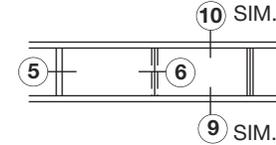
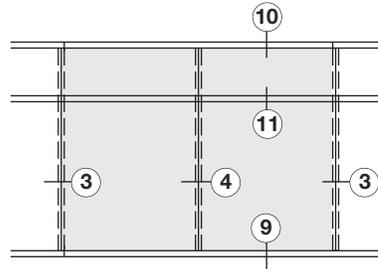
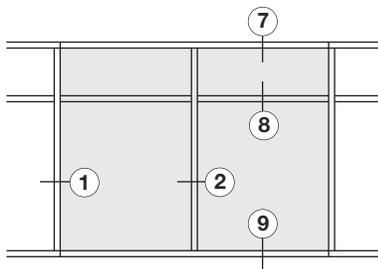
# WINDOW WALLS

## Typical Details

FOR 1/4" (6) OR 3/8" (10) GLAZING

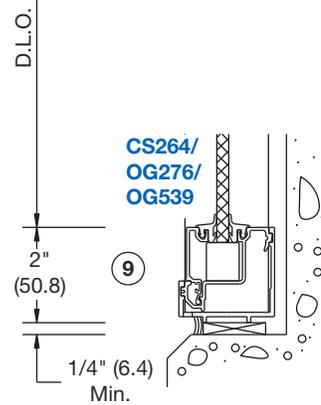
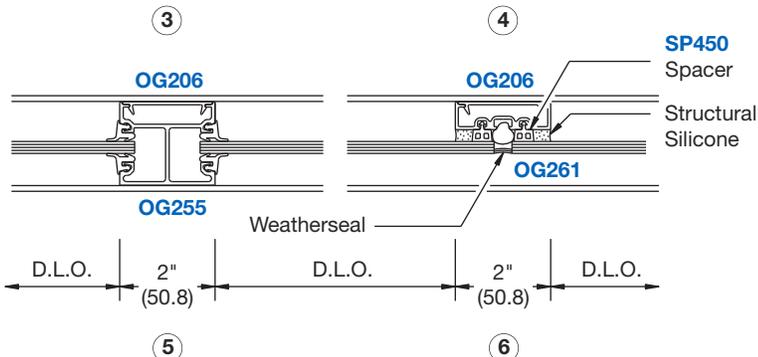
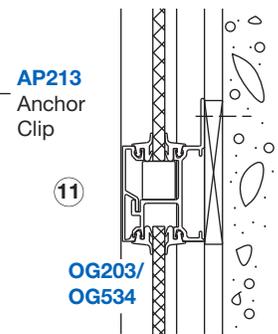
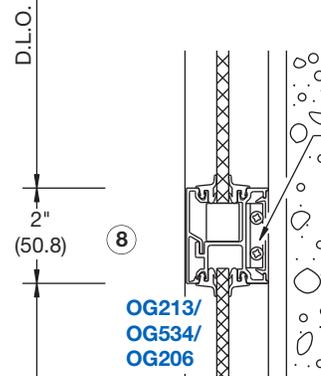
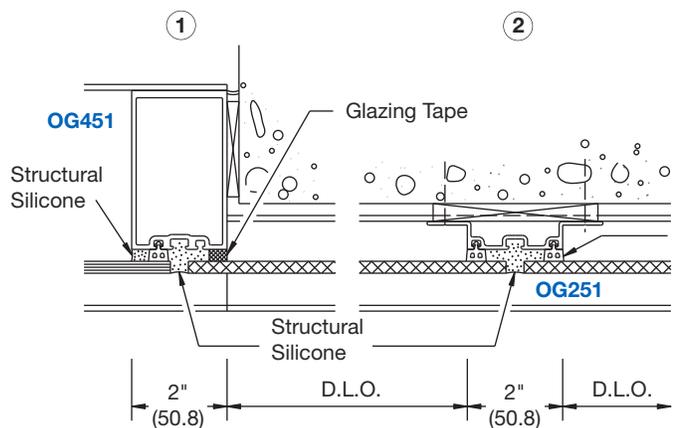
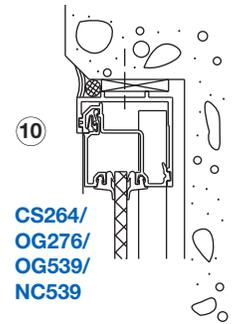
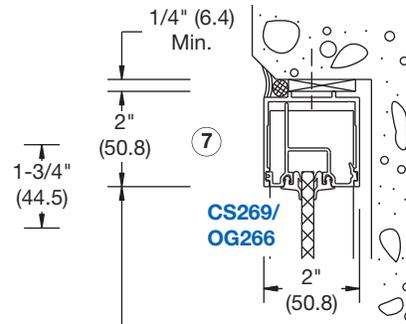
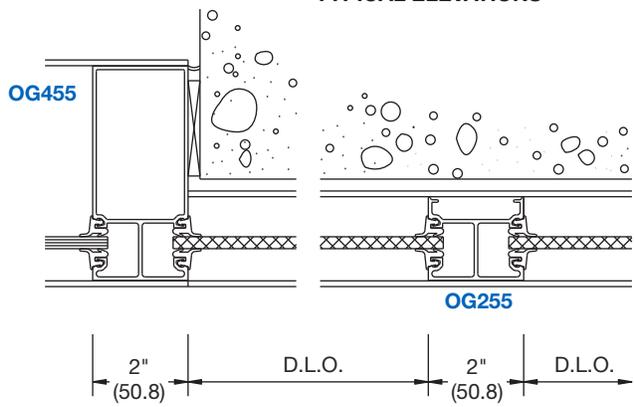
### OS-2 Systems

- Series OS175
- Series OS175SG



TYPICAL ELEVATIONS

**NOTE:** 1-3/4" (44.5) deep members may be used in conjunction with any of the Series OS-2 Systems.



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

NOT TO SCALE

# WINDOW WALLS

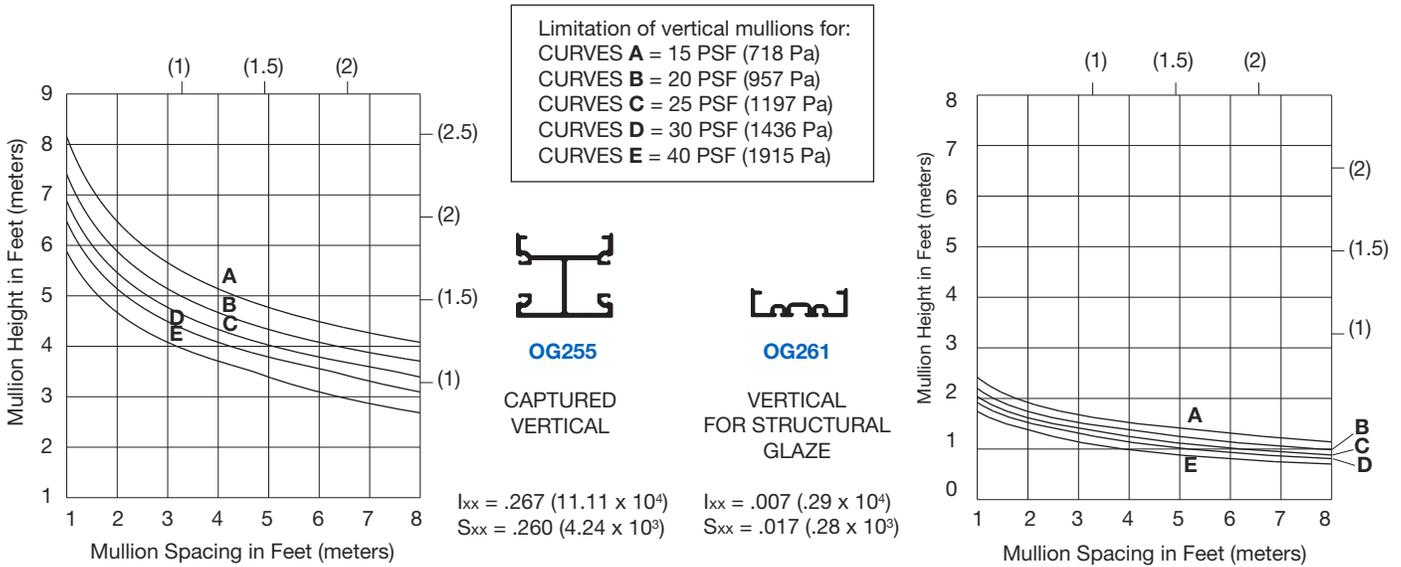
## Windload and Deadload Charts

**OS-2 Systems**  
 • Series OS175  
 • Series OS175SG

### WINDLOAD CHARTS

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

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

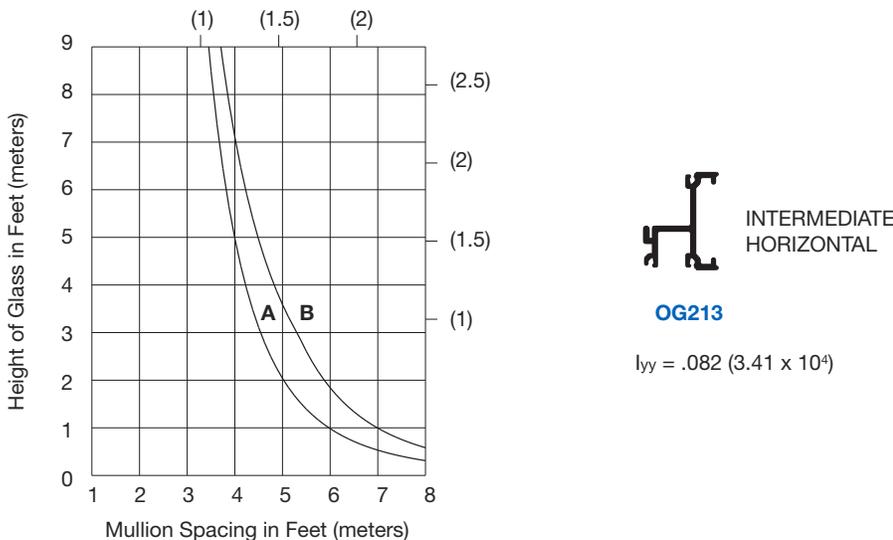


### DEADLOAD CHART

Deadload chart is based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>) for 1/4" (6) glass.

Glass shall rest on two setting blocks located at:

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



# WINDOW WALLS

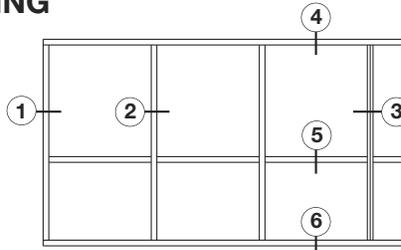
## Typical Details

### OS-2 Systems • Series OS450

#### FOR 1/4" (6) OR 3/8" (10) GLAZING

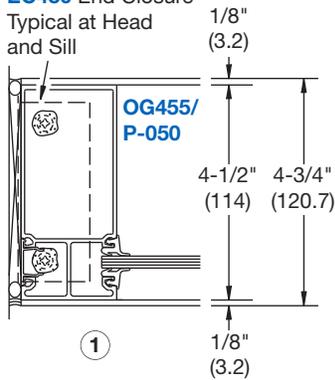
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of 1/4" (6) Glass; NP238 Glazing Gasket for 3/8" (10) Glazing, except at OG564 Head Insert. (Typical)



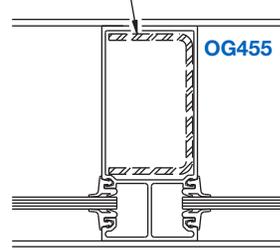
TYPICAL ELEVATION

**EC450** End Closure  
Typical at Head  
and Sill

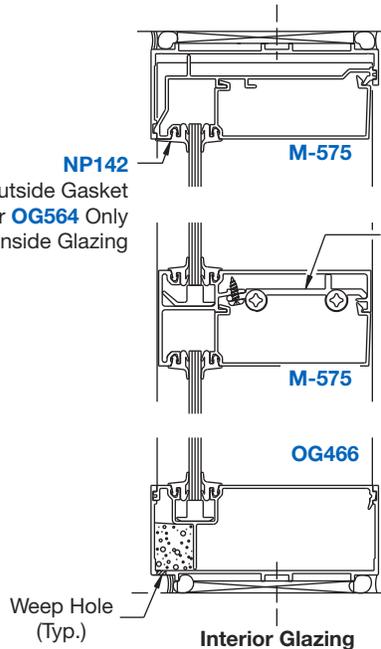
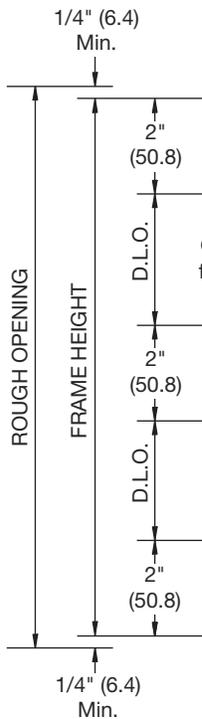
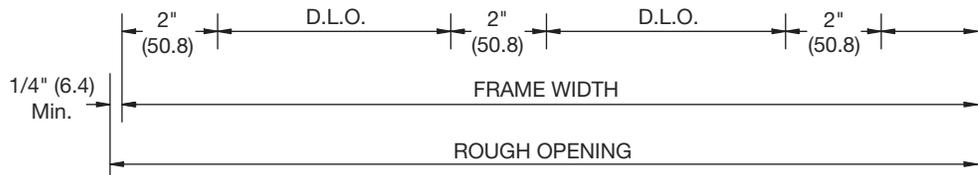
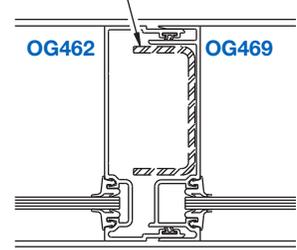


OPTIONAL JAMB

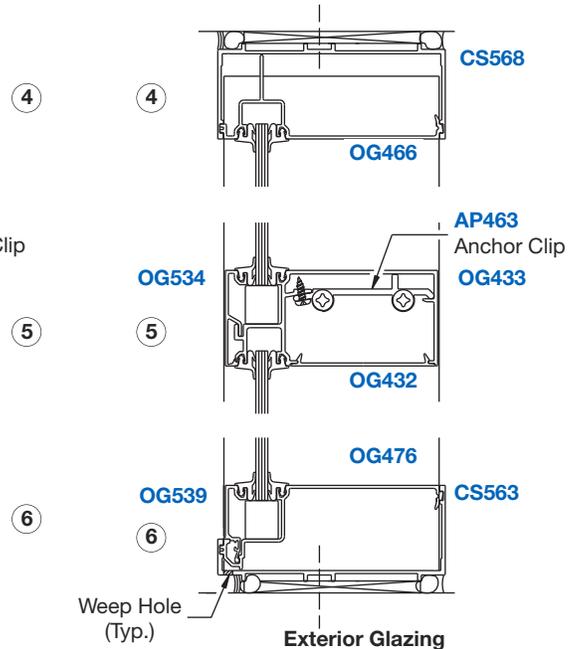
**SS455** Optional  
Steel Stiffener



**SS460** Optional  
Steel Stiffener



Interior Glazing



Exterior Glazing

NOT TO SCALE

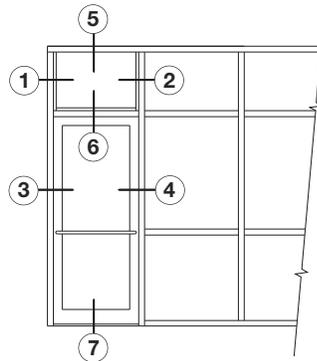
# WINDOW WALLS

## Typical Details

**OS-2 Systems**  
• Series OS450

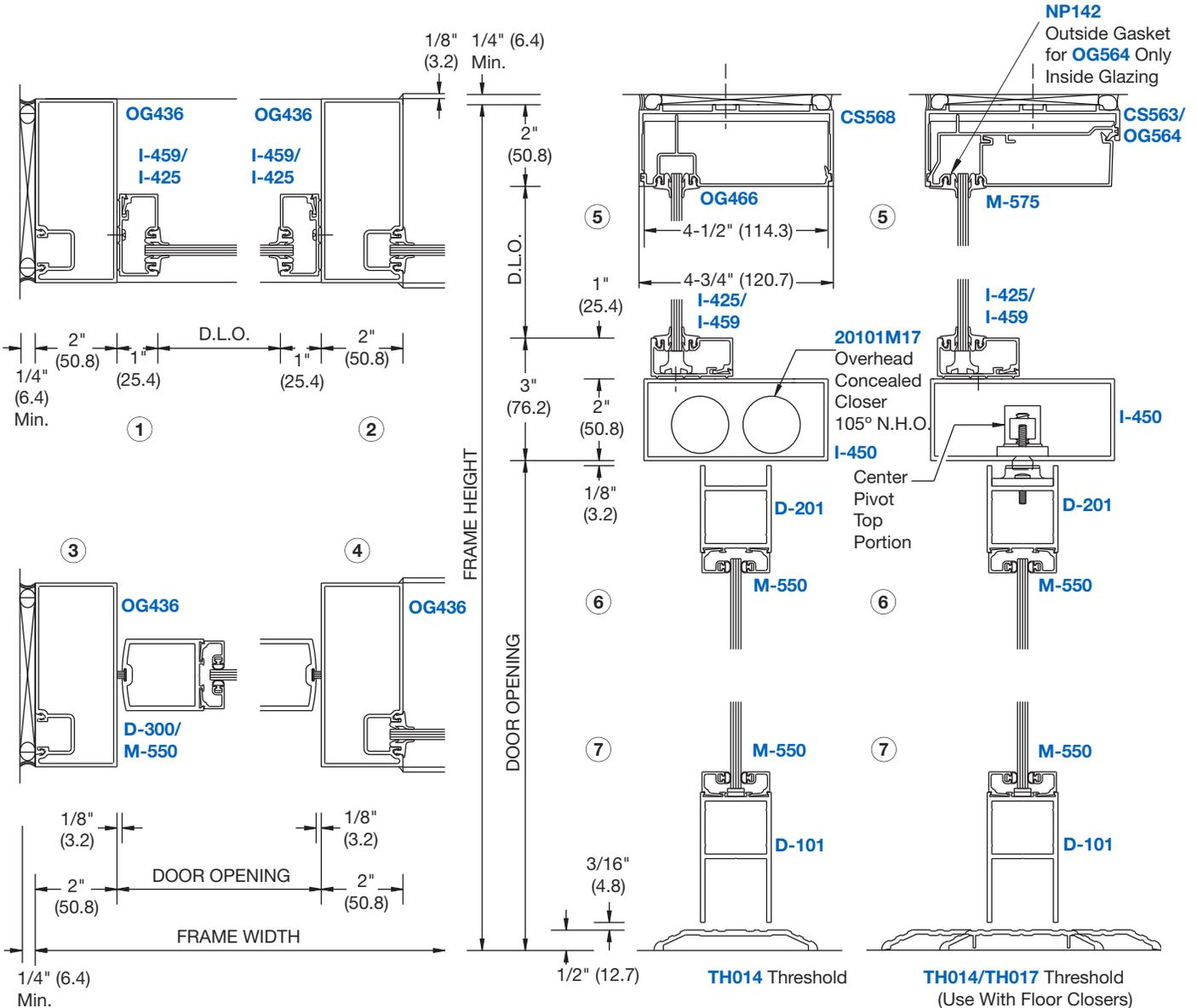
### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**CENTER HUNG DOORS**

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG464 Head Insert. (Typical)



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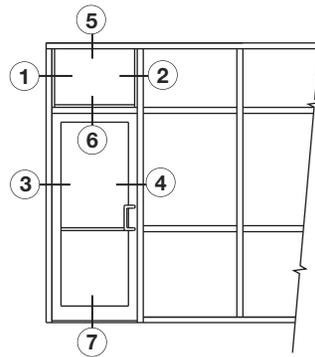
# WINDOW WALLS

## Typical Details

### OS-2 Systems • Series OS450

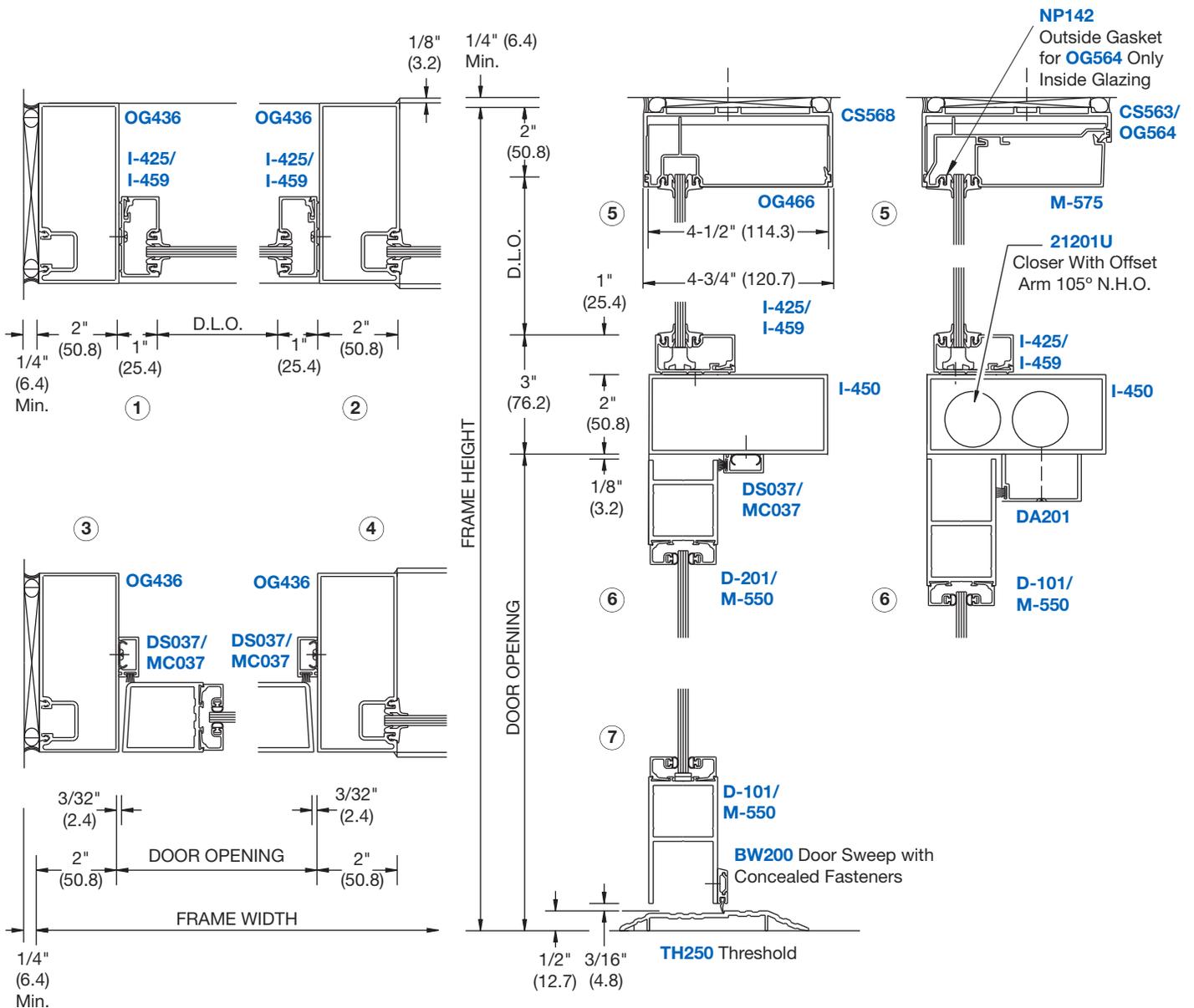
#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG564 Head Insert. (Typical)

#### OFFSET HUNG DOORS



NOT TO SCALE

# WINDOW WALLS

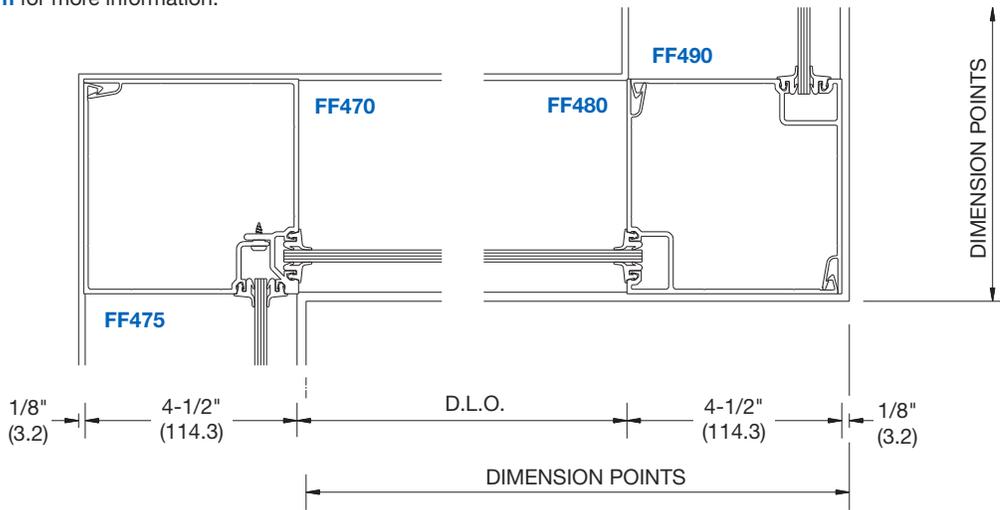
## Typical Details

**OS-2 Systems**  
• Series OS450

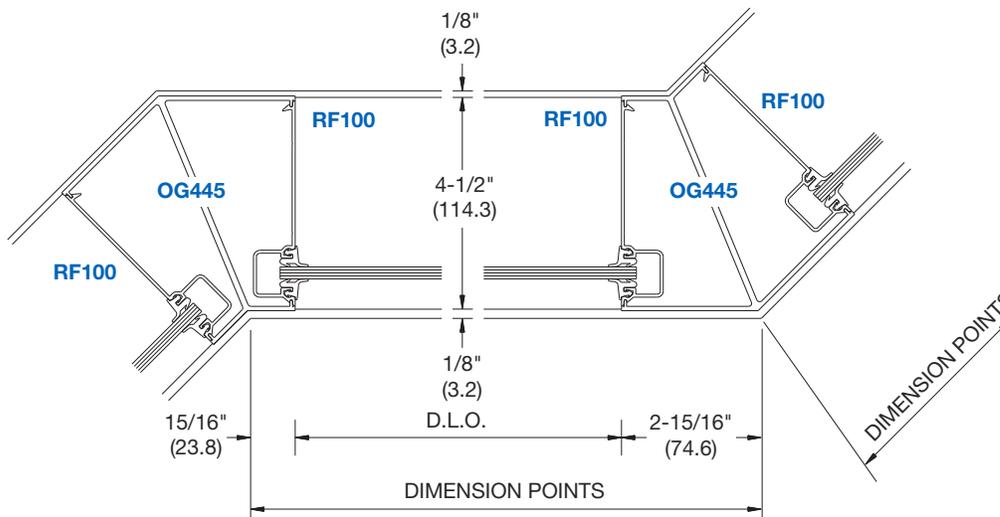
### VERTICAL CORNER CONDITIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

#### 90 DEGREE CORNERS



#### 135 DEGREE CORNERS



NOT TO SCALE

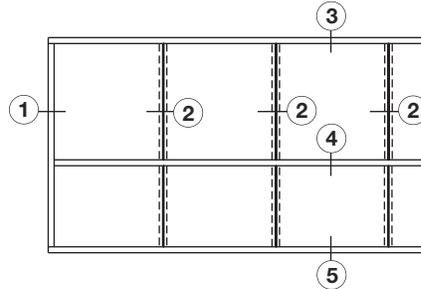
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Typical Details

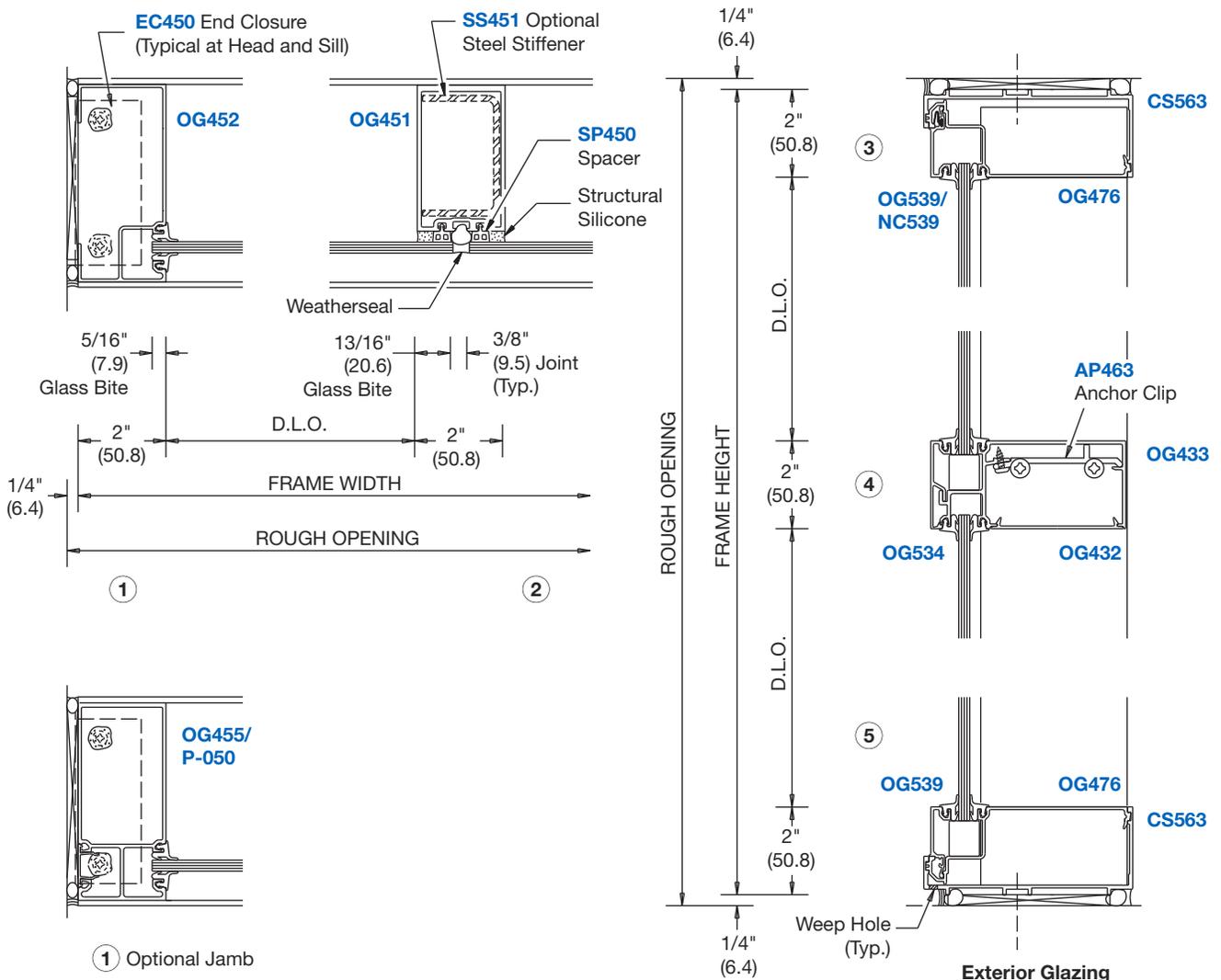
**OS-2 Systems**  
• Series OS450SG

### STRUCTURAL SILICONE GLAZING FOR 1/4" (6) OR 3/8" (10) GLAZING

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



TYPICAL ELEVATION



NOT TO SCALE

# WINDOW WALLS

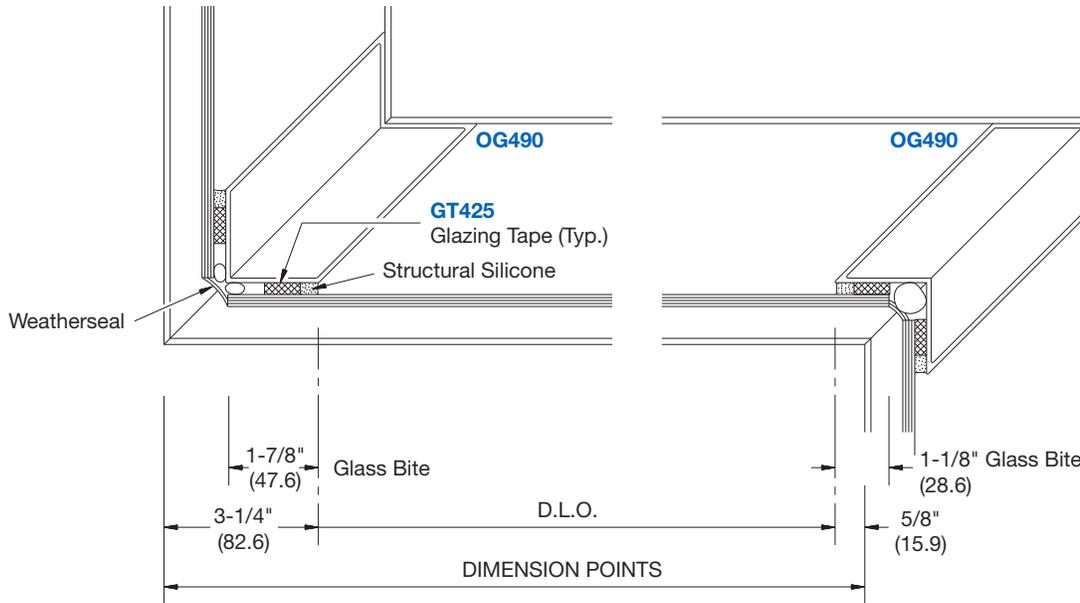
## Typical Details

**OS-2 Systems**  
• Series OS450SG

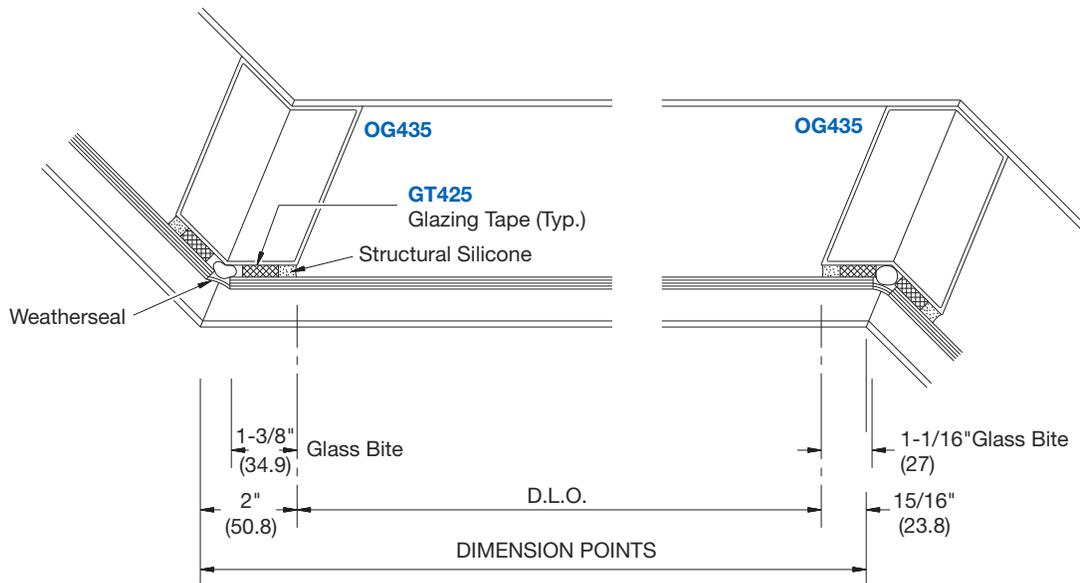
### STRUCTURAL SILICONE GLAZING CORNER CONDITIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

#### 90 DEGREE CORNERS



#### 135 DEGREE CORNERS



NOT TO SCALE

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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Windload Charts

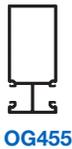
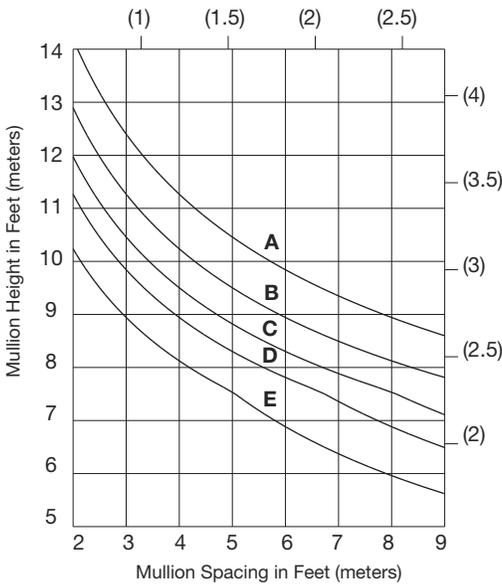
## OS-2 Systems

### CAPTURED VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

- Series OS450
- Series OS450SG

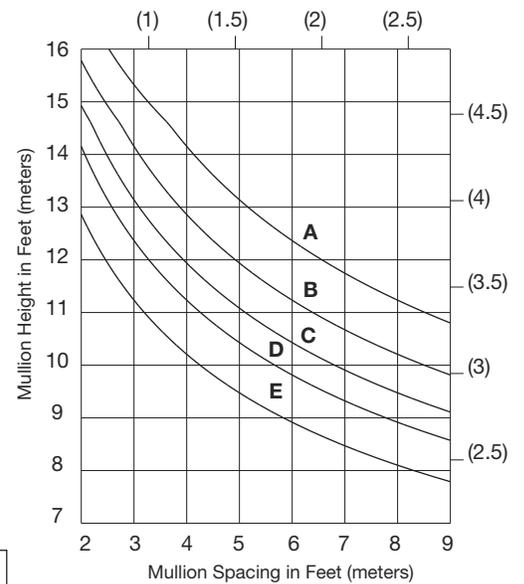
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance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

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



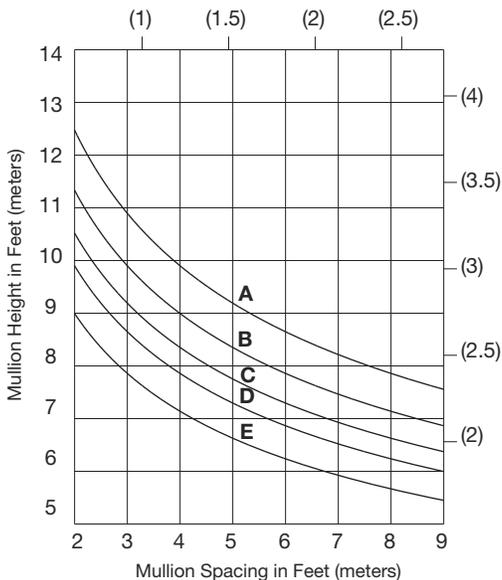
**OG455**  
 $I = 2.815 (117.17 \times 10^4)$   
 $S = 1.141 (18.70 \times 10^3)$   
**SS455 Steel Stiffener**  
 $I = 1.086 (45.20 \times 10^4)$   
 $S = .740 (12.13 \times 10^3)$

$I_{AL} = STL = 5.582$   
 $(232.32 \times 10^4)$



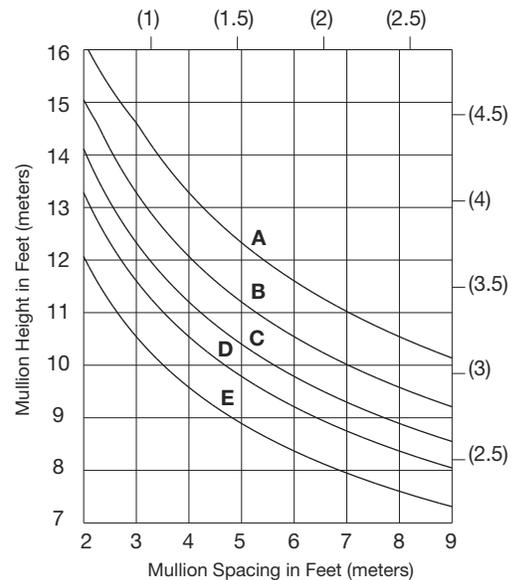
Limitation of vertical mullions for:  
 CURVES A = 15 PSF (718 Pa)  
 CURVES B = 20 PSF (957 Pa)  
 CURVES C = 25 PSF (1197 Pa)  
 CURVES D = 30 PSF (1436 Pa)  
 CURVES E = 40 PSF (1915 Pa)

### STRUCTURAL GLAZED VERTICAL MULLIONS



**OG451**  
 $I = 1.910 (79.50 \times 10^4)$   
 $S = 1.136 (18.62 \times 10^3)$   
**SS451 Steel Stiffener**  
 $I = .932 (38.79 \times 10^4)$   
 $S = 678 (11.11 \times 10^3)$

$I_{AL} = STL = 4.613$   
 $(192.00 \times 10^4)$



**NOTE:** See page 50-C3 for Structural Silicone Chart

# WINDOW WALLS



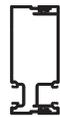
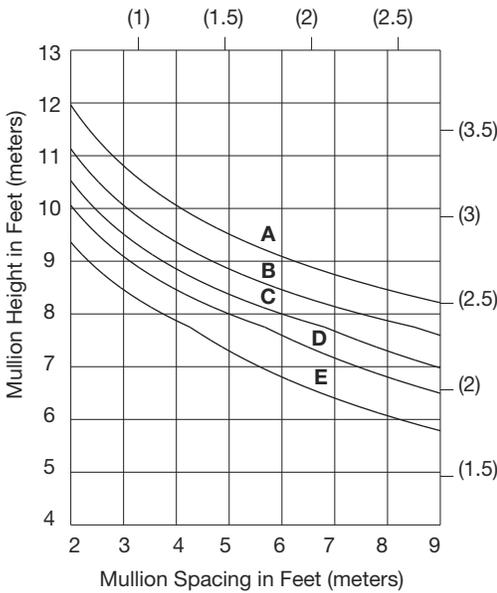
## Windload Charts

**OS-2 Systems**  
 • Series OS450  
 • Series OS450SG

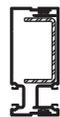
### CAPTURED VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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



**OG462/  
OG469**

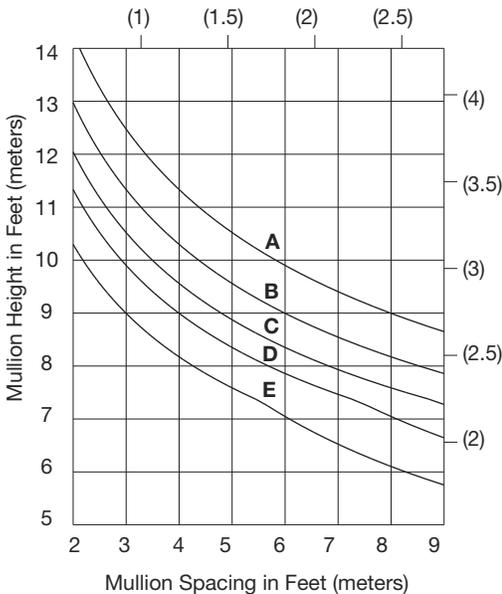
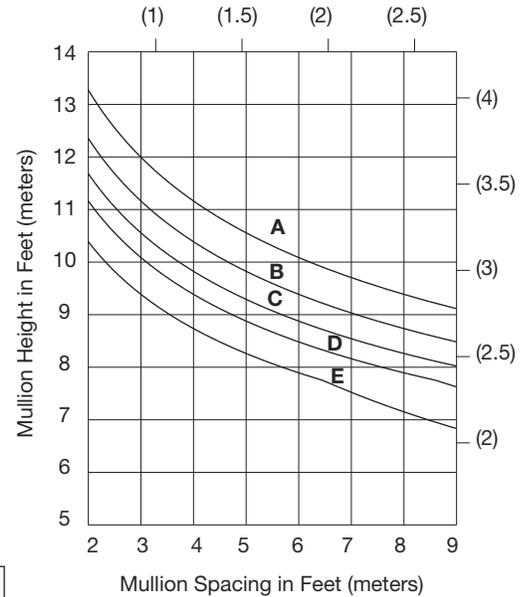


**OG462  
OG469  
With SS460**

**OG462/OG469**  
 $I = 3.815 (158.79 \times 10^4)$   
 $S = 1.562 (25.59 \times 10^3)$   
**SS460 Steel Stiffener**  
 $I = .680 (28.30 \times 10^4)$   
 $S = .506 (8.29 \times 10^3)$

$I_{AL} = STL = 5.787$   
 $(240.87 \times 10^4)$

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



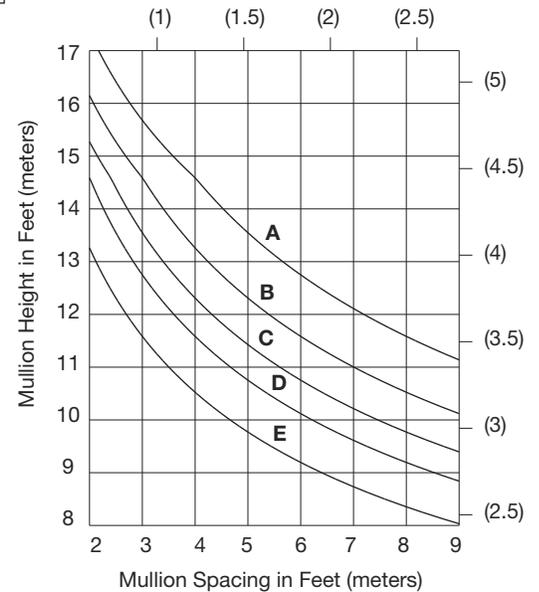
**OG436**



**OG436  
With SS045**

**OG436**  
 $I = 2.866 (119.29 \times 10^4)$   
 $S = 1.176 (19.27 \times 10^3)$   
**SS045 Steel Stiffener**  
 $I = 1.122 (46.70 \times 10^4)$   
 $S = .544 (8.91 \times 10^3)$

$I_{AL} = STL = 6.120$   
 $(254.73 \times 10^4)$



## Deadload Charts

**OS-2 Systems**  
 • Series OS450  
 • Series OS450SG

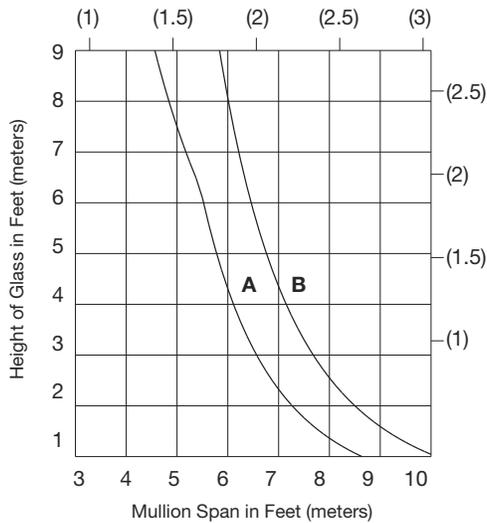
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1/4" (6) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>).

Glass shall rest on two setting blocks located at:

CURVES **A**: 1/4 points

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

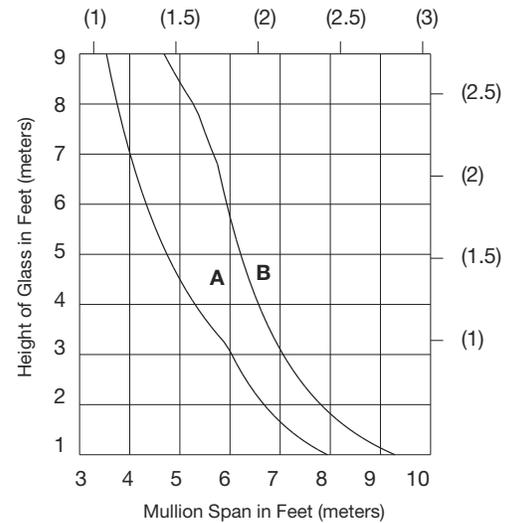


**OG433**

$I_{yy} = .359$   
 (14.94 x 10<sup>4</sup>)

**OG463**

$I_{yy} = .256$   
 (10.66 x 10<sup>4</sup>)



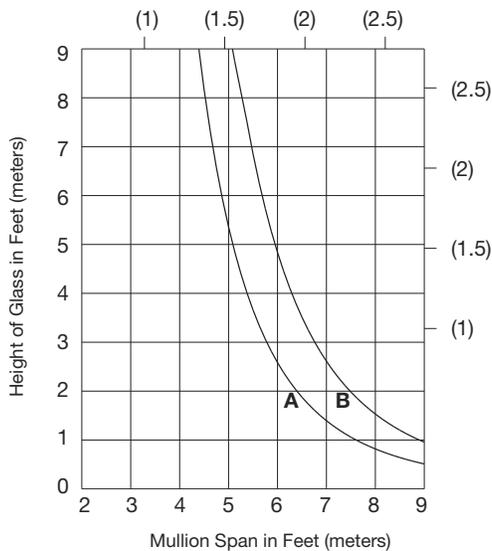
### DOOR HEADERS

Deadload chart is based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>) for 1/4" (6) glass.

Glass shall rest on two setting blocks located at:

CURVES **A**: 1/4 points

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



**I-450**

$I_{yy} = .862$   
 (35.88 x 10<sup>4</sup>)

# WINDOW WALLS

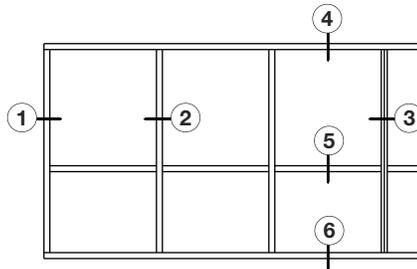
## Typical Details

### OS-2 Systems • Series OS451

#### FOR 1" (25) GLAZING

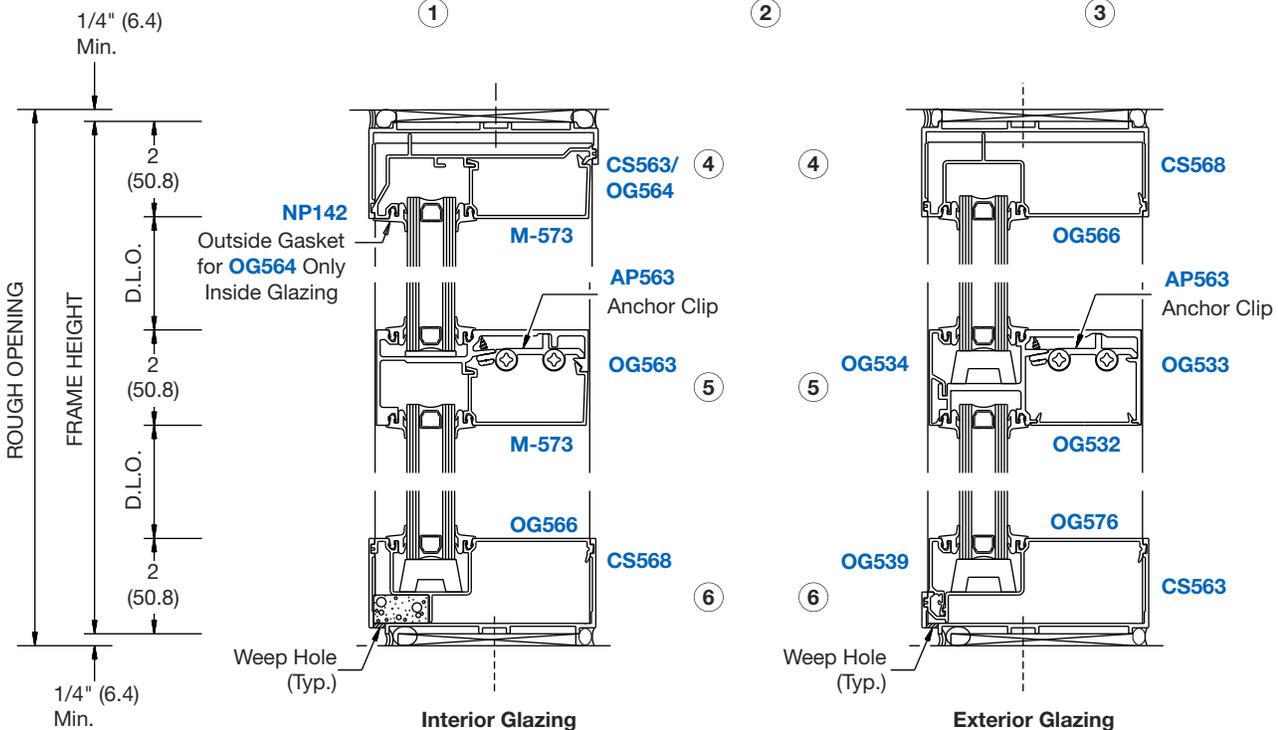
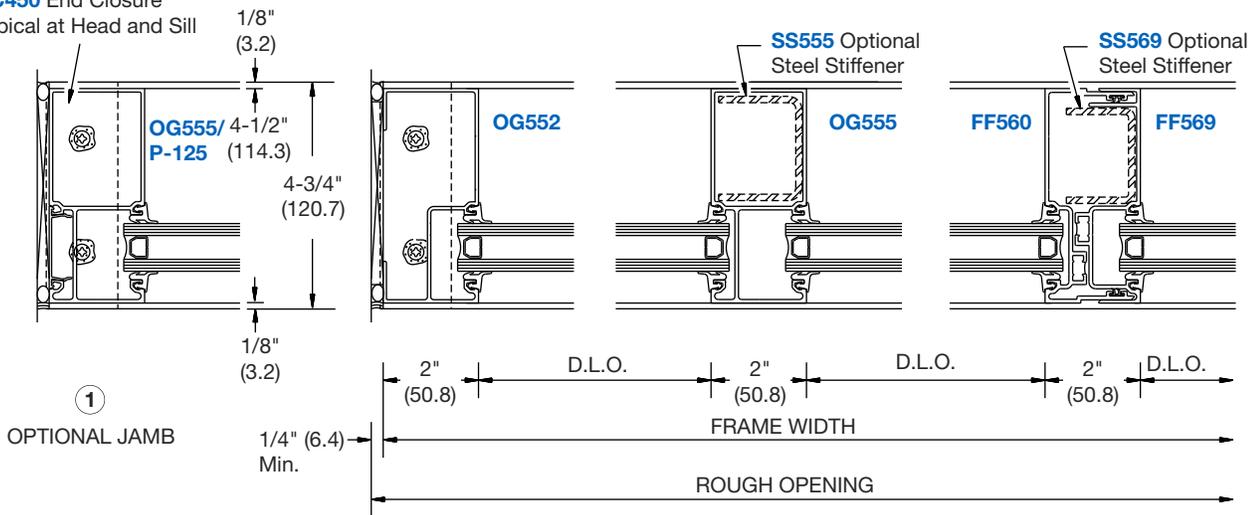
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG564 Head Insert. (Typical)



TYPICAL ELEVATION

**EC450** End Closure  
Typical at Head and Sill



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

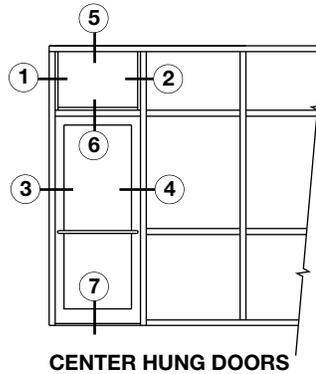
# WINDOW WALLS

## Typical Details

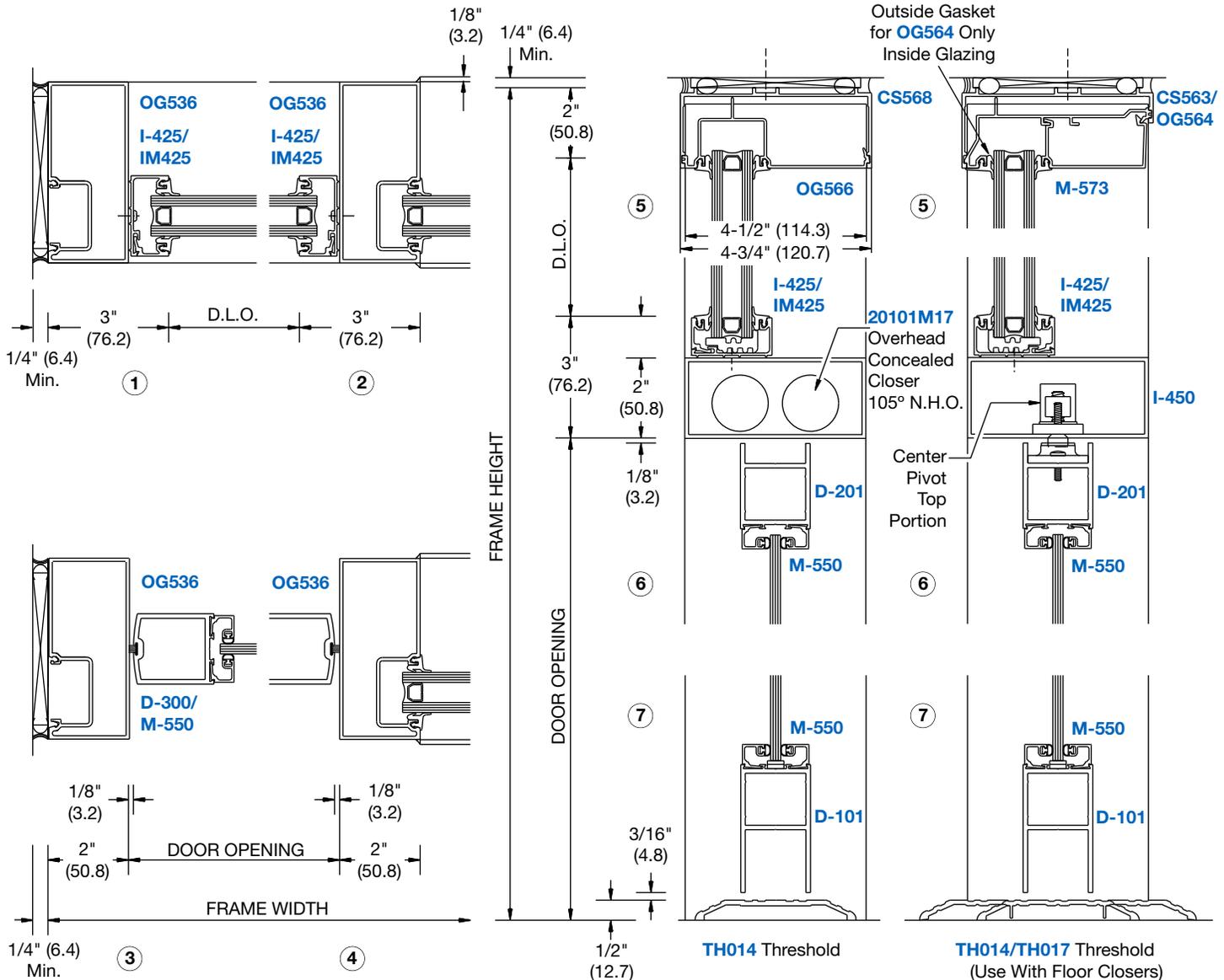
### OS-2 Systems • Series OS451

#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.



**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG564 Head Insert. (Typical)



NOT TO SCALE

# WINDOW WALLS

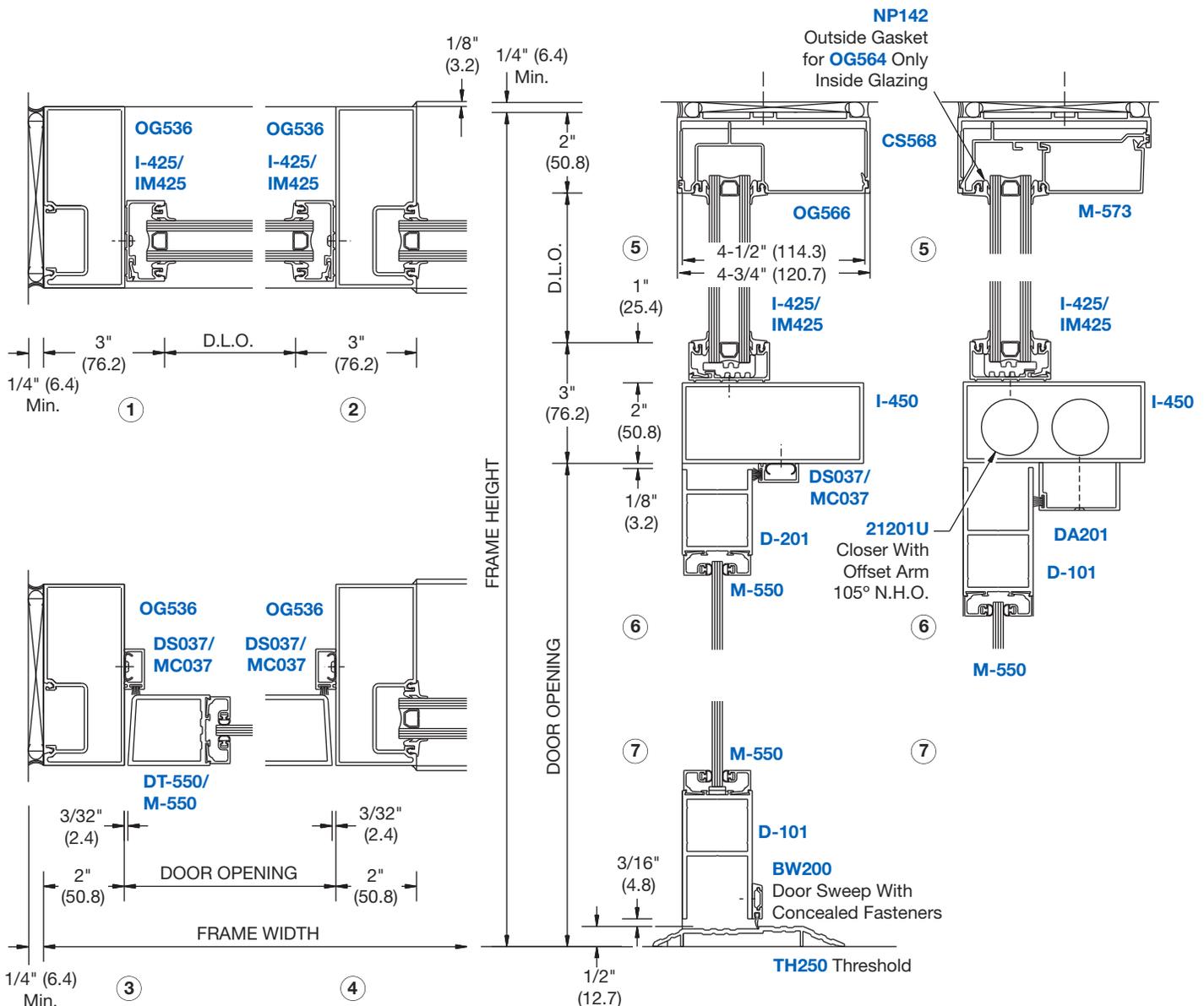
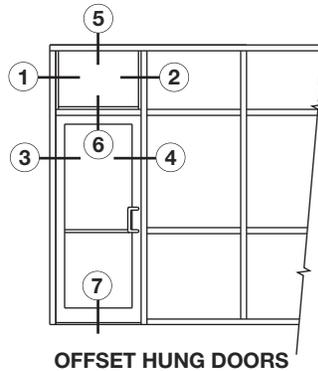
## Typical Details

### OS-2 Systems • Series OS451

#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG564 Head Insert. (Typical)



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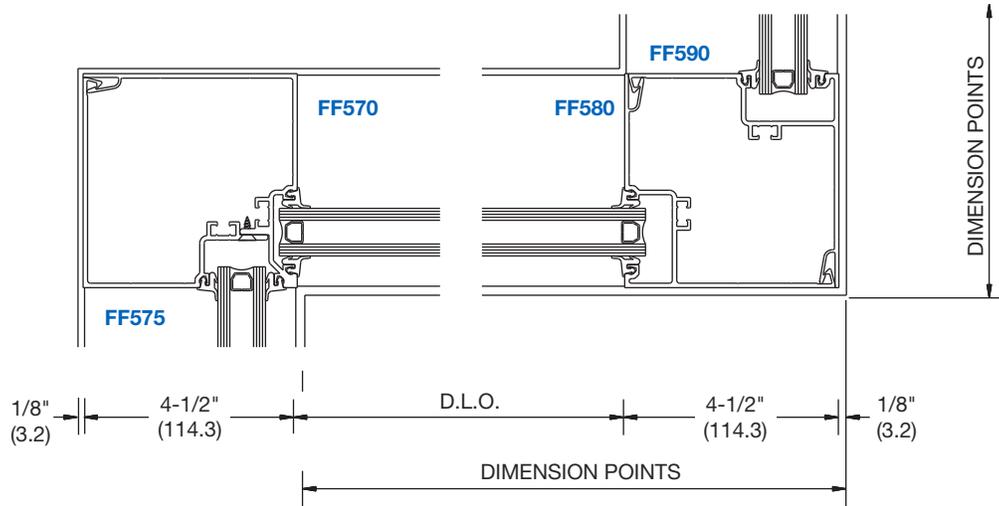
**Typical Details**

**OS-2 Systems**  
• Series OS451

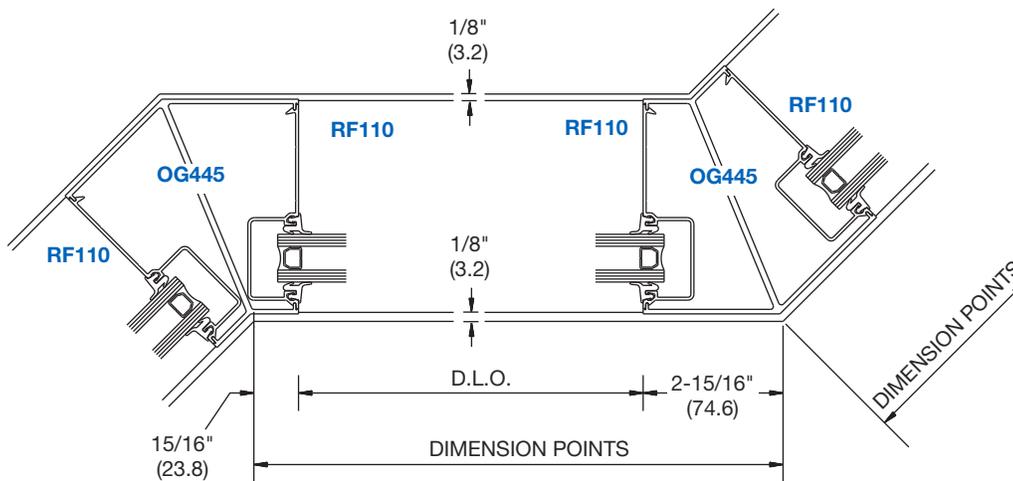
**VERTICAL CORNER CONDITIONS  
FOR 1" (25) GLAZING**

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

**90 DEGREE CORNERS**



**135 DEGREE CORNERS**



NOT TO SCALE

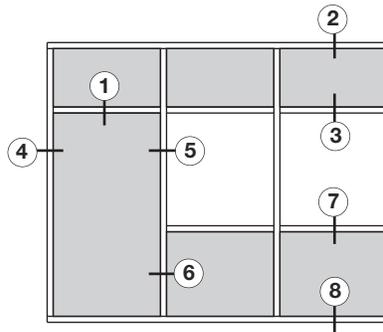
# WINDOW WALLS

## Typical Details

### OS-2 Systems • Series OS451

#### TRANSITION GLAZING FOR 1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING

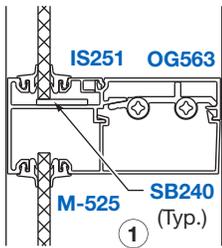
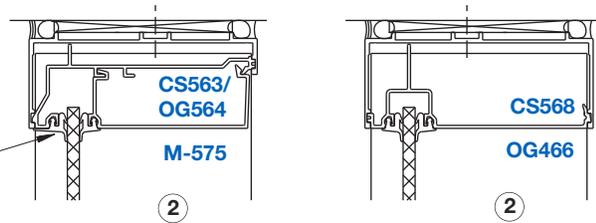
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.



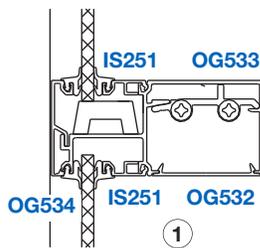
TYPICAL ELEVATION

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG564 Head Insert. (Typical)

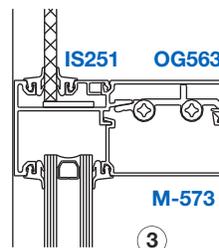
NP142  
Outside Gasket  
for OG564 Only  
Inside Glazing



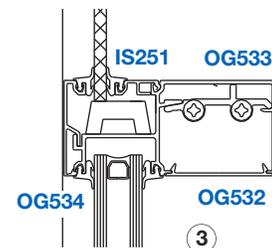
Interior Glazing



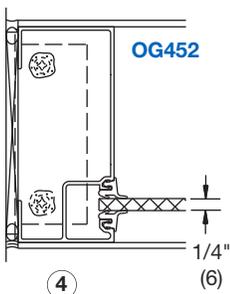
Exterior Glazing



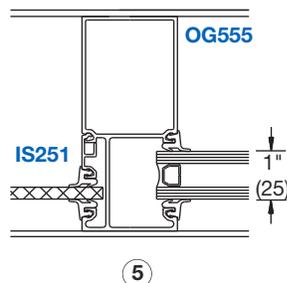
Interior Glazing



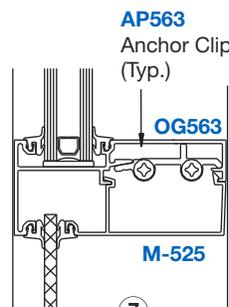
Exterior Glazing



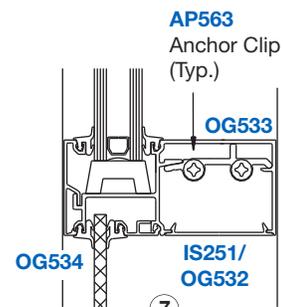
4 (6)



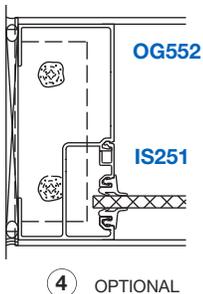
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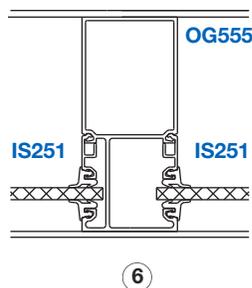
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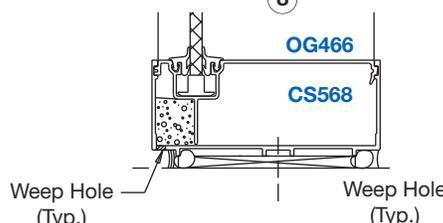
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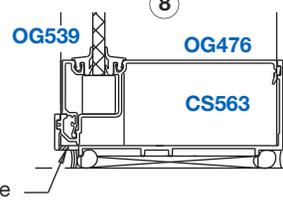
4 OPTIONAL



6



Interior Glazing



Exterior Glazing

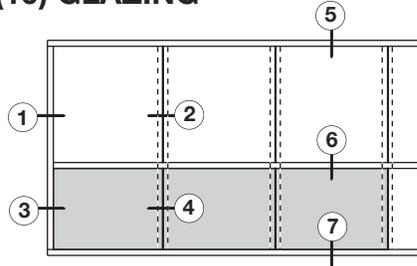
NOT TO SCALE

**Typical Details**

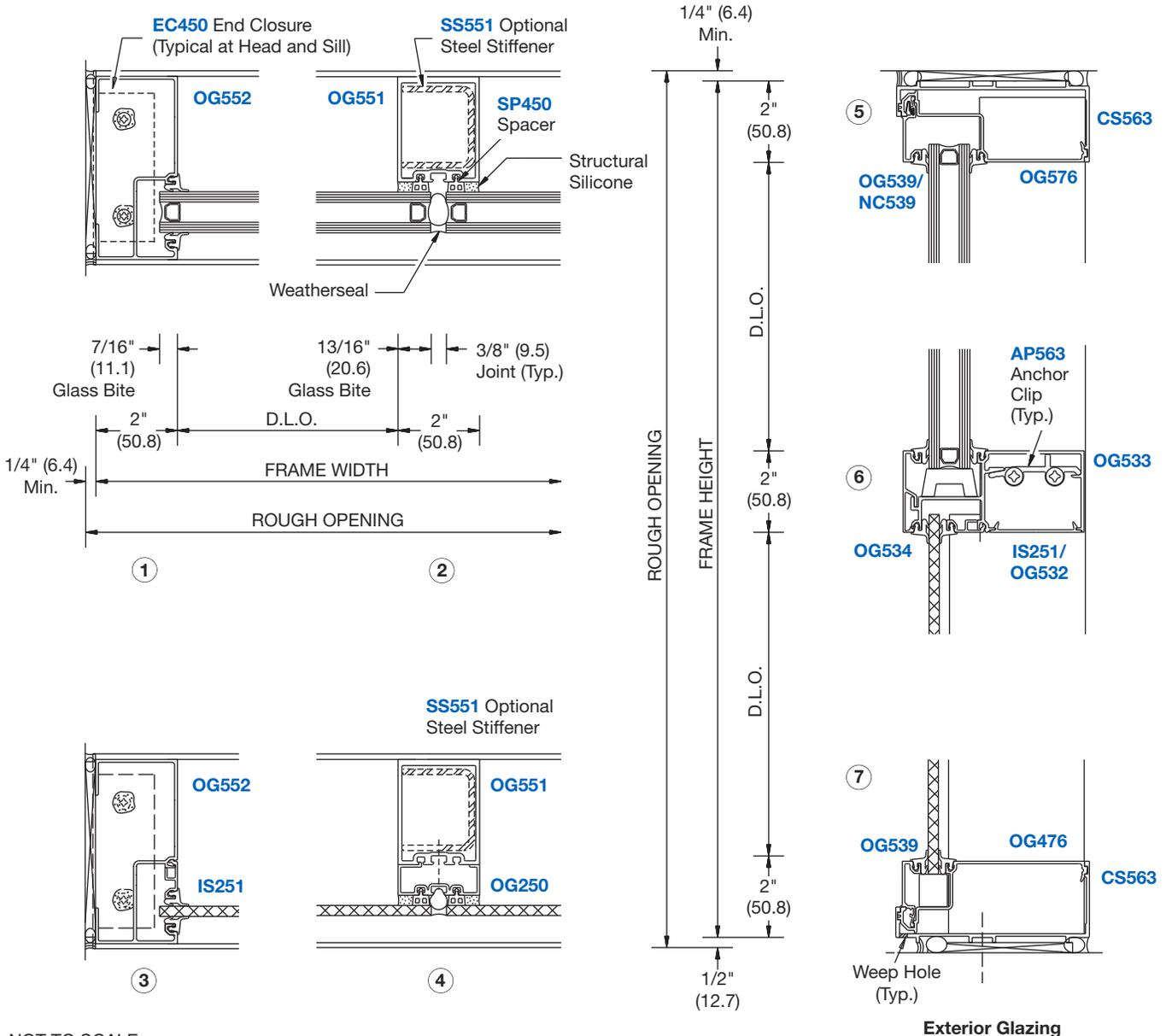
**OS-2 Systems**  
• Series OS451SG

**STRUCTURAL SILICONE GLAZING  
FOR 1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING**

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



TYPICAL ELEVATION



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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

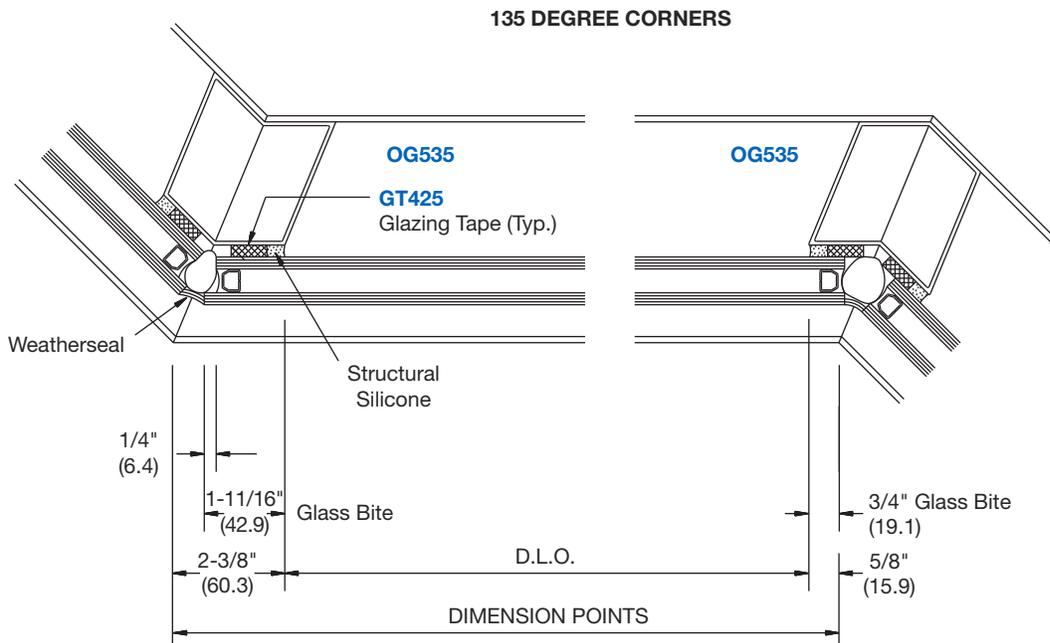
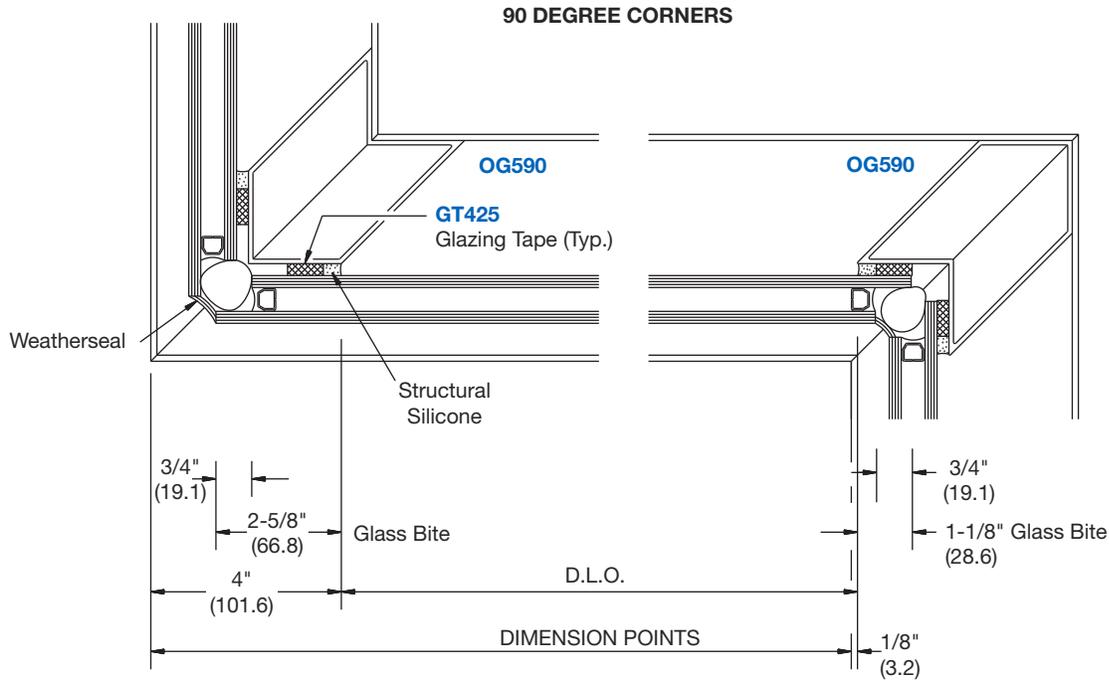
# WINDOW WALLS

## Typical Details

**OS-2 Systems**  
• Series OS451SG

### STRUCTURAL SILICONE GLAZING CORNER CONDITIONS FOR 1" (25) GLAZING

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



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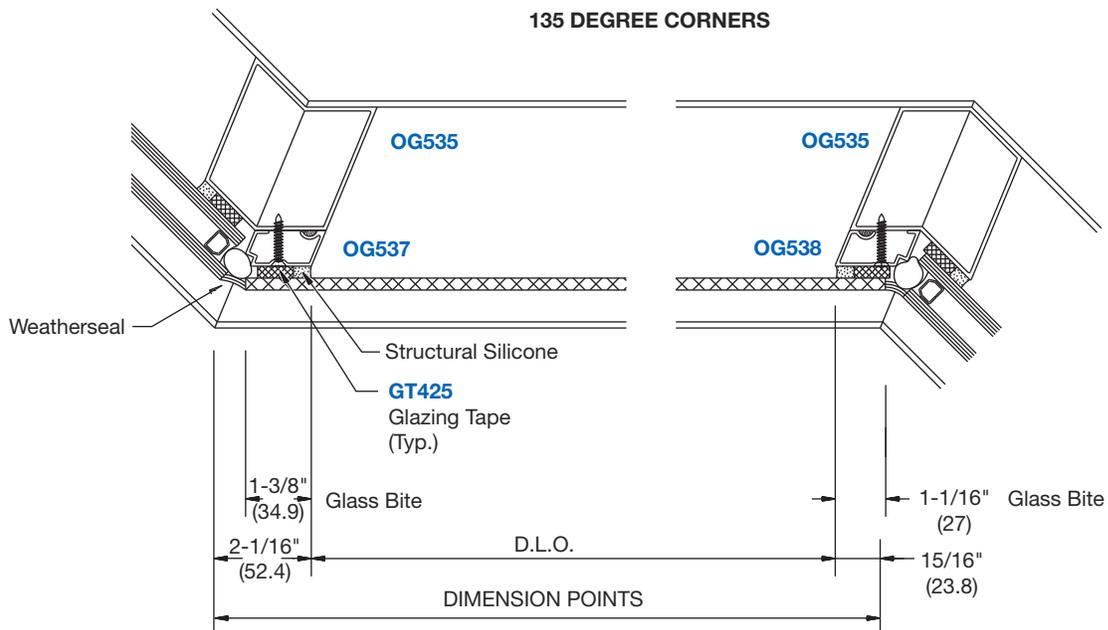
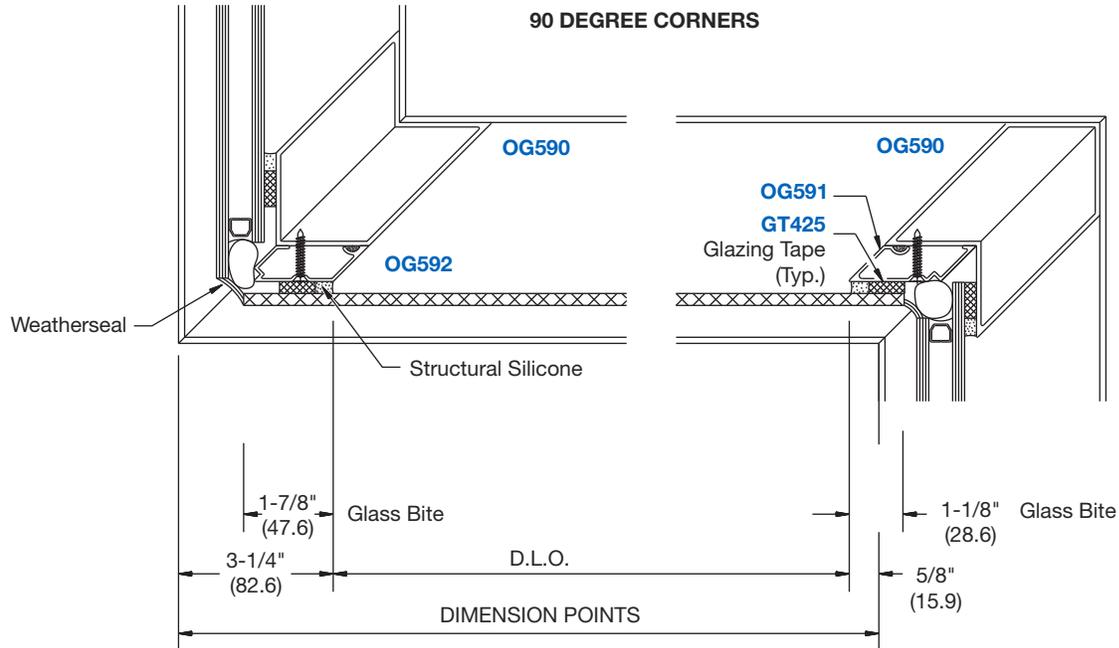
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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**OS-2 Systems**  
 • Series OS451SG

**STRUCTURAL SILICONE GLAZING  
 TRANSITION GLAZING - CORNER CONDITIONS  
 FOR 1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING**

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



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# WINDOW WALLS

## Windload Charts

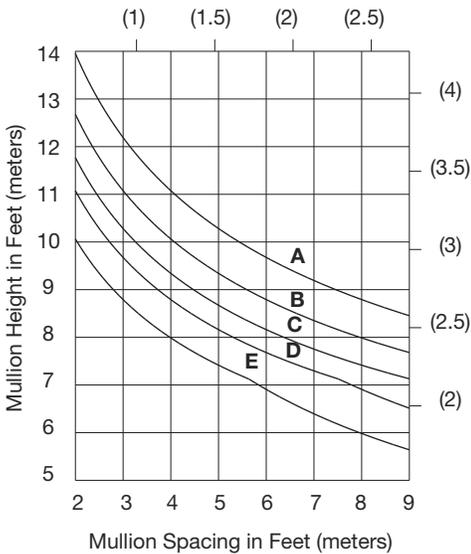
### OS-2 Systems

- Series OS451
- Series OS451SG

### CAPTURED VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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



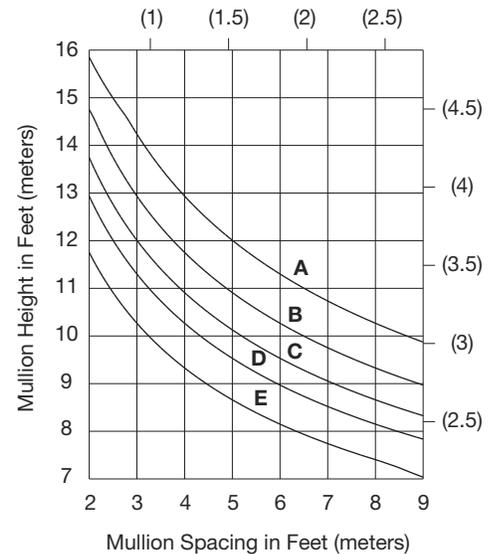
**OG555**

**OG555**

$I = 2.675 (111.34 \times 10^4)$   
 $S = 1.149 (18.83 \times 10^3)$

**SS555 Steel Stiffener**  
 $I = .547 (22.77 \times 10^4)$   
 $S = .500 (8.20 \times 10^3)$

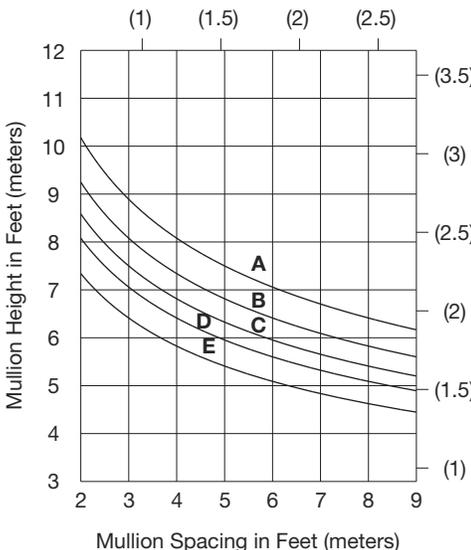
$IAL+STL = 4.261 (177.36 \times 10^4)$



**OG555 With SS555**

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

### STRUCTURAL GLAZED VERTICAL MULLIONS



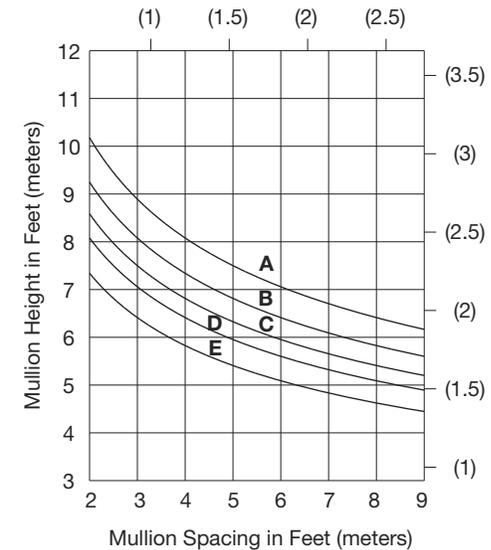
**OG551**

**OG551**

$I = 1.038 (43.20 \times 10^4)$   
 $S = .794 (13.01 \times 10^3)$

**SS551 Steel Stiffener**  
 $I = .445 (18.52 \times 10^4)$   
 $S = .396 (6.49 \times 10^3)$

$IAL+STL = 2.328 (96.92 \times 10^4)$



**OG551 With SS551**

**NOTE:** See page 50-C3 for Structural Silicone Chart

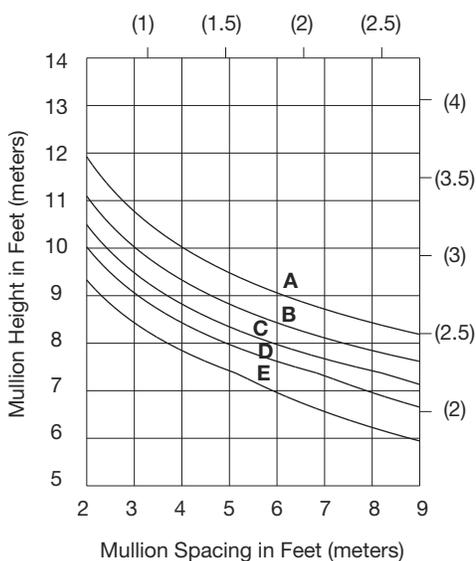
## Windload Charts

**OS-2 Systems**  
 • Series OS451  
 • Series OS451SG

### CAPTURED VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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



**FF560  
FF569**

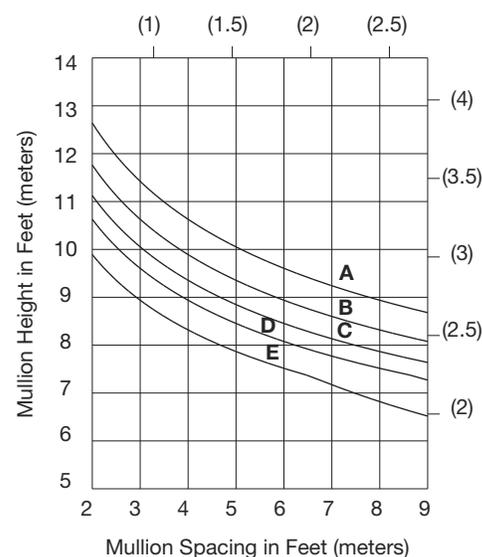


**FF560  
FF569  
With SS569**

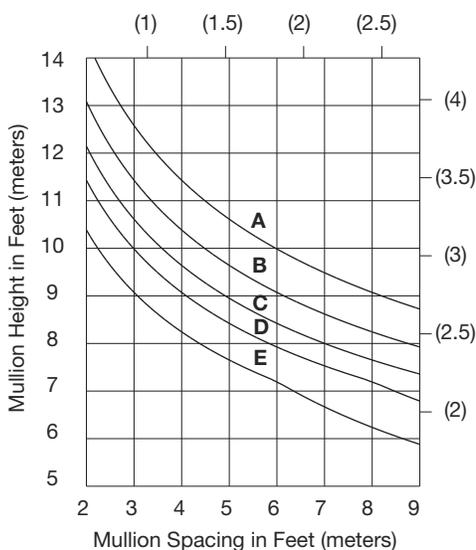
**FF560/FF569**  
 $I = 4.094 (170.40 \times 10^4)$   
 $S = 1.710 (28.02 \times 10^3)$

**SS569 Steel Stiffener**  
 $I = .373 (15.53 \times 10^4)$   
 $S = .373 (6.1 \times 10^3)$

$IAL+STL = 5.176 (215.43 \times 10^4)$



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



**OG536**

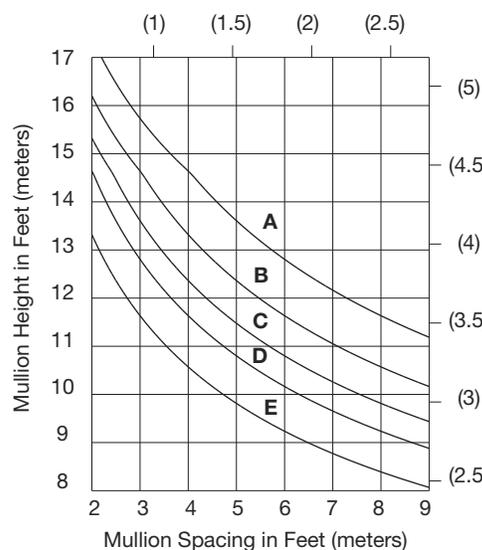


**OG536  
With SS045**

**OG536**  
 $I = 2.940 (122.66 \times 10^4)$   
 $S = 1.237 (20.27 \times 10^3)$

**SS045 Steel Stiffener**  
 $I = 1.122 (46.70 \times 10^4)$   
 $S = .544 (8.92 \times 10^3)$

$IAL+STL = 6.201 (258.10 \times 10^4)$



# WINDOW WALLS

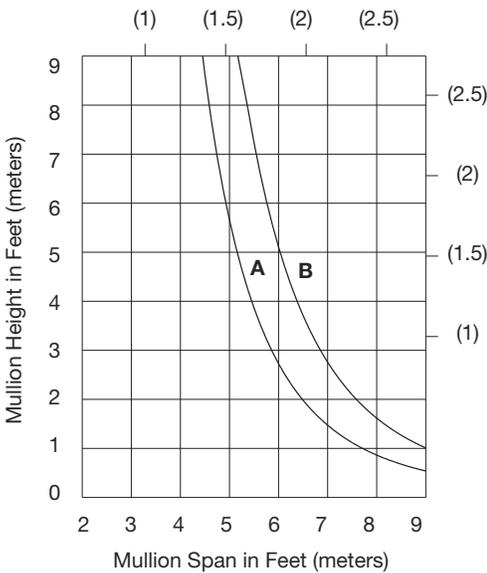
## Deadload Charts

**OS-2 Systems**  
 • Series OS451  
 • Series OS451SG

### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

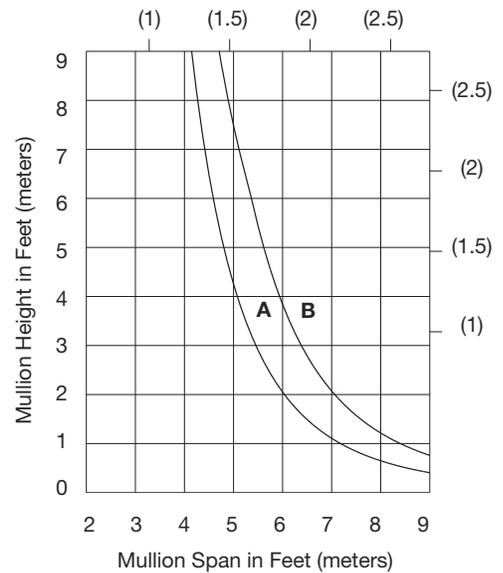
Glass shall rest on two setting blocks located at:  
 CURVES **A**: 1/4 points  
 CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



**OG533**  
 $I_{yy} = .455$   
 (18.94 x 10<sup>4</sup>)



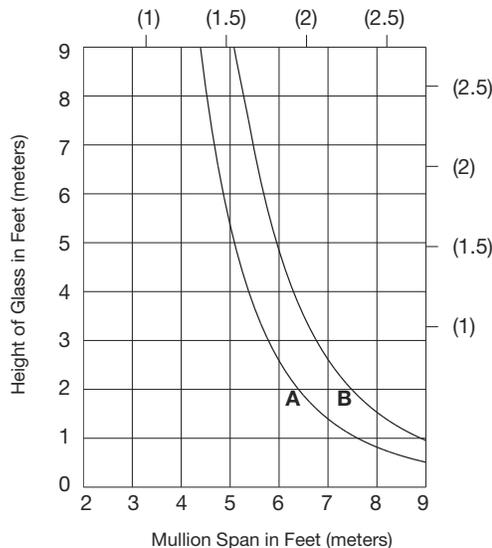
**OG563**  
 $I_{yy} = .342$   
 (14.24 x 10<sup>4</sup>)



### DOOR HEADER

Deadload chart is based on 1/16" (1.6) maximum deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

Glass shall rest on two setting blocks located at:  
 CURVES **A**: 1/4 points  
 CURVES **B**: 1/8 points or 8" (203.2) from corners, whichever is larger



**I-450**  
 $I_{yy} = .862$   
 (35.88 x 10<sup>4</sup>)

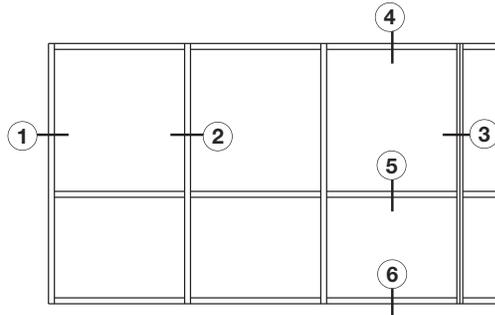
# WINDOW WALLS

## Typical Details

### OS-2 Systems • Series OS600

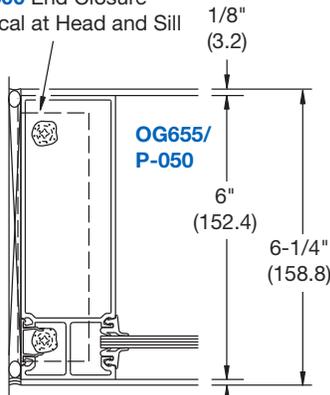
**FOR 1/4" (6) OR  
3/8" (10) GLAZING**

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

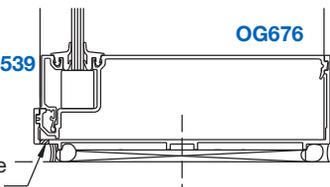
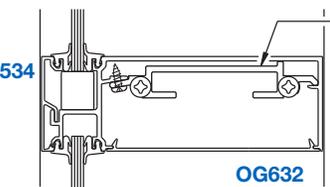
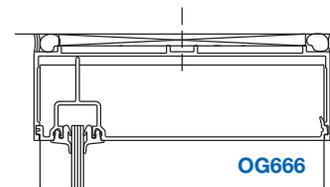
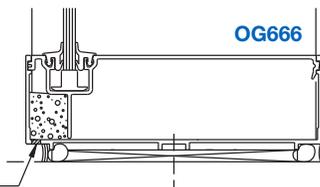
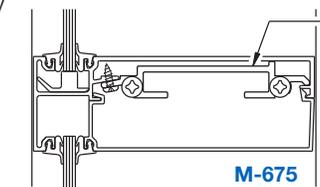
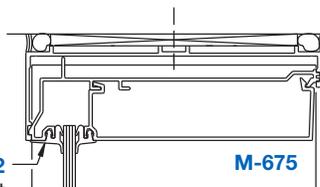
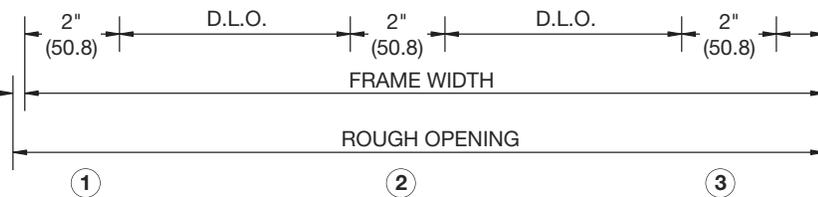
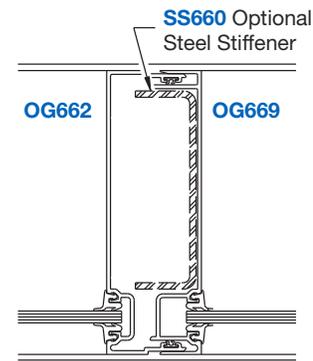
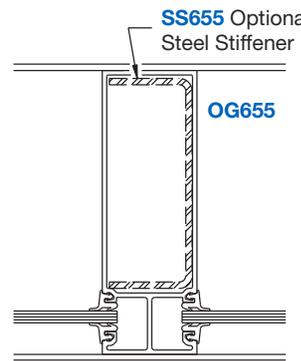
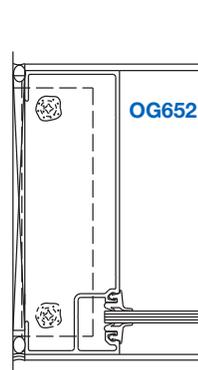
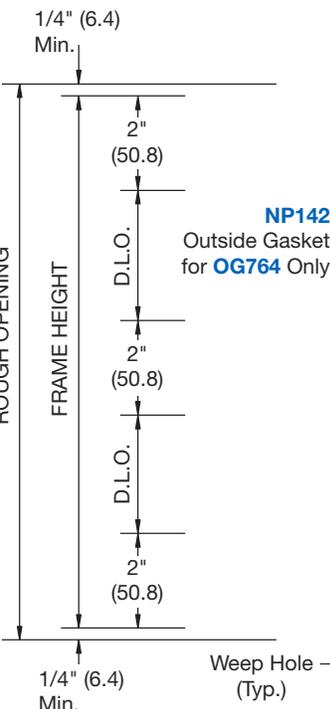
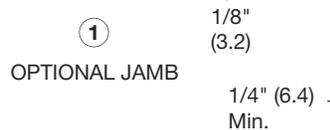


**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)

**EC600** End Closure  
Typical at Head and Sill



TYPICAL ELEVATION



Interior Glazing

Exterior Glazing

NOT TO SCALE

# WINDOW WALLS



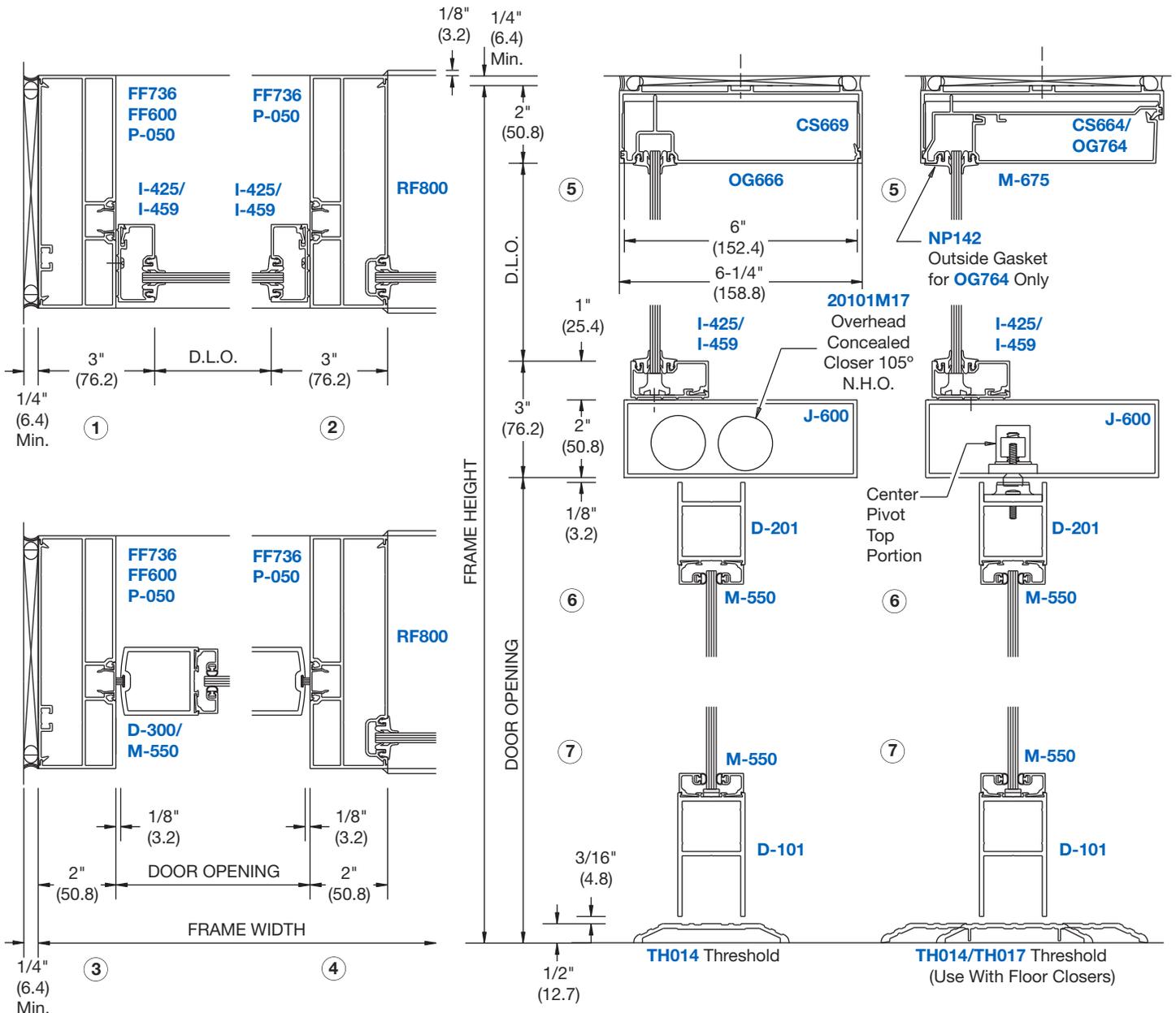
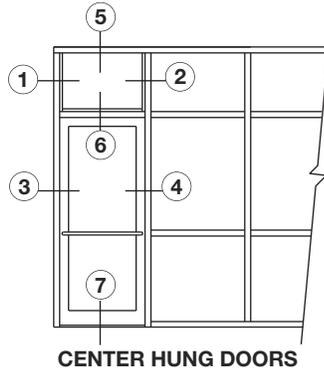
## Typical Details

### OS-2 Systems • Series OS600

#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)



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# WINDOW WALLS

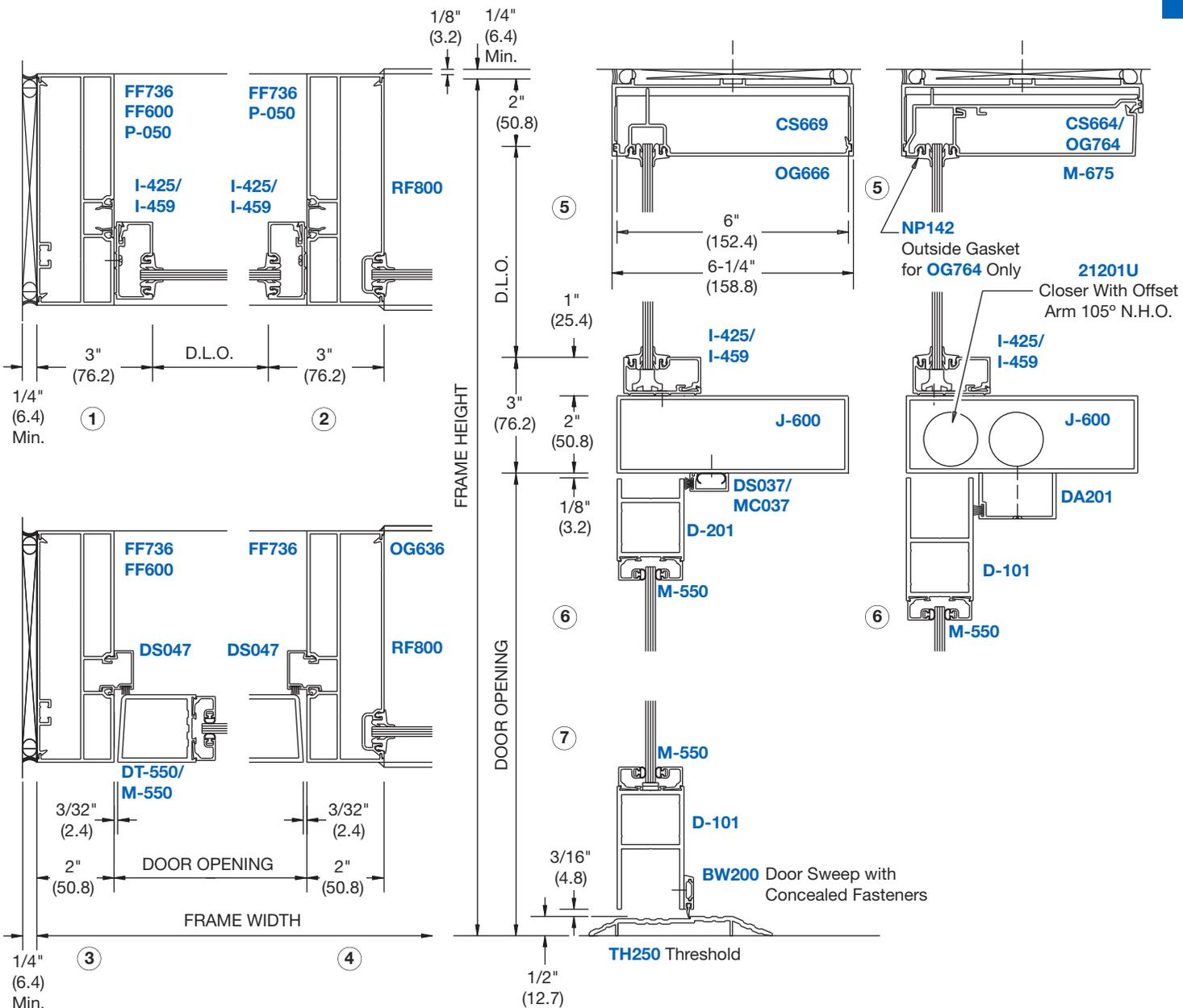
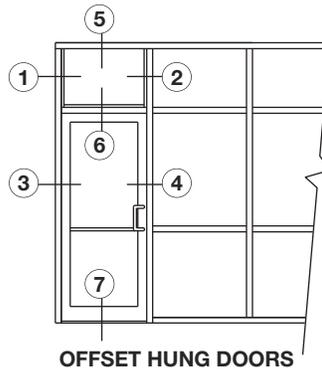
## Typical Details

### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

### OS-2 Systems • Series OS600

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)



NOT TO SCALE

# WINDOW WALLS

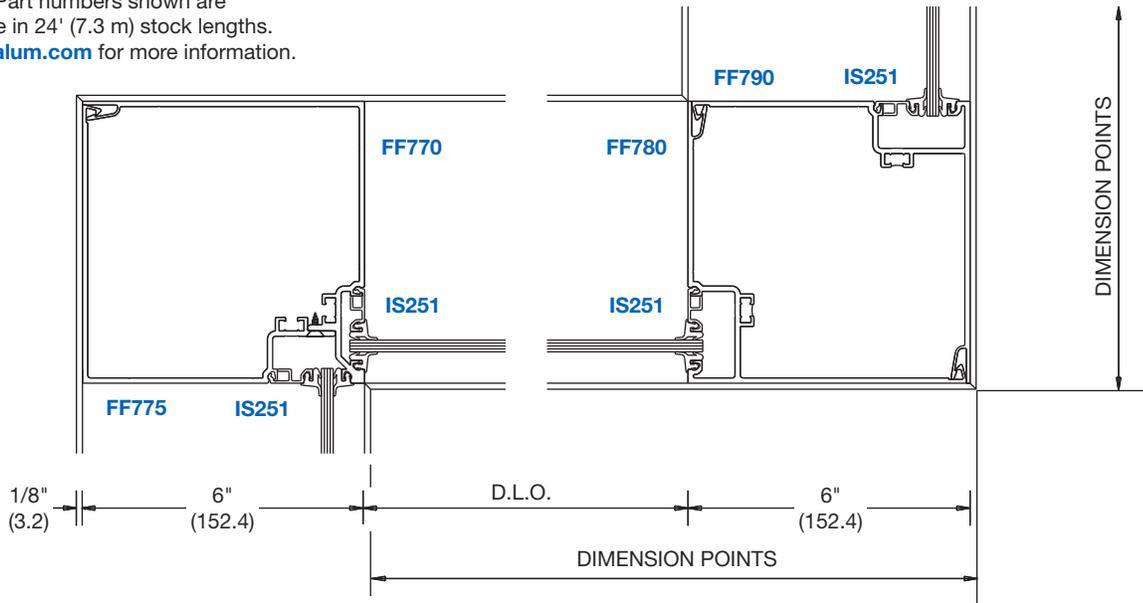
## Typical Details

**OS-2 Systems**  
• Series OS600

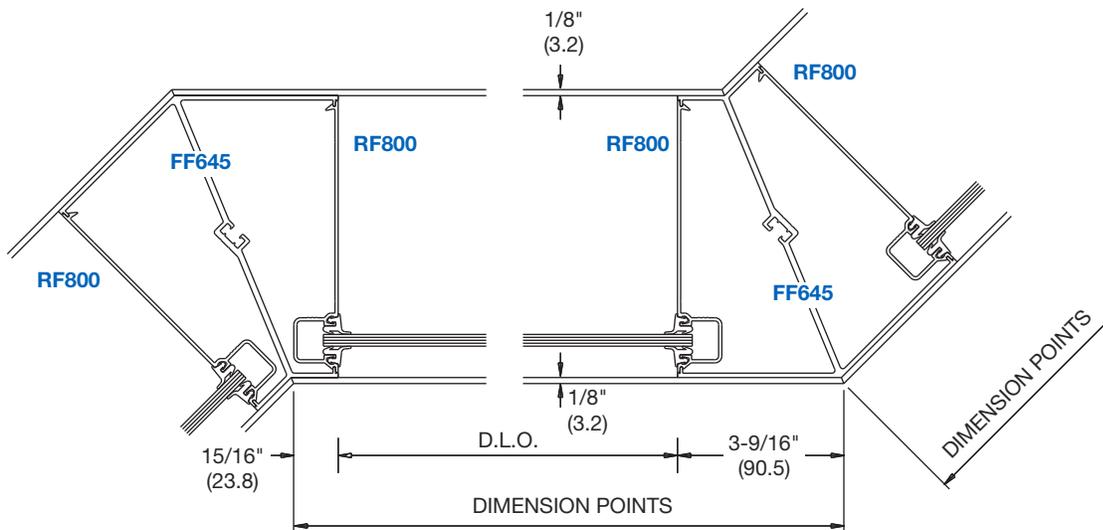
### VERTICAL CORNER CONDITIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

#### 90 DEGREE CORNERS

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



#### 135 DEGREE CORNERS



NOT TO SCALE

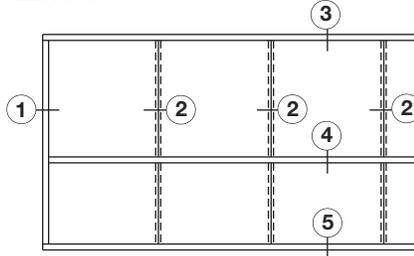
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

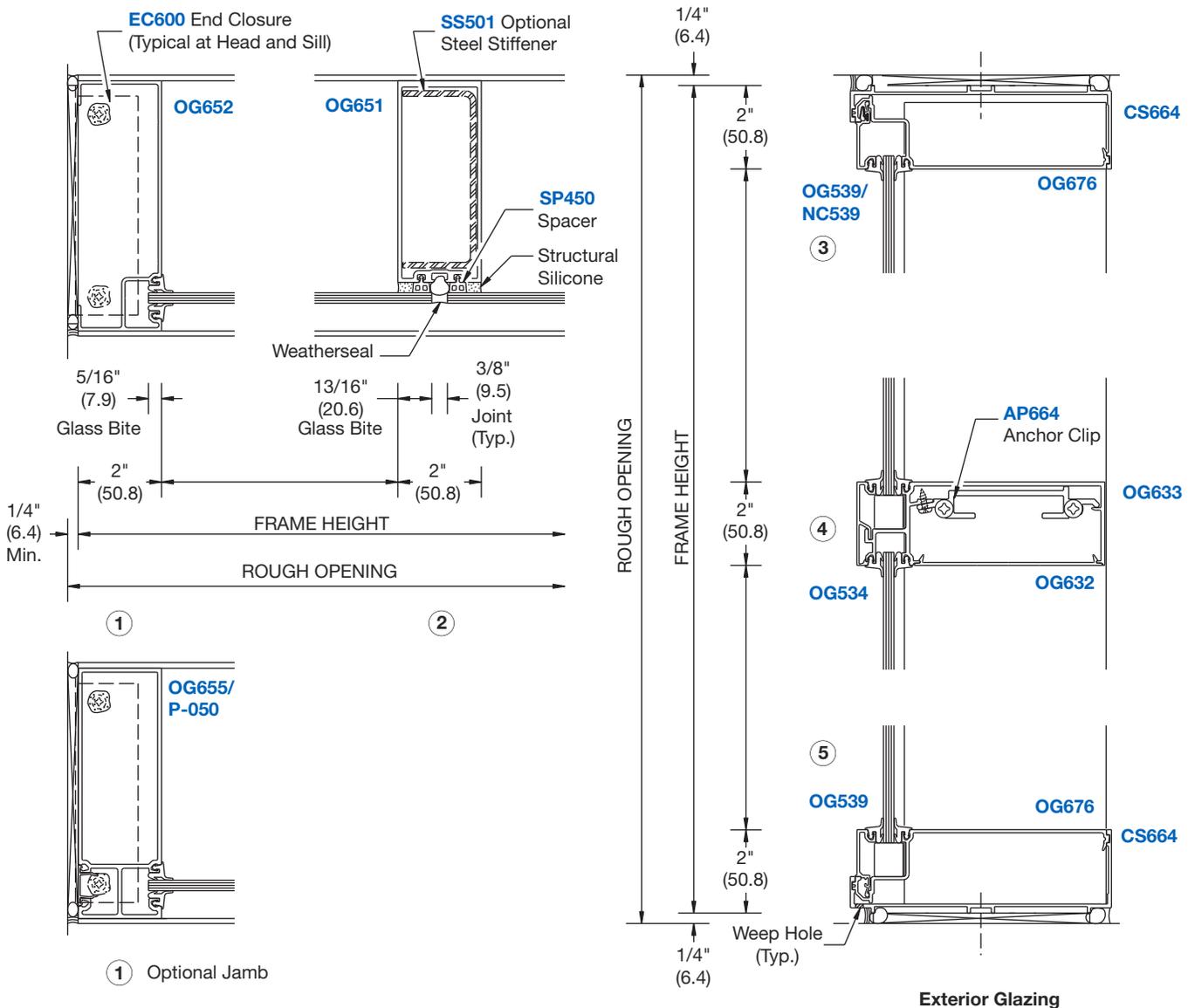
**OS-2 Systems**  
• Series OS600SG

**STRUCTURAL SILICONE GLAZING  
FOR 1/4" (6) OR 3/8" (10) GLAZING**

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



TYPICAL ELEVATION



NOT TO SCALE

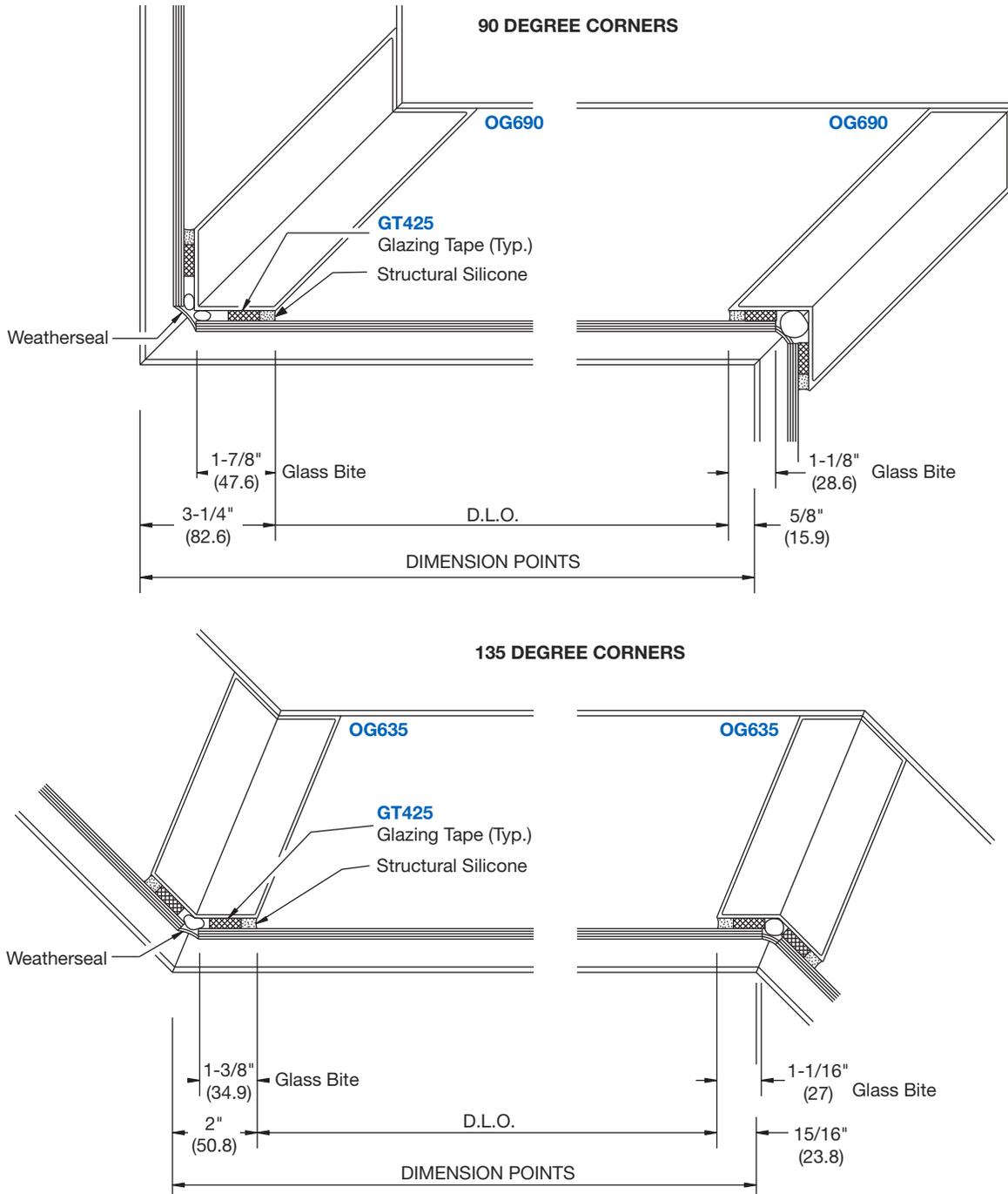
# WINDOW WALLS

## Typical Details

**OS-2 Systems**  
• Series OS600SG

### STRUCTURAL SILICONE GLAZING CORNER CONDITIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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



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Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Windload Charts

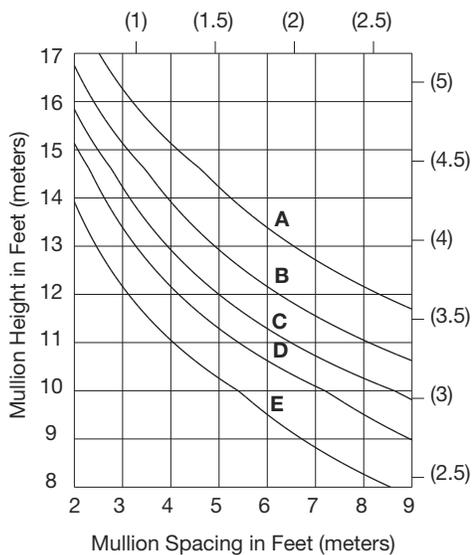
### OS-2 Systems

- Series OS600
- Series OS600SG

### CAPTURED VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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



**OG655**

**OG655**

$I = 7.082 (294.78 \times 10^4)$   
 $S = 2.178 (35.69 \times 10^3)$

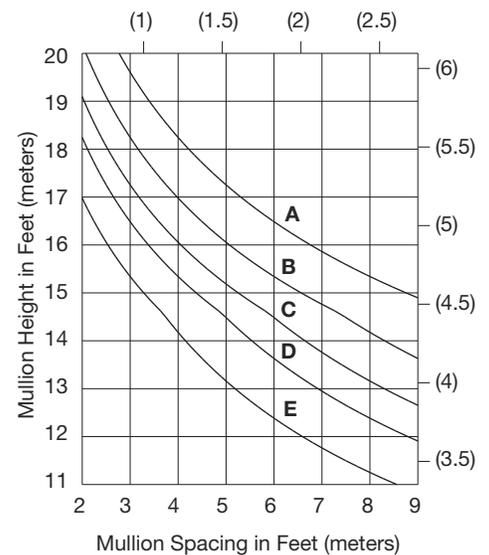
**SS655 Steel Stiffener**

$I = 2.715 (114.51 \times 10^4)$   
 $S = 1.224 (20.05 \times 10^3)$

$IAL + STL = 14.956 (622.49 \times 10^4)$

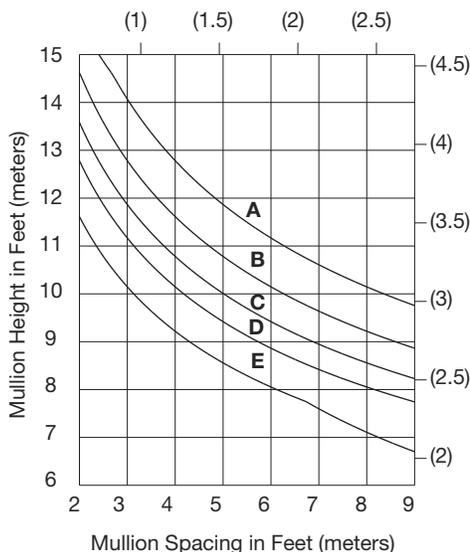


**OG655 With SS655**



### STRUCTURAL GLAZED VERTICAL MULLIONS

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



**OG651**

**OG651**

$I = 4.112 (171.15 \times 10^4)$   
 $S = 1.595 (26.14 \times 10^3)$

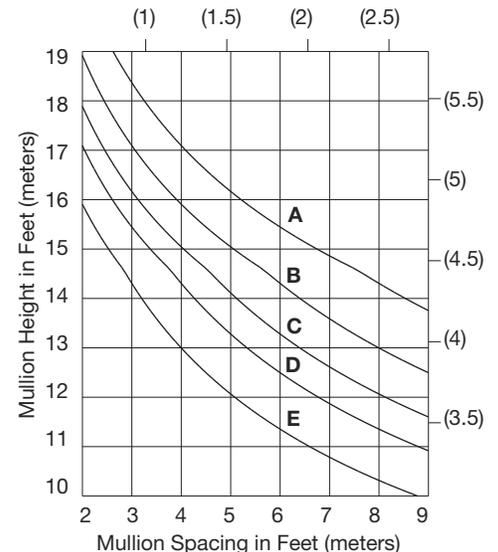
**SS501 Steel Stiffener**

$I = 2.556 (106.39 \times 10^4)$   
 $S = 1.186 (19.44 \times 10^3)$

$IAL + STL = 11.524 (479.68 \times 10^4)$



**OG651 With SS501**



**NOTE:** See page 50-C3 for Structural Silicone Chart.

# WINDOW WALLS



## Windload Charts

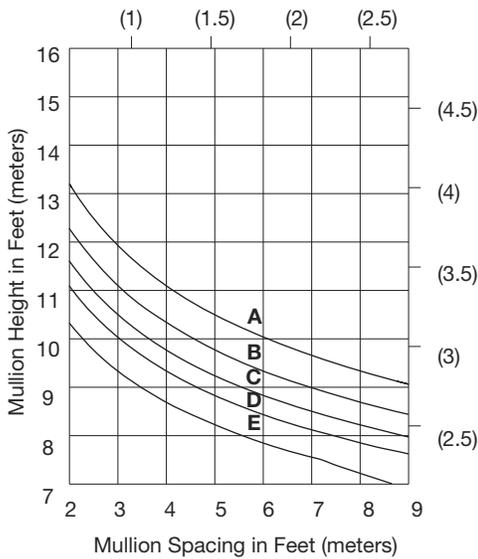
### OS-2 Systems

- Series OS600
- Series OS600SG

### CAPTURED VERTICAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

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

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



**OG662  
OG669**

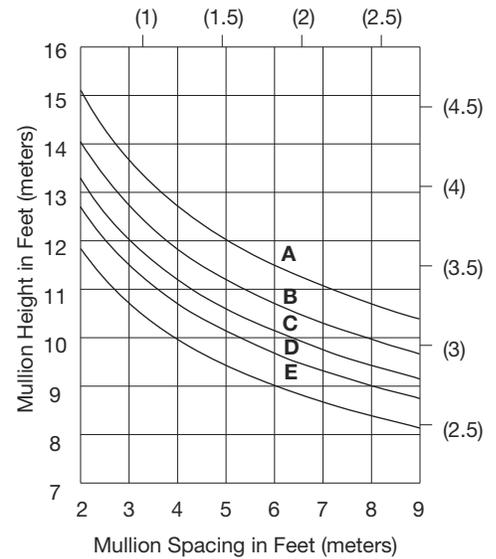


**OG662  
OG669  
With SS660**

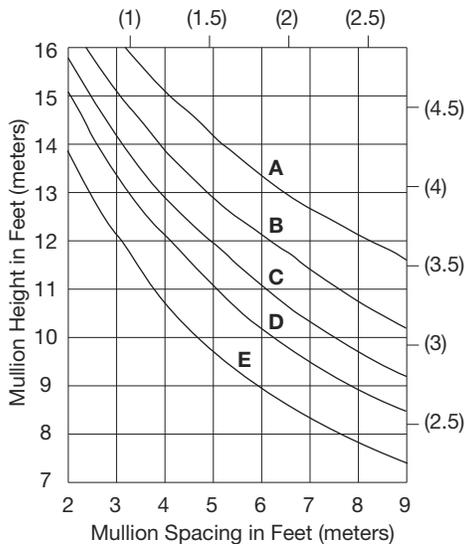
**OG662/OG669**  
 $I = 8.088 (336.65 \times 10^4)$   
 $S = 2.484 (40.71 \times 10^3)$

**SS660 Steel Stiffener**  
 $I = 1.989 (82.79 \times 10^4)$   
 $S = 0.950 (15.57 \times 10^3)$

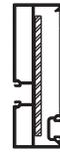
$IAL + STL = 13.856$   
 $(576.74 \times 10^4)$



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



**FF736/RF800**

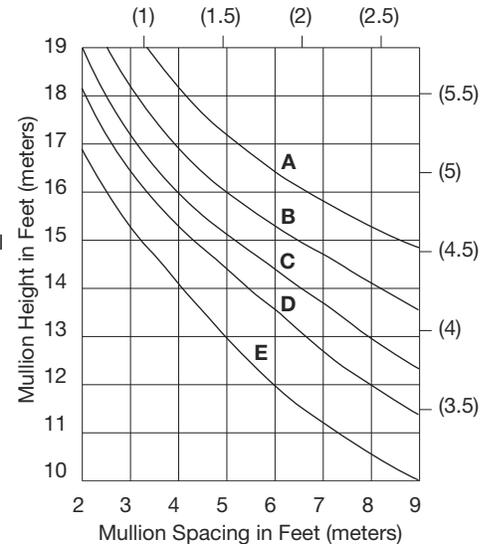


**FF736/RF800  
With 1/4" x 5" Steel**

**FF736/RF800**  
 $I = 7.427 (309.14 \times 10^4)$   
 $S = 2.449 (40.10 \times 10^3)$

**1/4" x 5" Steel Bar**  
 $I = 2.604 (108.39 \times 10^4)$   
 $S = 1.302 (21.34 \times 10^3)$

$IAL + STL = 14.797$   
 $(623.46 \times 10^4)$



## Deadload Charts

**OS-2 Systems**  
 • Series OS600  
 • Series OS600SG

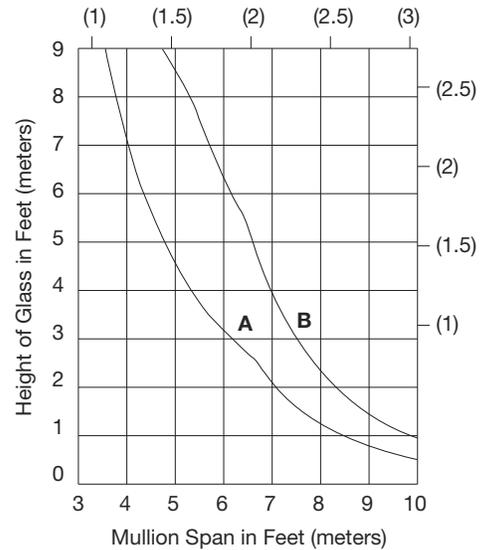
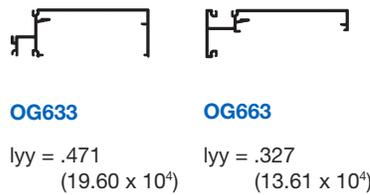
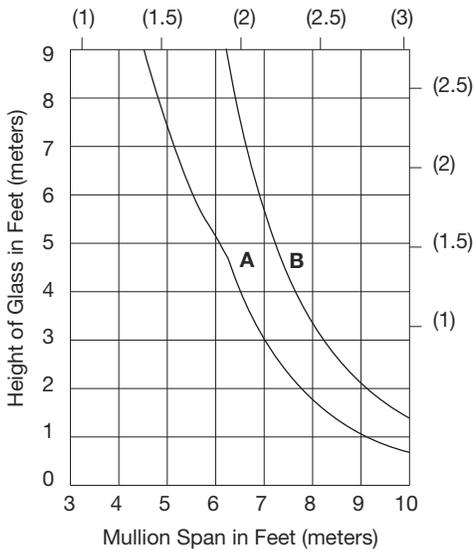
### INTERMEDIATE HORIZONTAL MULLIONS FOR 1/4" (6) OR 3/8" (10) GLAZING

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>) for 1/4" (6) glass.

Glass shall rest on two setting blocks located at:

CURVES **A** : 1/4 points

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



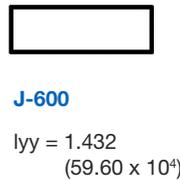
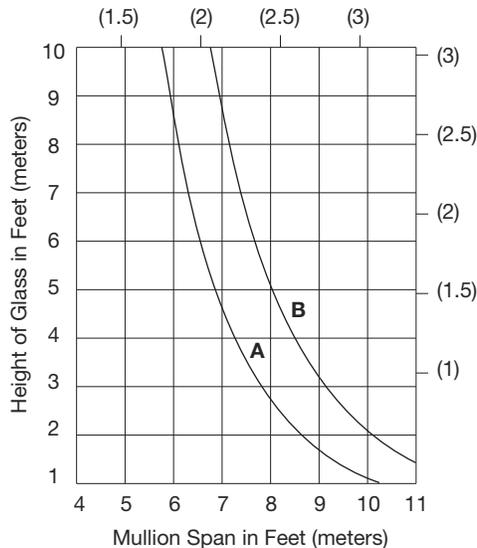
### DOOR HEADER

Deadload chart is based on 1/16" (1.6) maximum allowable deflection at the center point of the header and on a glass weight of 3.25 p.s.f. (15.87 Kg/m<sup>2</sup>) for 1/4" (6) glass.

Glass shall rest on two setting blocks located at:

CURVES **A** : 1/4 points

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



# WINDOW WALLS

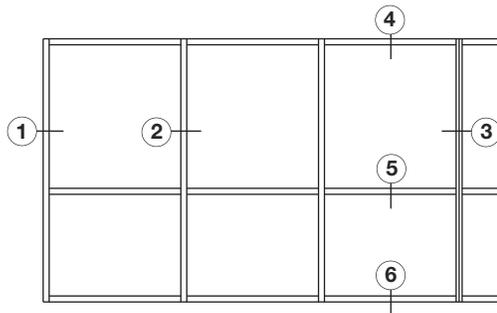
## Typical Details

### OS-2 Systems • Series OS601

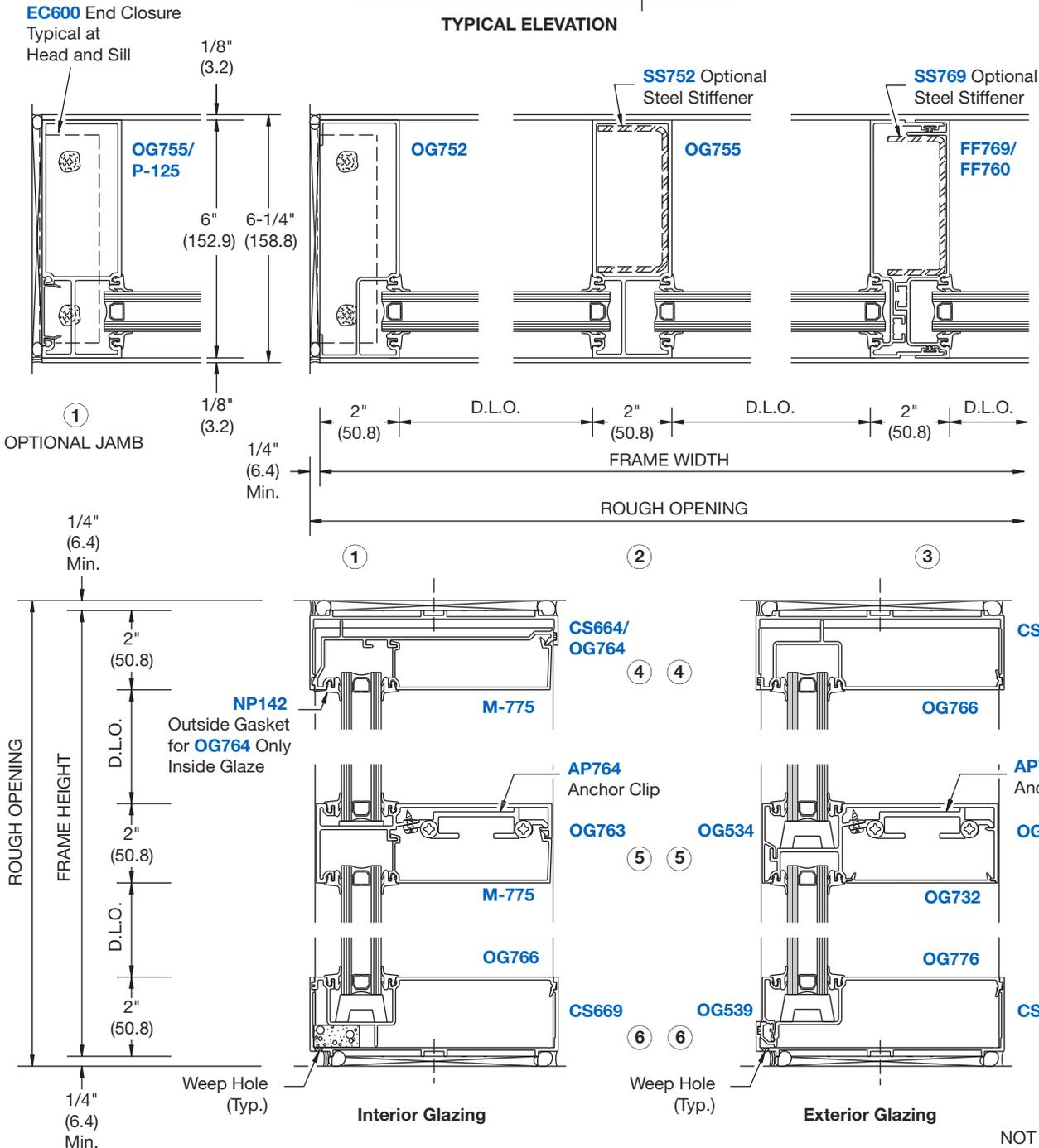
#### FOR 1" (25) GLAZING

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

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)



TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Typical Details

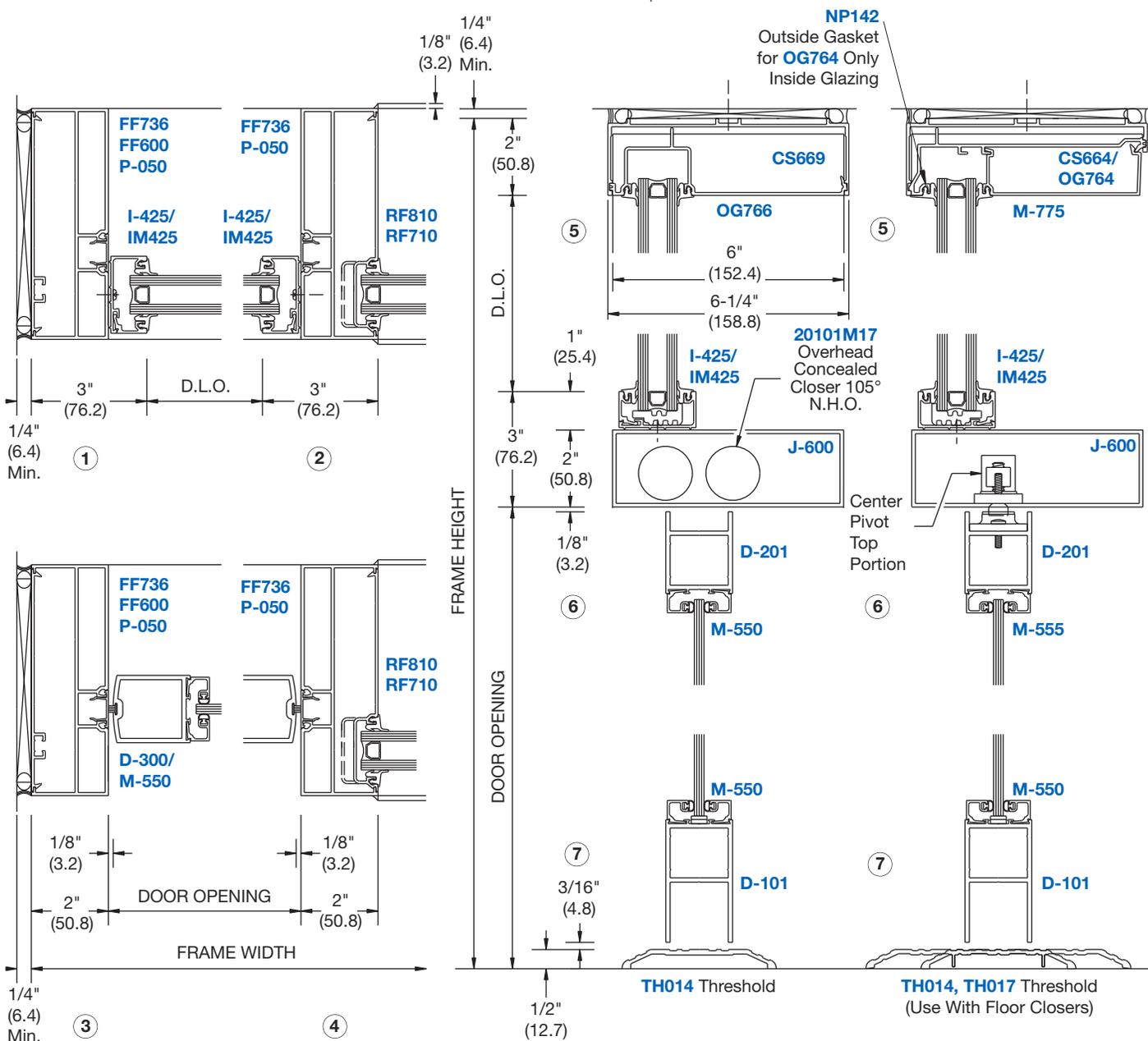
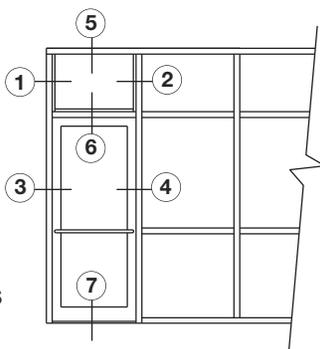
### OS-2 Systems • Series OS601

#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)

CENTER HUNG DOORS



NOT TO SCALE

# WINDOW WALLS

## Typical Details

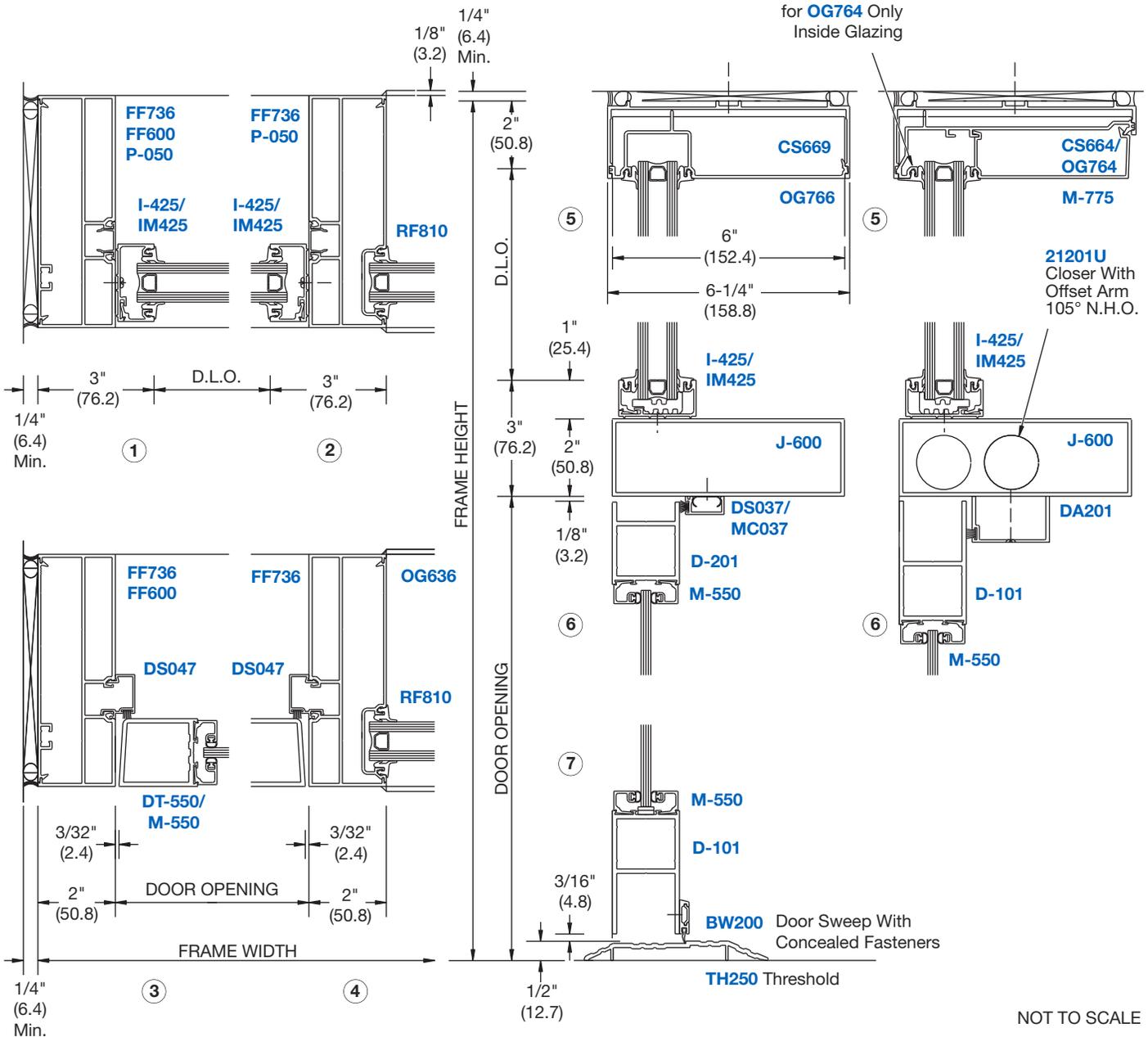
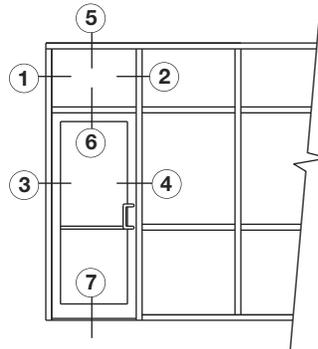
### OS-2 Systems • Series OS601

#### DOOR FRAMING

**NOTE:** Doors are available in stock to accommodate 36" x 84" (914 x 2134) and 72" x 84" (1829 x 2134) door openings. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)

#### OFFSET HUNG DOORS



NOT TO SCALE

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

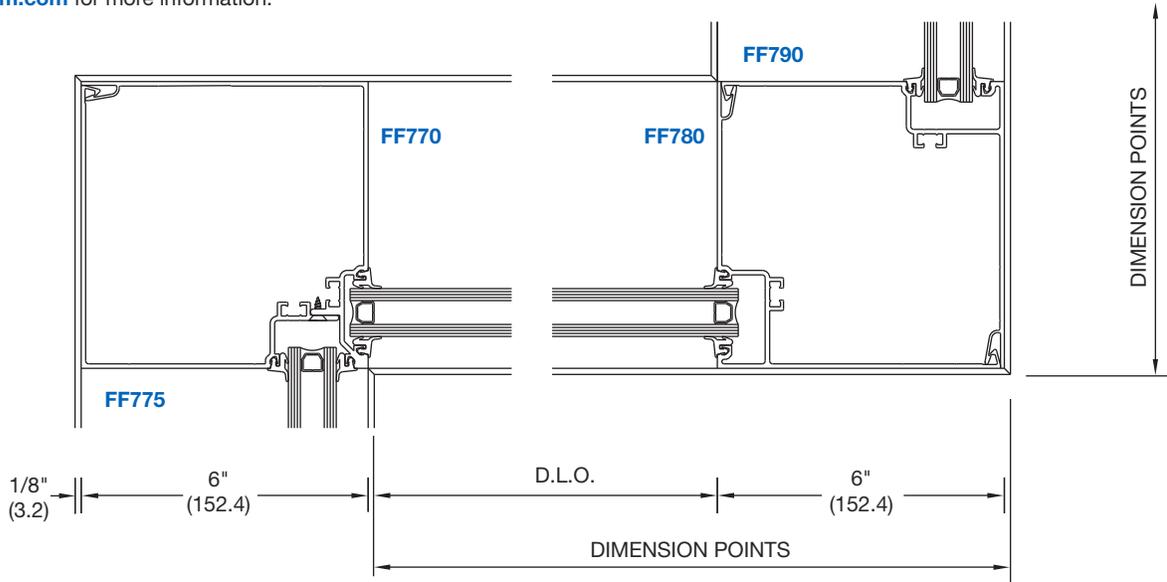
**Typical Details**

**OS-2 Systems**  
 • Series OS601

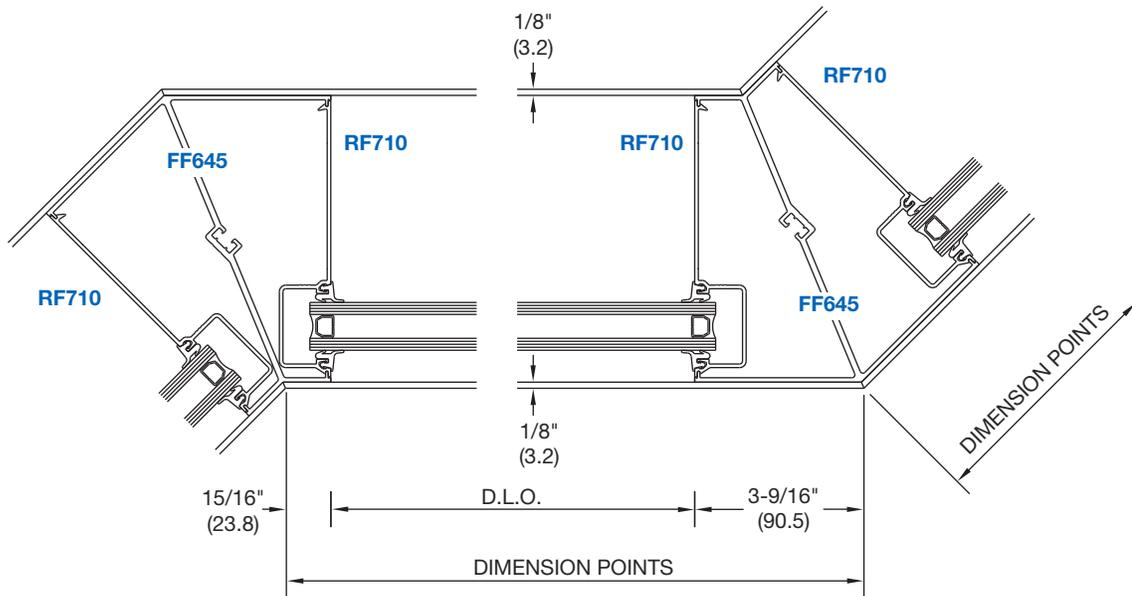
**VERTICAL CORNER CONDITIONS  
 FOR 1" (25) GLAZING**

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

**90 DEGREE CORNERS**



**135 DEGREE CORNERS**



NOT TO SCALE

# WINDOW WALLS

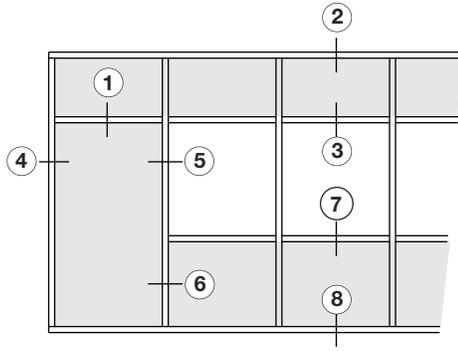
## Typical Details

### TRANSITION GLAZING FOR 1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING

### OS-2 Systems • Series OS601

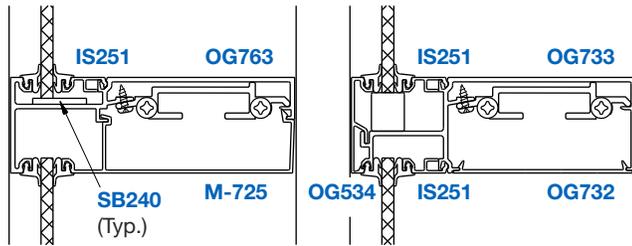
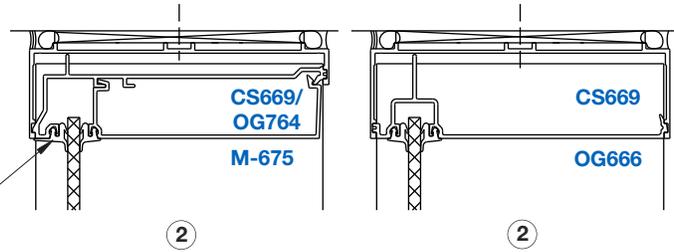
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.

**NOTE:** NP225 Glazing Gaskets are used on both sides of glass, except at OG764 Head Insert. (Typical)



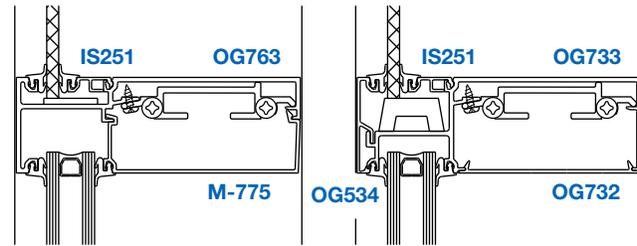
TYPICAL ELEVATION

NP142  
Outside Gasket  
for OG764 only



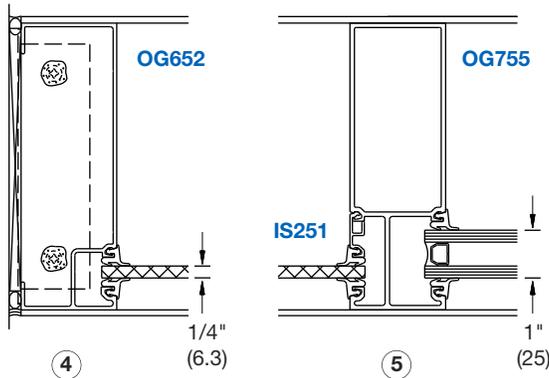
Interior Glazing

Exterior Glazing



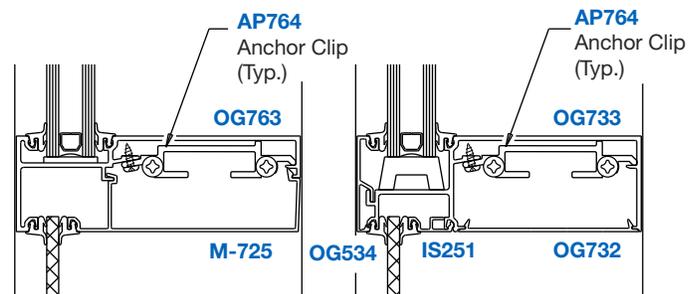
Interior Glazing

Exterior Glazing



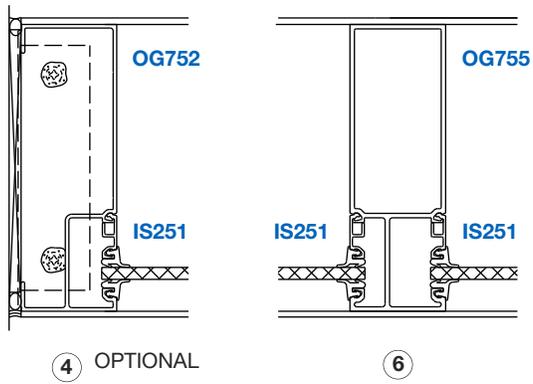
1/4" (6.3)

1" (25)



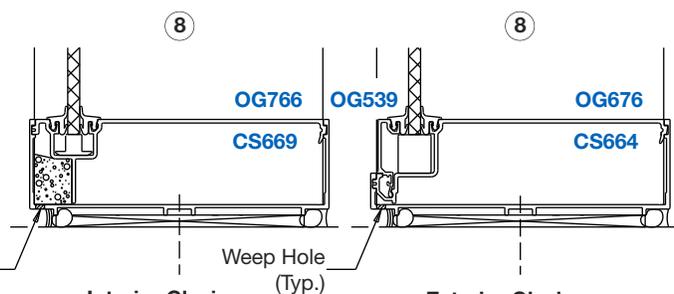
7

7



4 OPTIONAL

6



8

8

Weep Hole (Typ.)

Weep Hole (Typ.)

Interior Glazing

Exterior Glazing

NOT TO SCALE

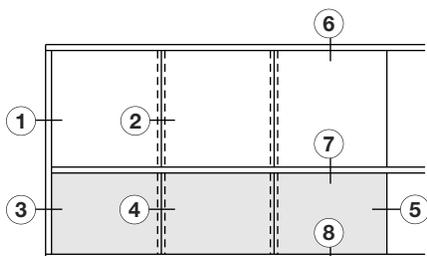
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

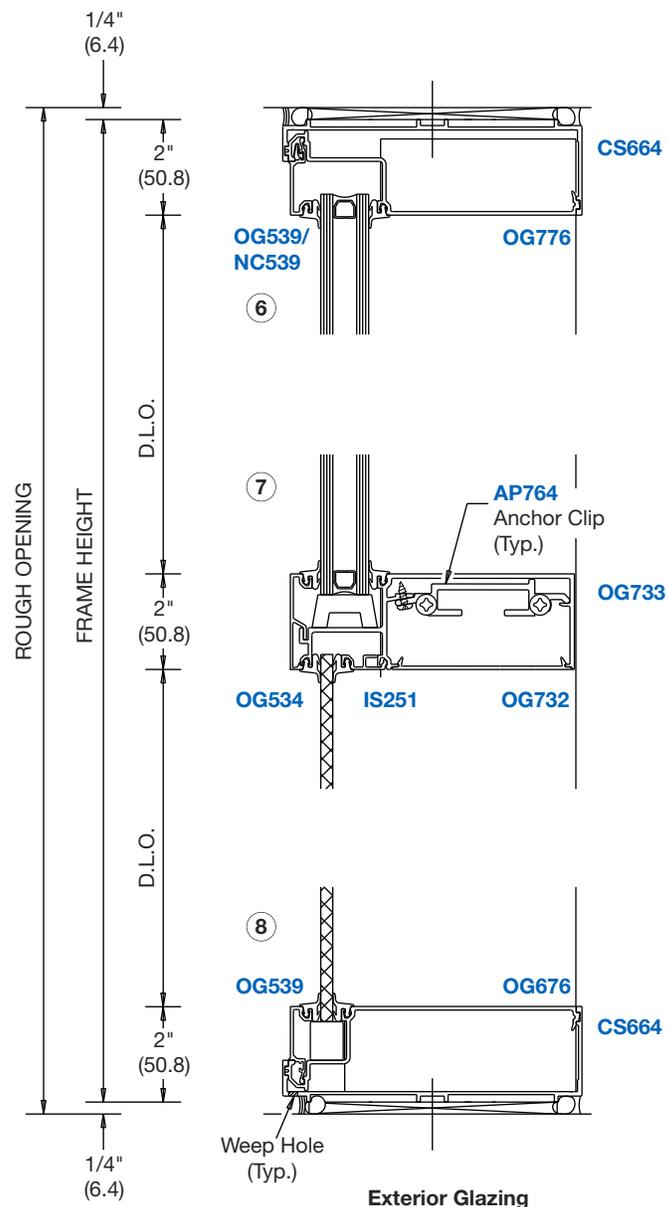
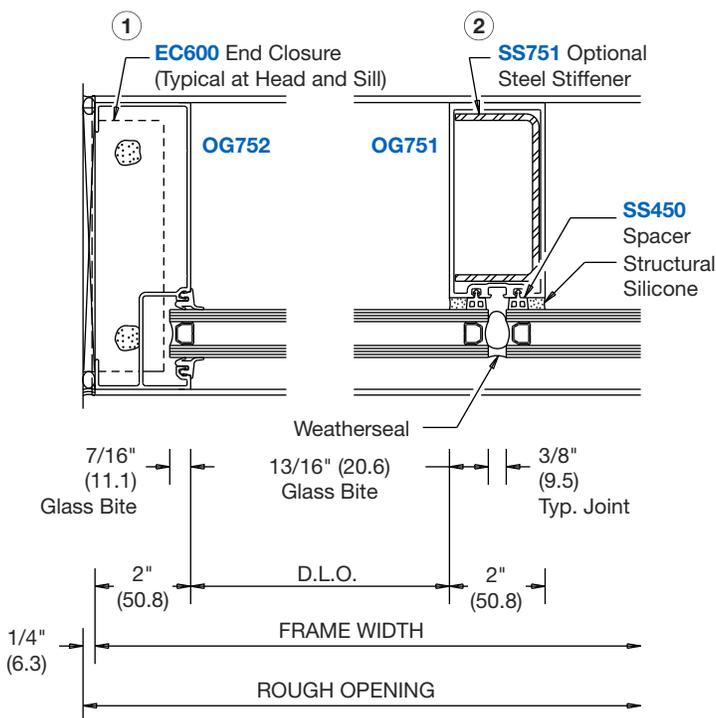
**OS-2 Systems**  
 • Series OS601SG

**STRUCTURAL SILICONE GLAZING**  
**1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING**

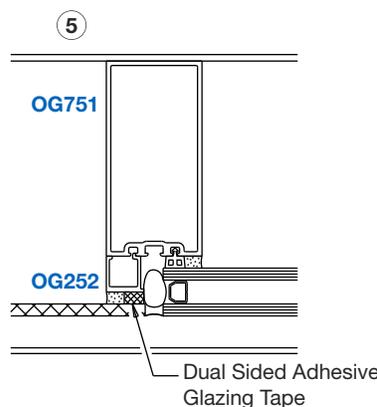
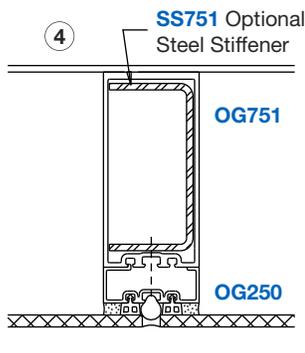
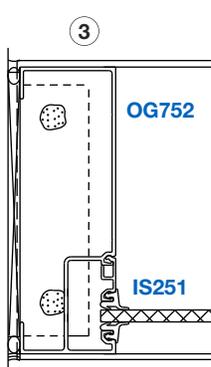
**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Visit [usalum.com](http://usalum.com) for more information.



**TYPICAL ELEVATION**



**Exterior Glazing**



NOT TO SCALE

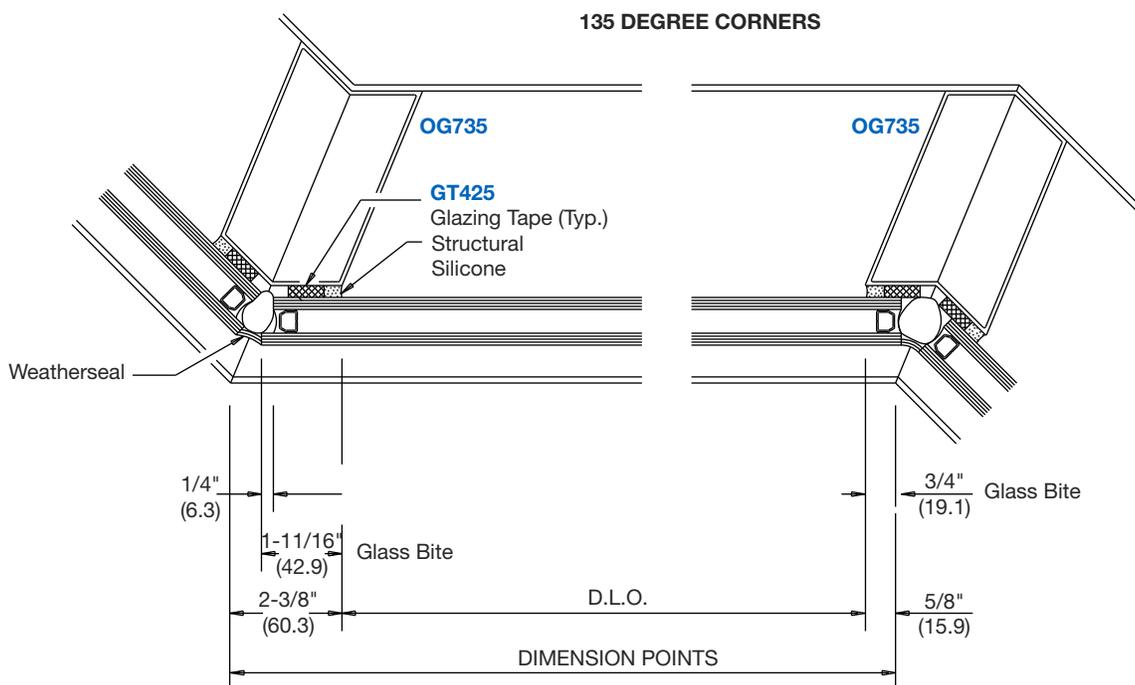
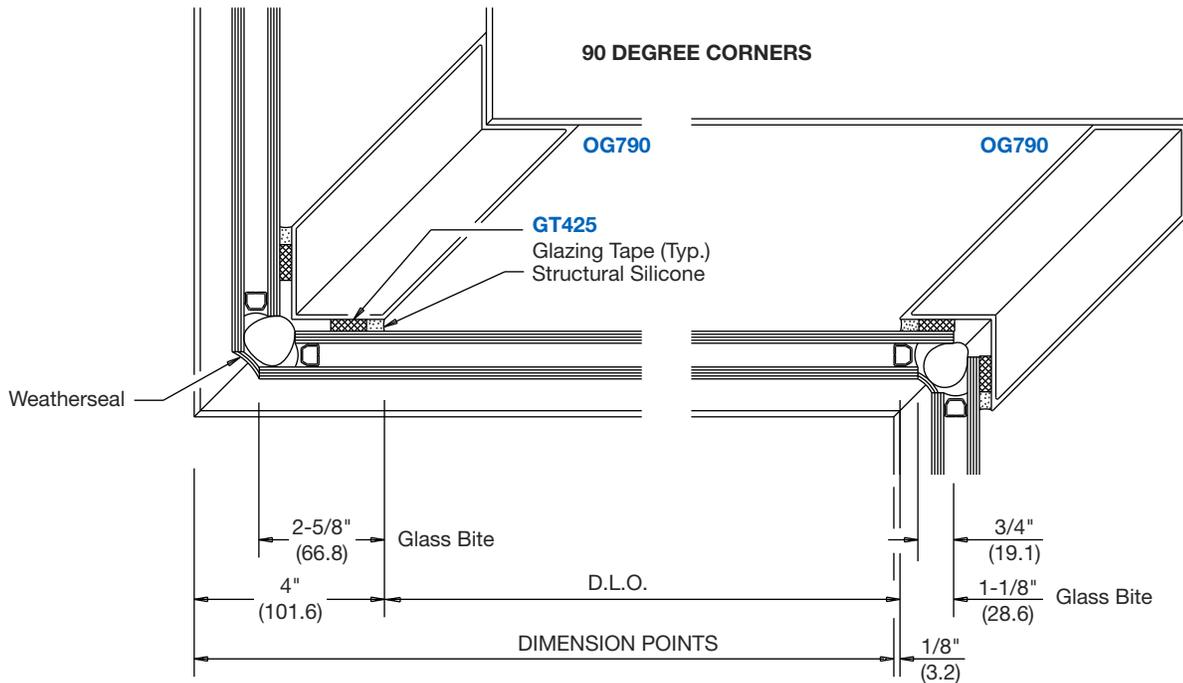
# WINDOW WALLS

## Typical Details

**OS-2 Systems**  
• Series OS601SG

### STRUCTURAL SILICONE GLAZING CORNER CONDITIONS FOR 1" (25) GLAZING

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



NOT TO SCALE

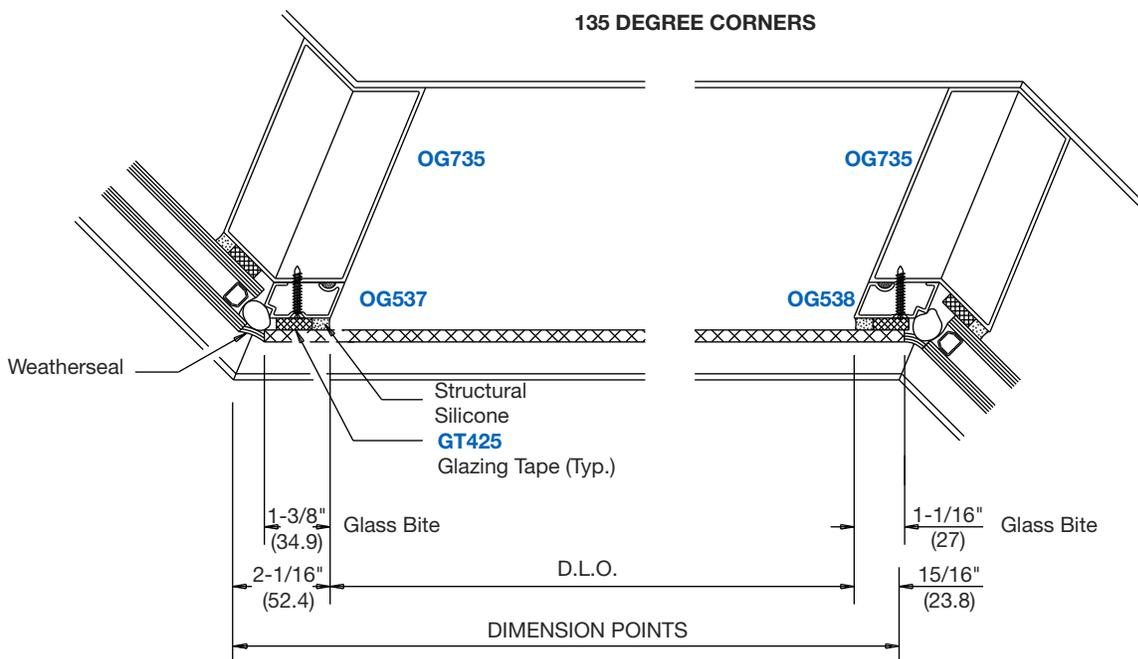
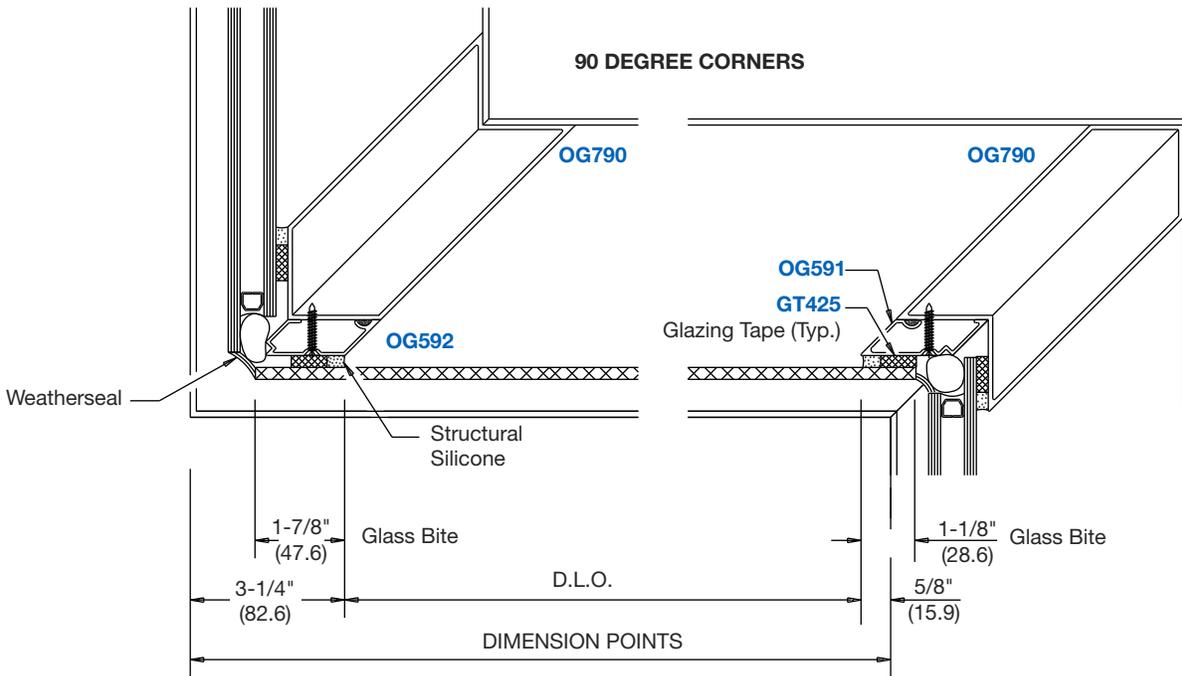
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**OS-2 Systems**  
 • Series OS601SG

**STRUCTURAL SILICONE GLAZING  
 TRANSITION GLAZING - CORNER CONDITIONS  
 FOR 1" (25) TO 1/4" (6) OR 3/8" (10) GLAZING**

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



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Windload Charts

### FOR 1" (25) GLAZING

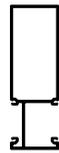
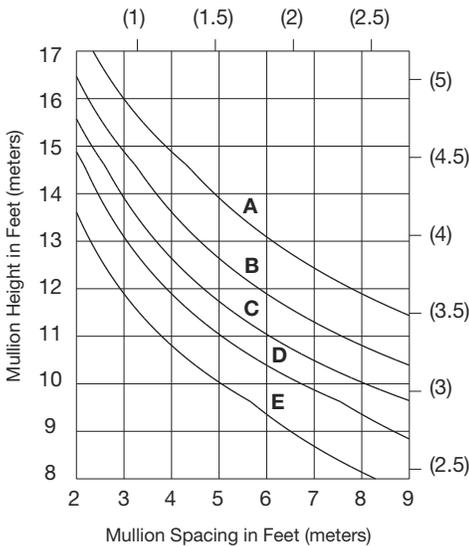
## OS-2 Systems

- Series OS601
- Series OS601SG

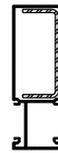
Deflection criteria to be in accordance with AAMA TIR-A11 - L/175 or L/240 + 1/4" (6.4 mm) for spans greater than 13'-6" (4.1 m) but less than 40'-0" (12.2 m). Codes and specifications may vary. No single lite of glass shall deflect more than 3/4" (19 mm). Glass is not considered as contributing to resistance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

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

### CAPTURED VERTICAL MULLIONS



**OG755**

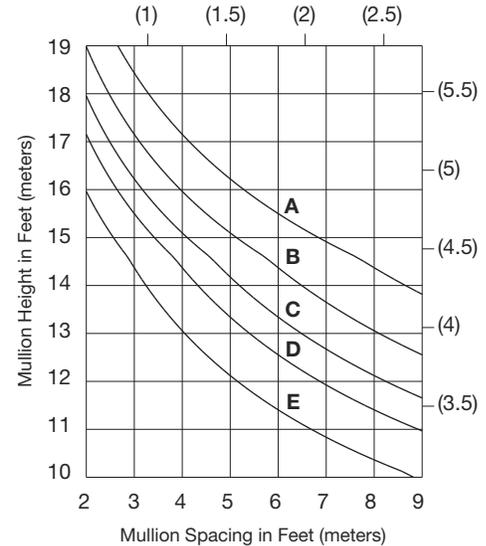


**OG755**  
With **SS755**

**OG755**  
I = 6.624 (275.71 x 10<sup>4</sup>)  
S = 2.130 (34.90 x 10<sup>3</sup>)

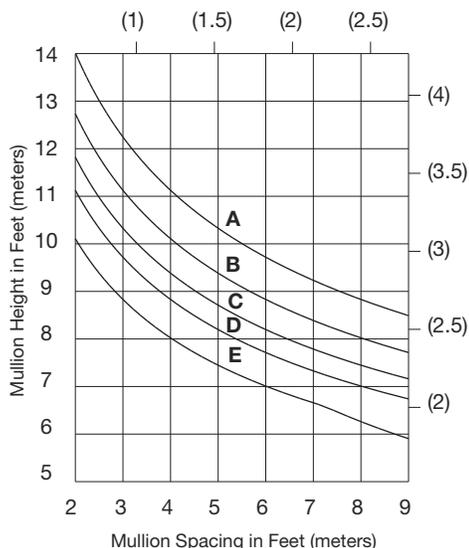
**SS755** Steel Stiffener  
I = 1.745 (72.63 x 10<sup>4</sup>)  
S = .947 (15.52 x 10<sup>3</sup>)

I<sub>AL</sub> + S<sub>TL</sub> = 11.684  
(486.33 x 10<sup>4</sup>)



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

### STRUCTURAL GLAZED VERTICAL MULLIONS



**OG751**

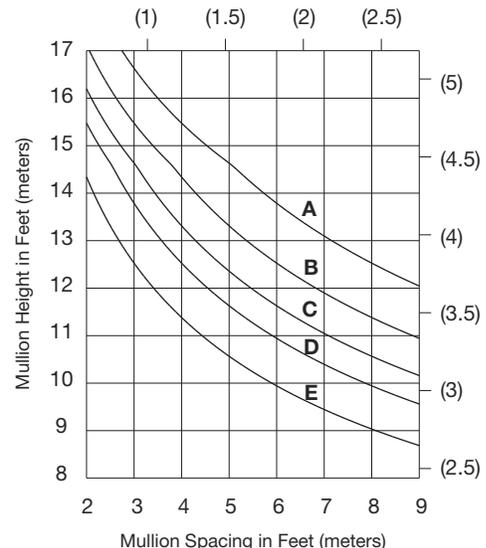


**OG751**  
With **SS751**

**OG751**  
I = 2.711 (112.84 x 10<sup>4</sup>)  
S = 1.238 (20.29 x 10<sup>3</sup>)

**SS751** Steel Stiffener  
I = 1.641 (68.30 x 10<sup>4</sup>)  
S = .938 (15.37 x 10<sup>3</sup>)

I<sub>AL</sub> + S<sub>TL</sub> = 7.740  
(310.92 x 10<sup>4</sup>)



**NOTE:** See page 50-C3 for Structural Silicone Chart

## Windload Charts

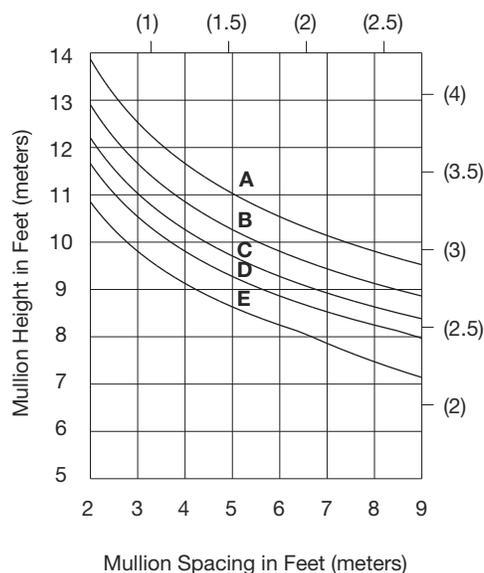
### OS-2 Systems

- Series OS601
- Series OS601SG

### VERTICAL MULLIONS FOR 1" (25) GLAZING

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

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

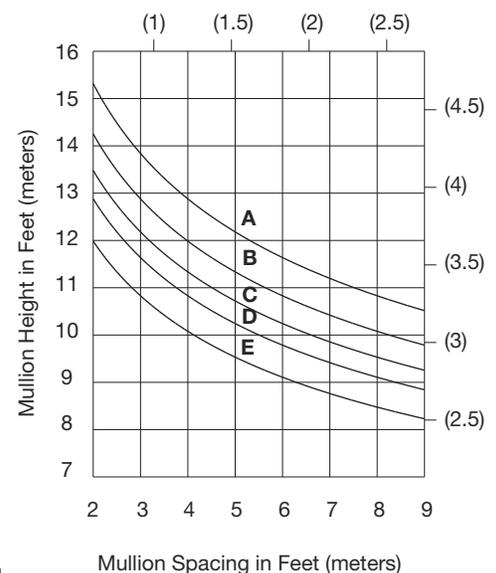


**FT760/FT769**  
**FF760/FF769**

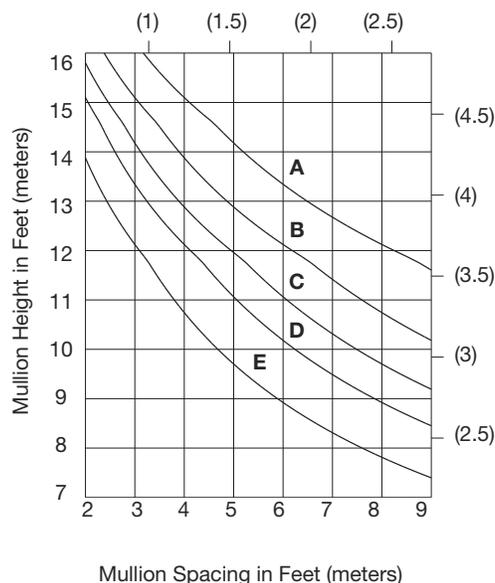
**FF760/FF769**  
I = 8.346 (347.39 x 10<sup>4</sup>)  
S = 2.587 (42.39 x 10<sup>3</sup>)

**SS769 Steel Stiffener**  
I = 1.403 (58.40 x 10<sup>4</sup>)  
S = .802 (13.14 x 10<sup>3</sup>)

IAL + STL = 12.415  
(516.74 x 10<sup>4</sup>)



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

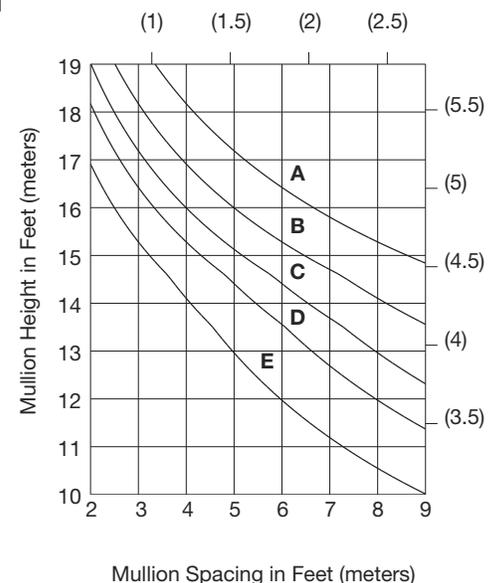


**FF736/RX810**  
**FF736/RF810**  
with 1/4" x 5" Steel

**FF736/RF810**  
I = 7.175 (298.65 x 10<sup>4</sup>)  
S = 2.364 (38.74 x 10<sup>3</sup>)

1/4" x 5" Steel Bar  
I = 2.604 (108.39 x 10<sup>4</sup>)  
S = 1.302 (21.34 x 10<sup>3</sup>)

IAL + STL = 14.727  
(620.81 x 10<sup>4</sup>)



# WINDOW WALLS

## Deadload Charts

### INTERMEDIATE HORIZONTAL MULLIONS FOR 1" (25) GLAZING

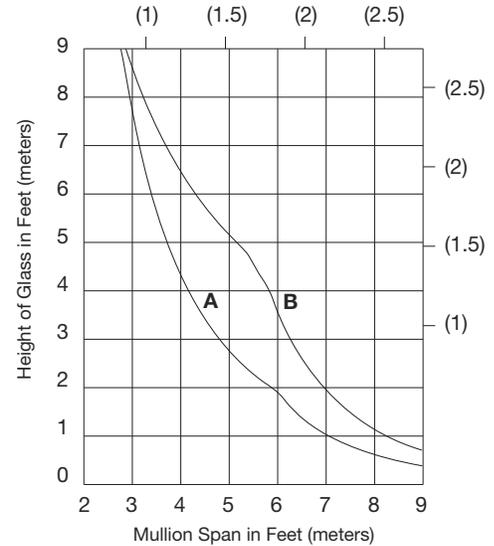
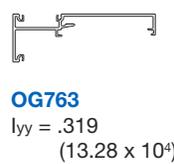
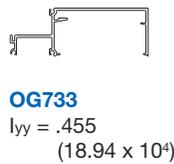
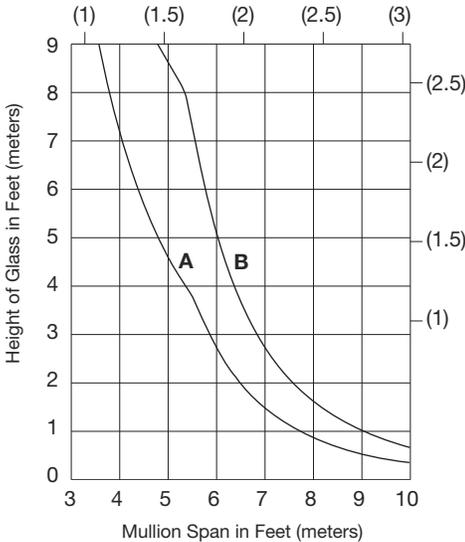
**OS-2 Systems**  
 • Series OS601  
 • Series OS601SG

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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



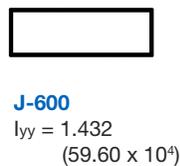
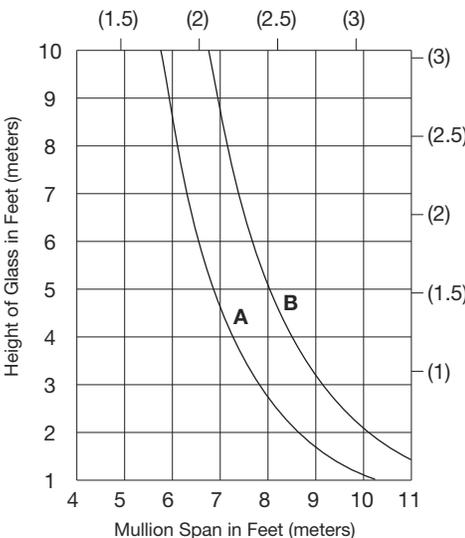
### DOOR HEADER

Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and on a glass weight of 6.5 p.s.f. (31.74 Kg/m<sup>2</sup>) for 1" (25) glass.

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points

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



# WINDOW WALLS

## Structural Silicone Charts

### OS-2 Systems

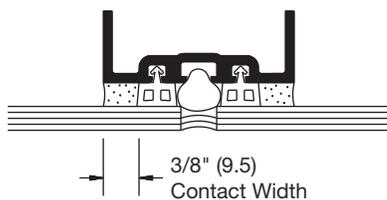
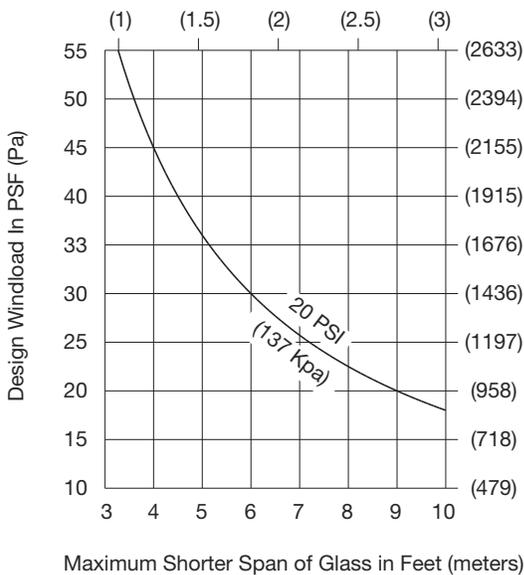
- Series OS175SG
- Series OS450SG
- Series OS451SG
- Series OS600SG
- Series OS601SG

For structural silicone glazing, the stress on the silicone must not exceed 20 psi (137 Kpa) for a 6:1 safety factor.

Series OS175SG, OS450SG, OS451SG, OG600SG, and OS601SG offer contact width of 3/8" (9.5).

**NOTE:** The maximum shorter span of glass may be the width or the height dimension.  
 EG. for 5' x 7' (1.52 m x 2.13 m) check 5' (1.52 m)  
 for 7' x 5' (2.13 m x 1.52 m) check 5' (1.52 m)

THESE LIMITATIONS ARE RELATED ONLY TO THE SILICONE JOINT CAPABILITY.  
 ALUMINUM MEMBERS SHOULD ALSO BE CHECKED FOR WINDLOAD AND DEADLOAD.



Project: Corporate Center, Las Vegas, NV

# WINDOW WALLS

## Accessories

### CRL 95C SILICONE BUILDING SEALANT

- **Excellent Primerless Adhesion to Most Common Construction Substrates**
- **± 50% Joint Width Movement**
- **AAMA Approved**
- **Approved for the Florida Hurricane Impact Glazing Code**
- **20 Year Limited Warranty**

Get Spec. Data for all Sealants at [crlaurence.com](http://crlaurence.com)



10.3 Fl. Oz. (305 ml);  
30 Cartridges Per Case;  
1440 Cartridges Per Pallet

CRL 95C Silicone is a one-part, medium modulus, neutral cure, 100% silicone formulation that cures to a durable and flexible silicone rubber building joint seal. It can accommodate ± 50% joint movement in properly designed joints.

**NOTE:** CRL 95C should not be used for structural glazing; sealing horizontal decks, patios, driveways or terrace joints where abrasion or physical abuse is encountered; sealing submerged joints; or for exterior or interior sealing below the waterline in marine applications.

PART NO.	COLOR
95CBL	Black
95CDBRZ	Dark Bronze
95CGRY	Gray
95CL	Limestone
95CW	Precast White
95CWHT	White

Minimum order: 1 each. All cartridge sealants can be combined for quantity pricing.

### DOW CORNING® 795 SILICONE BUILDING SEALANT

- **± 50% Joint Width Movement**
- **Medium Modulus Building Sealant for Expansion Joints**
- **Structural and Non-Structural Glazing of Glass, Metals, and Plastics**



10.3 Fl. Oz. (305 ml);  
12 Cartridges Per Case;  
1296 Cartridges Per Pallet

Dow Corning® 795 is a one-part, medium modulus, neutral cure silicone formulation. Dow Corning® 795 cures to a durable and flexible silicone rubber building joint seal, and can accommodate ± 50% joint movement in a properly designed joint.

**NOTE:** Should not be applied to building materials that bleed oils, plasticizers or solvents, or in totally confined spaces. Do not apply to frost-laden or wet surfaces, or to surfaces that are in direct contact with food. Check cartridge label and Specification Data Sheet for additional limitations.

PART NO.	COLOR
795BL	Black
795BRZ	Bronze
795GRY	Gray
795L	Limestone
795W	White

Minimum order: 1 each. All cartridge sealants can be combined for quantity pricing.

### DOW CORNING® 995 SILICONE STRUCTURAL ADHESIVE

- **Designed Specifically for Structural and Protective Glazing**
- **Self-Priming to Most Common Building Substrates, Including Most Fluoropolymer-Based Paints**



10.3 Fl. Oz. (305 ml);  
12 Cartridges Per Case;  
1296 Cartridges Per Pallet

Dow Corning® 995 is a one-component, self-priming, shelf stable, neutral cure, elastomeric adhesive specifically formulated for silicone structural glazing.

**NOTE:** Structural glazing applications for Dow Corning® 995 must be reviewed by the Technical Service staff, Dow Corning Corporation, Construction Sealants Technical Service and Development. Check cartridge label and Specification Data Sheet for additional limitations.

PART NO.	COLOR
995BL	Black
995W	White

Minimum order: 1 each. All cartridge sealants can be combined for quantity pricing.

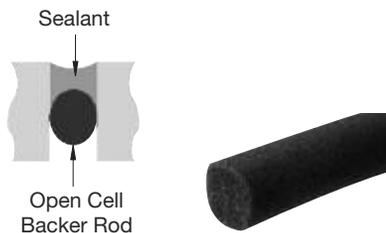
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Accessories

### OPEN CELL BACKER ROD

- Controls Depth of Sealant and Acts as a Bond Breaker
- Has No Skin, So It's Non-Gassing
- Soft So it Compresses Easily



Open Cell Backer Rod is a soft, round, and easily compressible open cell polyurethane foam. Dynamic joint movement does not adversely affect Open Cell Backer Rod, and its inherent flexibility applies itself to joint variations very easily.

#### 100 FOOT (30.5 M) ROLLS

PART NO.	ROD DIAMETER	ROLL LENGTH
B0CBR58C	5/8" (16)	100' (30.5 m)
B0CBR78C	7/8" (22)	100' (30.5 m)
B0CBR118C	1-1/8" (28)	100' (30.5 m)
B0CBR112C	1-1/2" (38)	100' (30.5 m)

Minimum order: 1 case. Sizes can be combined for quantity pricing.

#### BULK CASES

PART NO.	ROD DIAMETER	QTY/CASE
B0CBR58	5/8" (16)	1400' (426 m)
B0CBR78	7/8" (22)	900' (274 m)
B0CBR118	1-1/8" (28)	350' (107 m)
B0CBR112	1-1/2" (38)	200' (61 m)
B0CBR2	2" (51)	100' (30.5 m)

Minimum order: 1 case. Sizes can be combined for quantity pricing.

## Backer Rods



**Part No. SBRR**  
Roller Tool will not tear "skin" of Backer Rod.

### CLOSED CELL BACKER ROD

- Compatible With All Cold-Applied Sealants
- Available in Nine Widths

Closed Cell Backer Rod is a round, flexible, closed cell polyethylene foam with an exterior "skin" used as a backing and thickness control device for elastomeric and other cold-applied sealants.



#### 100 FOOT (30.5 M) ROLLS

PART NO.	ROD DIAMETER	ROLL LENGTH
EF14C	1/4" (6)	100' (30.5 m)
EF38C	3/8" (10)	100' (30.5 m)
EF12C	1/2" (12)	100' (30.5 m)
EF58C	5/8" (16)	100' (30.5 m)
EF34C	3/4" (19)	100' (30.5 m)
EF1C	1" (25)	100' (30.5 m)
EF114C	1-1/4" (32)	100' (30.5 m)
EF112C*	1-1/2" (38)	102' (31.1 m)
EF2C*	2" (51)	102' (31.1 m)

Minimum order: 1 roll. Sizes can be combined for quantity pricing.  
\* This size is shipped in 84" (2.13 m) cut lengths.

#### BULK CASES

PART NO.	ROD DIAMETER	QTY/CASE
EF14B	1/4" (6)	6400' (1951 m)
EF38B	3/8" (10)	3600' (1097 m)
EF12B	1/2" (12)	2500' (762 m)
EF58B	5/8" (16)	1550' (472 m)
EF34B	3/4" (19)	1100' (335 m)
EF1B	1" (25)	550' (167 m)
EF114B	1-1/4" (32)	400' (122 m)
EF112B*	1-1/2" (38)	552' (168 m)
EF2B*	2" (51)	360' (110 m)

Minimum order: 1 roll. Sizes can be combined for quantity pricing.  
\* This size is shipped in 84" (2.13 m) cut lengths.



**Part No. T607CU605**  
Backer Rod Insert Tool Set. Helpful for proper installation.

### SOF® ROD

- Non-Gassing if Damaged
- No Moisture Absorption

Sof® Rod is a state-of-the-art sealant backing material combining the best properties of both open and closed cell backer rods in a single, trouble-free product. Sof® Rod is a continuous length of extruded polyolefin foam made with a non-absorbent outer skin and a highly resilient interior network of open and closed cells. Sof® Rod will not out-gas if ruptured.

#### 100 FOOT (30.5 M) ROLLS

PART NO.	ROD DIAMETER	ROLL LENGTH
SR38C	3/8" (10)	100' (30.5 m)
SR58C	5/8" (16)	100' (30.5 m)
SR78C	7/8" (22)	100' (30.5 m)
SR118C	1-1/8" (28)	100' (30.5 m)
SR112C**	1-1/2" (38)	102' (31.1 m)
SR2C**	2" (51)	102' (31.1 m)

Minimum order: 1 roll. \*\*Minimum order: 1 box of seventeen 6-foot lengths. Sizes can be combined for quantity pricing.

#### BULK CASES

PART NO.	ROD DIAMETER	QTY/CASE
SR38B	3/8" (10)	3600' (1097 m)
SR58B	5/8" (16)	1550' (472 m)
SR78B	7/8" (22)	850' (259 m)
SR118B	1-1/8" (28)	500' (152 m)
SR112B*	1-1/2" (38)	552' (167 m)
SR2B*	2" (51)	360' (110 m)

Minimum order: 1 roll. \*Minimum order: 1 box of 6-foot lengths. Sizes can be combined for quantity pricing.



# WINDOW WALLS

## Accessories

## Glazing Gaskets

### GLAZING GASKET CHART FOR WINDOW WALL PRODUCTS

SYSTEM SERIES	GLASS THICKNESS	OUTSIDE GLAZING		INSIDE GLAZING		POCKET WIDTH	ADAPTOR
		EXTERIOR	INTERIOR	EXTERIOR	INTERIOR		
OS175 OS450 OS600	1/4" (6)	NP225	NP225	NP225	NP225	5/8" (15.9)	
OS451 OS601	1" (25)			NP142 at Head Only		1-3/8" (34.9)	
	1/4" (6)					5/8" (15.9)	IS251
OS175SG OS450SG OS600SG	1/4" (6)	Structural Silicone Weatherseal	SP450 and Silicone				
OS451SG OS601SG	1" (25)						
BG450	1/4" (6)	NP225	NP225	NP225	NP225	5/8" (15.9)	
BG525 BT525	1" (25)					1-3/8" (34.9)	
BG450	1/4" (6)	Structural Silicone Weatherseal	SP450 and Silicone	Structural Silicone Weatherseal	SP450 and Silicone		
BG525 BT525	1" (25)						
BG520	1/4" (6)	NP225	NP225	NP225	NP225	5/8" (15.9)	
BG600 BT600	1" (25)					1-3/8" (34.9)	
BG520	1/4" (6)	Structural Silicone Weatherseal	SP450 and Silicone	Structural Silicone Weatherseal	SP450 and Silicone		
BG600 BT600	1" (25)						



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

Minimum order: 1 roll.



PART NO.	COLOR	TYPE	ROLL LENGTH
SP450	Black	Spacer Structural Glaze	250' (76.2 m)

Minimum order: 1 roll.



PART NO.	COLOR	TYPE	ROLL LENGTH
NP142	Black	Exterior For OG564	200' (61 m)

Minimum order: 1 roll.

### Adjustable Multi-Cutter Tool

- Makes Precise Straight or Miter Cuts
- Adjustable Angle Guide Block

The Adjustable Multi-Cutter is great for cutting glazing vinyl and channel, rubber gaskets, PVC strips, trim molding, and weatherstrip. Simply adjust the guide with the desired angle line on the tool's platform and you have a perfect miter cut every time. Platform is marked at 135, 120, 105, 90, 75, 60, and 45 degrees. The Multi-Cutter is made of high quality steel with vinyl handgrips for comfort when cutting. Includes one blade.



PART NO. MC80N

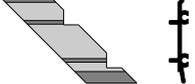
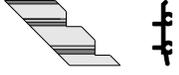
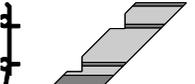
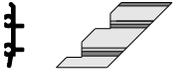
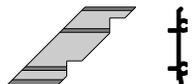
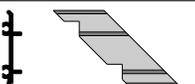
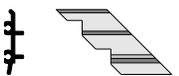
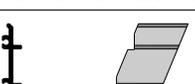
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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOW WALLS

## Accessories

## All OS-2 Systems

**NOTE:** Clips for 4-1/2" (114.3) Members at 90° Corners are Shown.  
Clips for 6" (152.4) Members at 90° Corners are Cut Similarly.

PART NO.	DETAIL/DESCRIPTION	PKG. QTY.	WHERE USED		PART NO.	DETAIL/DESCRIPTION	PKG. QTY.	WHERE USED	
			OS450SG	OS600SG				OS451SG	OS601SG
AP406L		4	●		AP506L		4	●	
AP606L	Left Anchor Clip Inside Corner 90° with Screws	4		●	AP706L	Left Anchor Clip Inside Corner 90° with Screws	4		●
AP406R		4	●		AP506R		4	●	
AP606R	Right Anchor Clip Inside Corner 90° with Screws	4		●	AP706R	Right Anchor Clip Inside Corner 90° with Screws	4		●
AP407L		4	●		AP507L		4	●	
AP607L	Left Anchor Clip Outside Corner 90° with Screws	4		●	AP707L	Left Anchor Clip Outside Corner 90° with Screws	4		●
AP407R		4	●		AP507R		4	●	
AP607R	Right Anchor Clip Outside Corner 90° with Screws	4		●	AP707R	Right Anchor Clip Outside Corner 90° with Screws	4		●
AP408L		4	●		AP508L		4	●	
AP608L	Left Anchor Clip Inside Corner 135° with Screws	4		●	AP708L	Left Anchor Clip Inside Corner 135° with Screws	4		●
AP408R		4	●		AP508R		4	●	
AP608R	Right Anchor Clip Inside Corner 135° with Screws	4		●	AP708R	Right Anchor Clip Inside Corner 135° with Screws	4		●
AP409L		4	●		AP509L		4	●	
AP609L	Left Anchor Clip Outside Corner 135° with Screws	4		●	AP709L	Left Anchor Clip Outside Corner 135° with Screws	4		●
AP409R		4	●		AP509R		4	●	
AP609R	Right Anchor Clip Outside Corner 135° with Screws	4		●	AP709R	Right Anchor Clip Outside Corner 135° with Screws	4		●
WD190	 Water Deflector Use Two Per Corner	8	●	●	WD290	 Water Deflector Use Two Per Corner	8	●	●

# WINDOW WALLS

## Accessories

## All OS-2 Systems

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED										
				OS175	OS175SG	OS450	OS450SG	OS451	OS451SG	OS600	OS600SG	OS601	OS601SG	
SB141		Setting Block for Interior Glazing	100			●					●			
SB142		Setting Block for Exterior Glazing	100	●	●	●	●				●	●		
SB100		Setting Block for Interior Glazing. Use at Sill Only	100			●					●			
SB240		Setting Block for Interior Glazing	100					●					●	
SB230		Setting Block for Exterior Glazing	100					●	●				●	●
UB335		Urethane Baffle for Interior Glazing Sill	100			●					●			
UB635		Urethane Baffle for Interior Glazing	100					●					●	
WB555		"W" Edge Block. Use at OG555 and OG755 Deep Pocket Only	50					●					●	
WB452		"W" Edge Block	50	●		●		●			●		●	
AP213		Anchor Clip	20	●	●									
AP463			20			●	●							
AP664			20								●	●		
AP563		Anchor Clip	20					●	●					
AP764			20										●	●
DJ210		Drill Jig	1			●	●	●	●					
DJ650			1								●	●	●	●
EC175		End Dam	20	●	●									
EC450			20			●	●	●	●					
EC600			20								●	●	●	●

# WINDOW WALLS

## Accessories

## All OS-2 Systems

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED									
				OS175	OS175SG	OS450	OS450SG	OS451	OS451SG	OS600	OS600SG	OS601	OS601SG
EC539		Splice End Cap for OG539	10		●		●		●		●		●
SV268	 SV268 SV568 SV668	Splice Sleeve for CS268	10	●									
SV568		Splice Sleeve for CS568	10			●		●					
SV668		Splice Sleeve for CS668	10							●		●	
SV264	 SV264 SV563 SV664	Splice Sleeve for CS264	10	●	●								
SV563		Splice Sleeve for CS563	10			●	●	●	●				
SV664		Splice Sleeve for CS664	10							●	●	●	●
WD160		Water Deflector for Shallow Pocket	50			●				●			
WD150		Water Deflector for Deep Pocket	50	●		●				●			
WD210		Water Deflector for Shallow Pocket	50					●				●	
WD200		Water Deflector for Deep Pocket	50					●				●	
WD270		Water Deflector for Deep Pocket. Use at OG555 and OG755 Only	50					●				●	
WD180		Water Deflector for OG451 and OG651	50				●				●		
WD280		Water Deflector for OG551 and OG751	50						●				●
RG700	 Patent No. D295,952	Twist-In Temporary Retainer for Structural Silicone Glazing	50		●		●		●		●		●

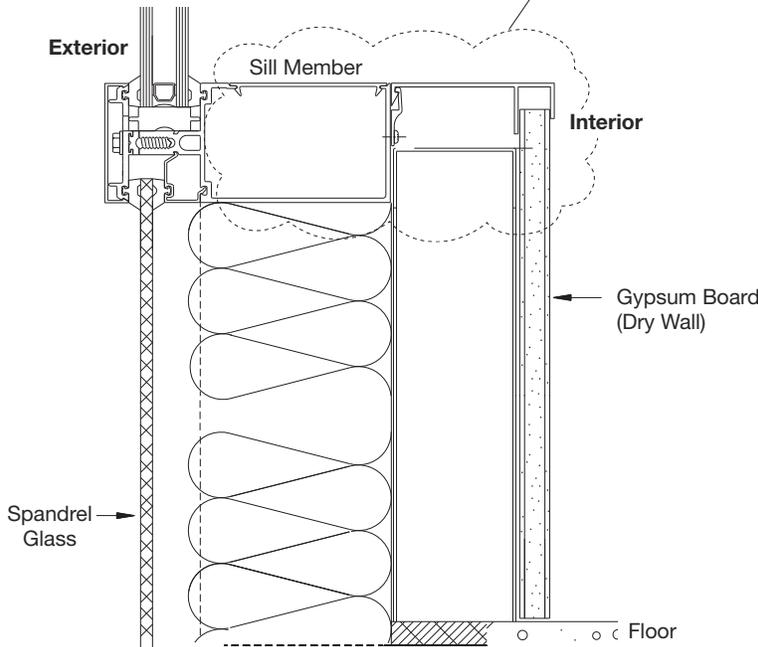
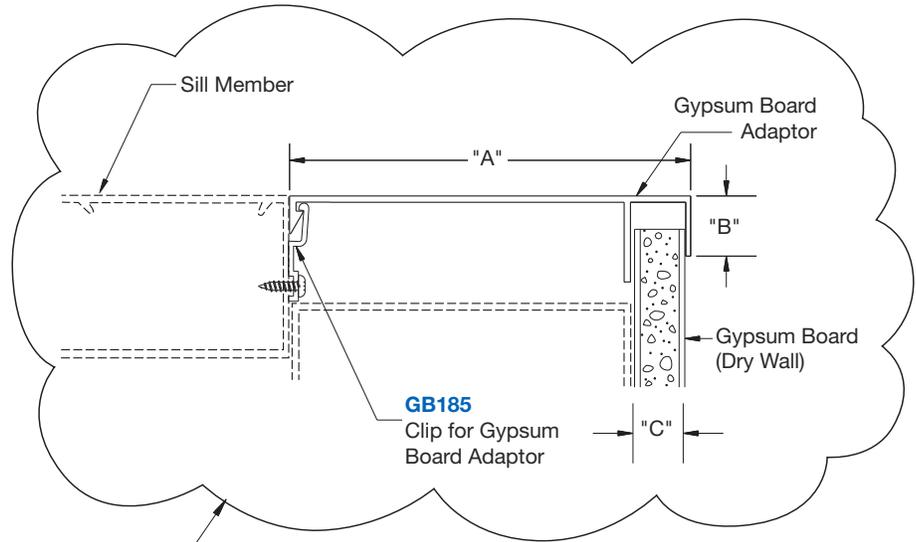
# WINDOW WALLS

## Typical Details

## Miscellaneous Framing

### GYPSUM BOARD ADAPTORS

Gypsum Board Adaptors provide a sill member featuring clip joinery, providing clean joints to curtain walls, storefronts, and other systems. Adaptors are available in an assortment of finishes, sizes, and shapes to adapt to many gypsum board (dry wall) conditions. Visit [usalum.com](http://usalum.com) for more information.



**NOTE:** Part numbers shown are available in 24' (7.3 m) stock lengths. Custom extrusions also available. Visit [usalum.com](http://usalum.com) for more information.

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PART NO.	DIMENSION "A"	DIMENSION "B"	DIMENSION "C"
<b>GB210</b>	2" (50.8)	3/4" (19.1)	5/8" (15.9)
<b>GB300</b>	3" (76.2)	3/4" (19.1)	5/8" (15.9)
<b>GB350</b>	3-1/2" (88.9)	3/4" (19.1)	5/8" (15.9)
<b>GB425</b>	4-1/4" (108)	3/4" (19.1)	5/8" (15.9)
<b>GB500</b>	5" (127)	3/4" (19.1)	5/8" (15.9)
<b>GB750</b>	7-1/2" (190.5)	3/4" (19.1)	5/8" (15.9)

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# D

## WINDOWS

- Series 7200/7300
  - Series 7400
  - Series 7500/7600
  - Series 8000/8100/8200
  - Accessory Hardware
- 

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Hall Hawk at The University of Hartford  
West Hartford, CT

U.S. Aluminum Windows are offered in a number of configurations to meet typical and specialized building conditions. Fixed and operable versions can be retrofit into existing openings or incorporated into window wall systems for new construction. Projected and casement type windows feature quality operating hardware for years of trouble-free service. Locking hardware options assure security, and integrated weatherstripping provides an airtight seal when closed. An array of architectural coatings and anodized finishes can be selected to provide windows that will complement the structure's aesthetic appeal. Accessories such as screens, mulling bars, subsills, head and jamb channels are available to complete the installation.

## SYSTEM

## PAGES

- **Series 7200/7300 Operable and Fixed.....01-D1 thru 15-D1**
- **Series 7400 Operable.....01-D2 thru 10-D2**
- **Series 7500 Concealed Vent .....01-D3 thru 11-D3**
- **Series 7600 Concealed Vent .....01-D4 thru 08-D4**
- **Series 8000/8100/8200 Single Hung, Fixed, and Horizontal Sliding .....01-D5 thru 09-D5**
- **Accessory Hardware .....10-D5 thru 12-D5**

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## Table of Contents

## Operable and Fixed Windows

- Series 7200
- Series 7300

### SECTION D1

### PAGE

SPECIFICATIONS .....02-D1 and 03-D1

SPECIAL FEATURES .....04-D1

TYPICAL DETAILS FIXED AND PROJECTED, 1" (25) GLASS .....05-D1 thru 07-D1

TYPICAL DETAILS WITH SERIES 3250 CURTAIN WALL 1" (25) GLASS .....08-D1

TYPICAL DETAILS WITH SERIES IT451 CENTER GLAZE STOREFRONT 1" (25) GLASS .....09-D1

TYPICAL DETAILS WITH ES350 WINDOW WALL 1" (25) GLASS .....10-D1

TYPICAL DETAILS FIXED AND PROJECTED, 1/4" (6) GLASS .....11-D1 thru 13-D1

OPTIONAL ACCESSORIES .....14-D1

HARDWARE SCHEDULE AND GLASS SIZE FORMULAS .....15-D1



Project: Los Angeles Valley College, Los Angeles, CA

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal

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## Specifications

## Operable and Fixed Windows

### SECTION 08 51 13 ALUMINUM WINDOWS

- Series 7200
- Series 7300

Drawings and specifications are based on the Series (*specify*) 7200 or 7300 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

- A. Furnish all necessary materials, labor, and equipment for the complete installation of aluminum windows as shown on the drawings and specified herein.
- B. Work Not Included: Structural support of the window system, interior closures, trim. (*Specifier list other exclusions*).

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

###### A. Test Units

1. Air, water, and structural test unit sizes and configuration shall conform to requirement set forth in ANSI/AAMA 101-93 or CSA-A440-98.

###### B. Test Procedures and Performance

###### 1. Standards:

- a. Windows shall conform to all requirements for the window type(s) referenced in ANSI/AAMA 101/I.S.2-97, or CSA-A440-98. In addition, the following specific performance requirements shall be met.

###### 2. Air Infiltration Test

- a. With window sash and ventilators closed and locked, test unit in accordance with ASTM E 283 at static air pressure difference of 6.24 or 75 Pa (1.5 psf).
- b. Air infiltration shall not exceed .10 CFM per foot or .25 m<sup>3</sup>/h-m of perimeter crack length.

###### 3. Water Infiltration Test

- a. With window sash and ventilators closed and locked, test unit in accordance with ASTM E 331 at static pressure difference of 12 psf.
- b. There shall be no uncontrolled water leakage.

###### 4. Uniform Load Structural Test

- a. With window sash and ventilators closed and locked, test unit in accordance with ASTM E 330 at a static pressure difference of (*specify per window system*) psf positive pressure and (*specify per window system*) or ASTM E330-97e1 at a static air pressure difference both positive and negative of 2000 Pa (41.6 psf) and a blow-out test of 5000 Pa (104 psf)
- b. At conclusion of test there shall be no glass breakage, permanent damage to fasteners, hardware parts, support arms or actuating mechanisms, nor any other damage which would cause the window to be inoperable.

###### 5. Condensation Resistance Test (crf)

- a. With window sash and ventilators closed and locked, test unit in accordance with AAMA 1503.
- b. Condensation Resistance Factor (crf) shall be not less than 56.

###### 6. Thermal Transmittance Test

- (Conductive U-value) in accordance with NFRC-100 and AAMA 1503.

###### 7. AAMA Ratings

- a. C-75 Series 7200 Operable Windows
  - b. C-90 Series 7200 Fixed Windows
  - c. HC-75 Series 7300 Operable and Fixed Windows
- Test Procedures:  
AAMA/WDMA/CSA 101/I.S.2/A 440-08 - Laboratory performance testing.  
AAMA 502-08 - Newly installed fenestration products.  
AAMA 511-08 - Installed fenestration products after 6 months.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA/CSA accredited laboratories certifying the performance as specified in section 1.05 (AAMA) or 11.15 of CSA-A440-98.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification stating that the tested window meets or exceeds the referenced criteria for the appropriate ANSI/AAMA 101-93 or CSA-A440-98 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

###### A. Total Window System

1. The responsible contractor shall assume full responsibility and warrant for one year the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

## Specifications

## Operable and Fixed Windows

- Series 7200
- Series 7300

### SECTION 08 51 13 ALUMINUM WINDOWS

2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at his expense during the warranty period.

#### PART 2 PRODUCTS

##### 2.01 Materials

- A. Aluminum
  - Extruded aluminum shall be 6063-T5 alloy and tempered.
- B. Hardware
  1. Casement Ventilators:
    - Five knuckle butt hinges with roto operators or 4-bar stainless steel hinges with lever handles.
  2. Project-Out Ventilators:
    - 4-bar stainless steel hinges, high pressure die-cast zinc cam handle lock and strike.
  3. Project-In Ventilators:
    - 4-bar stainless steel hinges, high pressure die-cast zinc cam handle with concealed zinc plated steel pawl and stainless steel keepers.
- C. Weatherstrip
  1. Weatherstrip shall be Monsanto Santoprene or equal.
- D. Thermal Barrier
  1. Barrier material shall be poured-in-place two-part Polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the Polyurethane polymer. A non-structural thermal barrier is unacceptable.
  2. Specified hardware shall not bridge the thermal barrier.

##### 2.02 Fabrication

- A. Aluminum vent extrusions shall have a nominal wall thickness of:
  - 7200 Series = .062" (1.57)
  - 7300 Series = .125" (3.2)
  1. Mechanical fasteners and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and sash corners.
- B. Frame
  - Frame components shall be mitered or butt jointed, as appropriate to the type of construction required. All joints shall incorporate mechanical fasteners.
- C. Sash
  1. All sash extrusions shall be tubular.
  2. Each corner shall be mitered, reinforced with an extruded aluminum corner key, and hydraulically crimped.
  3. Each sash shall have weatherstripping installed in specially designed dovetail grooves in the sash extrusion.
- D. Screens (Optional)
  1. Screen frames shall be extruded or roll formed aluminum.
  2. Screen mounting holes in the window frames shall be factory drilled.
  3. Screen mesh shall be aluminum or fiberglass.
- E. Glazing
  1. Shop and field glazed units are to be glazed with pre-shimmed glazing tape, extruded aluminum glazing beads, and an E.P.D.M. drive-in wedge gasket.
- F. Finish
  - All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... *(Specify one of the following):*

- \_\_\_\_\_ #11 Clear Anodic coating
  - \_\_\_\_\_ #22 Dark Bronze Anodic coating
  - \_\_\_\_\_ #33 Black Anodic coating
- A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be *(Specify a U.S. Aluminum standard color)*.

#### PART 3 EXECUTION

##### 3.01 Inspection

- A. Job Conditions
  1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

- A. Use only skilled tradesman with work done in accordance with approved shop drawings and specifications.
- B. Plumb and align window faces in a single plane for each wall plane and erect windows and materials square and true adequately anchored to maintain positions permanently when subjected to normal thermal and building movement and specified wind loads.
- C. Adjust windows for proper operation after installation.
- D. Furnish and apply sealants to provide a weathertight installation at all joints and intersections and at opening perimeters.

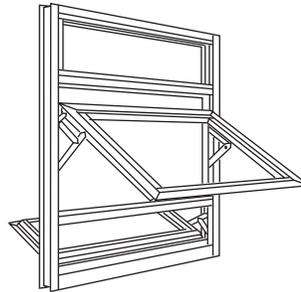
##### 3.03 Protection and Cleaning

- A. After completion of window installation, windows shall be inspected, put into working order, and left clean, free of labels, dirt, etc. Protection from this point shall be responsibility of general contractor.

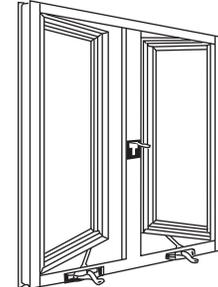
# WINDOWS

## Special Features

Projected and casement windows operate by moving away, or projecting, from the window frame, as awning or hopper vents, and as in-swinging or out-swinging casement vents. Projected windows open and close horizontally while casement windows operate on a vertical axis.

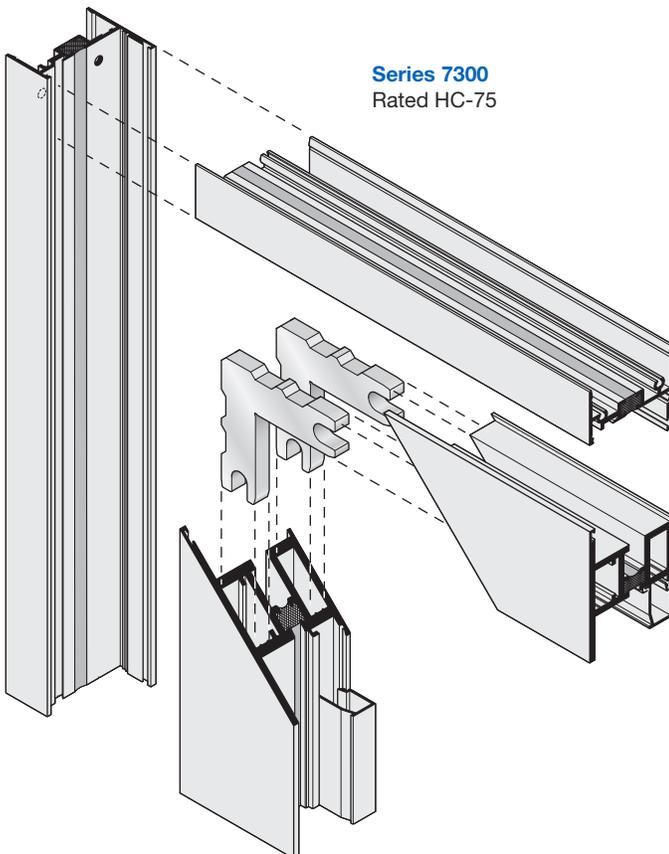


PROJECTED

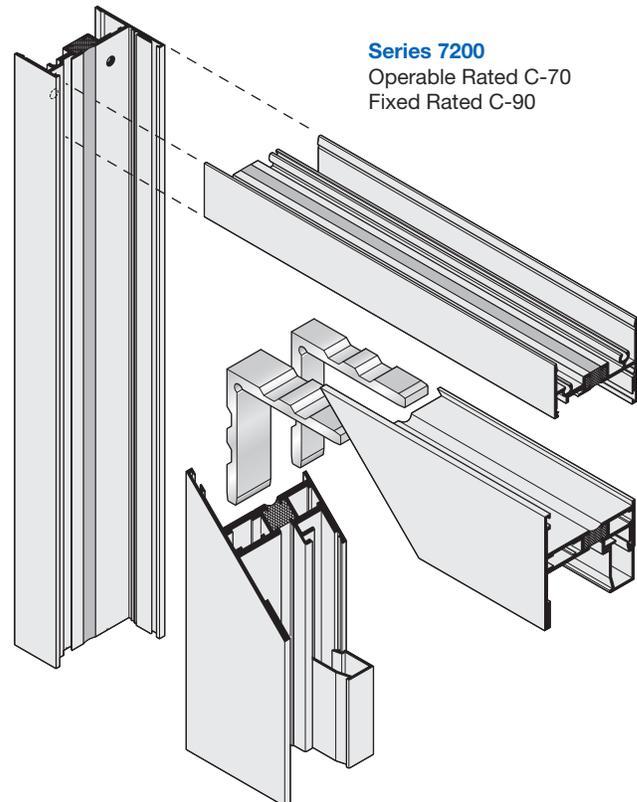


OUT-SWING CASEMENT

U.S. Aluminum offers a full line of operable windows to meet virtually any specification requirement for use in storefront, curtain wall systems, as well as retrofit. All units are tested for air, water, and structural integrity in accordance set forth in ANSI/AAMA 101/ I.S.2-97 or CSA-A440-98.



**Series 7300**  
Rated HC-75



**Series 7200**  
Operable Rated C-70  
Fixed Rated C-90

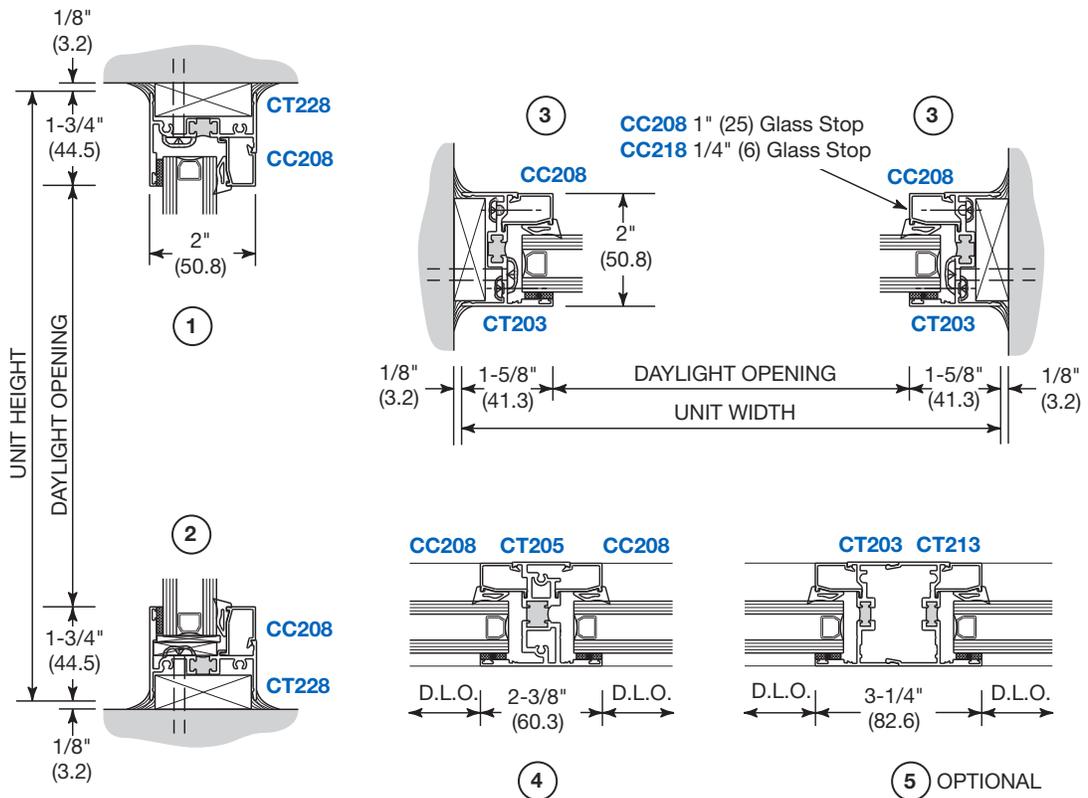
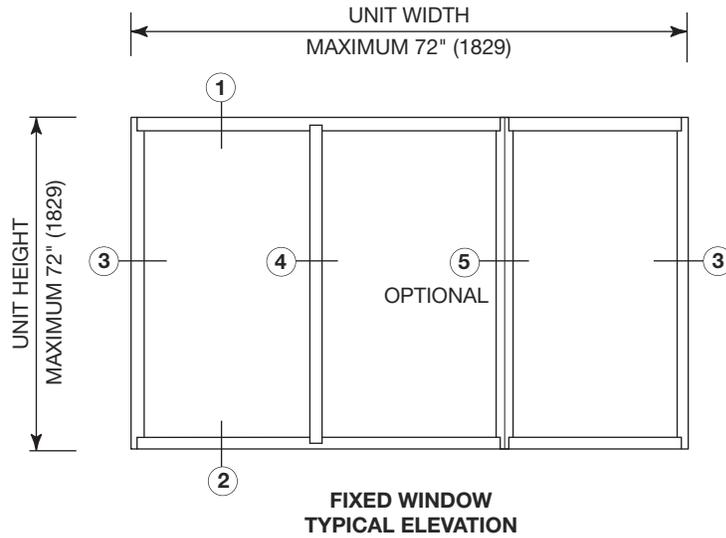
All window units are to be dry glazed with tape at the outside and E.P.D.M. elastomeric wedge at the inside. Vent construction is accomplished with tubular members, mitered and reinforced with an extruded aluminum corner key, and hydraulically crimped. Operating hardware options include 90° 4-bar Hinges, five knuckle butt hinges, roto operators, friction adjusters, and limit device arms. Locking hardware options include cam locking handles, two point locking handles, and security locks.

**Typical Details**

**Operable and Fixed Windows**

FOR 1" (25) GLAZING

- Series 7200
- Series 7300



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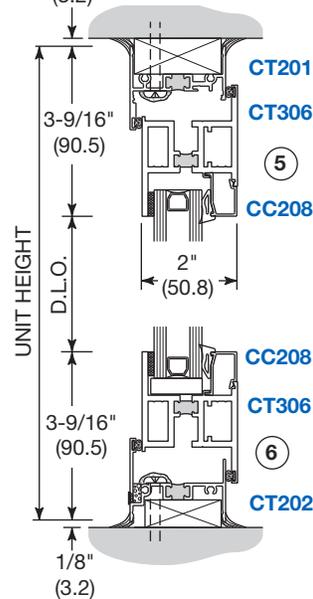
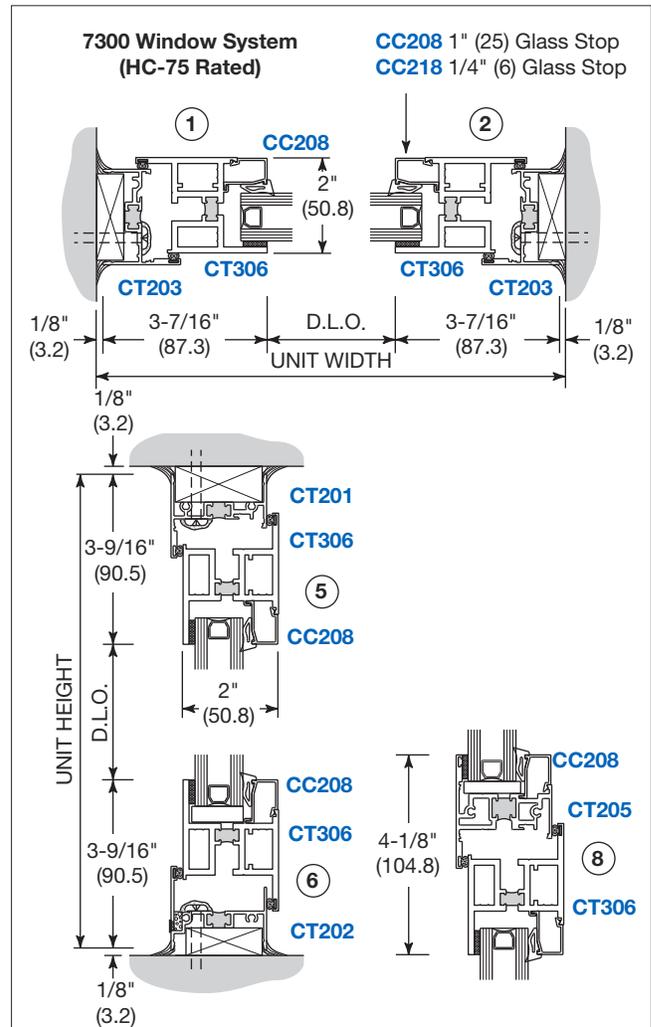
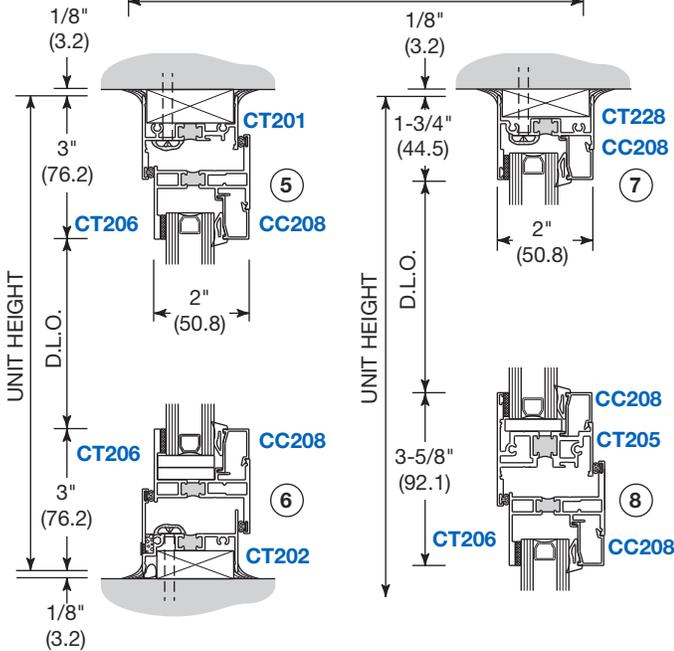
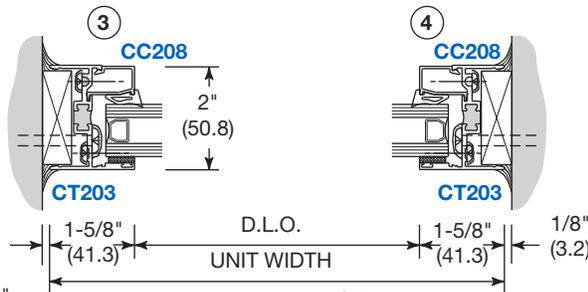
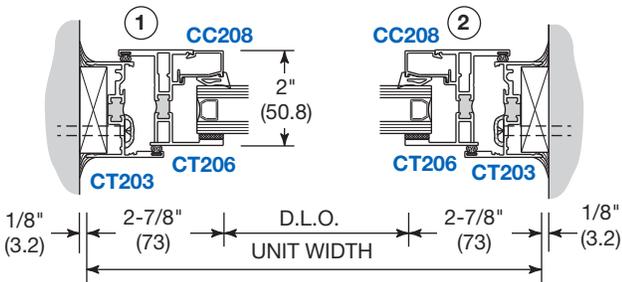
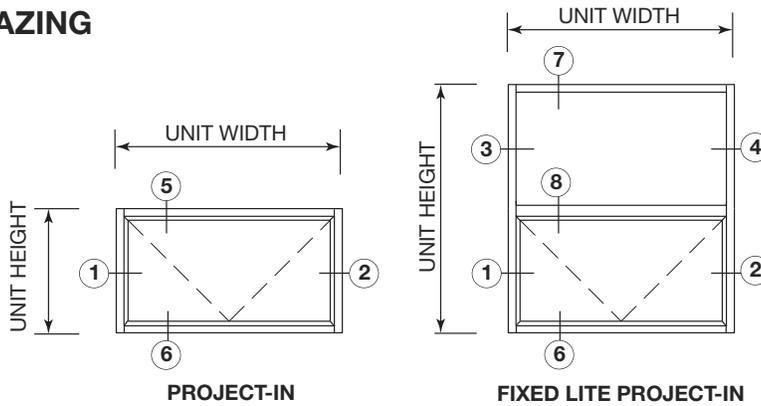
# WINDOWS

## Typical Details

FOR 1" (25) GLAZING

## Operable and Fixed Windows

- Series 7200
- Series 7300



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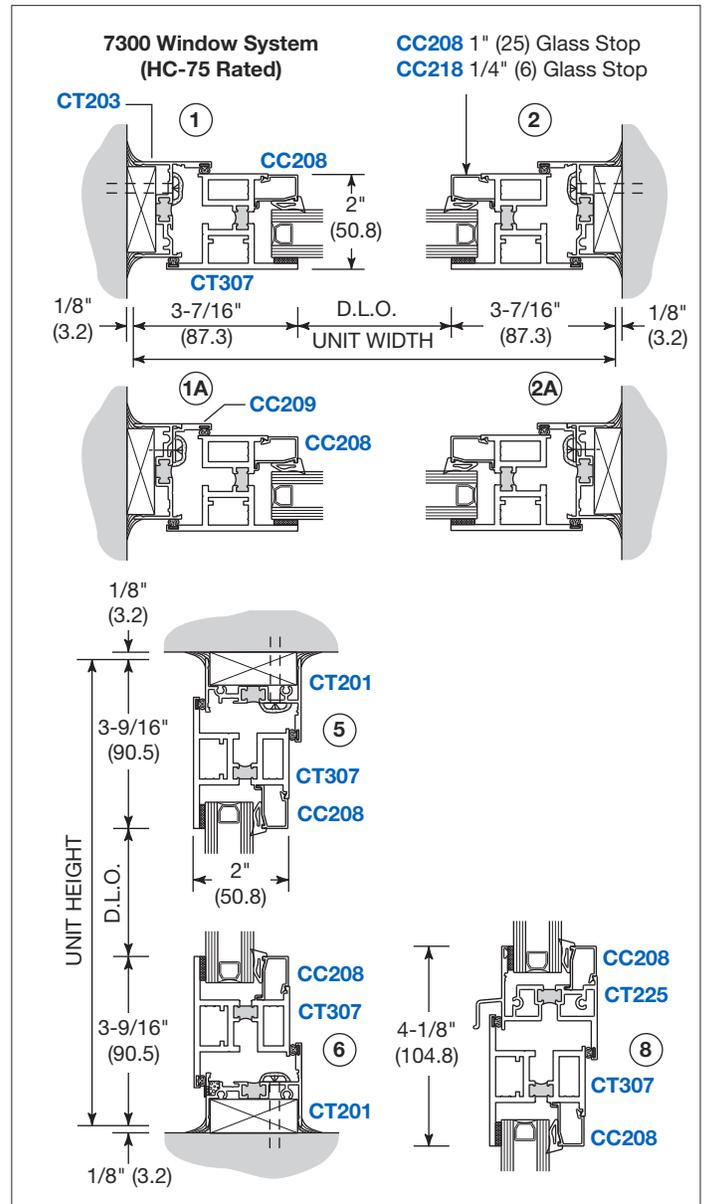
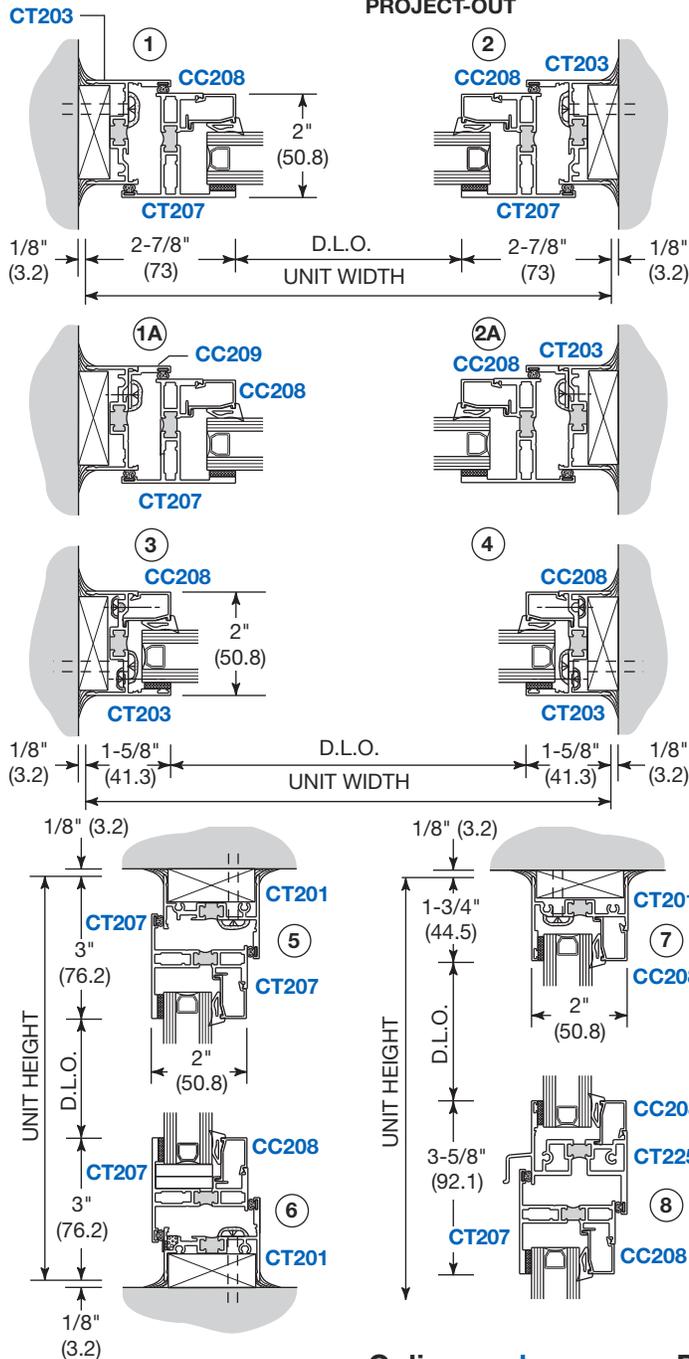
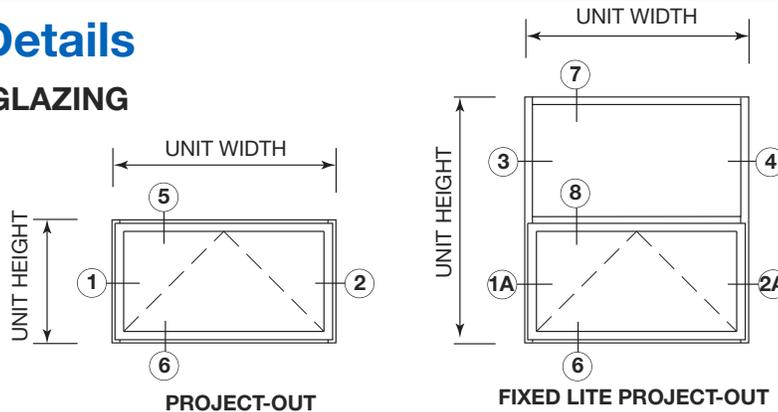
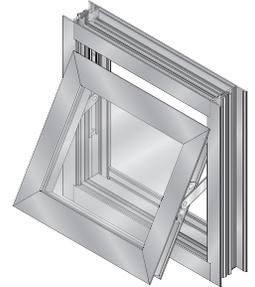
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**Typical Details**

FOR 1" (25) GLAZING

**Operable and Fixed Windows**

- Series 7200
- Series 7300



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# WINDOWS

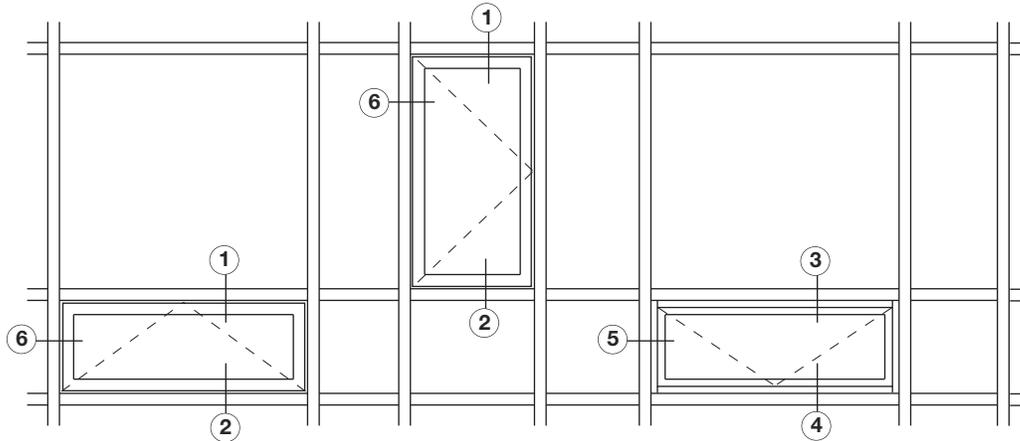
## Typical Details

## Operable and Fixed Windows

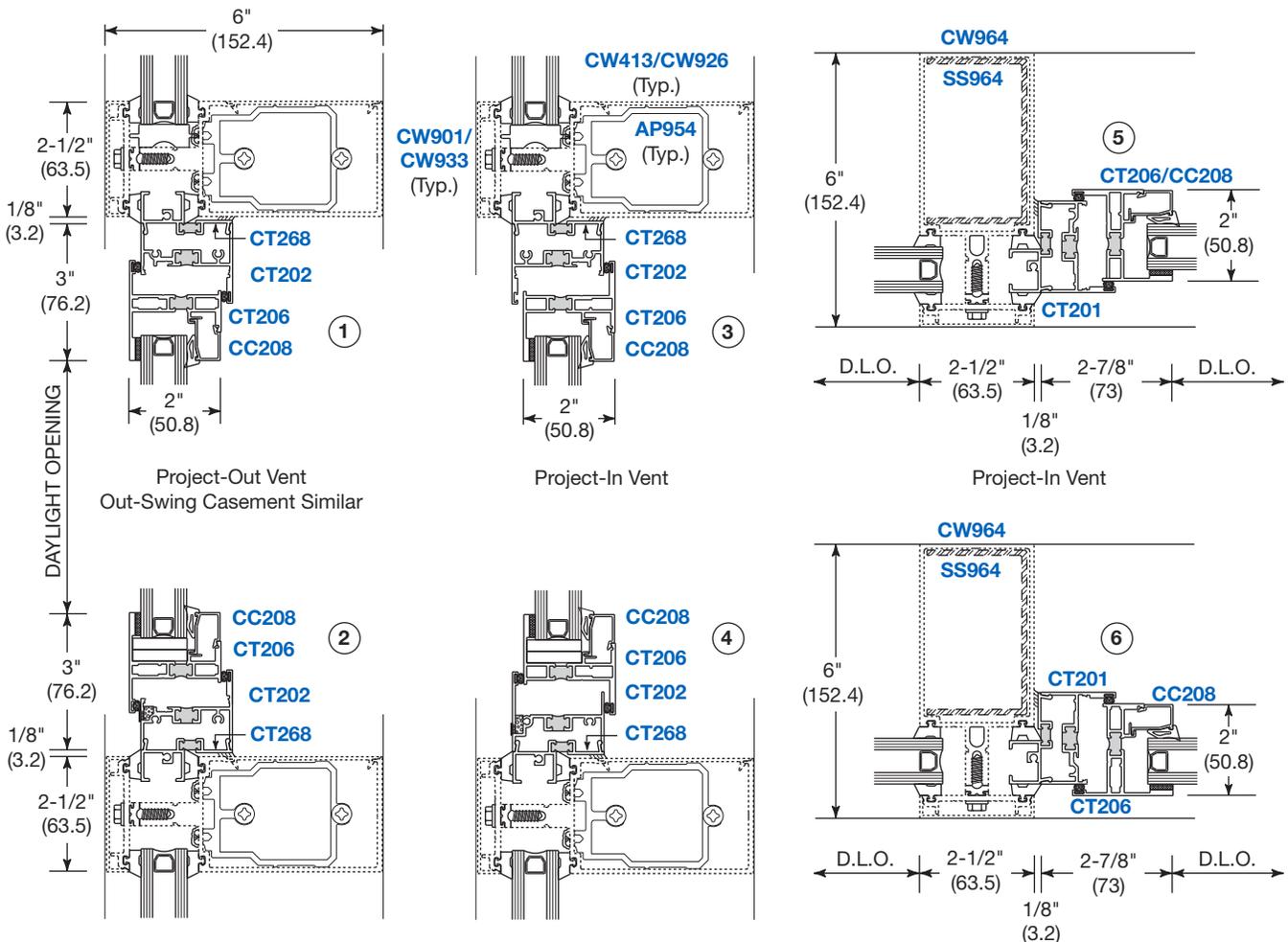
### FOR 1" (25) GLAZING

- Series 7200
- Series 7300

Series 7200 Shown With Series 3250 Curtain Wall.  
 For Series 7300 Sash Details, See Pages 06-D1 and 07-D1.



TYPICAL ELEVATION



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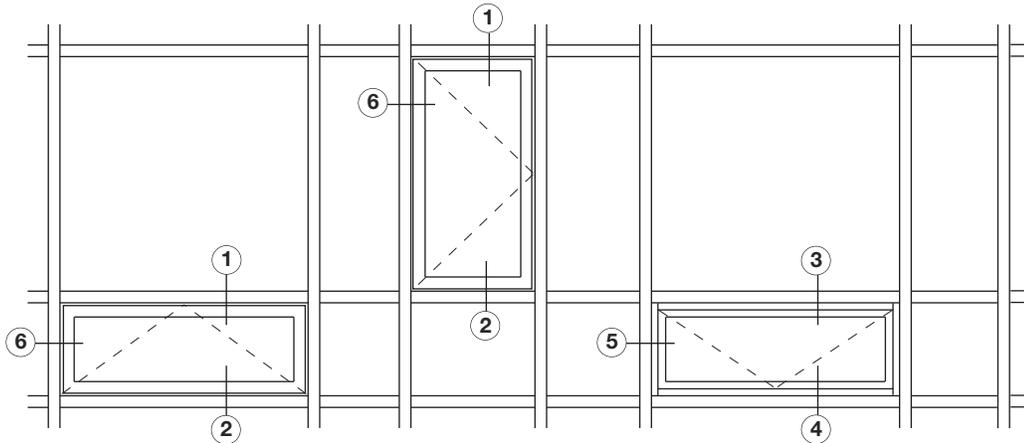
**Typical Details**

**Operable and Fixed Windows**

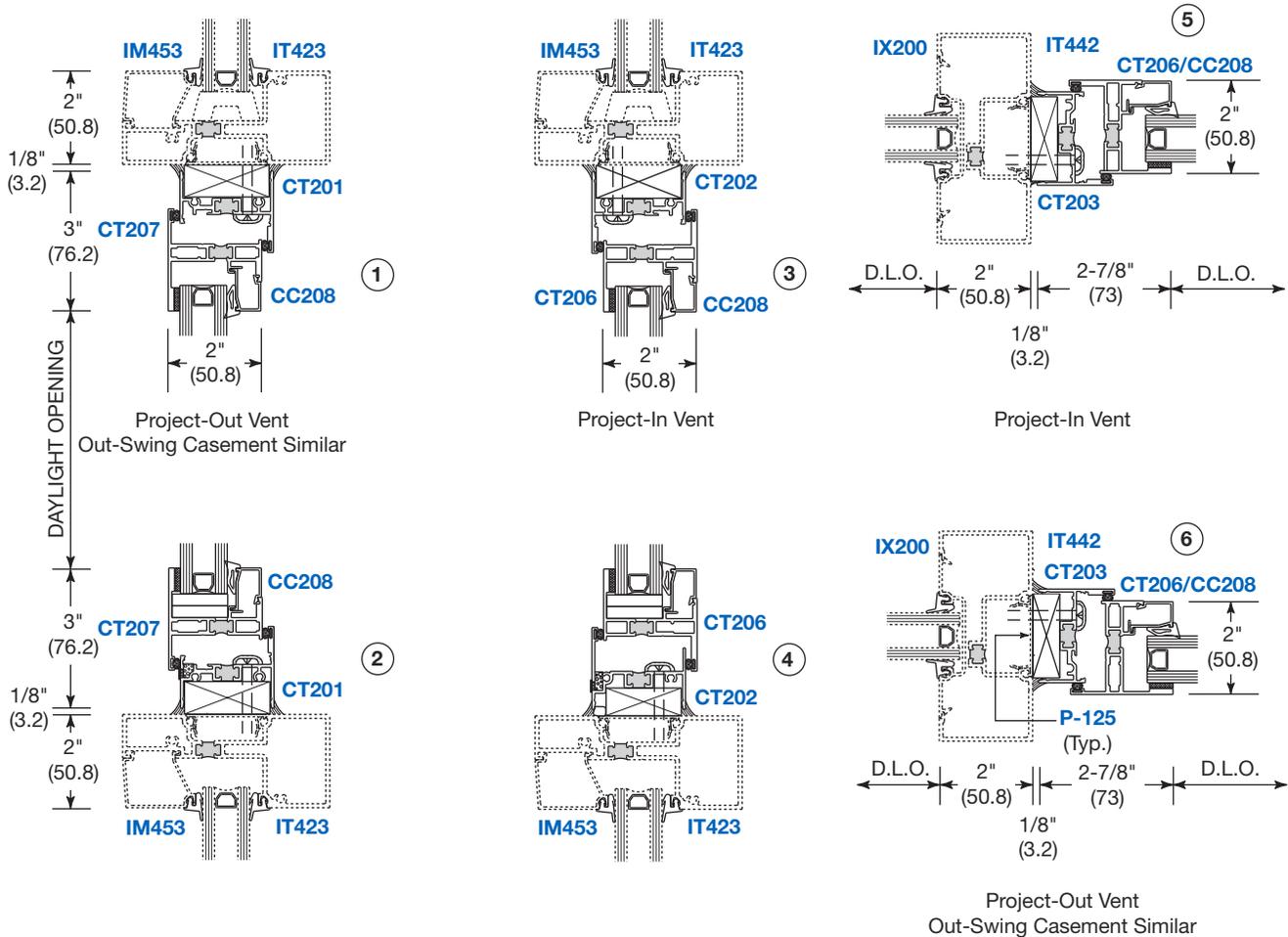
- Series 7200
- Series 7300

**FOR 1" (25) GLAZING**

Series 7200 Shown With Series IT451 Center Glazed Storefront.  
For Series 7300 Sash Details, See Pages 06-D1 and 07-D1.



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# WINDOWS

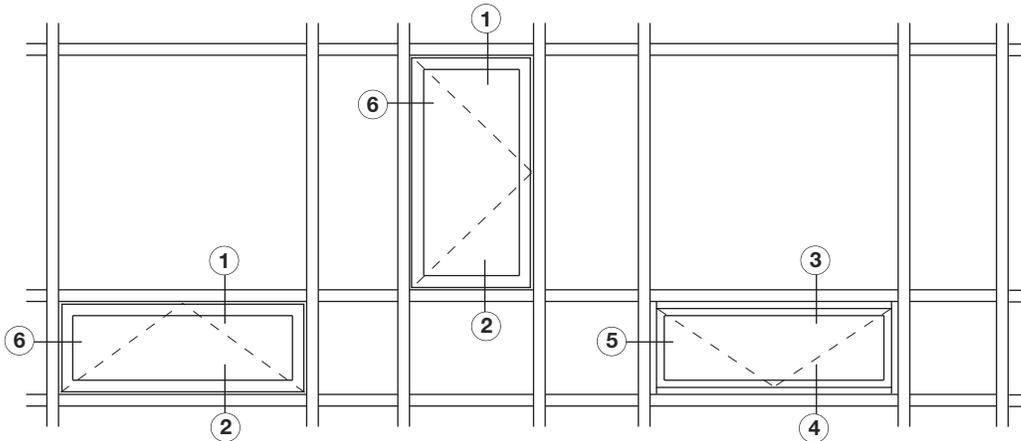
## Typical Details

## Operable and Fixed Windows

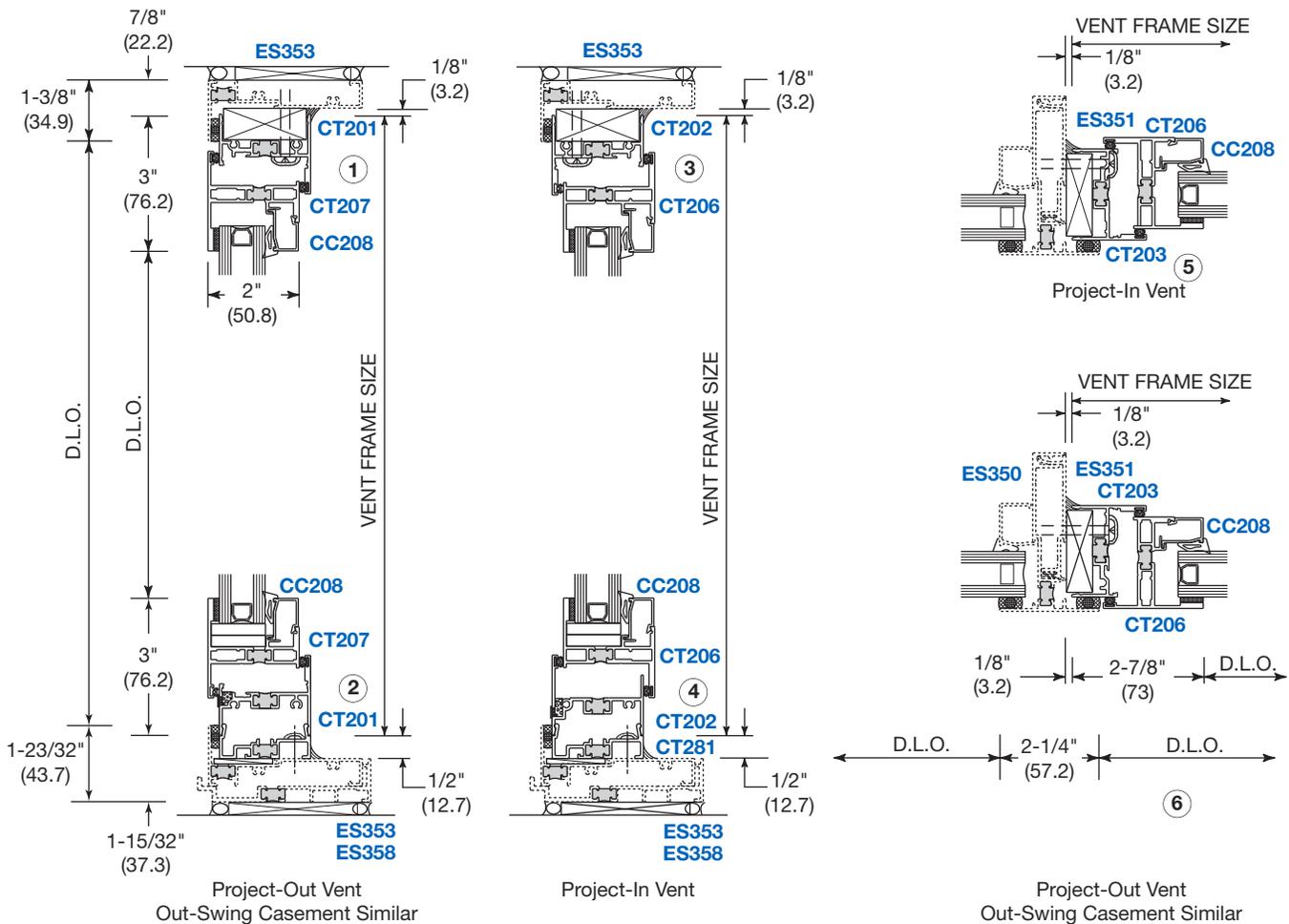
### FOR 1" (25) GLAZING

- Series 7200
- Series 7300

Series 7200 Shown With Series ES350 Window Wall.  
 For Series 7300 Sash Details, See Pages 06-D1 and 07-D1.



TYPICAL ELEVATION



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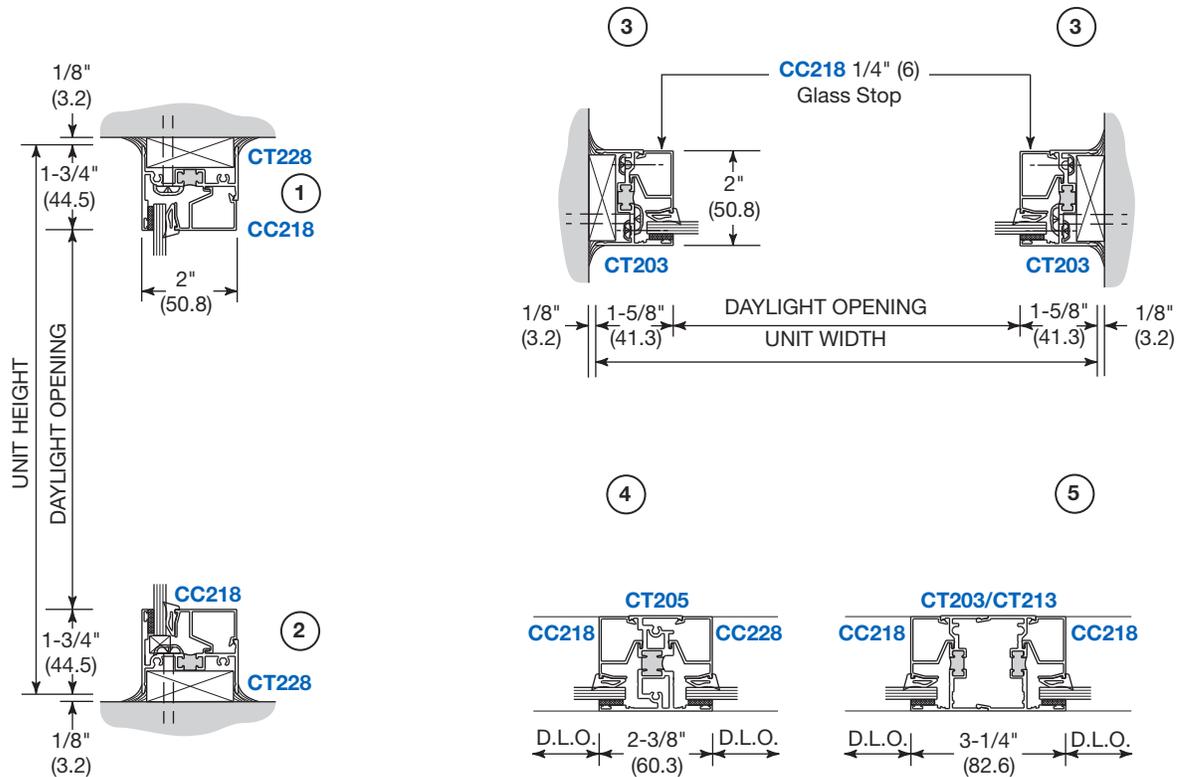
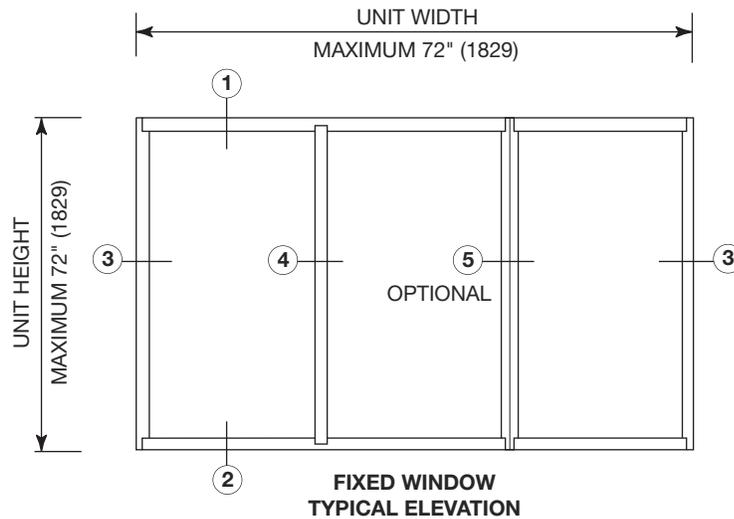
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**Typical Details**

**Fixed Windows**

FOR 1/4" (6) GLAZING

- Series 7200
- Series 7300



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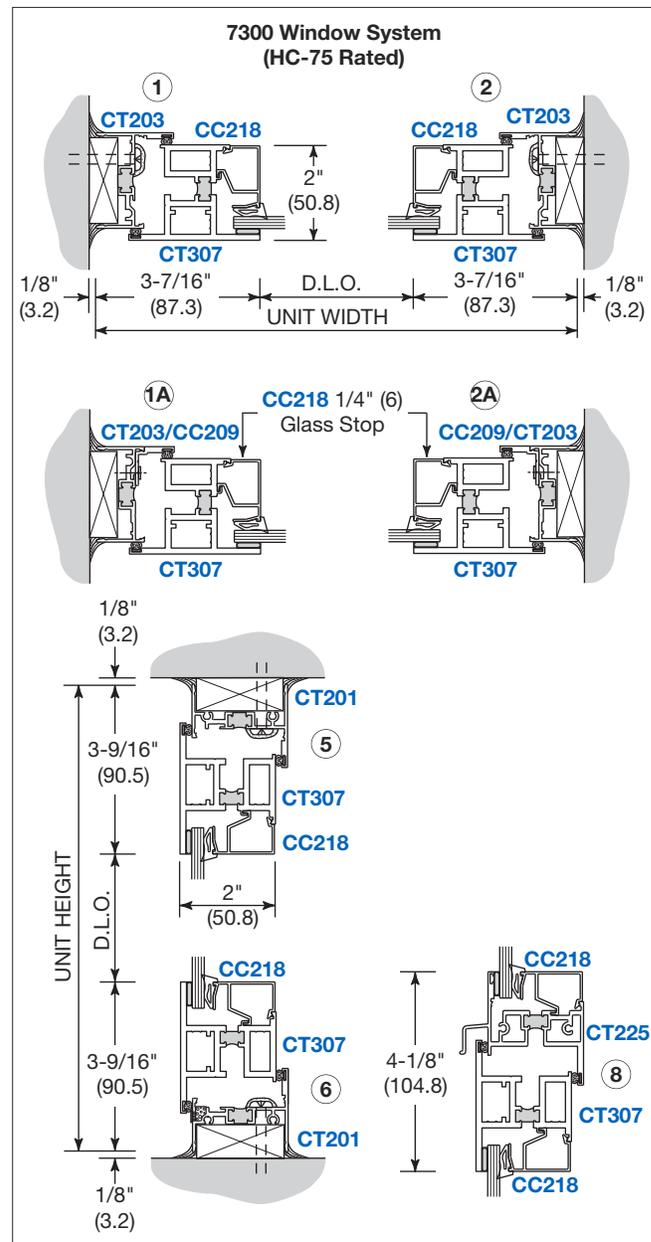
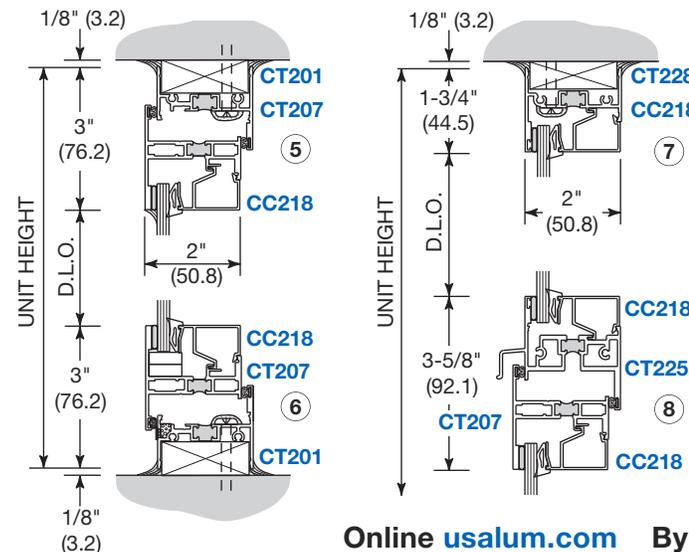
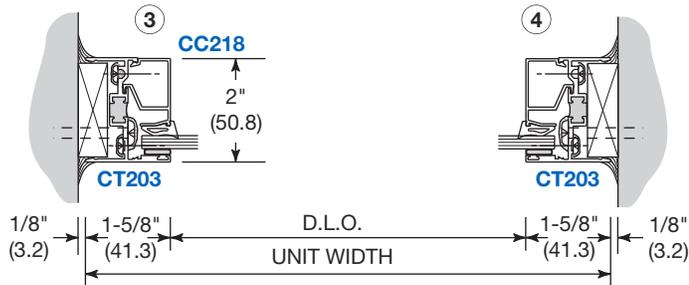
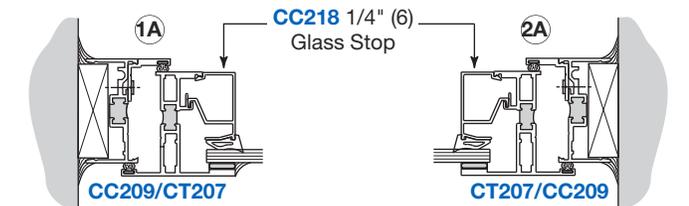
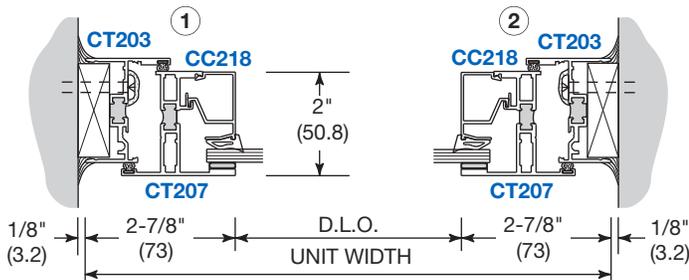
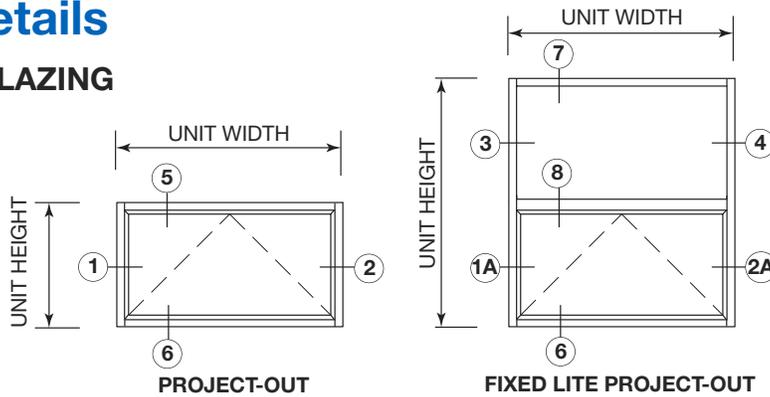
# WINDOWS

## Typical Details

FOR 1/4" (6) GLAZING

Operable and Fixed Windows

- Series 7200
- Series 7300



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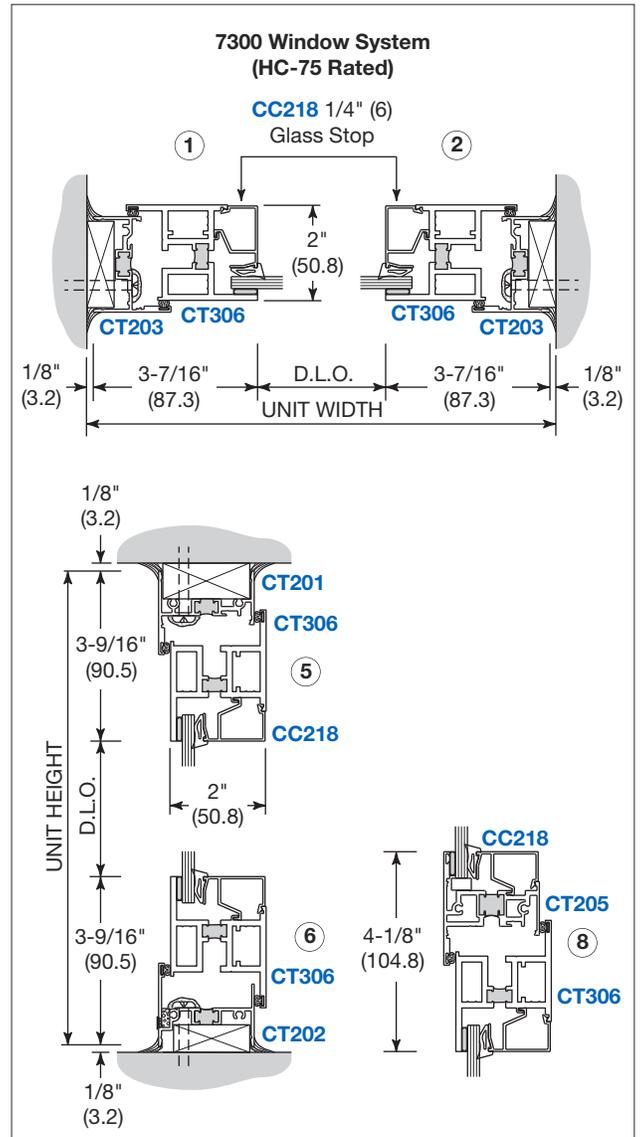
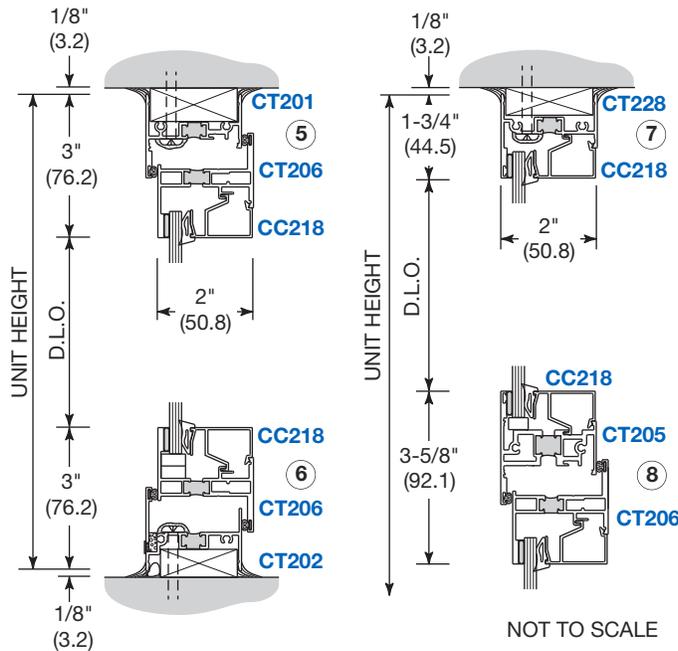
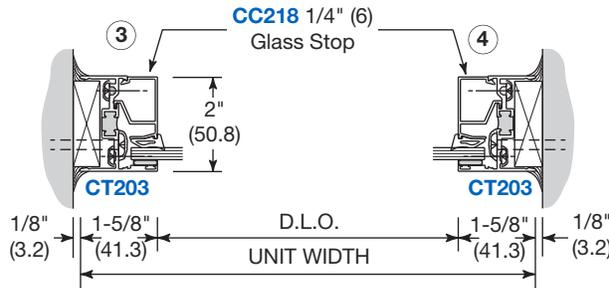
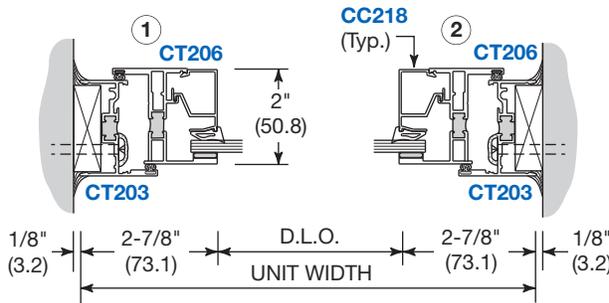
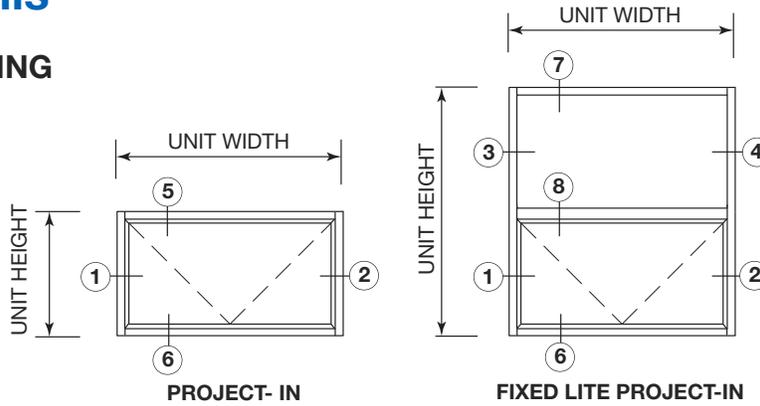
# WINDOWS

## Typical Details

FOR 1/4" (6) GLAZING

Operable and Fixed Windows

- Series 7200
- Series 7300



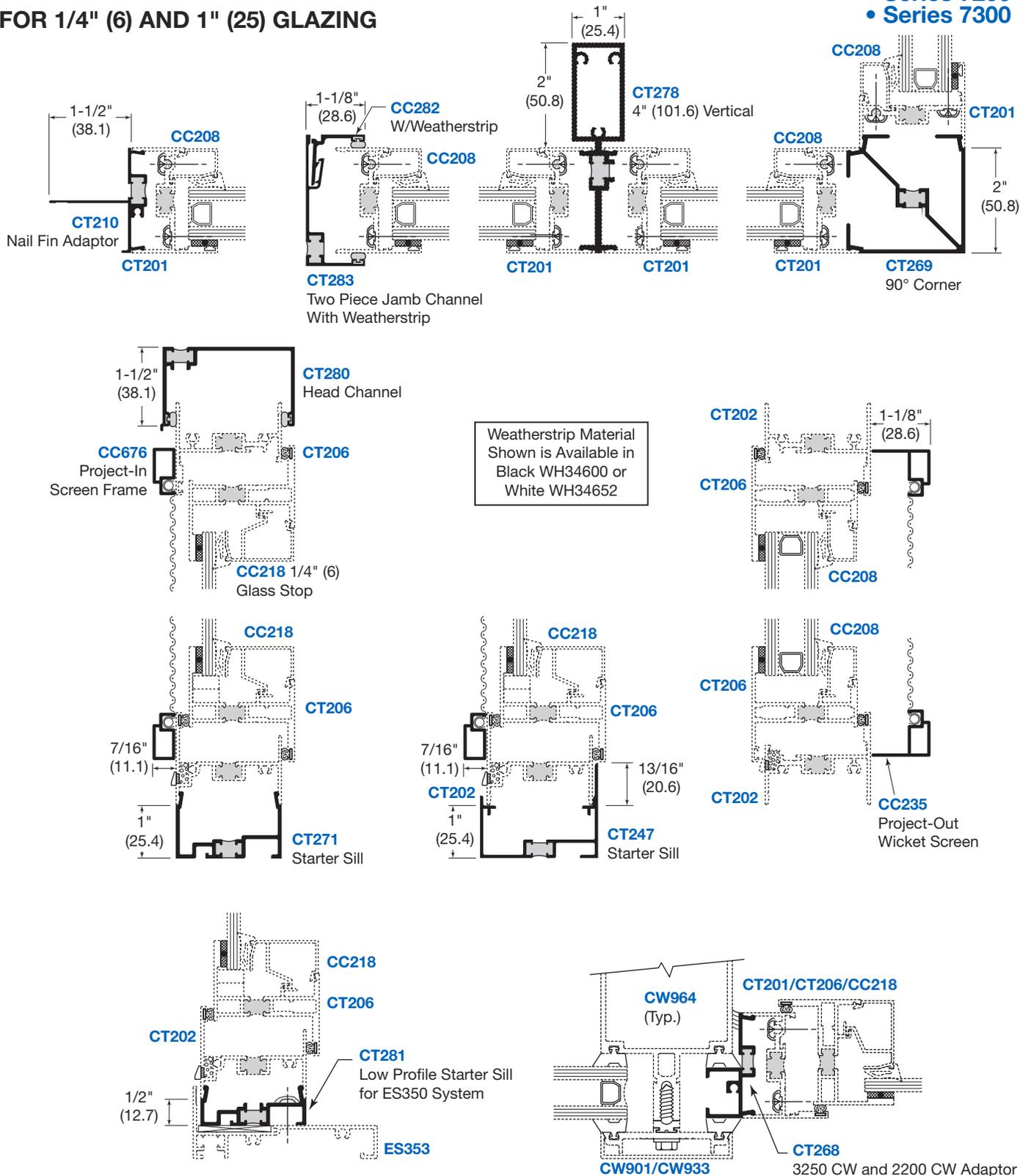
# WINDOWS

## Optional Accessories

## Operable and Fixed Windows

FOR 1/4" (6) AND 1" (25) GLAZING

- Series 7200
- Series 7300



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## Hardware

## Operable and Fixed Windows

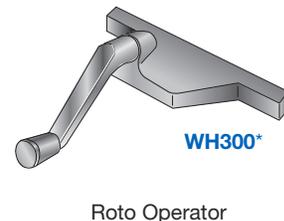
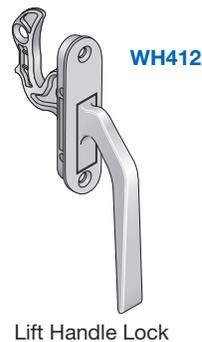
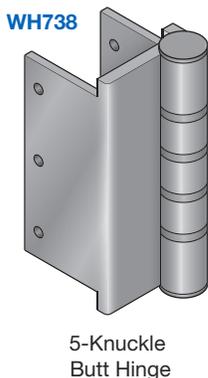
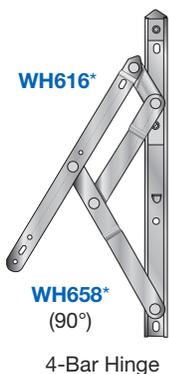
- Series 7200
- Series 7300

\* Must specify window size when ordering.

HARDWARE	PART NO.	DESCRIPTION	PKG QTY	PROJECT-IN VENT	PROJECT-OUT VENT	OUT-SWING CASEMENT
OPERATING HARDWARE	WH616*	Stainless Steel 4-Bar Hinges	1	●	●	●
	WH658*	Stainless Steel 90° 4-Bar Hinges	1			○
	WH738	5 Knuckle Butt Hinges	1			○
	WH300*	Roto Operators	1		○	○
	WH645	Limit Device	1	○	○	○
	WH646	Friction Adjuster	1	○	○	○
LOCKING HARDWARE	WH240	Cam Handle Lock	1	●	●	●
	WH412	Lift Handle Lock	1		○	○
	WH023	Access Control Key Lock	1	○	○	○

- STANDARD
- OPTIONAL

**NOTE:** Roto Operators Require Butt Hinges.  
Butt Hinges Without Roto Operator Requires Friction Hold Open Hardware.



## Glass Size Formulas

Glass Size formulas are for single window configurations.

7200 Fixed Windows:	7200 Operable Windows:	7300 Operable Windows:
Glass Height = Frame Height Minus 2-1/2" (63.5)	Glass Height = Frame Height Minus 5" (127)	Glass Height = Frame Height Minus 6-1/8" (155.6)
Glass Width = Frame Width Minus 2-1/4" (57.2)	Glass Width = Frame Width Minus 4-3/4" (120.7)	Glass Width = Frame Width Minus 5-7/8" (149.2)

**NOTE:** When utilizing subsills, subtract 1/2" (12.7) for CC281 and subtract 1" (25) for CC271 to the calculated glass height sizes.

Glass Size formula for multiple configurations is D.L.O. + 1" (25). This formula can be used for all glass openings.

MAXIMUM SIZE LIMITATIONS	
<b>7200 Windows (C Rating)</b> Fixed = 72" (1829) wide X 72" (1829) high Casement = 30" (762) wide X 60" (1524) high Project-in = 60" (1524) wide X 32" (813) high Project-out = 60" (1524) wide X 32" (813) high	<b>7300 Windows (HC Rating)</b> Fixed = 72" (1829) wide X 72" (1829) high Casement = 30" (762) wide X 60" (1524) high Project-in = 60" (1524) wide X 32" (813) high Project-out = 60" (1524) wide X 32" (813) high
MINIMUM FRAME DIMENSION WITH SASH	
<b>7200 Windows</b> 15" (381) wide X 15" (381) high	<b>7300 Windows</b> 16" (406) wide X 16" (406) high

# WINDOWS

## Table of Contents

## Operable and Fixed Windows • Series 7400

SECTION D2	PAGE
SPECIFICATIONS .....	02-D2 and 03-D2
SPECIAL FEATURES AND GLASS SIZE FORMULAS .....	04-D2
HARDWARE .....	05-D2 and 06-D2
TYPICAL DETAILS FIXED WINDOW, 1" (25) GLASS .....	07-D2
TYPICAL DETAILS IN-SWING CASEMENT, 1" (25) GLASS .....	08-D2
TYPICAL DETAILS OUT-SWING CASEMENT, 1" (25) GLASS .....	09-D2
OPTIONAL ACCESSORIES .....	10-D2



Project: 400 Orleans, Chicago, IL

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

m - meter	Kg - kilogram
Pa - pascal	KPa - kilopascal
MPa - megapascal	

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## Specifications

## Operable and Fixed Windows • Series 7400

### SECTION 08 51 13 ALUMINUM WINDOWS

Drawings and specifications are based on the Series 7400 Thermal AW75 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

- A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

##### B. Glass and Glazing

1. All units shall be factory glazed.
- OR

1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
 Section 08 44 00 - Glazed Curtain Walls  
 Section 08 44 33 - Slope Glazing Systems  
 Section 08 50 00 - Replacement Windows

##### 1.03 Testing and Performance Requirements

###### A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93.

2. Thermal test unit sizes shall be 36" (914) x 60" (1524). Unit shall consist of a casement, fixed or projected window.
- B. Test Procedures and Performances
1. Windows shall conform to all AAMA/ ANSI/NWWDA-101 I.S.2-97 and AAMA 910-93 requirements for the window type referenced in 1.01.B.
  2. Air Infiltration Test - With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .10 cfm per foot of crack.
  3. Water Resistance Test - With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
  4. Uniform Load Deflection Test - With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.
  5. Condensation Resistance Test (crf) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (crf) shall not be less than 49.
  6. Thermal Transmittance Test (Conductive U-Value) - With ventilators closed and locked, test unit in accordance with NFRC-100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall not be more than 0.63
  7. AAMA Ratings
    - a. AW75 Series 7400 Operable and Fixed Windows Test Procedures: AAMA/WDMA/CSA 101/I.S.2/ A 440-08 - Laboratory performance testing.

AAMA 502-08 - Newly installed fenestration products.

AAMA 511-08 - Installed fenestration products after 6 months.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

- A. Total Window System
1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.
  2. Any deficiencies due to such elements not meeting the specifications shall be corrected by the responsible contractor at his expense during the warranty period.

# WINDOWS

## Specifications

## Operable and Fixed Windows

### • Series 7400

### SECTION 08 51 13 ALUMINUM WINDOWS

#### PART 2 PRODUCTS

##### 2.01 Materials

- A. Aluminum - Extruded aluminum shall be 6063-T5 alloy and tempered.
- B. Hardware - Locking handles shall be cam type as supplied by U.S. Aluminum. Operating hardware shall be 4-bar stainless steel arms or equal.
- C. Weatherstrip - All weatherstrip shall be E.P.D.M. or equal.
- D. Thermal Barrier - All exterior aluminum shall be separated from interior aluminum by a rigid, structural thermal barrier. For purposes of this specification, a structural thermal barrier is defined as a system that shall transfer shear during bending and, therefore, promote composite action between the exterior and interior extrusions. The thermal barrier shall be INSULBAR® by ENSINGER, INC. or equal, consisting of two glass reinforced polyamide nylon 6/6 struts, mechanically crimped in raceways in exterior and interior extrusions. Poured and debridged urethane thermal barriers shall not be permitted.
- E. Glass
1. Insulating glass shall be ( ) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.  
OR
  1. Glass shall be 3/16" (5) or 1/4" (6) monolithic tempered.

##### 2.02 Fabrication

###### A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2).
2. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.

3. Depth of frame and vent shall not be less than 2-1/4" (57.2).
  4. All frame and vent members shall be able to accommodate separate interior and exterior finishes and colors.
- B. Frame - Frame components shall be mechanically fastened.
- C. Ventilator
1. All vent extrusions shall be tubular.
  2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
  3. Each vent shall be pressure equalized utilizing two rows of weatherstripping (or equal) installed in dovetail grooves in the extrusion.
  4. The vent shall present a flush appearance with the exterior and interior of the main frame when in the closed position.
- D. Muntins - Muntins shall be factory attached (non-removable), exterior grid designed to match vent sight line (if applicable).
- E. Screens
1. Screen frames shall be extruded.
  2. Screen mounting holes in the window frame shall be factory drilled.
  3. Screen mesh shall be aluminum or fiberglass.
- F. Glazing - All units shall be glazed with butyl tape, silicone cap seal, and extruded snap-in aluminum glazing bead, with E.P.D.M. gasket.
- G. Finish - Windows are capable of having separate interior and exterior finishes and/or colors.
1. Anodic
    - a. Finish all exposed areas of aluminum windows and components with electrolytically deposited color in accordance with Aluminum Association Designation AA-M10-C22-( ). Color shall be ( ). Available colors are clear, bronze, and black.

###### 2. Paint

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

#### PART 3 EXECUTION

##### 3.01 Inspection

- A. Job Conditions - Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Plumb and align window faces in a single plane for each wall plane, and erect windows and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified windloads.
- C. Adjust windows for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

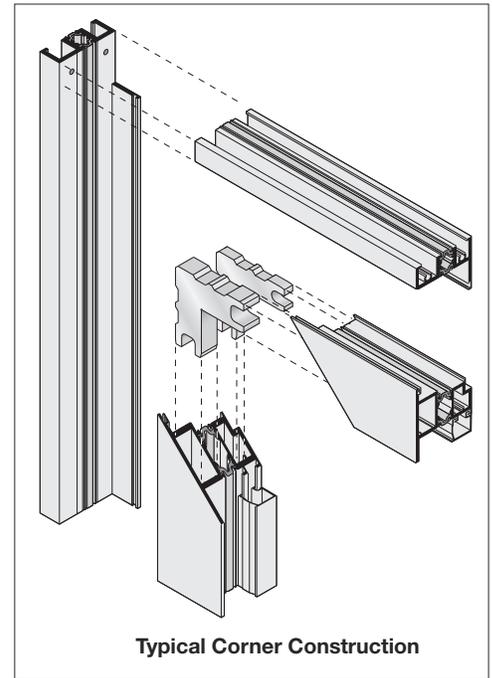
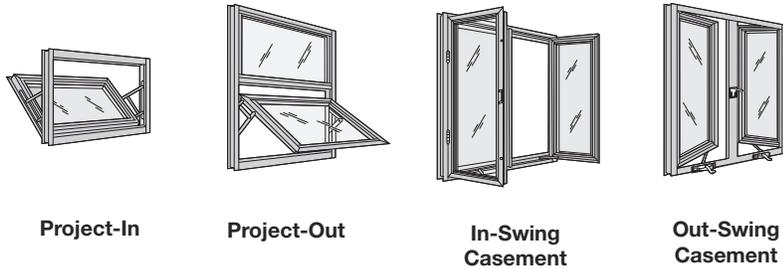
##### 3.03 Protection and Cleaning

- A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

## Special Features

## Operable and Fixed Windows • Series 7400

The Series 7400 is a 2-1/4" (57.2) Operable Window tested to meet or exceed ANSI/AAMA/NWDA-1011.5 2-97 requirements. The 7400 Window is constructed using extruded tubular members mitered and crimped with corner keys. These windows are offered in projected, casement, and fixed configurations. Series 7400 also features the Insulbar® by Ensinger, Inc. Thermal Break design to provide maximum thermal properties.



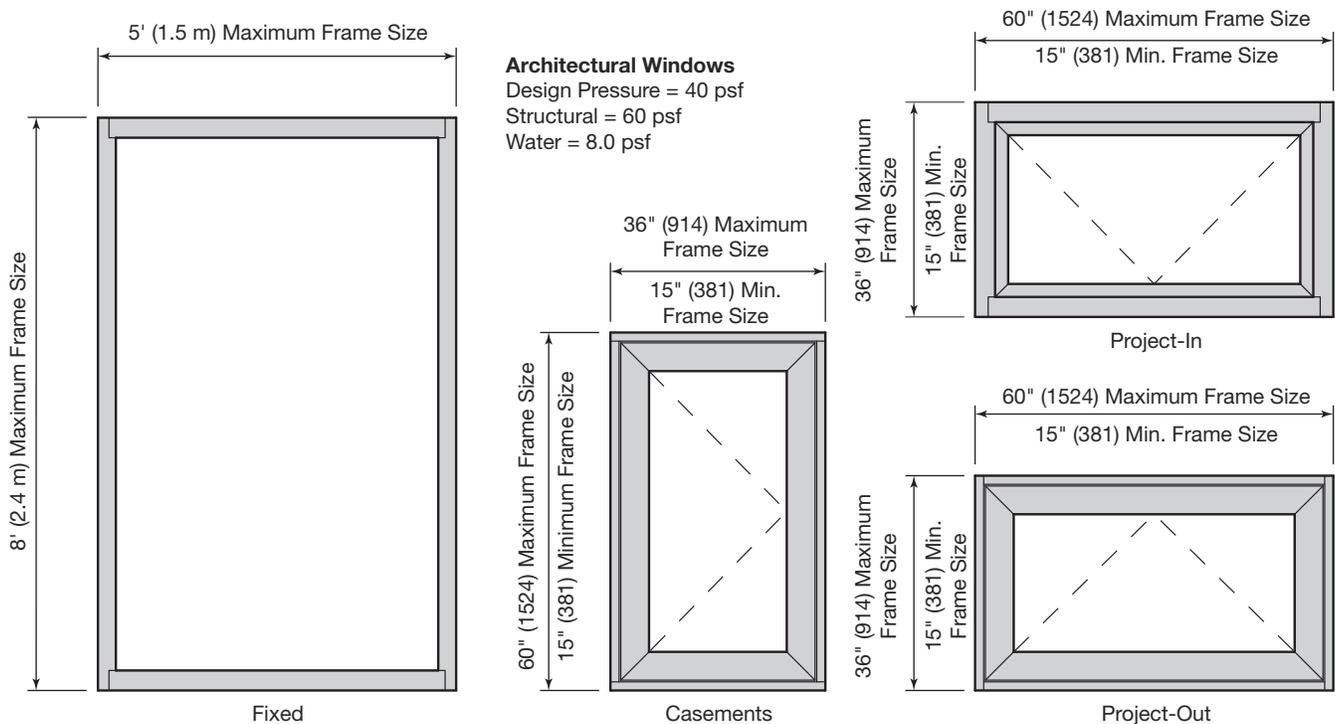
Projected and casement windows operate by moving away, or "projecting," from the window frame, as awning or hopper vents, and as in-swinging or out-swinging casement vents. Projected windows open and close horizontally while casement windows operate on a vertical axis.

Insulbar® is a registered trademark of Ensinger, Inc.

## Glass Size Formulas

## Size Limitations

Glass Sizes for Single Operable Units = Frame Size Minus 6" (152.4) Vertically and Horizontally.  
 Glass Sizes for Single Fixed Units = Frame Size Minus 2-5/8" (66.7) Vertically and Horizontally.  
 Glass Sizes for All Multi-Light Units = DLO plus 1" (25.4) Vertically and Horizontally (Good for Any Series 7400 Glass Sizing)



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## Hardware

## Operable Windows

- Series 7400

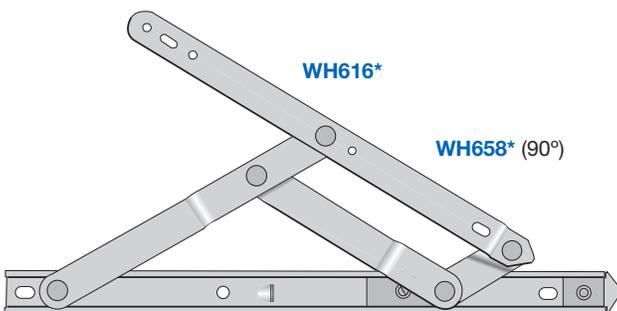
\* Must specify window size when ordering.

HARDWARE	PART NO.	DESCRIPTION	PKG QTY.	PROJECT-IN VENT	PROJECT-OUT VENT	IN-SWING CASEMENT	OUT-SWING CASEMENT
OPERATING HARDWARE	WH616*	Stainless Steel 4-Bar Hinges	1	●	●	●	●
	WH658*	Stainless Steel 90° 4-Bar Hinges	1			○	○
	WH748	5 Knuckle Butt Hinges	1			○	○
	WH656	High Performance Concealed Casement Hinge	1			○	○
	WH300*	Roto Operators	1		○		○
	WH645	Limit Device	1	○	○	○	○
	WH646	Friction Adjuster	1	○	○	○	○
LOCKING HARDWARE	WH240	Cam Handle Lock	1	●	●	●	○
	WH412	Lift Handle Lock	1		○		●
	WH023	Access Control Key Lock	1	○	○	○	○
	WH124*	Multi-Point Locking System	1				○

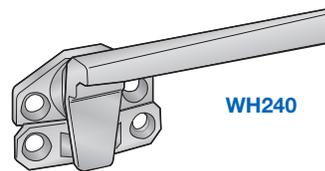
● **STANDARD** Standard Finish Supplied on Roto Operator, Cam Handle, and Lever Handle Hardware is White Bronze Unless Specified Otherwise.

○ **OPTIONAL** Consult Factory for Other Hardware Types and Finishes to Meet Project Requirements.

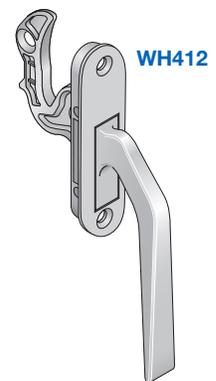
**NOTE:** Roto Operators Require Butt Hinges.  
Butt Hinges Without Roto Operator Requires Friction Hold Open Hardware.



Stainless Steel 4-Bar Hinge



Cam Handle Lock



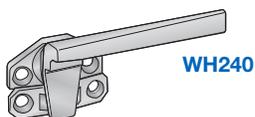
Lift Handle Lock

See page 06-D2 for additional information on Window Hardware

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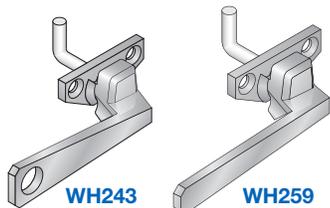
## Hardware

\* Must specify window size when ordering.



WH240

**Cam Handle Lock** (project-out windows) This lock is designed to have a long, trouble free life. The two-piece strike includes a polyester insert for smooth operation. Pole Operated Handle available for elevated window locations.



WH243

WH259

**Cam Handle Locks** (project-in windows) This concealed pawl design provides internal lock-up of in-swinging windows. **WH243** with optional Pole Operated Handle for elevated window locations.



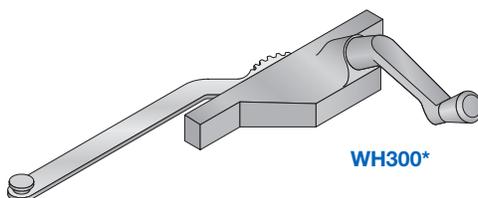
WH748

**5 Knuckle Butt Hinge**  
This is a heavy-duty butt hinge for use with casement window applications.



WH412

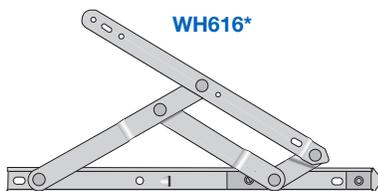
**Lift Handle Lock**  
This locking handle is designed with a slight taper to it's nose to help improve keeper engagement, and to produce a smoother locking action. A strong detent in both open and closed positions creates a solid and secure feel. These cam handles are rear mounted with no exposed screws.



WH300\*

### Single Arm Roto Operator

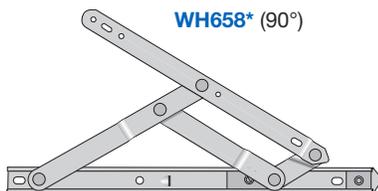
This operator provides arm movement for 90° of the window opening. The operator has a high pressure, die cast zinc crank handle and knob, and hardened steel worm gear and gear arm. Butt hinges must be used with this operator.



WH616\*

### Stainless Steel 4-Bar Hinges

These non-handed 4-bar hinges are specially designed for casement, awning and projected vents. This hinge has a stainless steel support arm, guide bracket and cap, and sliding brass shoe.



WH658\* (90°)

### Stainless Steel 90° 4-Bar Hinge

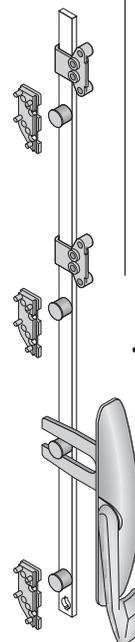
Hinges are designed for casement window applications and provide 90° of opening. When in the fully opened position, an average sized person can escape through the opening in case of an emergency as required by egress codes.



WH023

### Tamper Resistant Key Lock

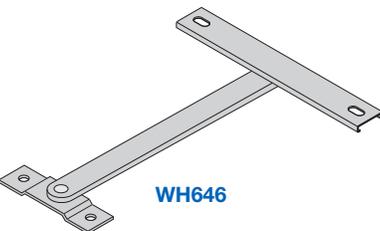
This spring-loaded lock design provides tamper-resistant lock-up of windows. A key slot in the housing requires a special key to operate the lock.



WH124\*

### Multi-Point Locking System

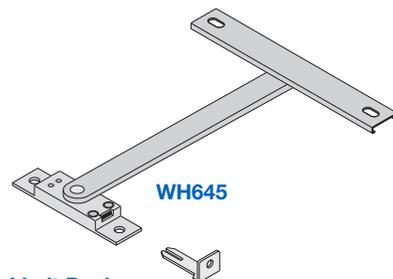
This lock has self-locating snap-on tie bar guides with "feet" protruding from within, that automatically index the tie bar the correct distance from the frame. The progressive locking action guarantees positive sequential locking of window.



WH646

### Friction Adjuster

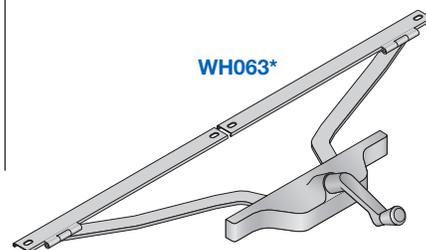
By tightening a screw in the sliding brass shoe, an operator can easily adjust the tension required to open and close the window. This friction adjuster is made of stainless steel with nylon friction block encased in a sliding brass shoe.



WH645

### Limit Device

Limit devices help prevent damage to casement and awning windows under high winds in high rise applications. Limit devices are plated steel arms with stainless steel track and detach clip.



WH063\*

### Pivot Shoe Roto Operator

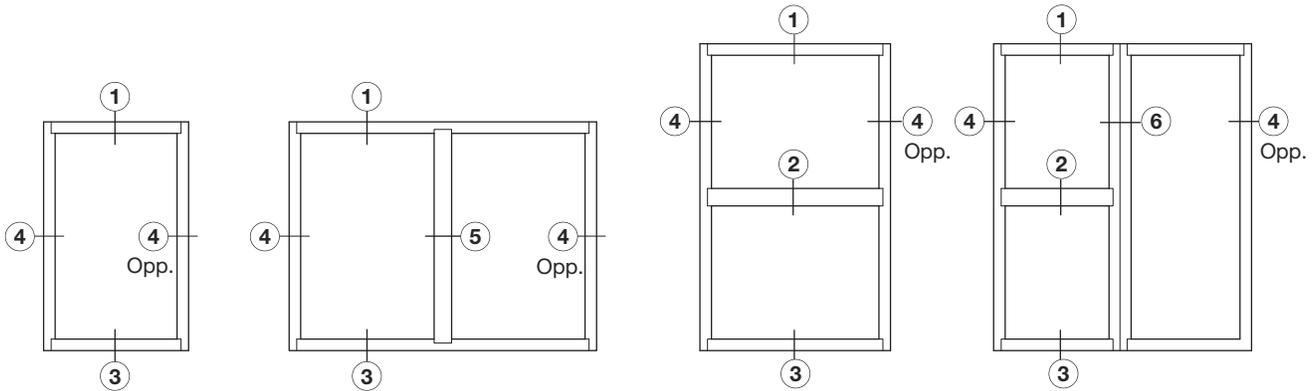
Designed for face mounted applications on single vent awning windows, this operator's unique pivot shoe design allows approximately 10" (254) of opening. Acetal pivot shoes slide smoothly in the track assuring positive operation and creating a self cleaning action.

# WINDOWS

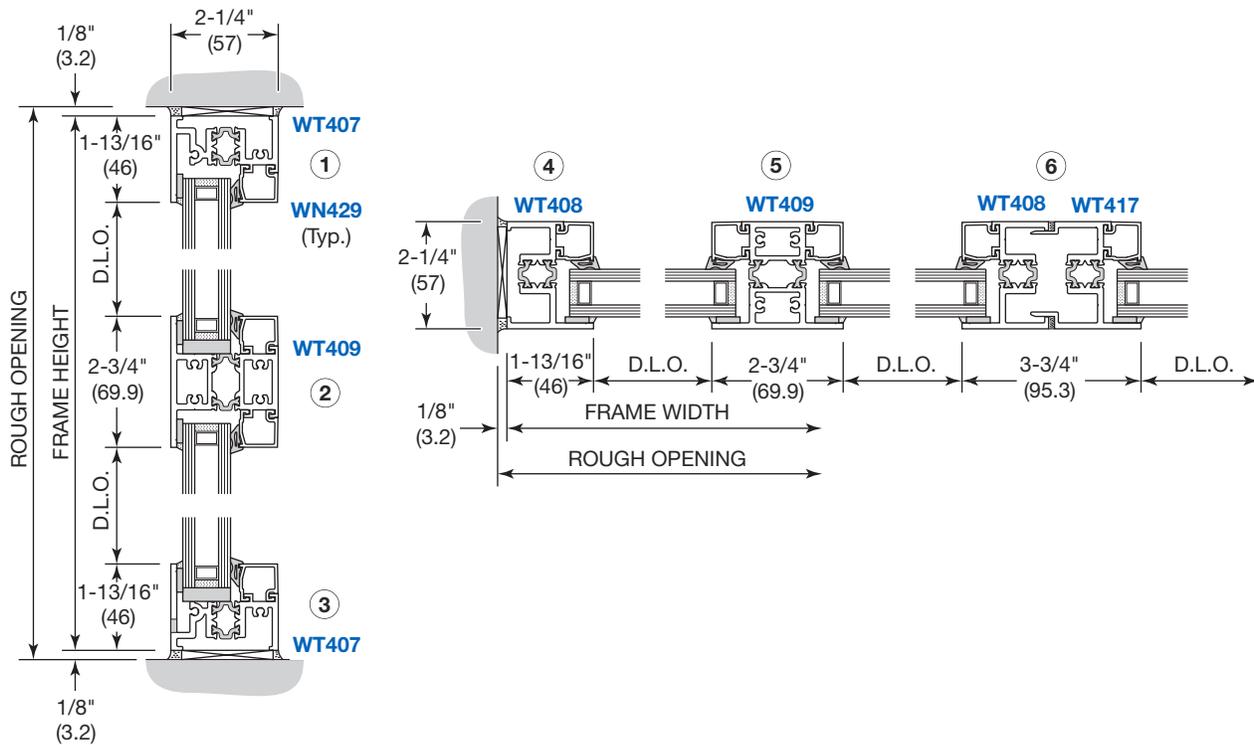
## Typical Details

### Fixed Windows • Series 7400

FOR 1" (25) GLAZING



FIXED WINDOW  
TYPICAL ELEVATIONS



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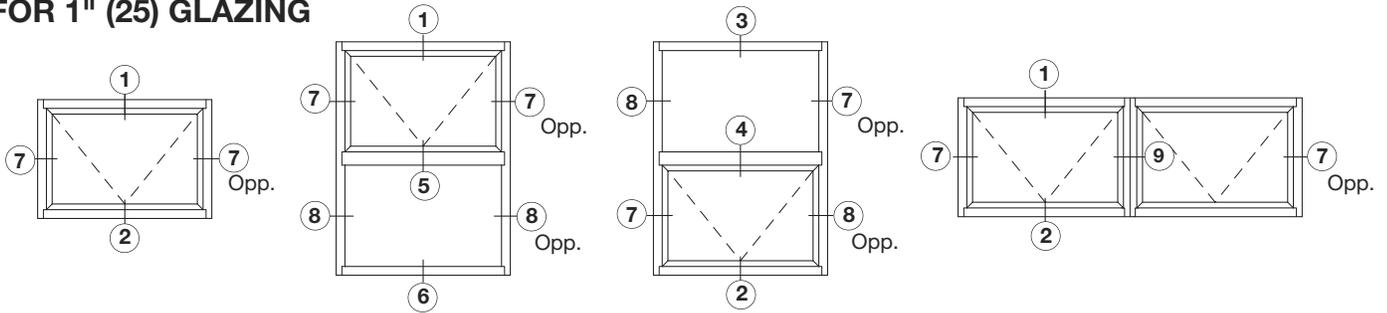
**Typical Details**

FOR 1" (25) GLAZING

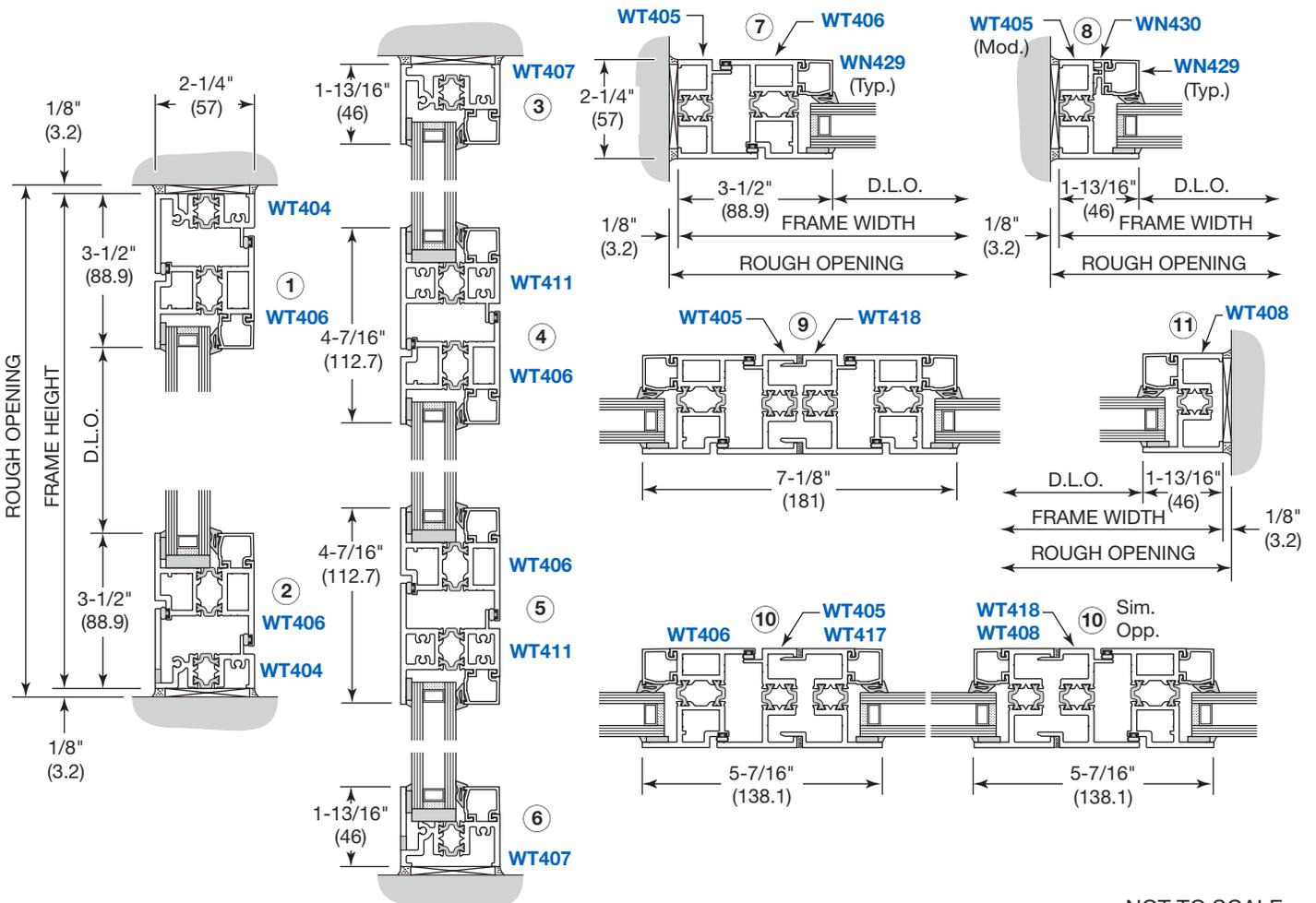
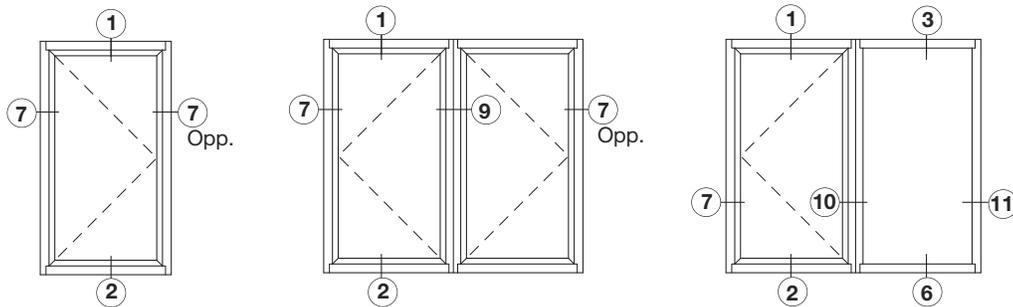
**PROJECT-IN**

**Operable Windows**

• Series 7400



**IN-SWING CASEMENT**



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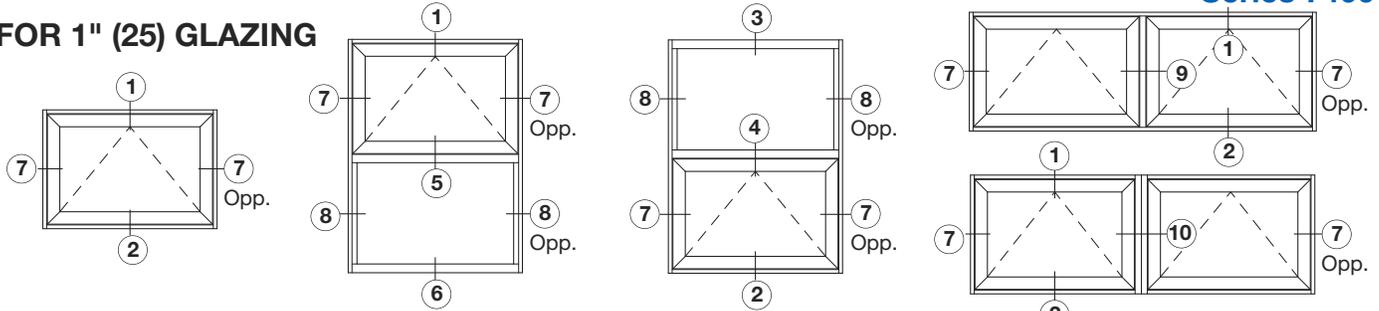
# WINDOWS

## Typical Details

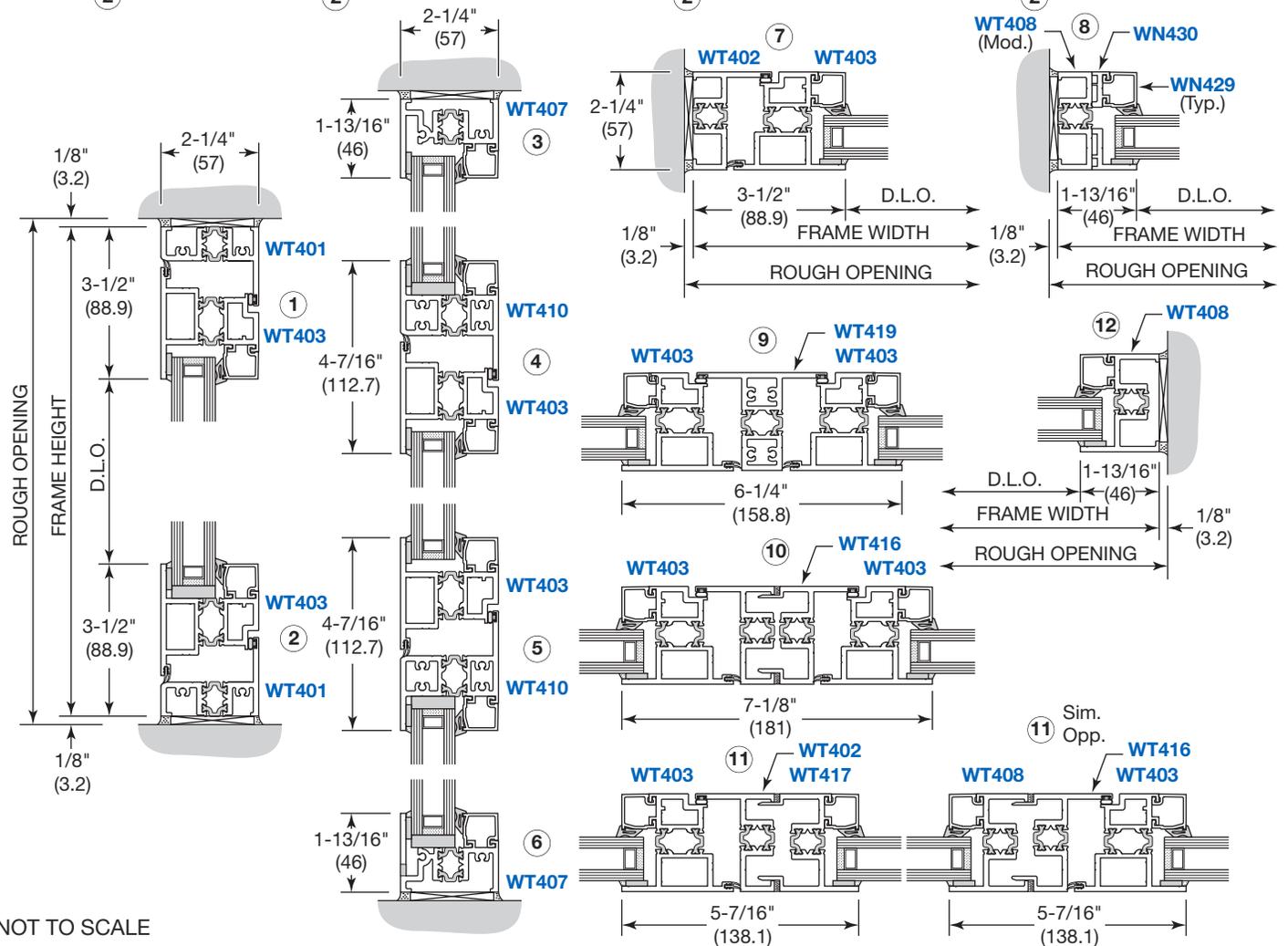
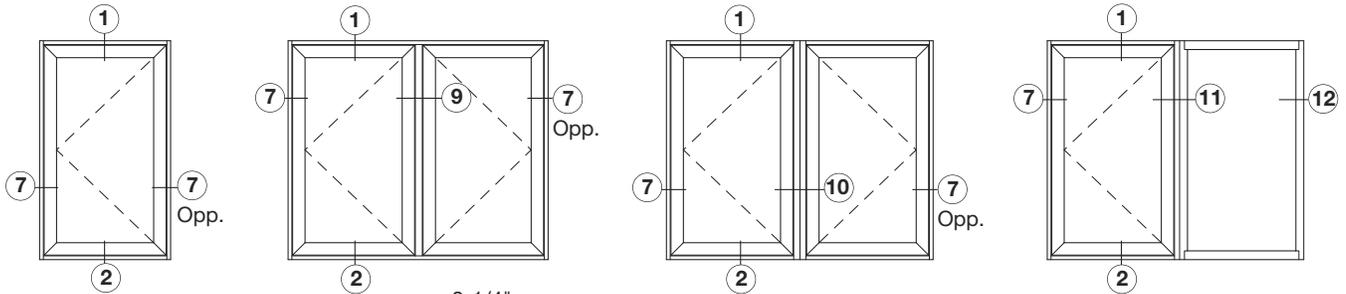
### PROJECT-OUT

### Operable Windows • Series 7400

FOR 1" (25) GLAZING



### OUT-SWING CASEMENT



NOT TO SCALE

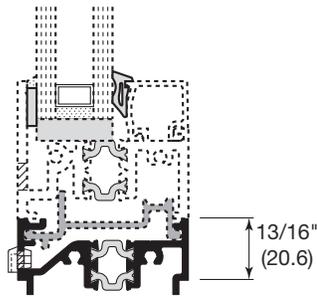
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaluminum.com](http://crlaluminum.com) By Phone (800) 421-6144

## Optional Accessories

## Operable Windows

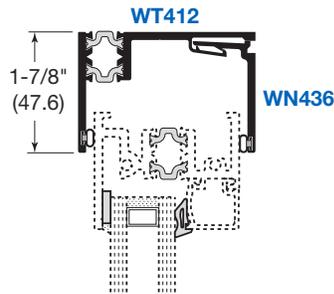
- Series 7400

FOR 1" (25) GLAZING



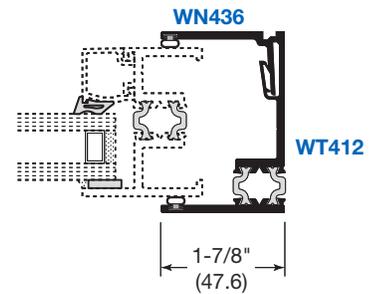
**WT414**

Starter Sills



**WN436**

**WN436**

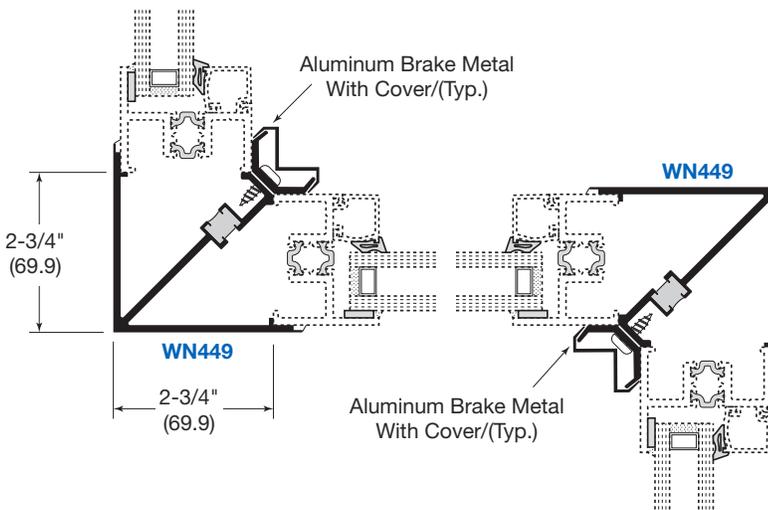


**WN436**

**WN412**

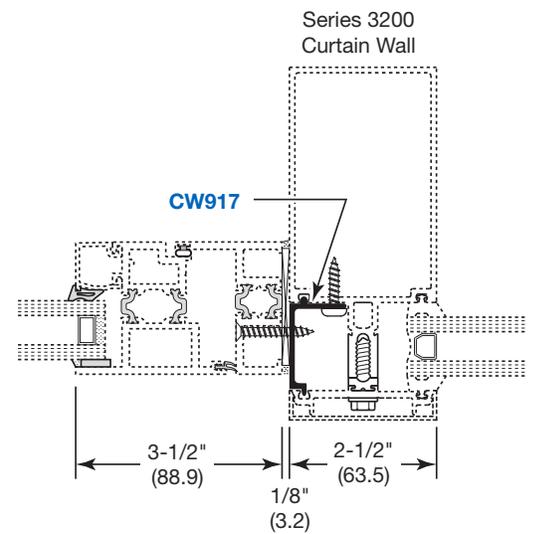
1-7/8" (47.6)

Compensation Channels



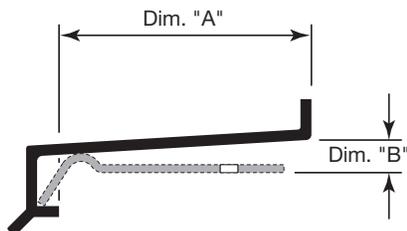
**WN449**

Corner Adaptors



**CW917**

Curtain Wall Adaptor



Extruded Sill Flashings

PART NO.	DIM. "A"	DIM. "B"	LENGTH
<b>WN442</b>	2-3/4" (69.9)	3/8" (9.5)	24' (7.3 m)
<b>WN443</b>	3-1/4" (82.6)	13/32" (10.3)	24' (7.3 m)
<b>WN444</b>	3-3/4" (95.3)	7/16" (11.1)	24' (7.3 m)
<b>WN445</b>	4-1/4" (108)	15/32" (11.8)	24' (7.3 m)
<b>WN446</b>	4-3/4" (120.7)	1/2" (12.7)	24' (7.3 m)
<b>WN447</b>	5-1/4" (133.4)	17/32" (13.5)	24' (7.3 m)
<b>WN448</b>	6-7/32" (158)	19/32" (15.1)	24' (7.3 m)

# WINDOWS

## Table of Contents

**Concealed Vent**  
• Series 7500

SECTION D3	PAGE
SPECIFICATIONS .....	02-D3 and 03-D3
SPECIAL FEATURES .....	04-D3
TYPICAL DETAILS WITH SERIES IT451 CENTER GLAZE STOREFRONT, 1" (25) GLASS .....	05-D3
TYPICAL DETAILS WITH SERIES FT451 FLUSH FRONT™ STOREFRONT, 1" (25) GLASS.....	06-D3
TYPICAL DETAILS WITH SERIES 3250 CURTAIN WALL, 1" (25) GLASS .....	07-D3
TYPICAL DETAILS WITH SERIES 4500 CURTAIN WALL, 1" (25) GLASS .....	08-D3
TYPICAL DETAILS WITH SERIES 450 CENTER GLAZE STOREFRONT, 1/4" (6) GLASS .....	09-D3
TYPICAL DETAILS WITH SERIES FF450 FLUSH FRONT™ STOREFRONT, 1/4" (6) GLASS .....	10-D3
TYPICAL DETAILS WITH SERIES 3250 CURTAIN WALL, 1/4" (6) GLASS.....	11-D3



Project: Recreation Center, Denver, CO

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

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**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## Specifications

### Concealed Vent • Series 7500

#### SECTION 08 51 13 ALUMINUM WINDOWS

Drawings and specifications are based on the Series 7500 Concealed Vent Thermal C-75 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

##### B. Glass and Glazing

1. All units shall be factory glazed.  
OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

###### A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.

2. Thermal test unit sizes shall be 36" x 60" (914 x 1524). Unit shall consist of a casement, fixed or projected window.

###### B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ ANSI/NWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
2. Air Infiltration Test - With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.
3. Water Resistance Test - With ventilators closed and locked, test unit in accordance with ASTM E 331-96 /ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
4. Uniform Load Deflection Test - With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.
5. Condensation Resistance Test (CRF) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49.
6. Thermal Transmittance Test (Conductive U-Value) - With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F.
7. AAMA C75 Rating Testing Procedures - AAMA/WDMA/CSA 101/I.S.2/

A440-0.8 - Laboratory Performance Testing.  
AAMA 502-08 - Newly Installed Fenestration Products.  
AAMA 511-08 - Installed Fenestration Products After 6 Months.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

- A. Total Window System
  1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

# WINDOWS



## Specifications

## Concealed Vent • Series 7500

### SECTION 08 51 13 ALUMINUM WINDOWS

#### PART 2 PRODUCTS

##### 2.01 Materials

###### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

1. Locking handles shall be cam type as supplied by U.S. Aluminum.
2. Operating hardware shall be 4-bar stainless steel arms or equal.

###### C. Weatherstrip

1. All weatherstrip shall be E.P.D.M. or equal.

###### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

###### E. Glass

1. Insulating glass shall be ( ) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

OR

1. Glass shall be 1/4" (6) monolithic tempered.

##### 2.02 Fabrication

###### A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2).
2. Mechanical fasteners, welded components, and hardware items

shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.

3. Depth of frame and vent shall not be less than 2-1/4" (57.2) for 1/4" (6) glazing or 3" (76.2) for 1" (25) glazing.

###### B. Frame

1. Frame components shall be mechanically fastened.

###### C. Ventilator

1. All vent extrusions shall be tubular.
2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
3. Each vent shall be pressure equalized utilizing two rows of E.P.D.M. weatherstripping (or equal) installed in dovetail grooves in the extrusion.
4. The vent shall present a flush appearance with the main frame when in the closed position.

###### E. Screens

1. Screen frames shall be extruded.
2. Screen mounting holes in the window frame shall be factory drilled.
3. Screen mesh shall be aluminum or fiberglass. (if applicable)

###### F. Glazing

1. All units shall be glazed with spacer and structural silicone.

###### G. Finish

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

(Specify one of the following)

- \_\_\_\_\_ #11 Clear anodic coating
- \_\_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_\_ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (Specify a

U.S. Aluminum standard color).

#### PART 3 EXECUTION

##### 3.01 Inspection

###### A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

C. Adjust windows for proper operation after installation.

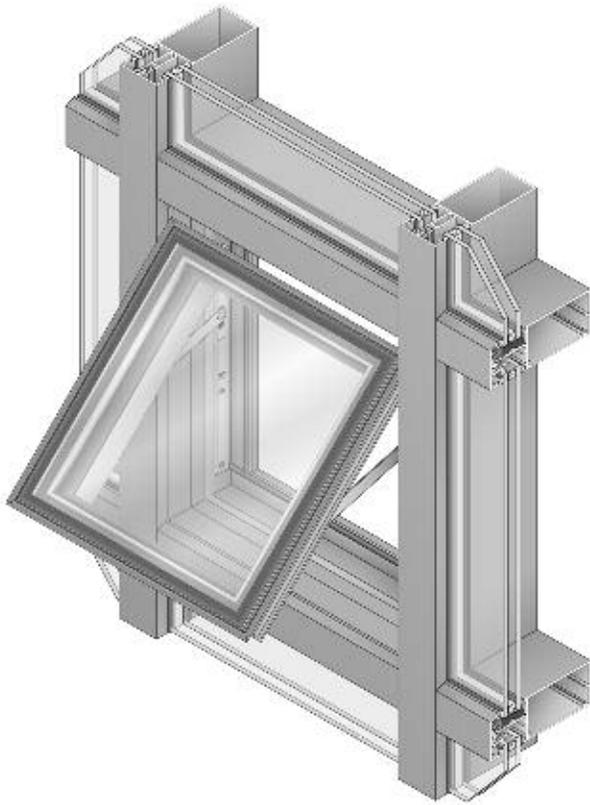
D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

##### 3.03 Protection and Cleaning

A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

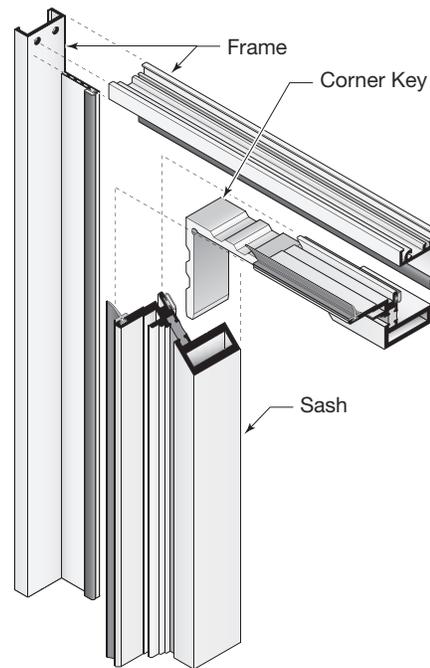
**Special Features**

**Concealed Vent**  
 • Series 7500



**Series 7500** Concealed Vent  
 (Project-Out Only)

The Series 7500 Concealed Vent is a minimal sightline, swing out, Thermally Broken Window, perfect for use in storefront, ribbon windows, and curtain wall openings. Stainless steel 4-bar hinges and cam locking handles complete the standard hardware. As with all of our operable windows, vent construction is accomplished with tubular vent components, mitered, reinforced with corner keys, and crimped.



When closed, the vent is sealed to the frame with E.P.D.M. bulb gaskets ensuring an airtight seal. The glass is held in place with structural silicone. The Series 7500 Concealed Vent is available in 1" (25) or 1/4" (6) glass versions.

**HARDWARE SELECTION GUIDE**

**Series 7500 Concealed Vent Window**

 <p><b>WH041</b> Cam Handle</p>	 <p><b>WH042</b> Keeper</p>	 <p><b>WH040</b> Handle Base</p>	 <p><b>WH765</b> Snubber Driver</p>	 <p><b>WH766</b> Snubber Receiver</p>
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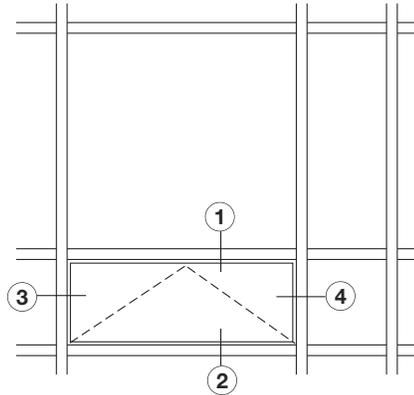
# WINDOWS

## Typical Details

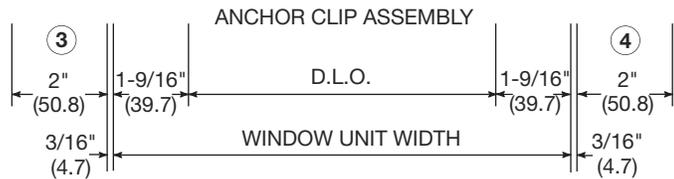
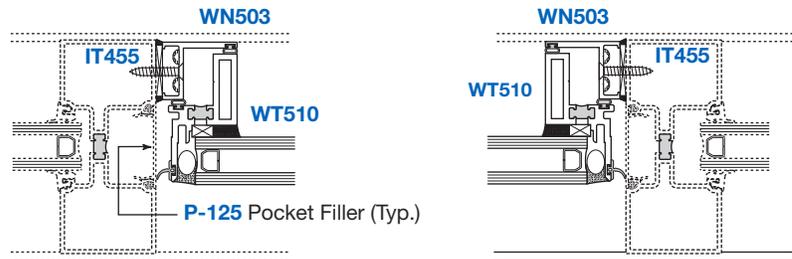
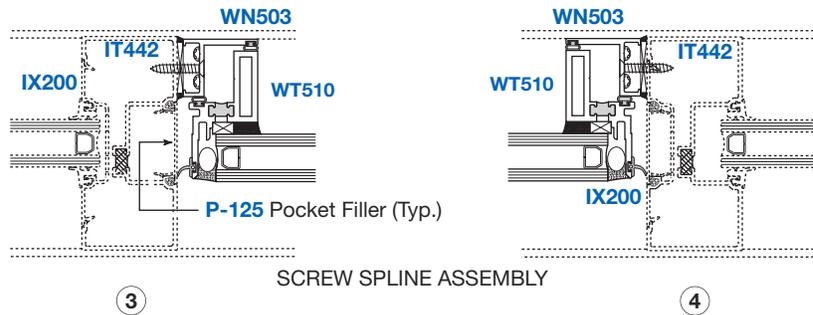
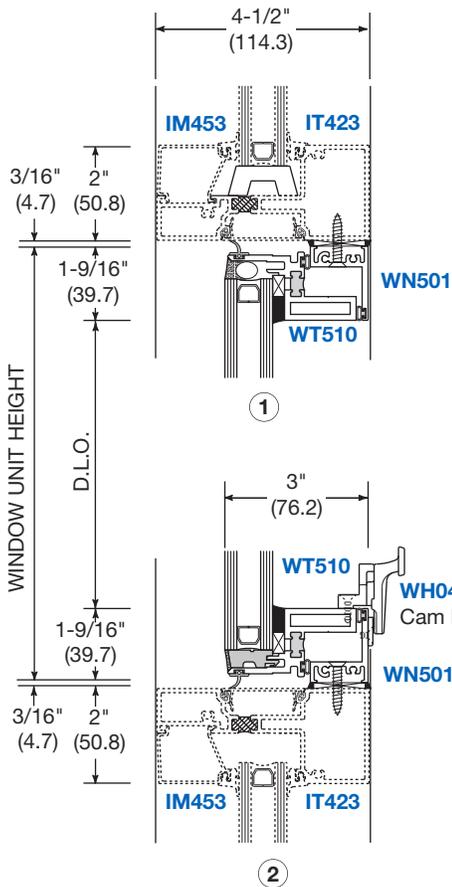
### Concealed Vent • Series 7500

#### FOR 1" (25) GLAZING

Series 7500 Shown With Series IT451 Center Glaze Storefront



TYPICAL ELEVATION



**Typical Details**

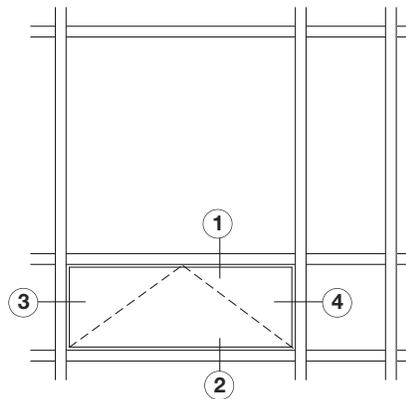
**Concealed Vent**  
• Series 7500

**FOR 1" (25) GLAZING**

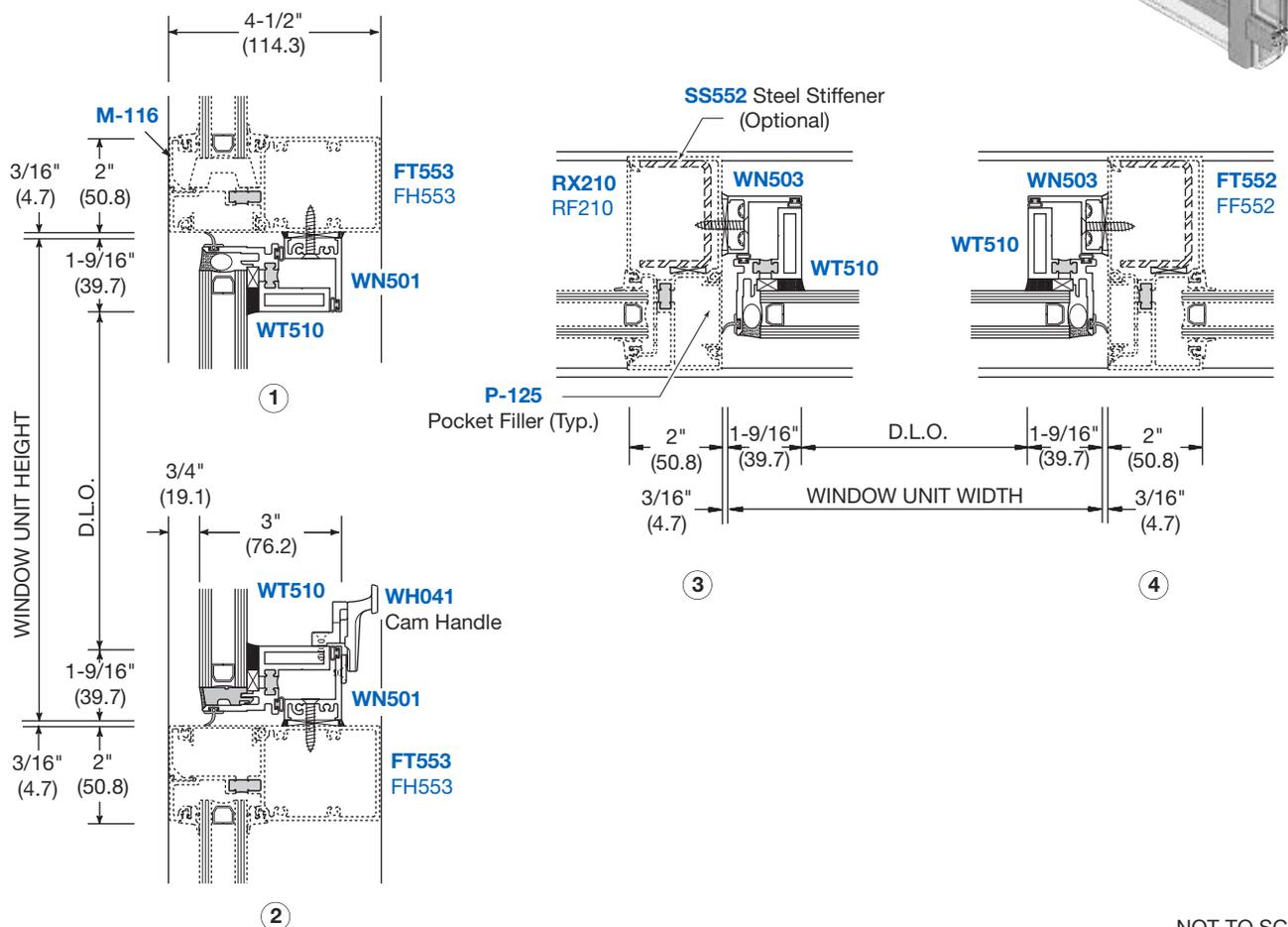
Series 7500 Shown With Series FT451 Flush Front™ Storefront

F	T	5	0	0
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Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. **FT451** details are typically shown.



TYPICAL ELEVATION



NOT TO SCALE

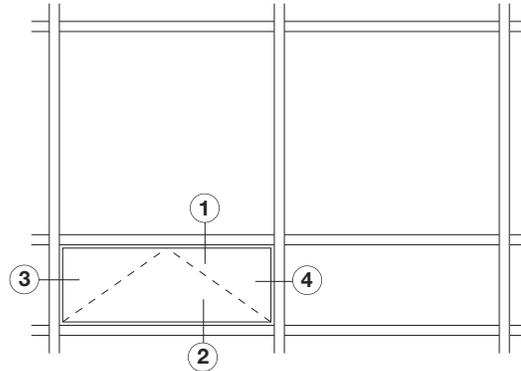
# WINDOWS

## Typical Details

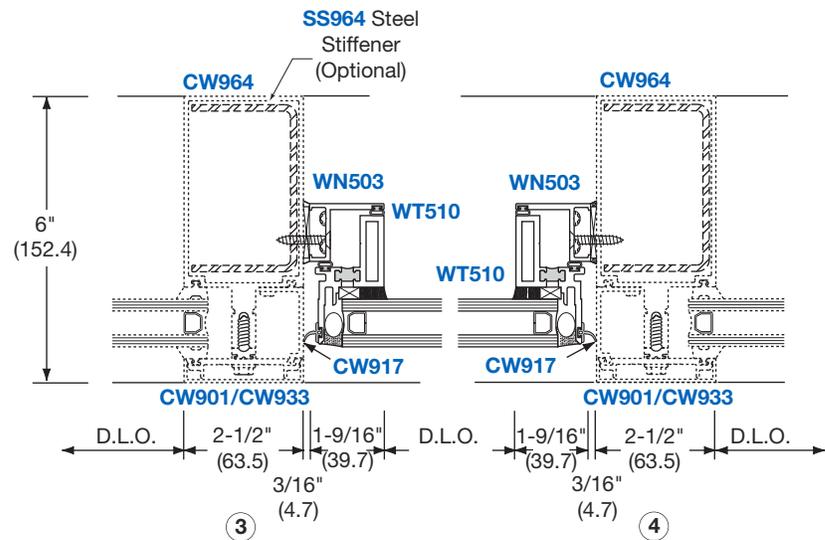
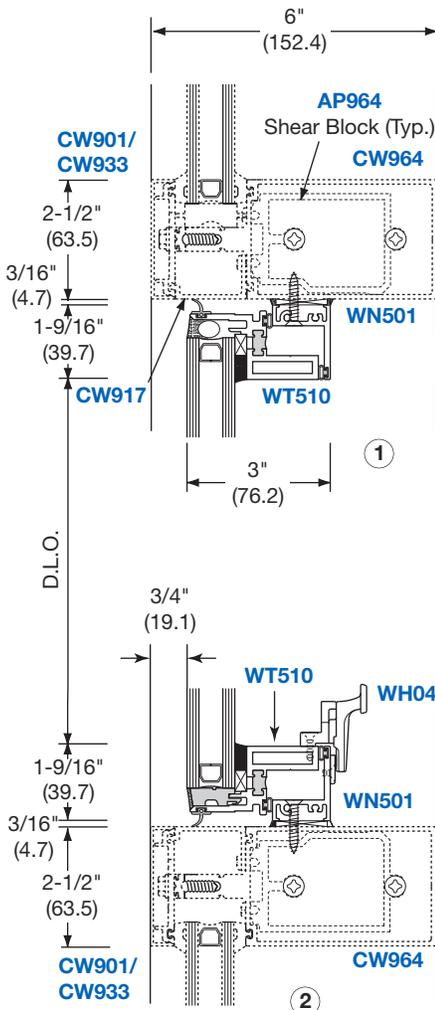
### Concealed Vent • Series 7500

#### FOR 1" (25) GLAZING

Series 7500 Shown With Series 3250 Curtain Wall



TYPICAL ELEVATION



NOT TO SCALE

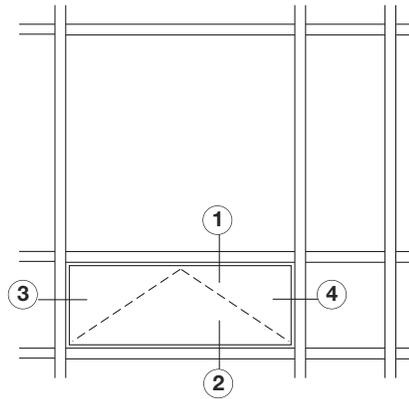
REV. 11/2017

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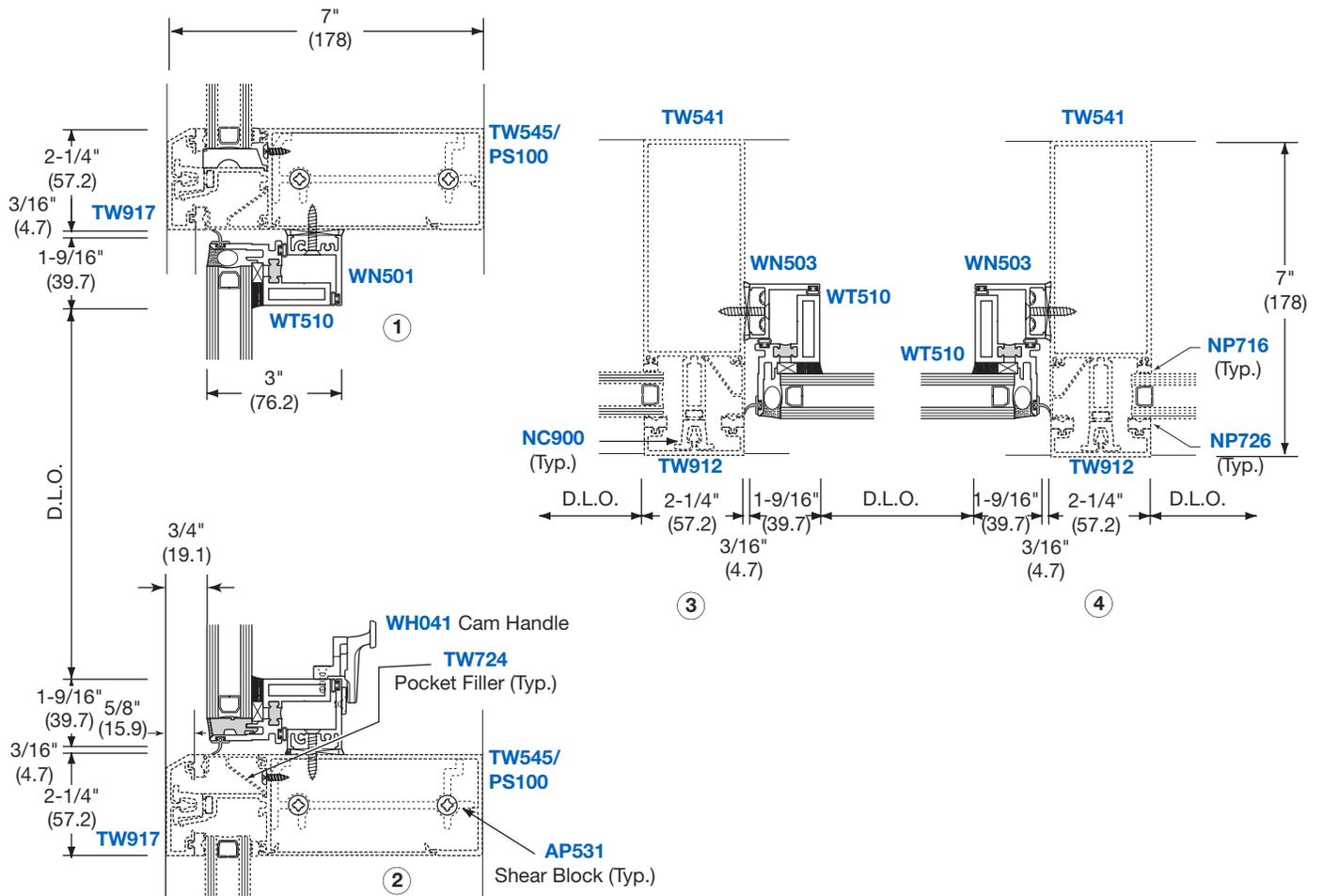
**Concealed Vent**  
 • Series 7500

**FOR 1" (25) GLAZING**

Series 7500 Shown With Series 4500 Curtain Wall



TYPICAL ELEVATION



NOT TO SCALE

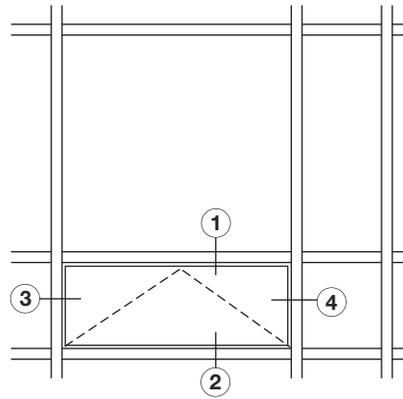
# WINDOWS

## Typical Details

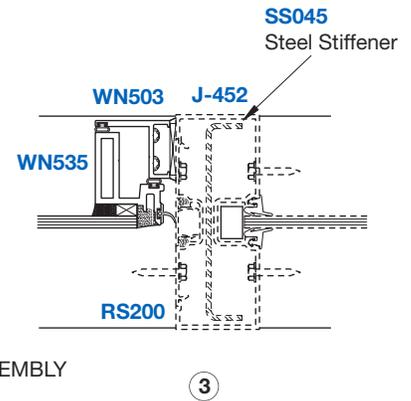
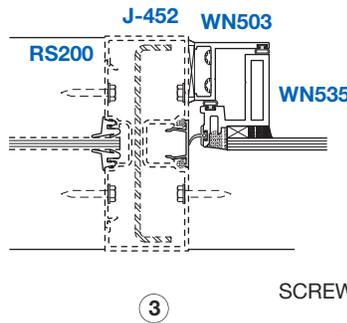
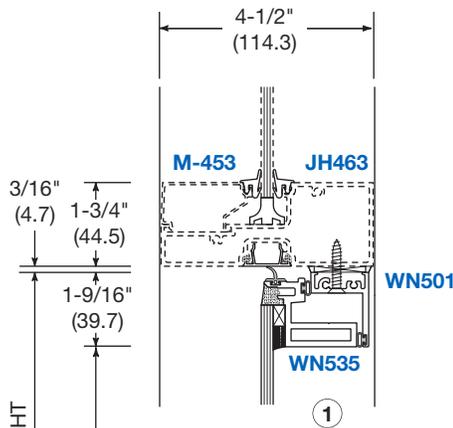
### Concealed Vent • Series 7500

#### FOR 1/4" (6) GLAZING

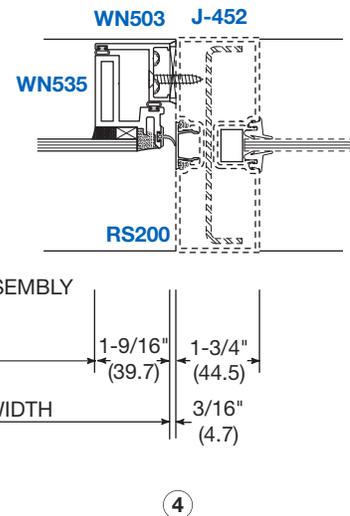
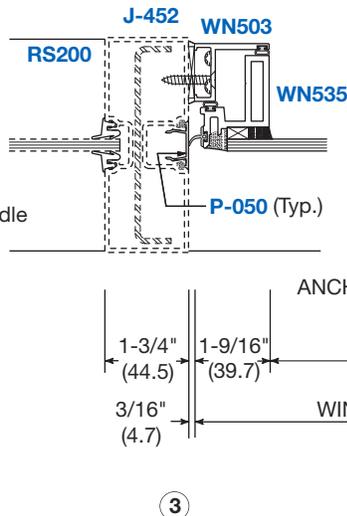
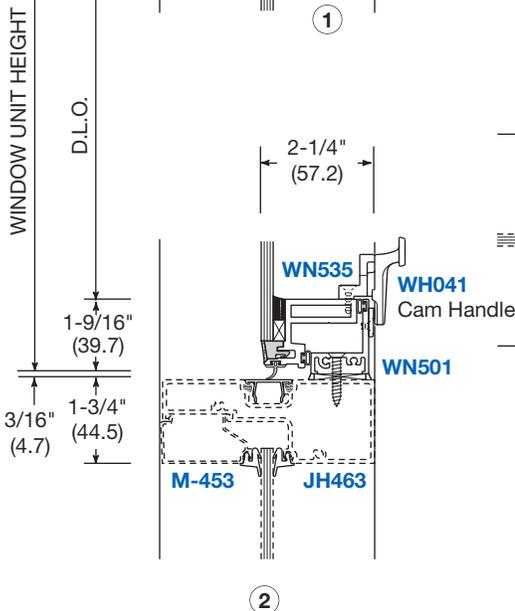
Series 7500 Shown with Series 450 Center Glaze Storefront



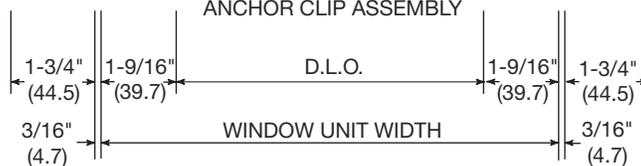
TYPICAL ELEVATION



SCREW SPLINE ASSEMBLY



ANCHOR CLIP ASSEMBLY



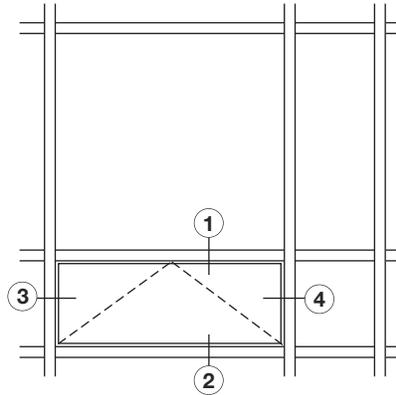
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REV. 12/2017

**Typical Details**

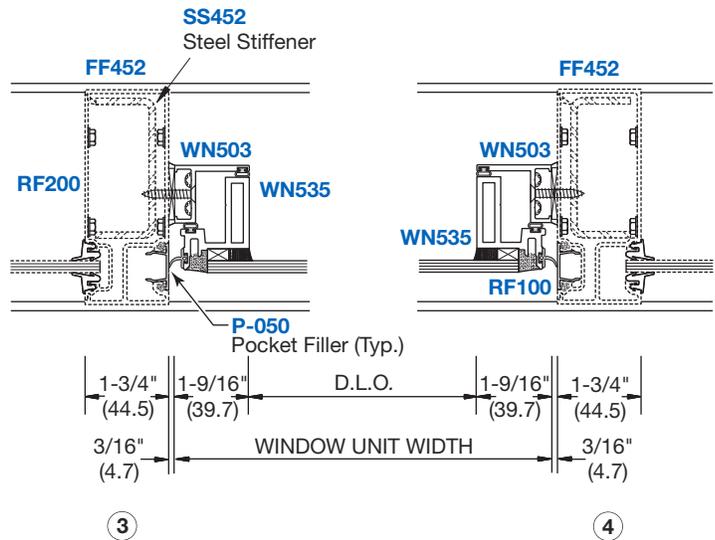
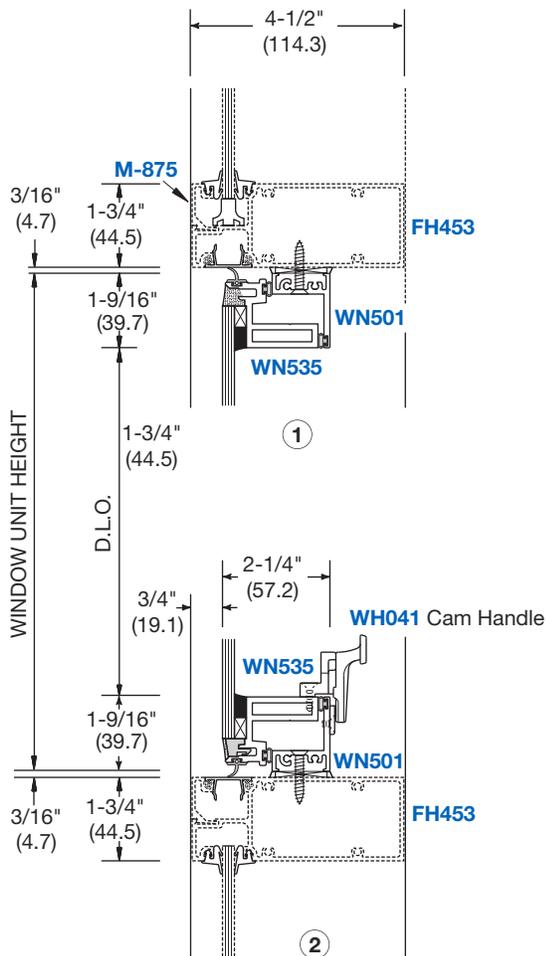
**Concealed Vent**  
• Series 7500

**FOR 1/4" (6) GLAZING**

Series 7500 With Series FF450 Flush Front™ Storefront



**TYPICAL ELEVATION**



NOT TO SCALE

REV. 12/2017

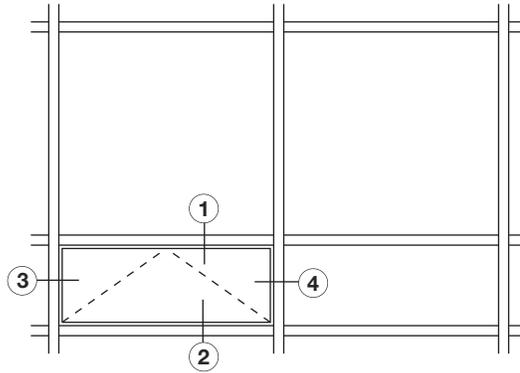
# WINDOWS

## Typical Details

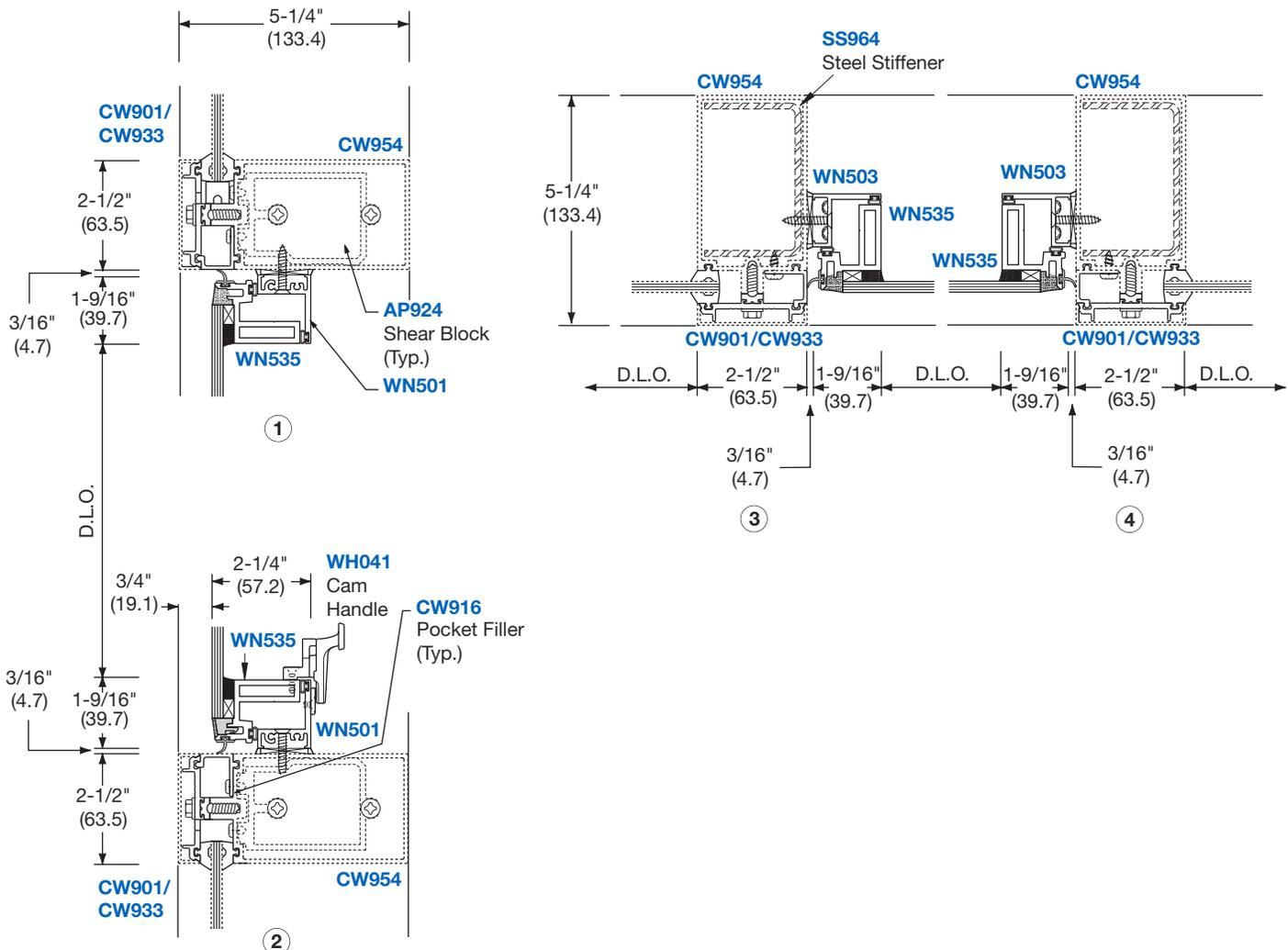
### Concealed Vent • Series 7500

#### FOR 1/4" (6) GLAZING

Series 7500 Shown With Series 3250 Curtain Wall



TYPICAL ELEVATION



NOT TO SCALE  
REV. 12/2017

**Table of Contents**

**Concealed Vent**  
• Series 7600

**SECTION D4**

**PAGE**

SPECIFICATIONS .....02-D4 and 03-D4

SPECIAL FEATURES .....04-D4

TYPICAL DETAILS WITH SERIES IT451 CENTER GLAZE STOREFRONT, 1" (25) GLASS .....05-D4

TYPICAL DETAILS WITH SERIES FT451 FLUSH FRONT™ STOREFRONT, 1" (25) GLASS.....06-D4

TYPICAL DETAILS WITH SERIES 3250 CURTAIN WALL, 1" (25) GLASS .....07-D4

TYPICAL DETAILS WITH SERIES 4500 CURTAIN WALL, 1" (25) GLASS .....08-D4



Project: 800J Lofts, Sacramento, CA

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  - Kg - kilogram
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# WINDOWS

## Specifications

## Concealed Vent • Series 7600

### SECTION 08 51 13 ALUMINUM WINDOWS

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series 7600 Concealed Vent Thermal CW100 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

B. Glass and Glazing

1. All units shall be factory glazed.  
OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

A. Test Units

1. Air, water, and structural test unit

shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.

2. Thermal test unit sizes shall be 36" x 60" (914 x 1524). Unit shall consist of a casement, fixed or projected window.

B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.

2. Air Infiltration Test -

With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.

3. Water Resistance Test -

With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.

4. Uniform Load Deflection Test -

With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.

5. Condensation Resistance Test

(CRF) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49.

6. Thermal Transmittance Test

(Conductive U-Value) - With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F.

7. AAMA CW100 Rating

Testing Procedures - AAMA/WDMA/CSA 101/I.S.2/A440-8 - Laboratory Performance Testing.

AAMA 503-08 - Newly Installed Fenestration Products.

AAMA 511-08 - Installed Fenestration Products After 6 Months.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

A. Total Window System

1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

## Specifications

### Concealed Vent • Series 7600

#### SECTION 08 51 13 ALUMINUM WINDOWS

##### PART 2 PRODUCTS

###### 2.01 Materials

###### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

1. Locking handles shall be Single Multi-Point as supplied by U.S. Aluminum.
2. Operating hardware shall be 4-bar stainless steel arms or equal.

###### C. Weatherstrip

1. All weatherstrip shall be E.P.D.M. or equal.

###### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

###### E. Glass

1. Insulating glass shall be ( ) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

OR

1. Glass shall be 1/4" (6) monolithic.

###### 2.02 Fabrication

###### A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2)
2. Mechanical fasteners, welded components, and hardware items

shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.

3. Depth of frame 3" (76.2) for 1" (25) glazing.

###### B. Frame - Frame components shall be mechanically fastened.

###### C. Ventilator

1. All vent extrusions shall be tubular.
2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
3. Each vent shall be pressure equalized utilizing two rows of E.P.D.M. weatherstripping (or equal) installed in dovetail grooves in the extrusion.
4. The vent shall present a flush appearance with the main frame when in the closed position.

###### D. Screens

1. Screen frames shall be extruded.
2. Screen mounting holes in the window frame shall be factory drilled.
3. Screen mesh shall be aluminum or fiberglass. (if applicable)

###### E. Glazing - All units shall be glazed with spacer and structural silicone.

###### F. Finish

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

\_\_\_\_ #11 Clear anodic coating

\_\_\_\_ #22 Dark Bronze anodic coating

\_\_\_\_ #33 Black anodic coating

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

##### PART 3 EXECUTION

###### 3.01 Inspection

###### A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

###### 3.02 Installation

A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

C. Adjust windows for proper operation after installation.

D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

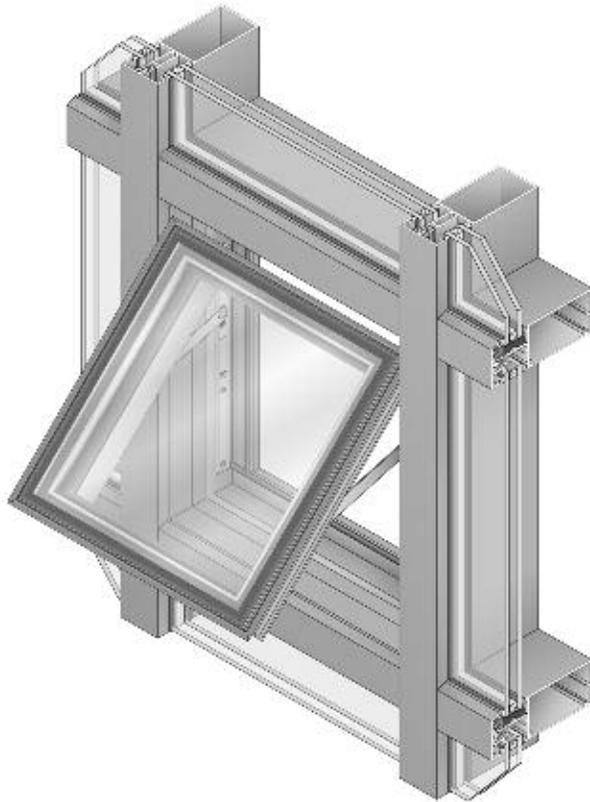
###### 3.03 Protection and Cleaning

A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# WINDOWS

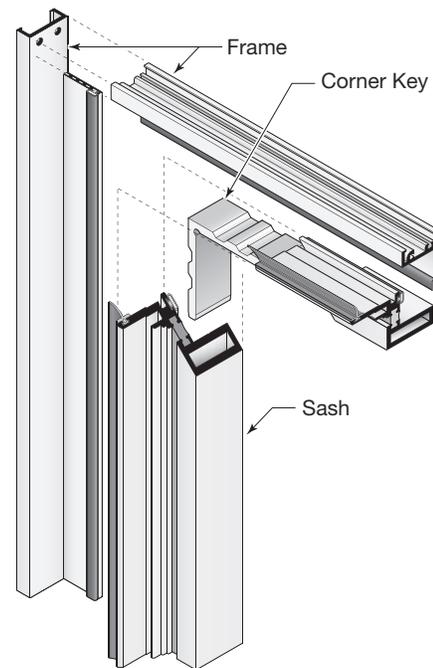
## Special Features

### Concealed Vent • Series 7600



Series 7600 Concealed Vent

The Series 7600 Concealed Vent is a minimal sightline, swing out, Thermally Broken Window, perfect for use in storefront, ribbon windows and curtain wall openings. Stainless steel 4-bar hinges and multi-point euro hardware locking handles complete the standard hardware. As with all of our operable windows, vent construction is accomplished with tubular vent components, mitered, reinforced with corner keys, and crimped.



When closed, the vent is sealed to the frame with E.P.D.M. bulb gaskets ensuring an airtight seal. The glass is held in place with structural silicone. The Series 7600 Concealed Vent is available for 1" (25) Glazing.

### EURO HARDWARE SELECTION GUIDE

#### Series 7600 Concealed Vent Window Locking Handles



**EUR1248W**  
Powder Coat White



**EUR1248BL**  
Powder Coat Black



**EUR1248SN**  
Satin Nickel



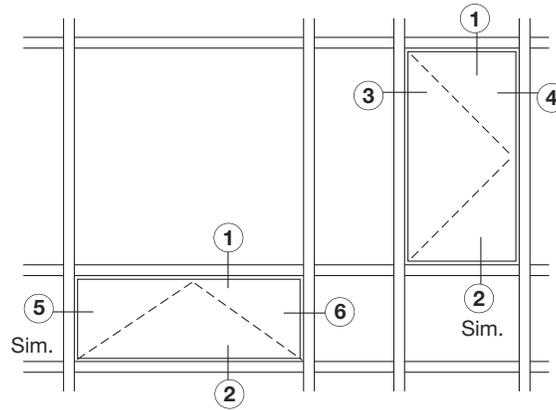
**EUR1248SC**  
Satin Chrome

**Typical Details**

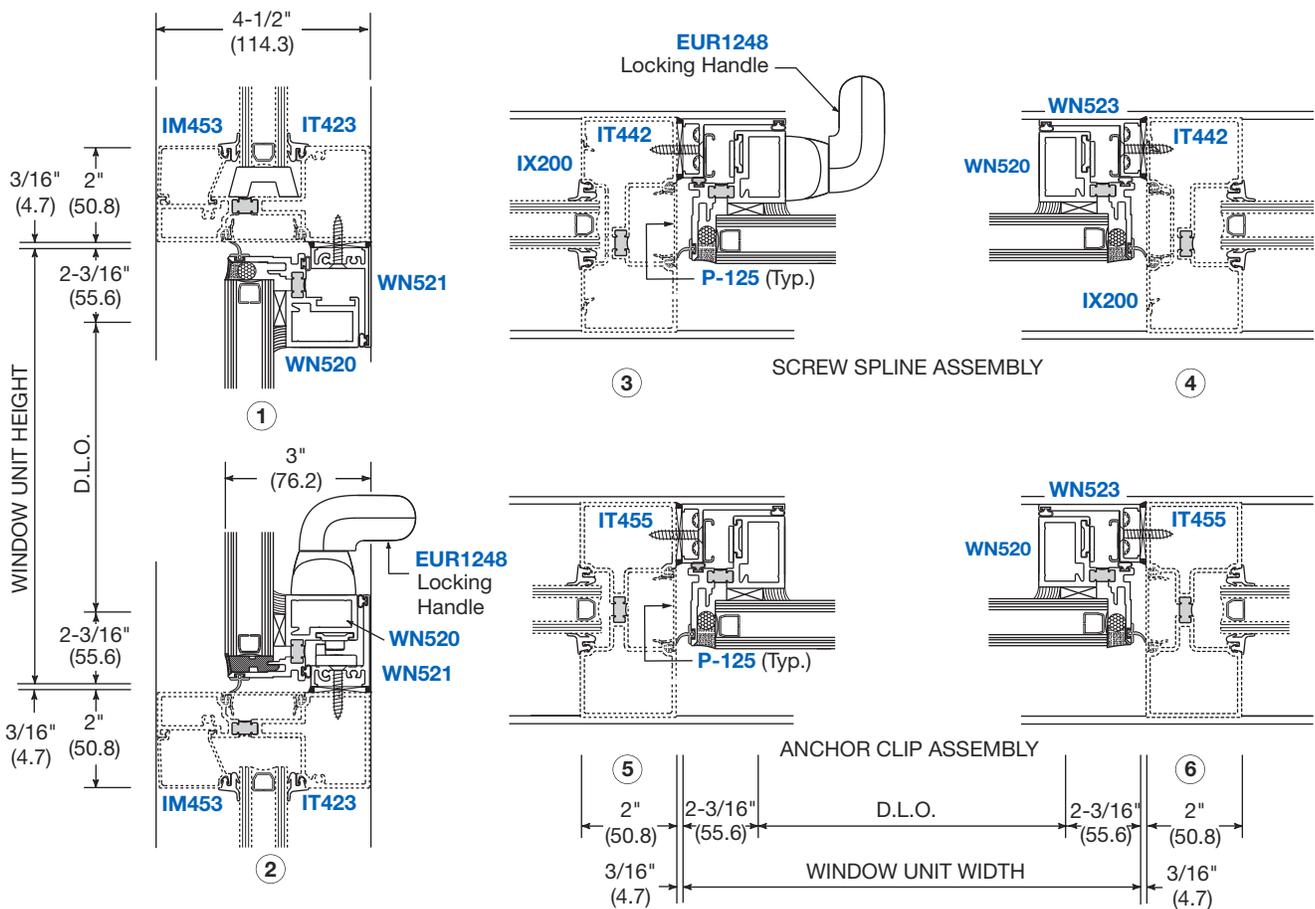
**Concealed Vent**  
• Series 7600

**FOR 1" (25) GLAZING**

Series 7600 Shown With Series IT451 Center Glaze Storefront



TYPICAL ELEVATION



NOT TO SCALE

REV. 12/2017

# WINDOWS



## Typical Details

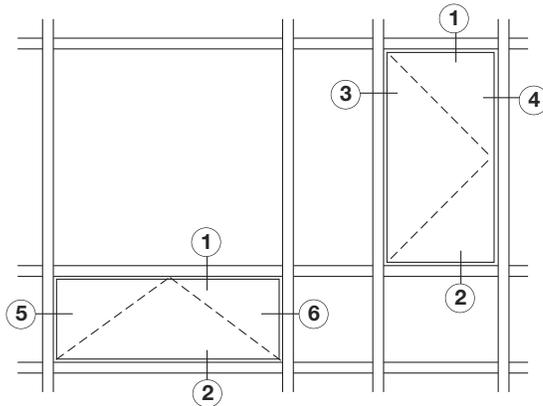
### Concealed Vent • Series 7600

#### FOR 1" (25) GLAZING

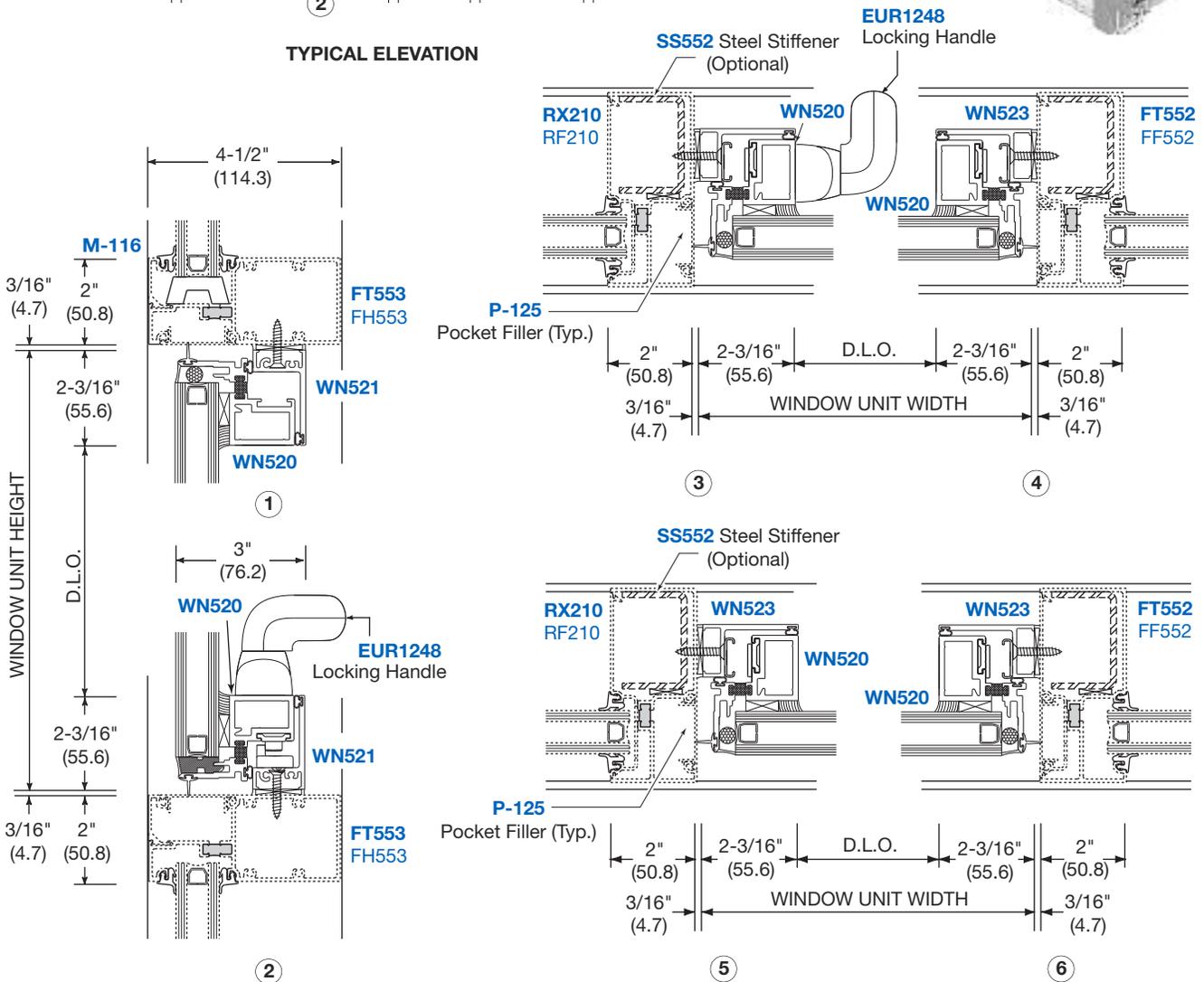
Series 7600 Shown With Series FT451 Flush Front™ Storefront

**F T 5 0 0**

Part Number prefix ending in "T" represents THERMALLY BROKEN parts. Thermal parts are in **BOLD** print. **FT451** details are typically shown.



TYPICAL ELEVATION

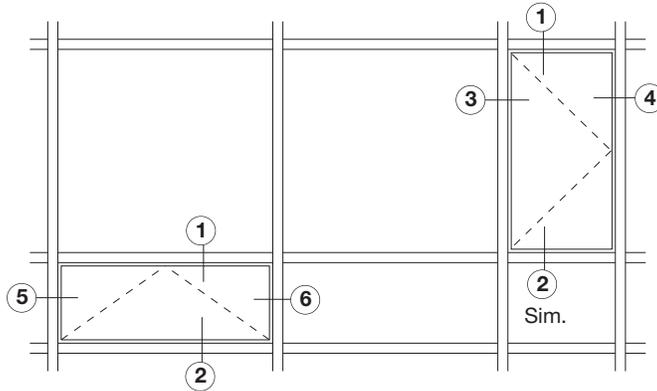


**Typical Details**

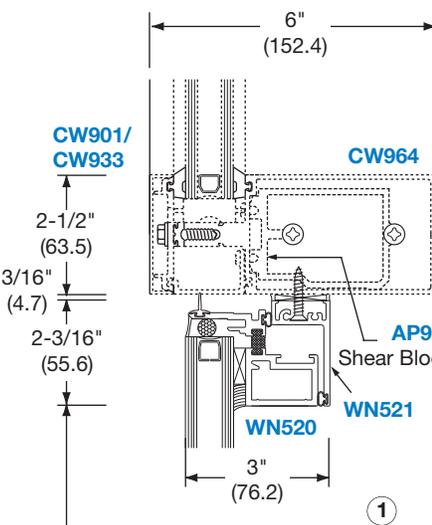
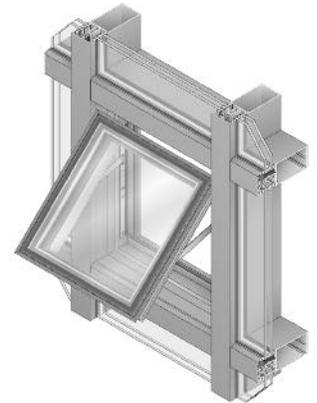
**Concealed Vent**  
 • Series 7600

**FOR 1" (25) GLAZING**

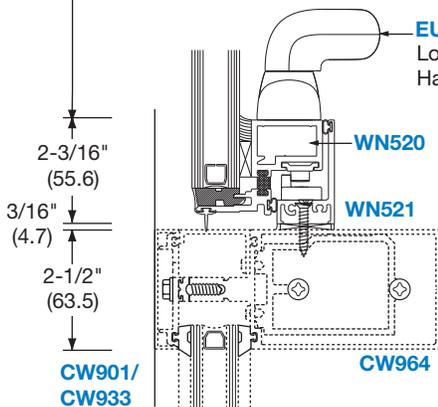
Series 7600 Shown With Series 3250 Curtain Wall



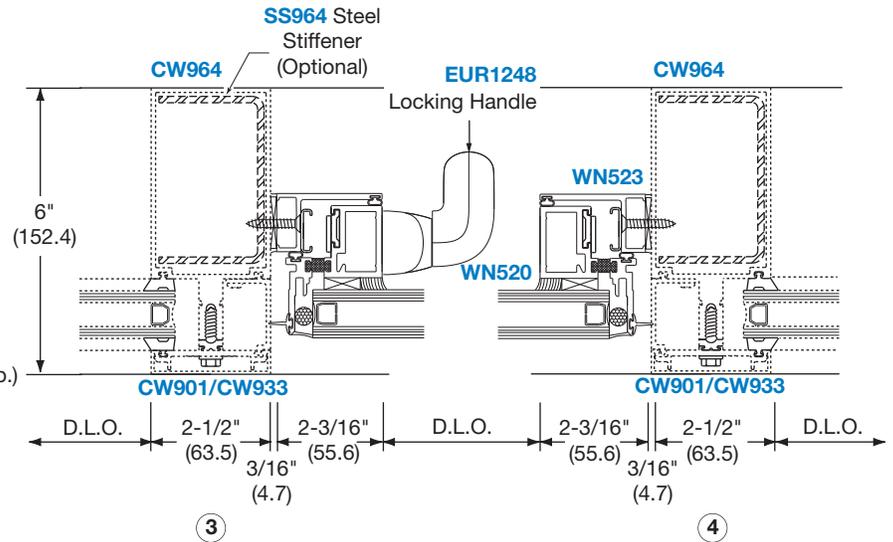
**TYPICAL ELEVATION**



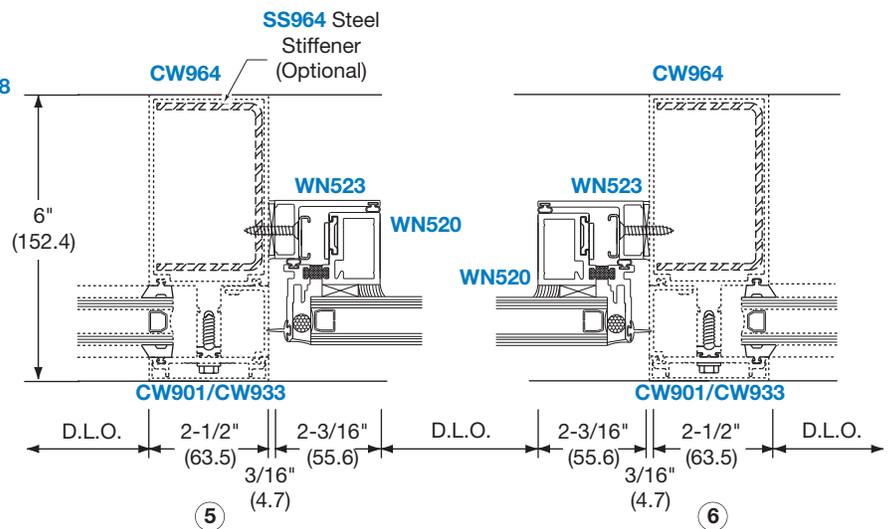
①



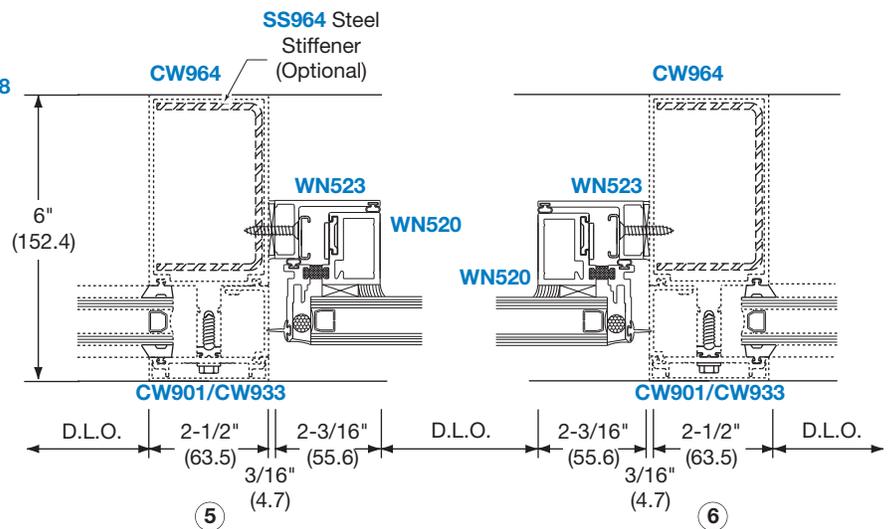
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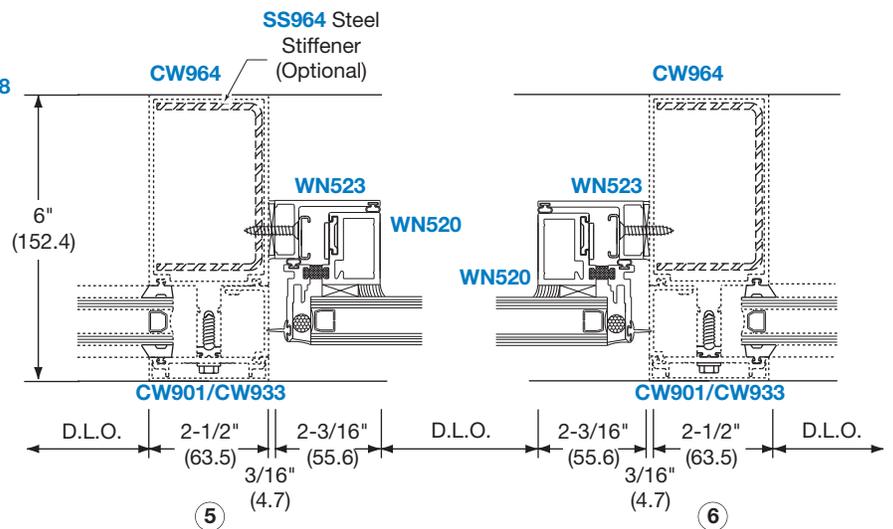
③



④



⑤



⑥

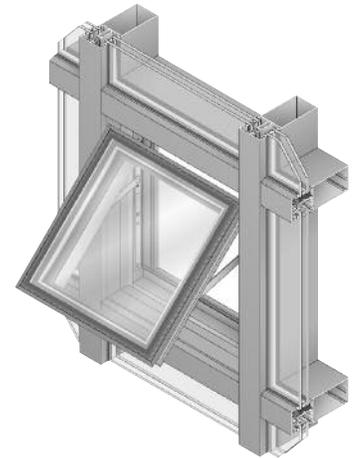
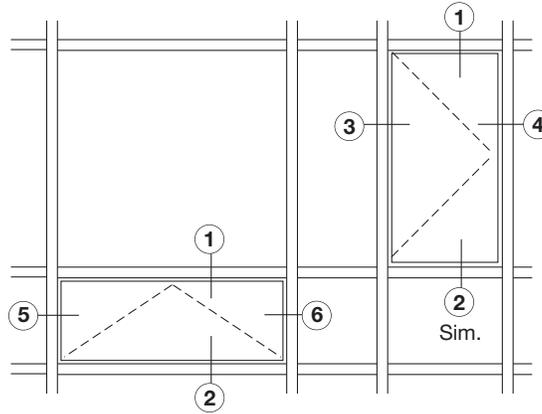
# WINDOWS

## Typical Details

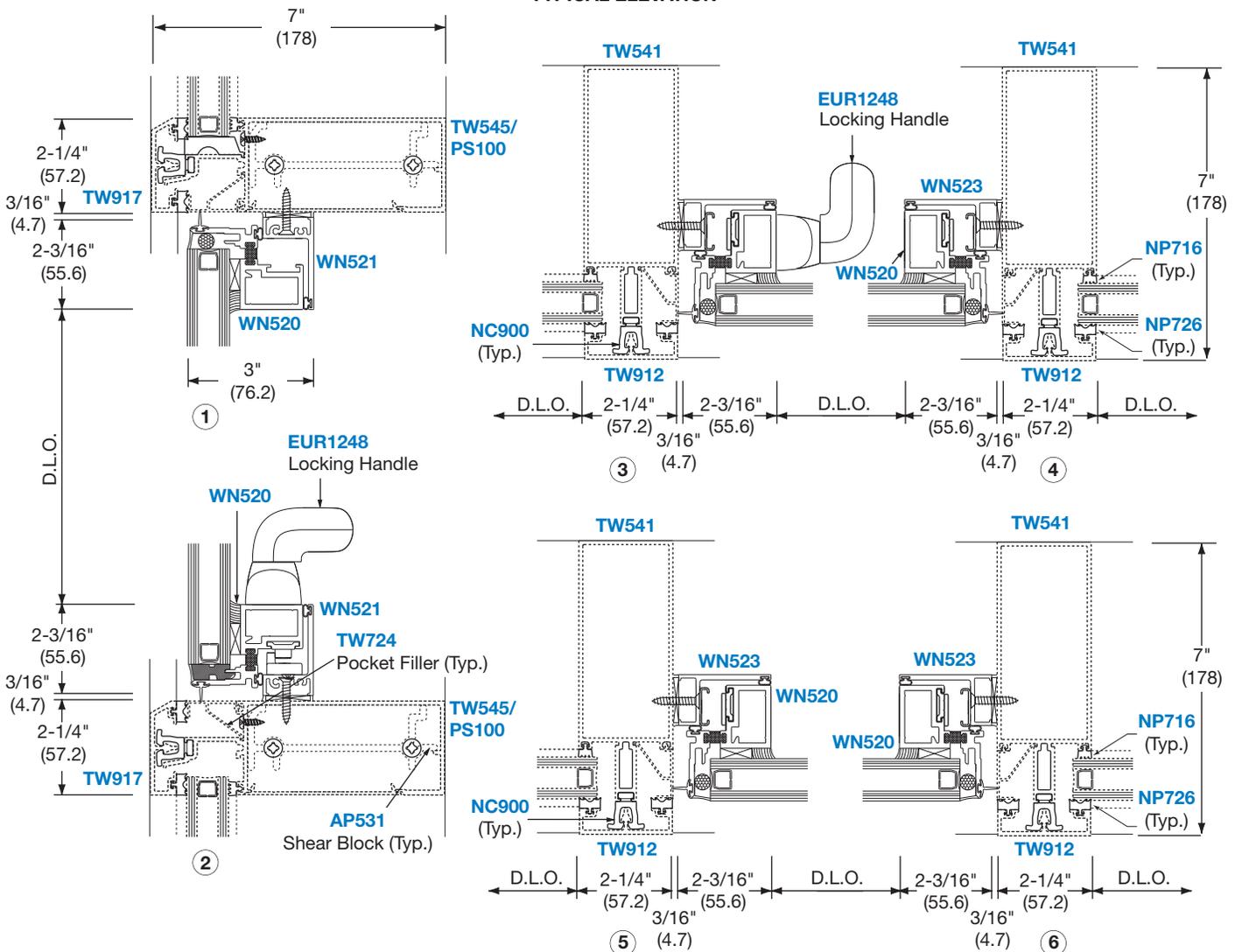
### Concealed Vent • Series 7600

#### FOR 1" (25) GLAZING

Series 7600 Shown With Series 4500 Curtain Wall



TYPICAL ELEVATION



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## Table of Contents

## Single Hung, Fixed, and Horizontal Slider

- Series 8000
- Series 8100
- Series 8200

SECTION D5	PAGE
SPECIFICATIONS SERIES 8000, 8100, AND 8200 WINDOWS .....	02-D5 and 03-D5
SPECIAL FEATURES SINGLE HUNG SERIES 8000 WINDOW .....	04-D5
TYPICAL DETAILS SINGLE HUNG SERIES 8000 WINDOW .....	05-D5
SPECIAL FEATURES FIXED SERIES 8100 WINDOW .....	06-D5
TYPICAL DETAILS FIXED SERIES 8100 WINDOW.....	07-D5
SPECIAL FEATURES HORIZONTAL SLIDER SERIES 8200 WINDOW .....	08-D5
TYPICAL DETAILS HORIZONTAL SLIDER SERIES 8200 WINDOW .....	09-D5
ACCESSORIES .....	10-D5 thru 12-D5



Project: River Rock Casino Resort, British Columbia, Canada

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |

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# WINDOWS



## Specifications

### SECTION 08 51 13 ALUMINUM WINDOWS

## Single Hung, Fixed, and Sliding Windows

- Series 8000
- Series 8100
- Series 8200

#### QUALITY ASSURANCE

Drawings and specifications are based on Series 8000 Single Hung, 8100 Fixed, or 8200 Horizontal Sliding (*Specify*) Thermal CW60 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

##### B. Glass and Glazing

1. All units shall be factory glazed.  
OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

###### A. Test Units

1. Air, water, and structural test unit shall conform to requirements set

forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.

2. Thermal test unit sizes shall be 47-1/4" x 59" (1200 x 1500) for Series 8000 and 8100, 59" x 47-1/4" (1500 x 1200) for Series 8200. Unit shall consist of a single hung, fixed or horizontal sliding window.

###### B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
  2. Air Infiltration Test - With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.
  3. Water Resistance Test - With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
  4. Uniform Load Deflection Test - With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 90 psf positive and negative pressure. No member shall deflect over L/175 of its span.
  5. Condensation Resistance Test (CRF) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49 for Series 8100 and 8200. Not less than 50 for Series 8000.
  6. Thermal Transmittance Test (Conductive U-Value) - With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance

(U-Value) for Series 8000 and 8200 Windows shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F and Series 8100 Windows shall have a range between 0.33 to 0.56 BTU/hr/ft<sup>2</sup>/°F.

###### 7. AAMA CW60 Rating

Testing Procedures -

- AAMA/WDMA/CSA 101/I.S.2/A440-8 - Laboratory Performance Testing.
- AAMA 503-08 - Newly Installed Fenestration Products.
- AAMA 511-08 - Installed Fenestration Products After 6 Months.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

- A. Total Window System
  1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

## Specifications

## Single Hung, Fixed, and Sliding Windows

- Series 8000
- Series 8100
- Series 8200

### SECTION 08 51 13 ALUMINUM WINDOWS

#### PART 2 PRODUCTS

##### 2.01 Materials

###### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

1. Series 8000 and 8200 Windows have spring loaded self-locking latches as supplied by U.S. Aluminum.

###### C. Weatherstrip

1. For Series 8000 and 8200 Windows weatherstrip shall be fin seal or equal. For Series 8100 Windows all weatherstrip shall be E.P.D.M.

###### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

###### E. Glass

1. Insulating glass shall be ( ) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.  
OR
1. Glass shall be 1/4" (6) monolithic.

##### 2.02 Fabrication

###### A. General

1. All primary aluminum frame, extrusions or vent extrusions shall have a minimum wall thickness of .062 (1.57)
2. Depth of frame 4-1/2" (114.3) for 1" (25) glazing.

###### B. Frame - Frame components shall be mechanically fastened.

###### C. Ventilator (Series 8000 and 8200)

1. All vent extrusions shall be notched .

###### D. Screens (Series 8000 and 8200)

1. Screen frames shall have springs locking the screen in place.
2. Screen mesh shall be aluminum or fiberglass. (if applicable)

###### E. Glazing - All units shall be either shop or field glazed.

###### F. Finish

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

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### PART 3 EXECUTION

##### 3.01 Inspection

###### A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

###### A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

###### B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

###### C. Adjust windows for proper operation after installation.

###### D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

##### 3.03 Protection and Cleaning

###### A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# WINDOWS

## Special Features

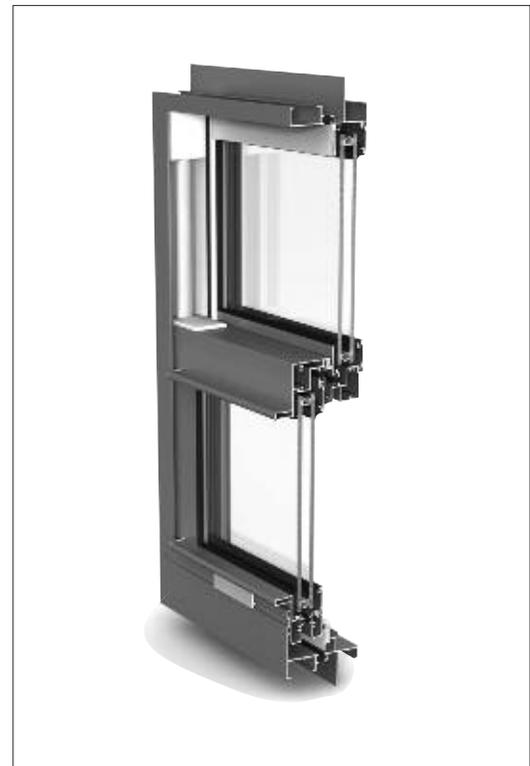
## Single Hung Window • Series 8000

The Series 8000 Single Hung Window uses a Class 5 Balance for smooth operation. The 4-1/2" (114) deep frame is designed to match typical building conditions, including our entrances and storefronts. An efficient thermally insulated frame accepts 1" (25) glazing, with extruded pulls at the interlock and bottom rail. The window features a self-locking latch.

- Tested to AAMA CW60
- Accepts 1" (25) Glazing
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.34
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Class 5 Balance for Ease of Operation
- Accessories Such as Screens, Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Complemented by the **Series 8200** Horizontal Sliding and **Series 8100** Fixed Windows
- Made in the U.S.A.



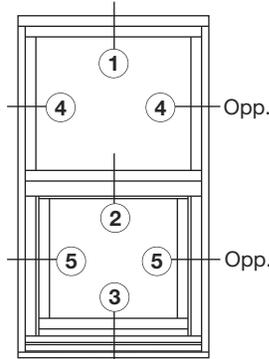
Single Hung Windows



**Typical Details**

**Single Hung Window**  
• Series 8000

FOR 1" (25) GLAZING



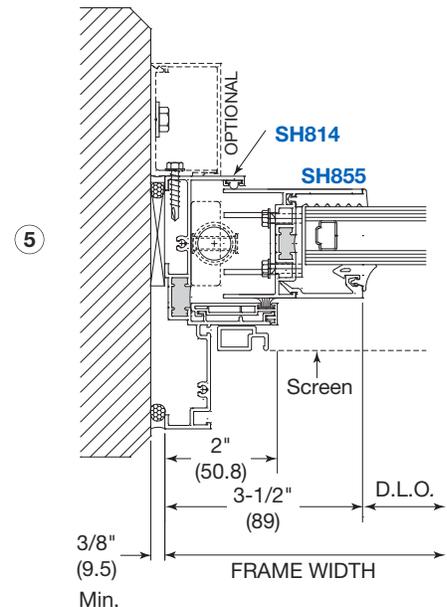
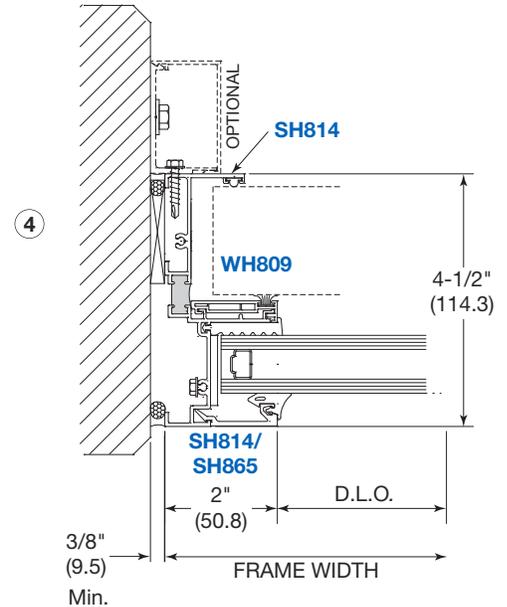
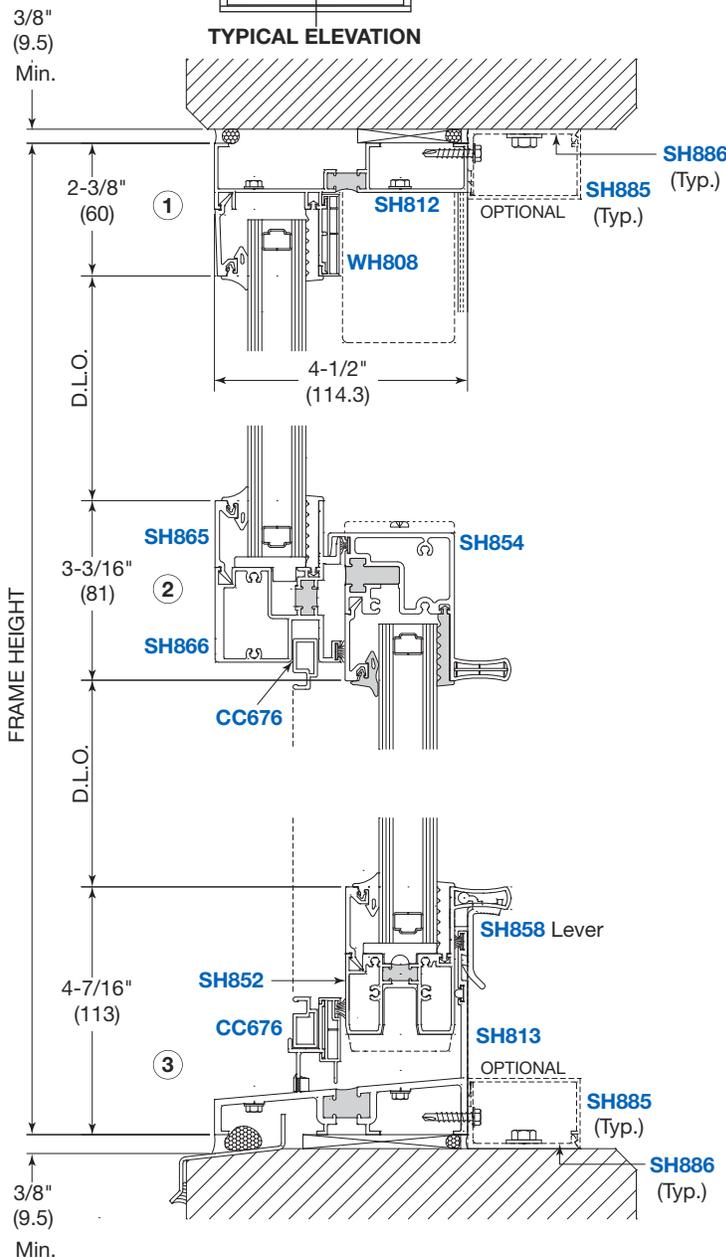
**TYPICAL ELEVATION**

- Meets or Exceeds Specifications:
- AAMA/WDMA/CSA 101/1.S.2/A 440 -08
    - ASTM E 283-04
    - ASTM E 330-02
    - ASTM E 331-00
    - AAMA 1503
  - NFRC - NFRC 100-2004
    - NFRC 200-2004
    - NFRC 500-2004

Block Frame  
Installation Method Shown

Maximum Frame Size  
56" x 91" (1422 x 2311)

A complete set of details in DWG format is available at [usalum.com](http://usalum.com)



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# WINDOWS

## Special Features

### Fixed Window • Series 8100

The Series 8100 Fixed Window has a 4-1/2" (114) deep frame designed to match typical building conditions, including our entrances and storefronts. An efficient thermally insulated frame accepts 1" (25) glazing. Available in an array of architectural coatings and anodized finishes.

- Tested to AAMA CW60
- Accepts 1" (25) Glazing
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.34
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Accessories Such as Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



Fixed Window

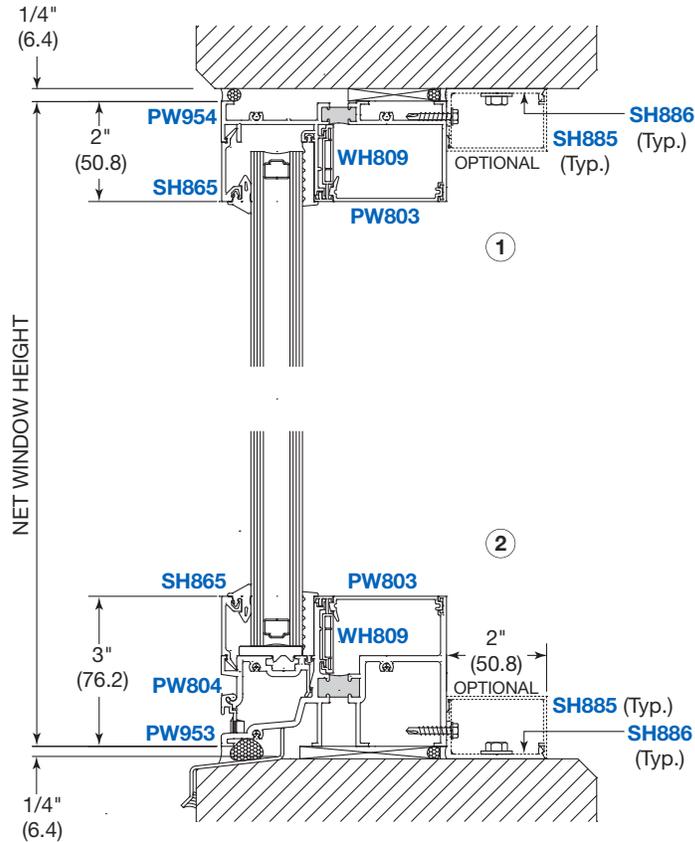


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**Typical Details**

**Fixed Window**  
• Series 8100

FOR 1" (25) GLAZING



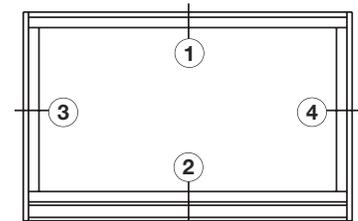
Meets or Exceeds Specifications:

- AAMA/WDMA/CSA 101/1.S.2/A 440 -08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004

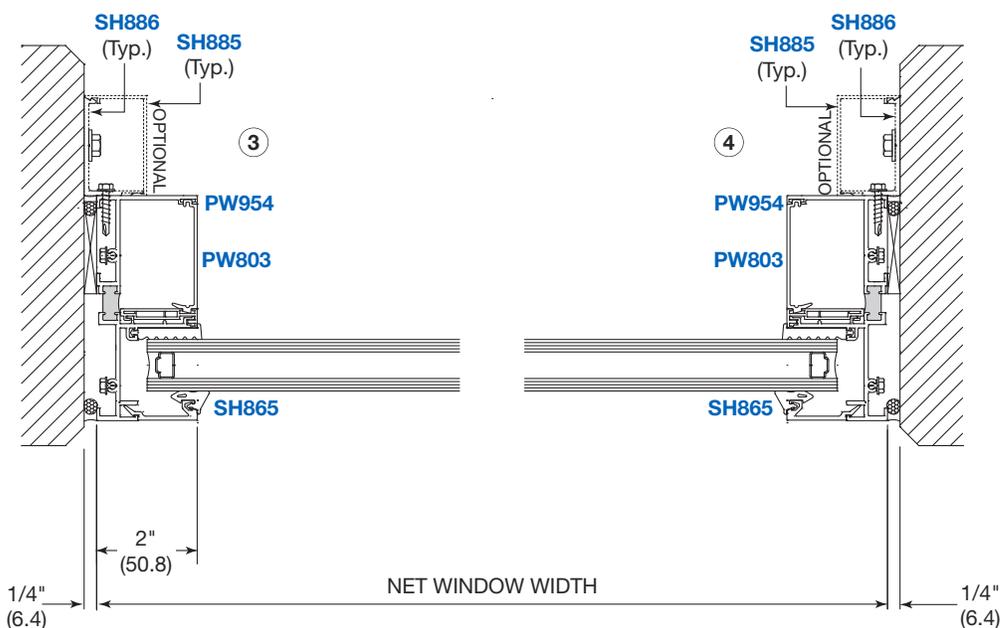
Block Frame  
Installation Method Shown

Maximum Frame Size  
56" x 63" (1422 x 1600)

A complete set of details in DWG format is available at [usalum.com](http://usalum.com)



TYPICAL ELEVATION



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# WINDOWS

## Special Features

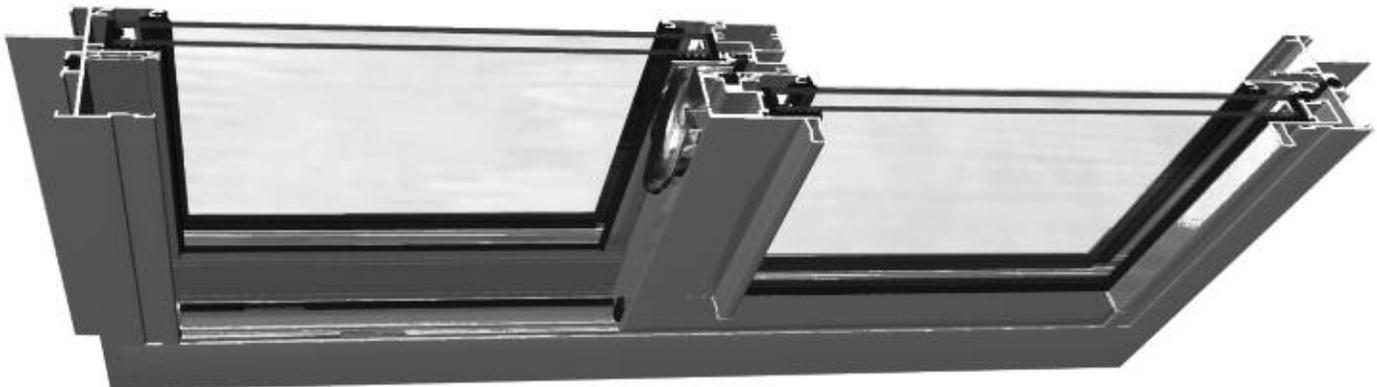
## Horizontal Sliding Window • Series 8200

The Series 8200 Horizontal Sliding Window offers that rare combination of smooth operation, durability, and toughness. It has a 4-1/2" (114) deep frame designed to match typical building conditions, including our entrances and storefronts. An efficient thermally insulated frame accepts 1" (25) glazing. Available in an array of architectural coatings and anodized finishes.

- Tested to AAMA CW60
- Accepts 1" (25) Glazing
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.34
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Dry Glazed
- Self Locking Latch and Tandem Adjustable Rollers for Ease of Operation
- Accessories Such as Screens, Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



Horizontal Sliding Windows

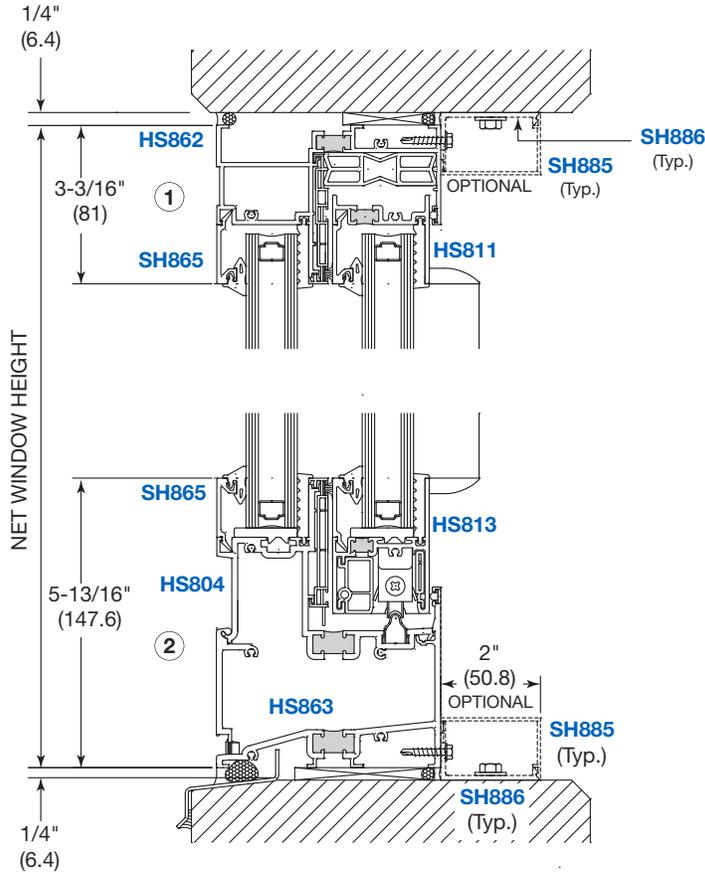


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Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

**Typical Details**

**Horizontal Sliding Window**  
• Series 8200

FOR 1" (25) GLAZING



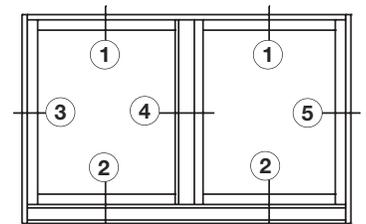
Meets or Exceeds Specifications:

- AAMA/WDMA/CSA 101/1.S.2/A 440 -08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004

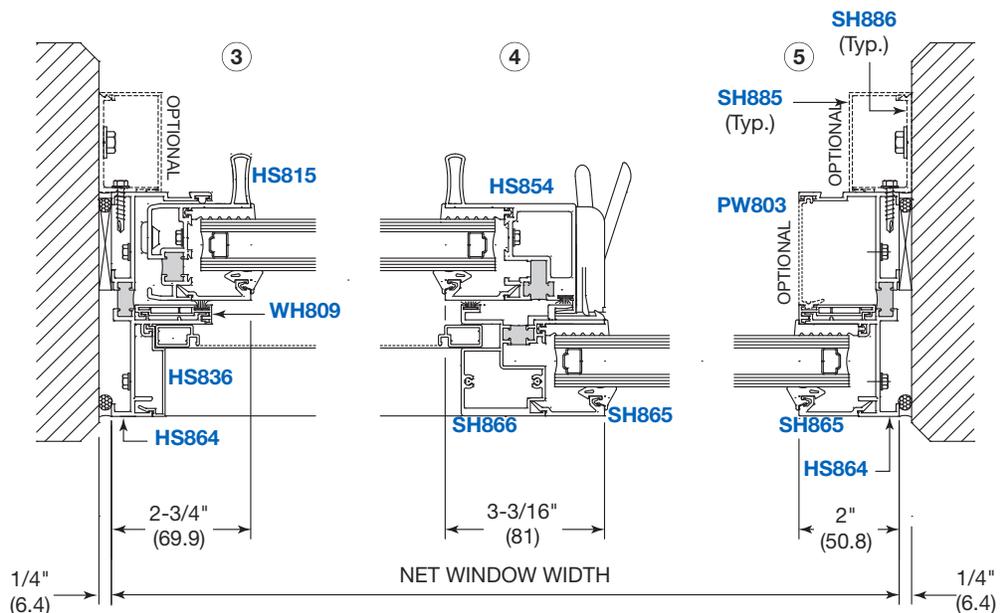
Block Frame  
Installation Method Shown

Maximum Frame Size  
71" x 60" (1803 x 1524)

A complete set of details  
in DWG format is available  
at [usalum.com](http://usalum.com)



TYPICAL ELEVATION



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# WINDOWS

## Accessories

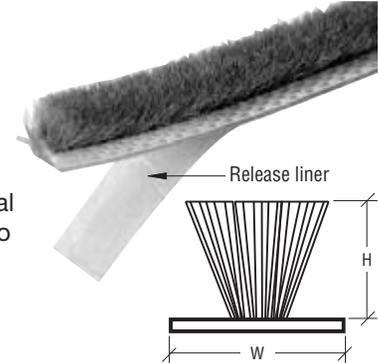
### ADHESIVE-BACKED WINDO-PILE

- Reduces Heat and Energy Loss Around Windows and Doors
- Adhesive Backing Allows Press-On Installation
- Seals Effectively Without Affecting Operation



Effectively seals vertical hung and horizontal sliding windows. Simply press Windo-Pile into the window sash channels. Doesn't interfere with normal window operation.

### Weatherstripping

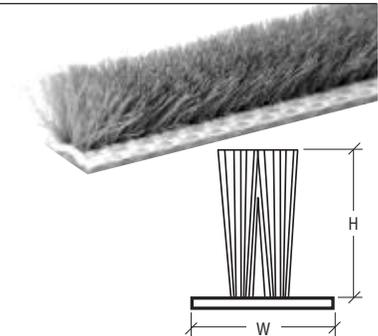


PART NO.	PILE HEIGHT (H)	BACK WIDTH (W)	ROLL LENGTH
A71320C	.200 (5)	.270 (6.8)	100' (30.5 m)
A71320B	.200 (5)	.270 (6.8)	700' (213.3 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

### WINDO-PILE

- Replaces Old or Worn-Out Pile Weatherstripping in Doors or Windows
- Water-Resistant Woven Pile is Unaffected by Adverse Weather
- Quick and Simple Installation
- Available in Two Pile Densities: Medium and High



#### MEDIUM DENSITY WINDO-PILE BACK WIDTH .187 (4.7)

100 FOOT ROLL PART NO.	PILE HEIGHT (H)	BULK ROLL PART NO.	BULK ROLL LENGTH
A11320C	.200 (5)	A11320B	1100' (335.3 m)
A11325C	.250 (6.3)	A11325B	900' (274.3 m)
A11330C	.300 (7.6)	A11330B	700' (213.4 m)
A11335C	.350 (8.9)	A11335B	600' (182.9 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

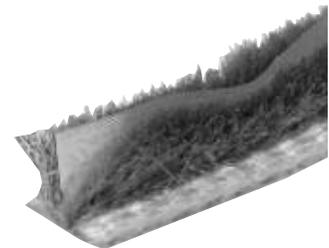
#### HIGH DENSITY WINDO-PILE BACK WIDTH .270 (6.8)

100 FOOT ROLL PART NO.	PILE HEIGHT (H)	BULK ROLL PART NO.	BULK ROLL LENGTH
A11420C	.200 (5)	A11420B	800' (243.8 m)
A11425C	.250 (6.3)	A11425B	600' (182.9 m)
A11430C	.300 (7.6)	A11430B	400' (121.9 m)
A11435C	.350 (8.9)	A11435B	400' (121.9 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.

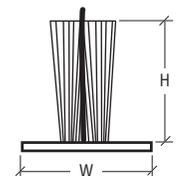
### FINNED WEATHERSTRIP

- Unique Center Fin Stops Air, Water, and Dust From Infiltrating Joints Around Windows and Doors
- Made to Replace Most Existing Pile Weatherstrips
- Resists Mold, Mildew, and Corrosion



PART NO.	PILE HEIGHT (H)	BACK WIDTH (W)	ROLL LENGTH
FS7716C	.160 (4)	.187 (4.7)	100' (30.5 m)
FS77163M	.160 (4)	.187 (4.7)	3000' (914.4 m)

Minimum order: 1 roll. 100 foot rolls can be combined with all other 100 foot rolls of Windo-Pile for quantity pricing. Bulk rolls can be combined with all other bulk rolls of Windo-Pile for quantity pricing.



# WINDOWS

## Stain Removers

### Accessories

#### BIO-CLEAN WATER STAIN REMOVER

- Effectively Removes Water and Mineral Stains, Rust, Tree Sap, Paint Overspray, Soap Scum, and Mildew From Glass and Other Surfaces
- Works Great On: Windows, Glass Surfaces, Tile, Fiberglass, Chrome, Anodized Brass and Aluminum, and Stainless Steel



Bio-Clean is a professional strength cleaner recommended by both glazing contractors and professional window cleaning companies. **NOTE:** Do not use on surfaces that can be harmed by the use of a mild abrasive.

#### •Removes Stage One Corrosion Quickly

Stage One Corrosion is defined as glass with light corrosion, and little or no damage to the glass. Stage Two Corrosion occurs when the deposits are no longer on the surface of the glass, but have started to break down the molecular structure of the glass, leaving an etched or white haze on the glass after the stain has been removed. CRL Bio-Clean Water Stain Remover will not repair glass with Stage Two Corrosion.

PART NO.	CONTENTS	QTY/CASE
WSR1	16 Fl. Oz. (473 ml)	12
WSR1P	5 Pouches	1

Minimum order: 1 each of WSR1 and 1 pack of WSR1P.

#### WATER SPOT REMOVER

- Solves the Problem of Water Spotting From Sprinklers, Hard Water Sources, and Exposure to Acid Rain
- Removes Alkaline Residue, Chemical and Mineral Deposits From Uncoated Clear and Float Glass Surfaces (Typical Stage One Corrosion)



PART NO.	CONTENTS	QTY/CASE
C2020	1 Gallon (3.785 l)	4
C2030	1 Quart (946 ml)	12

Minimum order: 1 each.

Water Spot Remover is specifically formulated for use by professional window cleaning contractors and glazing professionals. It is designed to remove any residue left on glass which may alter the optical clarity, and cannot be cleaned using standard methods.

#### "SPARKLE" CLEANER AND STAIN REMOVER

- Cleans Light Water Stains From Glass Caused by Weather, Sea Air, and Pollution
- A Longtime Favorite

PART NO.	CONTENTS	QTY/CASE
SP101	8 Fl. Oz. (236 ml)	12

Minimum order: 1 each.

"Sparkle" Cleaner does those glass cleaning jobs too tough for spray-on cleaners. It removes light water spots and stains in glass caused by weather, sea air, or pollution. Wipe on with a damp cloth or paper towel, rub stained areas, then wipe off.



#### A-MAZ WATER STAIN REMOVER

- Removes the Toughest Stains
- Contains No Acids, Bleach, or Chlorides
- Includes Nylon Scrub Pad



A-Maz Water Stain Remover removes the toughest stains on glass, chrome, porcelain, fiberglass, metal, tile - water stains, mineral deposits, and sealant stains.

PART NO.	CONTENTS	QTY/CASE
3379520	14 Fl. Oz. (396 ml)	6

Minimum order: 1 each.

# WINDOWS

## Cleaning Products and Supplies

One of our fastest growing product lines has been our Cleaning Products. We have always specialized in glass cleaning products with the industry favorite being our 1973 Glass Cleaner. And because of our alliance with Sprayway, we are able to offer you even more high quality glass cleaning products, as well as other specialty products for all types of cleaning needs. Available in aerosol and liquid forms, they tackle your toughest applications from cleaning glass, plastics, and metal, to removing graffiti, greases, oils, sealants, adhesives, and even cleaning your hands.



### Glass Cleaners

- Ammoniated Aerosol Formulas
- Non-Ammoniated Aerosol Formulas
- Private and Logo Labels
- Glass Washing Machine Detergents



### Concentrated Glass Cleaners, Stain Removers, and Protectants

- Concentrated Liquid Glass Cleaner
- Ready-Mix Glass and Mirror Cleaners
- Stain Removers
- Surface Protectants



### Plastic Cleaners

- Aerosol Plastic Cleaners
- Liquid Plastic Cleaners



### All Purpose Cleaners

- Multi-Surface Cleaners
- Stone Countertop Cleaners
- Anti-Fog Spray and Dust Remover
- Solvent Adhesive Removers and Cleaners



### Metal and General Purpose Cleaners

- Stainless Steel Polish and Cleaners
- Armor All® Protectant
- Metal Cleaners
- Rust Treatment



### Wipes, Towels, and Rags

- Lint Free Shop Wipes
- Scott Paper Towel Rolls
- Kimberly-Clark® Towels
- Micro-Fiber Wipes
- Box of Rags



### Hand Cleaners

- Organic Formula
- Orange Formula With Grit
- Wipes in a Bucket With Urethane and Grease Removers



### Cleaning Accessories

- Razor Blades and Scrapers
- Coveralls and Shoe Covers
- Steel Wool and Scotch Brite® Pads
- Vehicle Interior Protection



### Window Washing Tools

- Squeegees
- Extension Poles
- Window Cleaning Soaps



# E

## HURRICANE RESISTANT

- Series DH-350  
Entrance Doors
- Series DHS-500 Storefront
- Storm Front™ IG500/IG600
- Storm Front™ IT600
- Series BAL-350  
Terrace Doors
- IW7500/IW7600/IW8000  
IW8100/IW8200 Windows
- Accessory Hardware

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U.S. and Canada

**CRL**®  
**U.S. ALUMINUM**

[usalum.com](http://usalum.com)

# E HURRICANE RESISTANT



United States Federal Courthouse  
Coeur D'Alene, ID

U.S. Aluminum Hurricane Resistant Systems are constructed to provide essential protection in regions where impact resistant glazing systems are mandated. These systems have passed the stringent requirements of the Miami/Dade County protocols for protection from high winds and wind borne debris.

We can design a collaboration of these variations on our Entrance, Storefront, and Window Systems to suit the needs of retrofit or new construction in residential, commercial, and institutional facilities. An array of architectural coatings and anodized finishes can be selected to ensure these systems will meet the aesthetic demands of architects while also conforming to local and national building codes.

## SYSTEM

## PAGES

- Series DH-350 Entrance Doors .....01-E1 thru 07-E1
- Series DHS-500 Storefront.....01-E2 thru 04-E2
- Storm Front™ IG500/IG600/IT600.....01-E3 thru 25-E3
- Series BAL-350 Terrace Doors .....01-E4 thru 05-E4
- IW7500/IW7600/IW8000/IW8100/IW8200 Windows .....01-E5 thru 15-E5

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

Toll Free Phone (800) 262-5151

Toll Free Fax (866) 262-3299

Contact us through our web site at [usalum.com](http://usalum.com)



**SECTION E1**

**PAGE**

SPECIFICATIONS.....02-E1  
 TECHNICAL DATA .....03-E1  
 TYPICAL DETAILS .....04-E1 and 05-E1  
 DOOR FRAMES .....06-E1  
 ACCESSORIES .....07-E1



Project: Adrienne Arsht Center for Performing Arts, Miami, FL

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- m - meter
- Pa - pascal
- MPa - megapascal
- Kg - kilogram
- KPa - kilopascal

# STORM FRONT™



## Specifications

## Hurricane Resistant Entrance Doors • Series DH-350

### SECTION 08 39 80

### HURRICANE RESISTANT DOORS

NOA: 10-0121.10 Out-Swing  
NOA: 08-0618.06 In-Swing

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
DH-350	3-3/4" (95.3)	2" (50.8)	9/16" (14)	Wet Glaze

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the U.S. Aluminum Series DH-350 System. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** 0.050 cfm/sq. ft at a pressure differential of 6.24 psf.

**Forced Entry Resistance:**

AAMA 1304. Dade County Protocol TAS-201, 202, and 203: Meets all Miami-Dade County, Florida air, structural, and impact requirements.

Large and Small Missile Impact Test:

Maximum design pressure of +100 psf to -100 psf.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T6 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a Kynar 500 AAMA 2605 paint.

(*Specify one of the following*):

\_\_\_ Bone White

\_\_\_ Statuary Bronze

\_\_\_ Kynar 500 (special order)

with the requirements of AAMA 2605. Color shall be (*Specify*).

Class 1 anodized extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain...

\_\_\_ Bronze Anodize

\_\_\_ Clear Anodize

#### FABRICATION

Vertical and horizontal framing members shall have a nominal face dimension of 1-3/4" x 5" x 1/8" thick (44 x 127 x 3.2).

#### GLAZING

Dade County

- DH-350 Single Door - 9/16" (14)

Heat strengthened with SentryGlas® Plus interlayer

- DH-350 Pair of Doors - 9/16" (14) Heat strengthened with SentryGlas® Plus interlayer.

#### SEALANTS

All metal to metal joints shall use DOW 795 Silicone.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

#### IV. OPTIONS

- Concealed Overhead Closers
- Exposed Heavy-Duty Closers

## Technical Data

## Hurricane Resistant Entrance Doors

- Series DH-350

The DH-350 is a High Performance Hurricane Resistant Storefront Entrance Door designed for all commercial entrance applications including retail space, hotels, condominiums, office buildings, institutional facilities, and industrial structures. The DH-350 complies with the stringent requirements of Florida's Miami-Dade County Building Codes, making it the top choice for installation in areas ravished by hurricanes. The DH-350 is intended to be installed in punched openings or as a liner frame within other U.S. Aluminum Impact Framing Systems.



Series DH-350 Hurricane Resistant  
Out-Swing Medium Stile  
Entrance (Exterior View)

### Standard Features:

- Factory Pre-Glazed With Structural Silicone
- Standard Panel Sizes: 36" x 84" (914 x 2137) for Single Doors  
72" x 84" (1829 x 2137) for Pairs of Doors  
36" x 96" (914 x 2438) for Single Doors  
72" x 96" (1829 x 2438) for Pairs of Doors
- Heavy Commercial Grade
- 8" (203.2) Bottom Rail
- Heavy-Duty Internal Corner Clips
- 1" x 5" (25 x 127) or 1-3/4" x 5" (44.5 x 127) Door Frame
- 0.125 Nominal Wall Thickness, Door, and Frame
- 1-1/2 Pair of 4" x 4-1/2" (101.6 x 114.3) Mortised Aluminum Butt Hinges with Non-Removable Stainless Steel Hinge Pins for 3070 / 6070 Doors
- Two Pairs of 4" x 4-1/2" (101.6 x 114.3) Mortised Aluminum Butt Hinges with Non-Removable Stainless Steel Hinge Pins for 3080 / 6080 Doors
- Double Rows of Weather Seals
- Three-Point Locking System with Cylinder and Thumbturn Included
- Standard Push/Pull Set 1" (25) Round US28 Finish
- Non-Removable Interior Glass Stops
- Wet Glazing Method
- Three Color Option



Series DH-350 Hurricane Resistant  
In-Swing Medium Stile  
Entrance (Exterior View)

### Options:

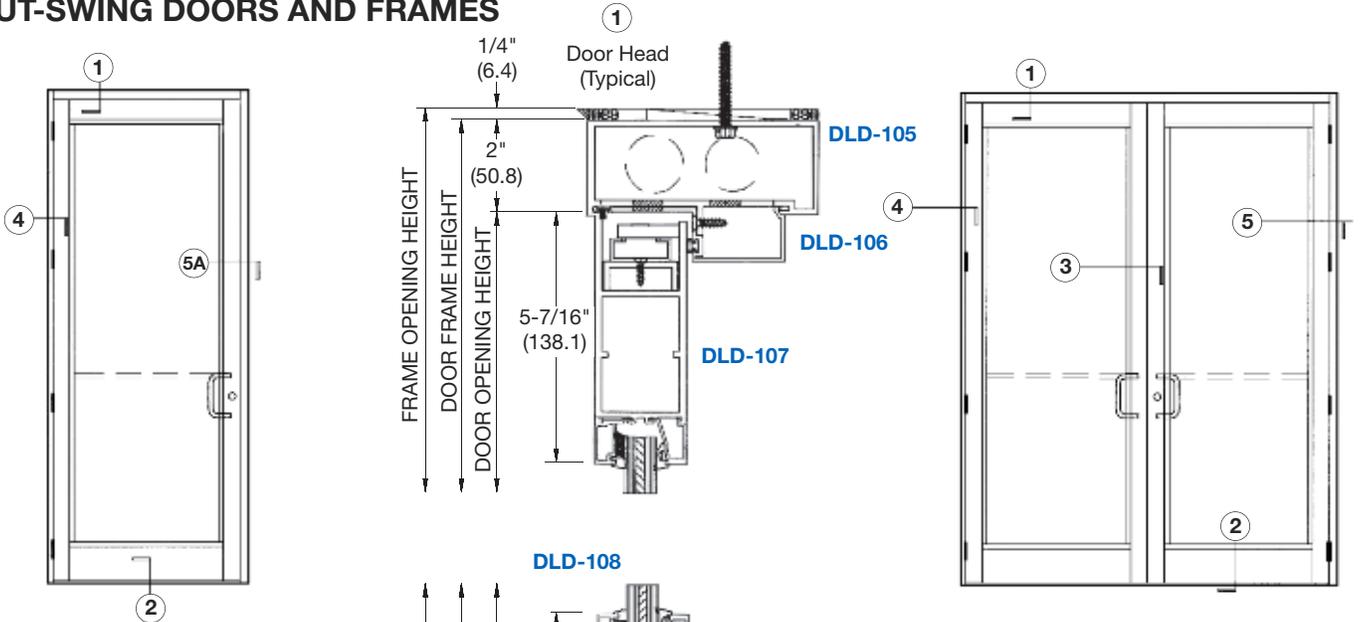
- Custom Finishes: AAMA 2605 Compliant Painted Finishes
- Concealed Overhead Closers
- Exposed Heavy-Duty Closer for Coastal and High Wind Zones
- Glass Tint Available as Selected by the Architect/Owner
- CRL Jackson Concealed Panic Exit Device
- Open for Glazing by Customer
- Glass: Large Missile 9/16" (14) Laminated Impact Glass 0.090" Interlayer SGP by Dupont; Laminated Glass Composition: 1/4" (6) Heat-Strengthened Laminated with 0.090" SentryGlas® Plus Interlayer and 1/4" (6) Heat-Strengthened Glass

# STORM FRONT™

## Typical Details

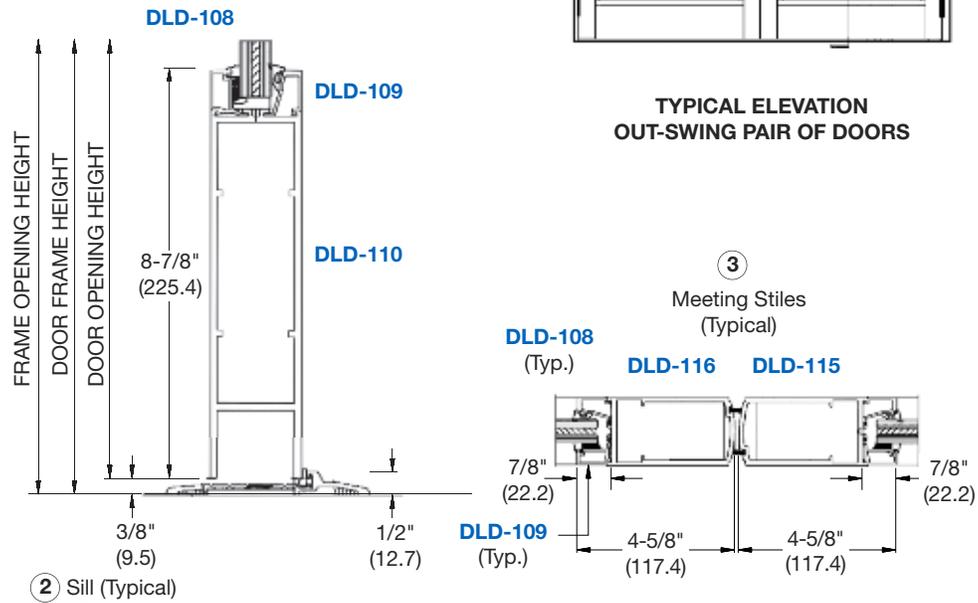
## Hurricane Resistant Entrance Doors • Series DH-350

### OUT-SWING DOORS AND FRAMES



TYPICAL ELEVATION  
OUT-SWING SINGLE DOOR

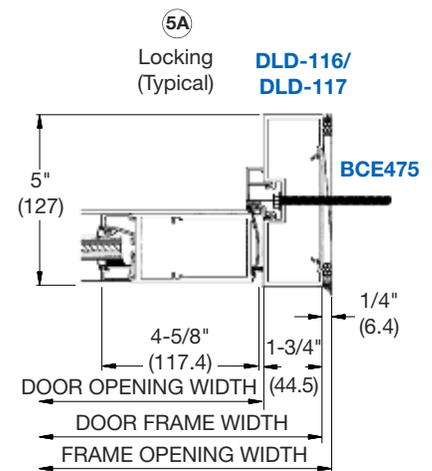
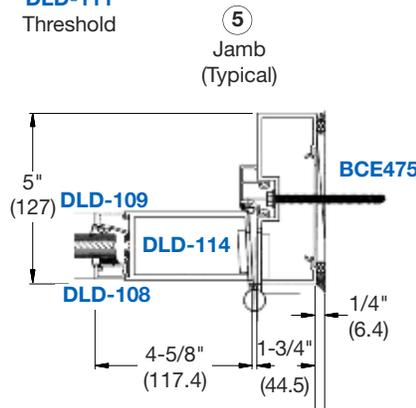
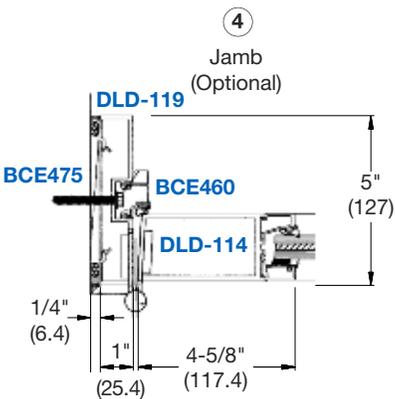
TYPICAL ELEVATION  
OUT-SWING PAIR OF DOORS



② Sill (Typical)  
**DLD-111**  
Threshold

⑤ Jamb  
(Typical)

⑤A Locking  
(Typical) **DLD-116/  
DLD-117**



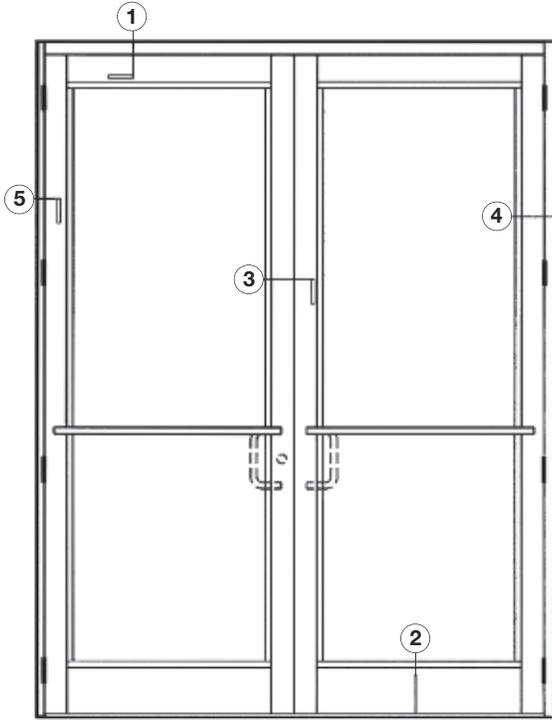
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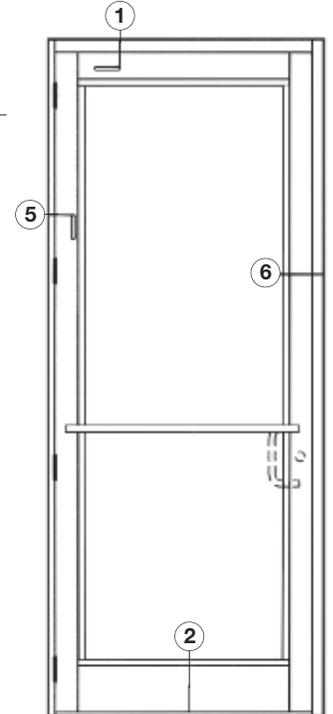
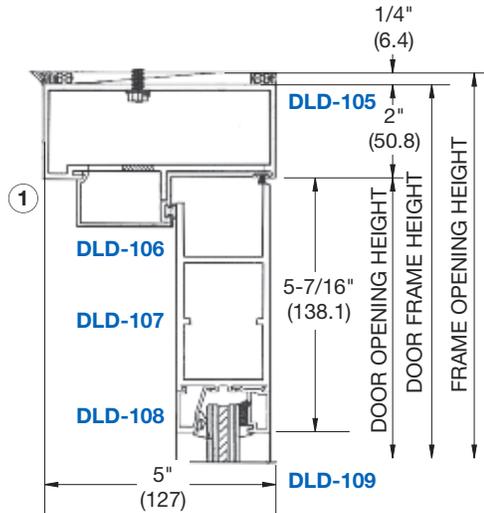
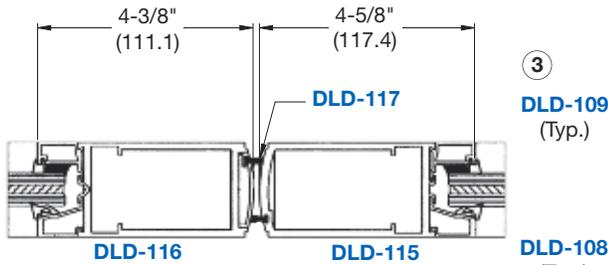
**Typical Details**

**Hurricane Resistant Entrance Doors**  
• Series DH-350

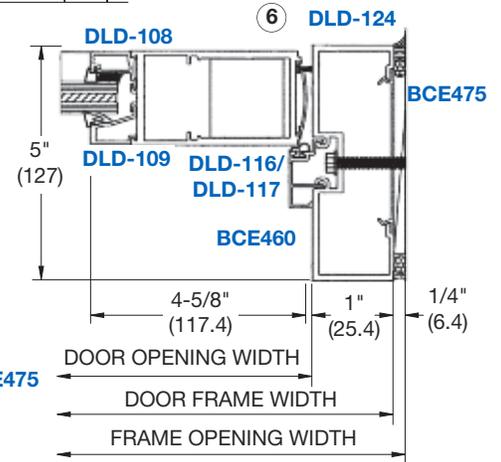
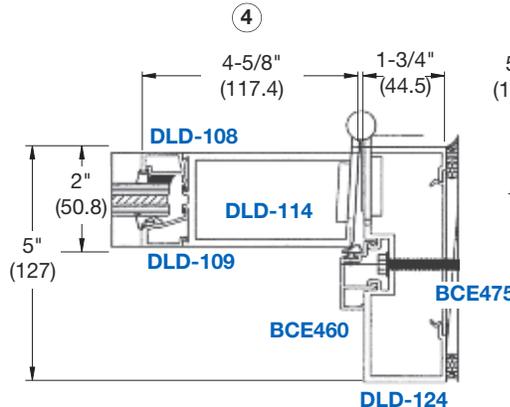
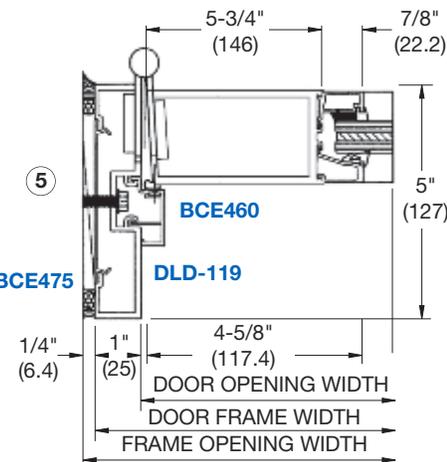
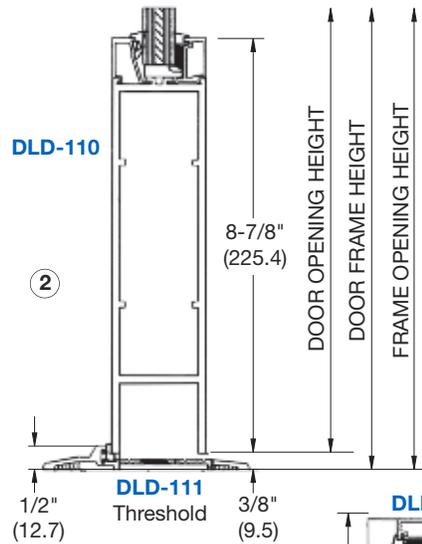
**IN-SWING DOORS AND FRAMES**



**TYPICAL ELEVATION  
IN-SWING PAIR OF DOORS**



**TYPICAL ELEVATION  
IN-SWING SINGLE DOOR**



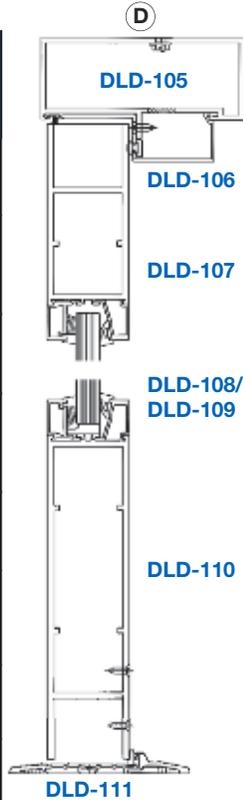
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# STORM FRONT™

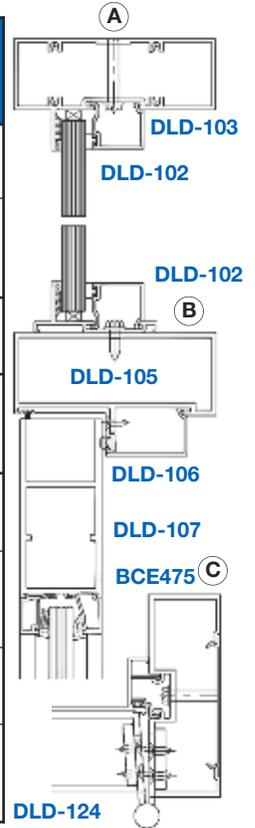
## Hurricane Resistant Entrance Doors • Series DH-350 Frames

### OUT-SWING DOOR FRAMES

UP/OVER FRAMES FOR SINGLE AND PAIRS	HARDWARE	PART NO.*
<p>Frame without Transom 39-1/2" x 86" or 39-1/2" x 98"</p>	3 Butt Hinges 3-Point Lock 36" x 84" D.O.	DH350A10FN
	3 Butt Hinges Jackson Exit Device 36" x 84" D.O.	DH350A20FN
	4 Butt Hinges 3-Point Lock 36" x 96" D.O.	DH350A11FN
<p>Frame without Transom 75-1/2" x 86" or 75-1/2" x 98"</p>	4 Butt Hinges Jackson Exit Device 36" x 96" D.O.	DH350A21FN
	3 Butt Hinges 3-Point Lock 72" x 84" D.O.	DH350A10FNP
	3 Butt Hinges Jackson Exit Device 72" x 84" D.O.	DH350A20FNP
	4 Butt Hinges 3-Point Lock 72" x 96" D.O.	DH350A11FNP
	4 Butt Hinges Jackson Exit Device 72" x 96" D.O.	DH350A21FNP



TRANSOM FRAMES FOR SINGLE AND PAIRS	HARDWARE	PART NO.*
<p>Frame with Transom 39-1/2" x 120"</p>	3 Butt Hinges 3-Point Lock 36" x 84" D.O.	DH350A10FT
	3 Butt Hinges Jackson Exit Device 36" x 84" D.O.	DH350A20FT
	4 Butt Hinges 3-Point Lock 36" x 96" D.O.	DH350A11FT
<p>Frame with Transom 75-1/2" x 120"</p>	4 Butt Hinges Jackson Exit Device 36" x 96" D.O.	DH350A21FT
	3 Butt Hinges 3-Point Lock 72" x 84" D.O.	DH350A10FTP
	3 Butt Hinges Jackson Exit Device 72" x 84" D.O.	DH350A20FTP
	4 Butt Hinges 3-Point Lock 72" x 96" D.O.	DH350A11FTP
	4 Butt Hinges Jackson Exit Device 72" x 96" D.O.	DH350A21FTP

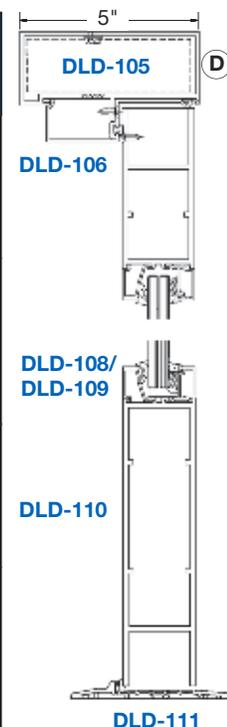


\* For single door frames specify right or left handed at time of order.

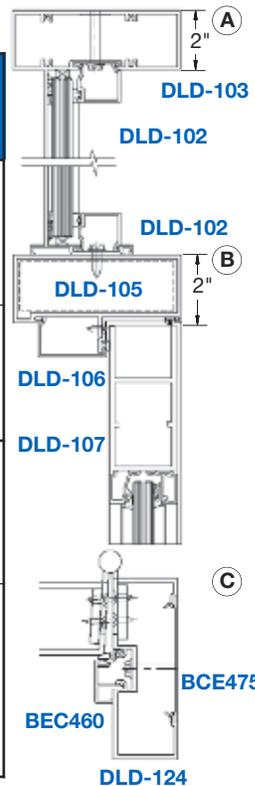
\* For single door frames specify right or left handed at time of order.

### IN-SWING DOOR FRAMES

UP/OVER FRAMES FOR SINGLE AND PAIRS	HARDWARE	PART NO.*
<p>Frame without Transom 39-1/2" x 86" or 39-1/2" x 98"</p>	3 Butt Hinges 3-Point Lock 36" x 84" D.O.	DH3501NA10FN
	4 Butt Hinges 3-Point Lock 36" x 96" D.O.	DH3501NA11FN
<p>Frame without Transom 75-1/2" x 86" or 75-1/2" x 98"</p>	3 Butt Hinges 3-Point Lock 72" x 84" D.O.	DH3501NA10FNP
	4 Butt Hinges 3-Point Lock 72" x 96" D.O.	DH3501NA11FNP



TRANSOM FRAMES FOR SINGLE AND PAIRS	HARDWARE	PART NO.*
<p>Frame with Transom 39-1/2" x 120"</p>	3 Butt Hinges 3-Point Lock 36" x 84" D.O.	DH3501NA10FT
	4 Butt Hinges 3-Point Lock 36" x 96" D.O.	DH3501NA11FT
<p>Frame with Transom 75-1/2" x 120"</p>	3 Butt Hinges 3-Point Lock 36" x 84" D.O.	DH3501NA10FTP
	4 Butt Hinges 3-Point Lock 36" x 96" D.O.	DH3501NA11FTP



\* For single door frames specify right or left handed at time of order.

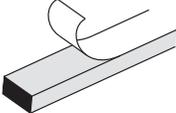
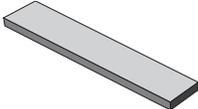
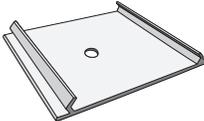
\* For single door frames specify right or left handed at time of order.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STORM FRONT™

## Accessories

## Hurricane Resistant Entrance Doors • Series DH-350

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.
V220414		Norton 1/8" x 1/4" (3.2 x 6.4) ThermalBond Glazing Tape	50' (15.2 m) Roll
ACE1013		E.P.D.M. Glazing Gasket	300' (91.4 m) Roll
12N125SFPS		Assembly Screws #12 X 1-1/4" (31.8) Pan Head Phillips	100
SB574		Neoprene Setting Block 1/8" x 3/4" x 4" (3.2 x 19 x 102) Long	100
12NWFS2Z		Bolts 1/4-20 x 2" (51) MS With Washer and Nut	100
BCE475		Flat Fillers 2-1/2" (63.5) Long. Used at Anchor Locations	50



Project: Corporate Offices, Miami, FL

# STORM FRONT™

## Table of Contents

## Hurricane Resistant Storefront • Series DHS-500



SECTION E2	PAGE
SPECIFICATIONS .....	02-E2
TECHNICAL DATA .....	03-E2
TYPICAL DETAILS .....	04-E2



Project: Saria Shopping Center, Miami, FL

U.S. Aluminum warrants its High Impact Glazing Systems to perform at the published values for air and water infiltration and structural performance. Testing standards allow for unit inter layer a maximum rip size after impact and cycle testing. Though considered as successfully passing the test, water infiltration can occur through the glazing material in such cases. U.S. Aluminum does not warrant any glazing materials resulting from impact from wind borne debris and subsequent cycling under storm conditions.

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal

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## Specifications

## Hurricane Resistant Storefront • Series DHS-500

### SECTION 08 41 13 ALUMINUM STOREFRONTS

NOA: 11-0927.06

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
DHS-500	1-3/4" (44.5)	5" (127)	9/16" (14) or 1-5/16 (33)	Wet Glaze

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the U.S. Aluminum Series DHS-500 System. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** Shall be tested in accordance with TAS 202.

- DHS-500 Storefront - pressure @ 6.24 psf = (5.08 L/s/m<sup>2</sup>)

**Water Infiltration:** Shall be tested in accordance with ASTM E 547. No water penetration at test pressure of: 18.0 psf Dade County Protocol TAS-202

- DHS-500 Storefront Meets all Miami-Dade County, Florida, Air, Water, Structural, and Impact requirements. Large and

Small Missile Impact Test: Maximum design pressure of +/-80 psf with Laminated Glass with PVB interlayer +/-130 psf with SGP Interlayer.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy.

#### FABRICATION

Vertical and horizontal framing members shall have a nominal face dimension of 1-3/4" (44.5). Overall depth shall be 5" (127).

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a Kynar 500 AAMA 2605 paint.

*(Specify one of the following):*

- \_\_\_ Bone White
- \_\_\_ Statuary Bronze
- \_\_\_ Kynar 500

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

Class 1 anodized extrusions shall be given a caustic etch followed by a anodic oxide treatment to obtain...

- \_\_\_ Bronze Anodize
- \_\_\_ Clear Anodize

#### GLAZING

- Large Missile 9/16" (14) SGP by Dupont Laminated Impact Glass (Heat Strengthened/Heat Strengthened)
- Large Missile 9/16" (14) SGP by Dupont or PVB Laminated Impact Glass (Heat Strengthened/Heat Strengthened)

- Small Missile 9/16" (14) PVB Laminated Impact Glass (Tempered/Tempered)
- Large Missile 1-5/16" (33) Laminated Insulating Glass (Heat Strengthened/Heat Strengthened on Exterior, 1/2" (12.7) Air Space, 1/4" (6.3) Tempered on Interior.)
- Glass Tint Available as Selected by the Architect/Owner

#### SEALANTS

All metal-to-metal joints shall use DOW 995 Silicone. Door seal gaskets shall require small DOW 795 Silicone.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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

# STORM FRONT™

## Technical Data

## Hurricane Resistant Storefront

- Series DHS-500

The DHS-500 is a 5" (127) deep Hurricane Resistant Storefront System designed for all commercial applications including retail space, hotels, condominiums, office buildings, institutional facilities, and industrial structures. The DHS-500 is engineered to deliver superior quality, strength, and durability, while maintaining a truly elegant appearance.



### Specifications:

- Frame Sections are Extruded from a Minimum of 6063-T6 Aluminum Alloy
- Frame Depth 1-3/4" x 5" (44.5 x 127)
- 0.125" (3.2) Nominal Wall Thickness, Door and Frame
- Maximum Frame Height: 120" (3.05 m)
- Standard Finishes: Bone White or Statuary Bronze Kynar Paint, and Clear Anodized (Class I)
- Factory Pre-Glazed With Structural Silicone

### Testing and Code Compliance:

- Miami-Dade County Approved (See Approval for Specific Order Options)
- Florida Building Code Approved (See Approval for Specific Order Options)
- Maximum Design Pressures: +100 psf /-130 psf Large Missile Impact and Small Missile Impact
- Test Air Infiltration to ASTM E283 at 6.24 psf
- Test Water Infiltration to ASTM E331 at 20.0 psf

### Options:

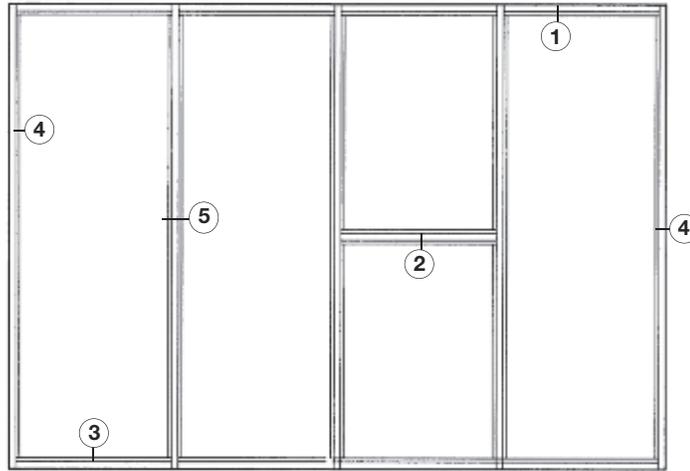
- Custom Finishes: AAMA 2605 Compliant Painted Finishes
- Large Missile 9/16" (14) SGP Laminated Impact Glass (Heat Strengthened/Heat Strengthened)
- Large Missile 9/16" (14) SGP or PVB Laminated Impact Glass (Heat Strengthened/Heat Strengthened)
- Small Missile 9/16" (14) PVB Laminated Impact Glass
- Large Missile 1-5/16" (33) SGP Laminated Insulating Glass (Heat Strengthened/Heat Strengthened on Exterior, 1/2" (12.7) Air Space, 1/4" (6) Tempered on the Interior)
- Glass Tint Available as Selected by the Architect/Owner
- Open for Glazing by Customer

**Typical Details**

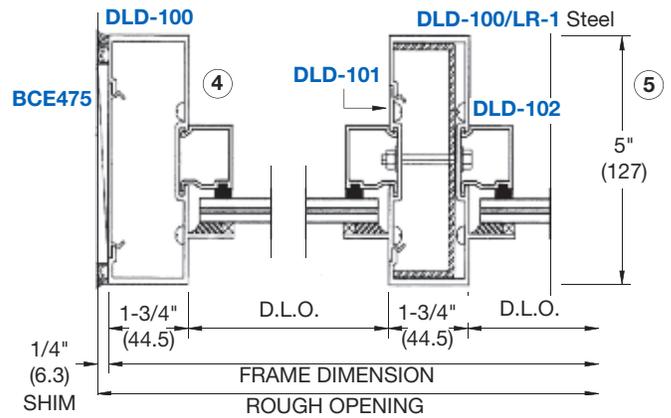
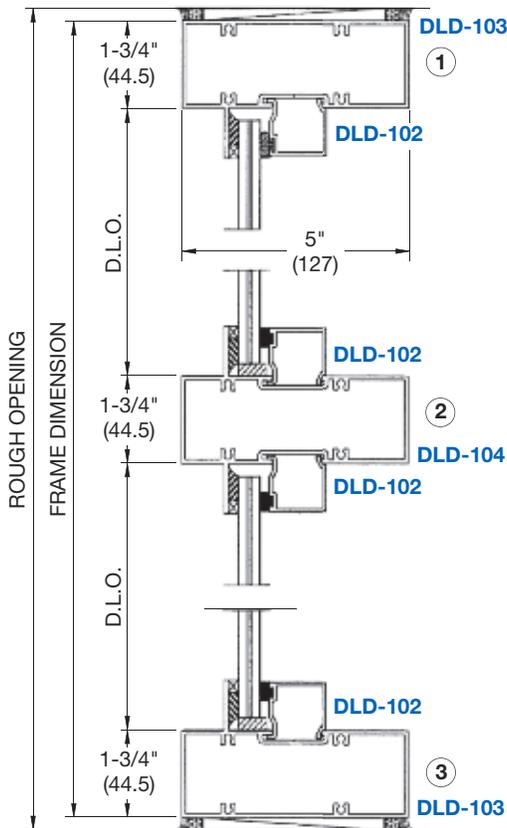
**Hurricane Resistant Storefront**  
 • Series DHS-500

**9/16" (14) GLAZING SHOWN**

(For 1-5/16" (33) Glazing Contact  
 U.S. Aluminum Technical Representative)



TYPICAL ELEVATION



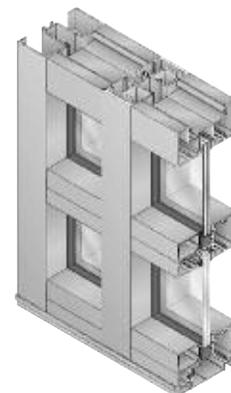
NOT TO SCALE

# STORM FRONT™

## Table of Contents

## Hurricane Resistant Storefronts

- Series IG500
- Series IG600



### SECTION E3

### PAGE

TECHNICAL DATA .....	02-E3 and 03-E3
SPECIAL FEATURES .....	04-E3
<b>IG500</b> TYPICAL DETAILS .....	05-E3 thru 07-E3
<b>IG500</b> WINDLOAD CHARTS .....	08-E3
<b>IG500</b> DEADLOAD CHARTS .....	09-E3
<b>IG600</b> TYPICAL DETAILS .....	10-E3 thru 12-E3
<b>IG600</b> WINDLOAD CHARTS .....	13-E3
<b>IG600</b> DEADLOAD CHARTS .....	14-E3

U.S. Aluminum warrants its High Impact Glazing Systems to perform at the published values for air and water infiltration and structural performance. Testing standards allow for unit interlayer a maximum rip size after impact and cycle testing. Though considered as successfully passing the test, water infiltration can occur through the glazing material in such cases. U.S. Aluminum does not warrant any glazing materials resulting from impact from wind-borne debris and subsequent cycling under storm conditions.

When using this product, U.S. Aluminum recommends specifying a uniform overall glazing thickness of plus or minus .020" (0.5) over the entire area of the glazing unit. This must include edges and center of unit. It is critical to check the glazing unit prior to glazing to ensure the proper thickness of the interlayer. The monolithic glass must be two pieces of 1/4" (6) thick, heat strengthened with a .090" (2.3) SentryGlas® Plus interlayer. For insulated units the glass must be two pieces of 1/4" (6) thick, heat strengthened with a .090" (2.3) SentryGlas® Plus interlayer, 1/2" (12.7) air space and 1/4" (6) thick, heat strengthened outboard lite.

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |



# STORM FRONT™

## Specifications

## Hurricane Resistant Storefronts

### SECTION 08 41 13 ALUMINUM STOREFRONTS

- Series IG500
- Series IG600

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
IG500	2-1/2" (63.5)	5" (127)	9/16" (14)	Exterior
IG600	2-1/2" (63.5)	5" (127)	1-5/16" (33)	Exterior

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series (Specify) IG500 / IG600 system as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** Shall be tested in accordance with ASTM E 283-91. Infiltration shall not exceed:

- Dade County Protocol TAS 202-94
- IG500 Storefront - 1.00 cfm/ft<sup>2</sup>  
@ 6.24 psf = (5.08 L/s/m<sup>2</sup>)
- IG500 Pair of Doors - 1.00 cfm/ft<sup>2</sup>  
@ 6.24 psf = (6.10 L/s/m<sup>2</sup>)
- Outside Dade County
- IG500 / IG600 Storefront - 1.00 cfm/ft<sup>2</sup>  
@ 6.24 psf = (5.08 L/s/m<sup>2</sup>)
- IG500 / IG600 Pair of Doors - 1.00 cfm/ft<sup>2</sup>  
@ 6.24 psf = (5.08 L/s/m<sup>2</sup>)

**Water Infiltration:** Shall be tested in accordance with ASTM E 331-93. No water penetration at test pressure of: Dade County Protocol TAS 202-94

- IG500 Storefront - 12 psf
- IG500 Pair of Doors - 12 psf (Water resistant threshold)
- Outside Dade County
- IG500 / IG600 Storefront - 12 psf
- IG500 / IG600 Pair of Doors - 12 psf (Water resistant threshold)

**Structural Performance:** Shall be tested in accordance with ASTM 330-96 and based on:

- Maximum deflection of L/175 of the span. 3/4" (19.1) max.
- Allowable stress with a safety factor of 1.65. The system shall perform to this criteria under a windload of (Specify) psf
- Dade County Protocol TAS 220-94
- IG500 Storefront
  - Design 65 psf (159 mph)
  - Structural +/- 97.5 psf (195 mph)
- IG500 Pair of Doors
  - Design 65 psf (159 mph)
  - Structural +/- 97.5 psf (195 mph)
- Outside Dade County
- IG500 Storefront
  - Design 65 psf (159 mph)
  - Structural +/- 97.5 psf (195 mph)
  - Design 75 psf (171 mph)
  - Structural +/- 112.5 psf (210 mph)
- IG500 Pair of Doors
  - Design 65 psf (159 mph)
  - Structural +/- 97.5 psf (195 mph)
  - Design 75 psf (171 mph)
  - Structural +/- 112.5 psf (210 mph)

**Forced Entry Resistance:** Shall be tested with a 300 lb. force applied to the active door panel simultaneously with a 150 lb. force applied in both perpendicular directions to the 300 lb. force.

- Dade County Protocol TAS 220-94
- IG500 Pair of Doors

Outside Dade County

- IG500 / IG600 Pair of Doors

Large Missile Impact Test - Shall be tested in accordance with: Dade County Protocol TAS 201-94 with a 9 lb. 2x4 traveling at 50 fps.

- Dade County
  - IG500 Storefront
  - IG500 Pair of Doors
- Outside Dade County
  - IG500 / IG600 Storefront
  - IG500 / IG600 Pair of Doors

Cycle Load Test - Shall be tested in accordance with:

- Dade County Protocol TAS 201-94 for 9,000 cycles.
- Dade County
  - IG500 Storefront
  - IG500 Pair of Doors
  - IG500 / IG600 Storefront
  - IG500 / IG600 Pair of Doors

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain ... (Specify one of the following):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

# STORM FRONT™

## Specifications

## Hurricane Resistant Storefronts

### SECTION 08 41 13 ALUMINUM STOREFRONTS

- Series IG500
- Series IG600

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2-1/2" (63.5). Overall depth shall be 5" (127). Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### GLAZING

Dade County

- IG500 Storefront - 9/16" (14) Heat strengthened with SentryGlas® Plus interlayer

- IG500 Pair of Doors - 9/16" (14) Heat strengthened with SentryGlas® Plus interlayer Outside Dade County
- IG500 Storefront and IG500 Pair of Doors. Glazing must meet Impact and Cycle Testing requirements according to Local Building Codes.
- IG600 Storefront and IG600 Pair of Doors. 1-5/16" (33) Glazing must meet Impact and Cycle Testing requirements according to Local Building Codes.

#### SEALANTS

All metal-to-metal joints shall use DOW 795 Silicone. Door seal gaskets shall require small joint sealer.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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



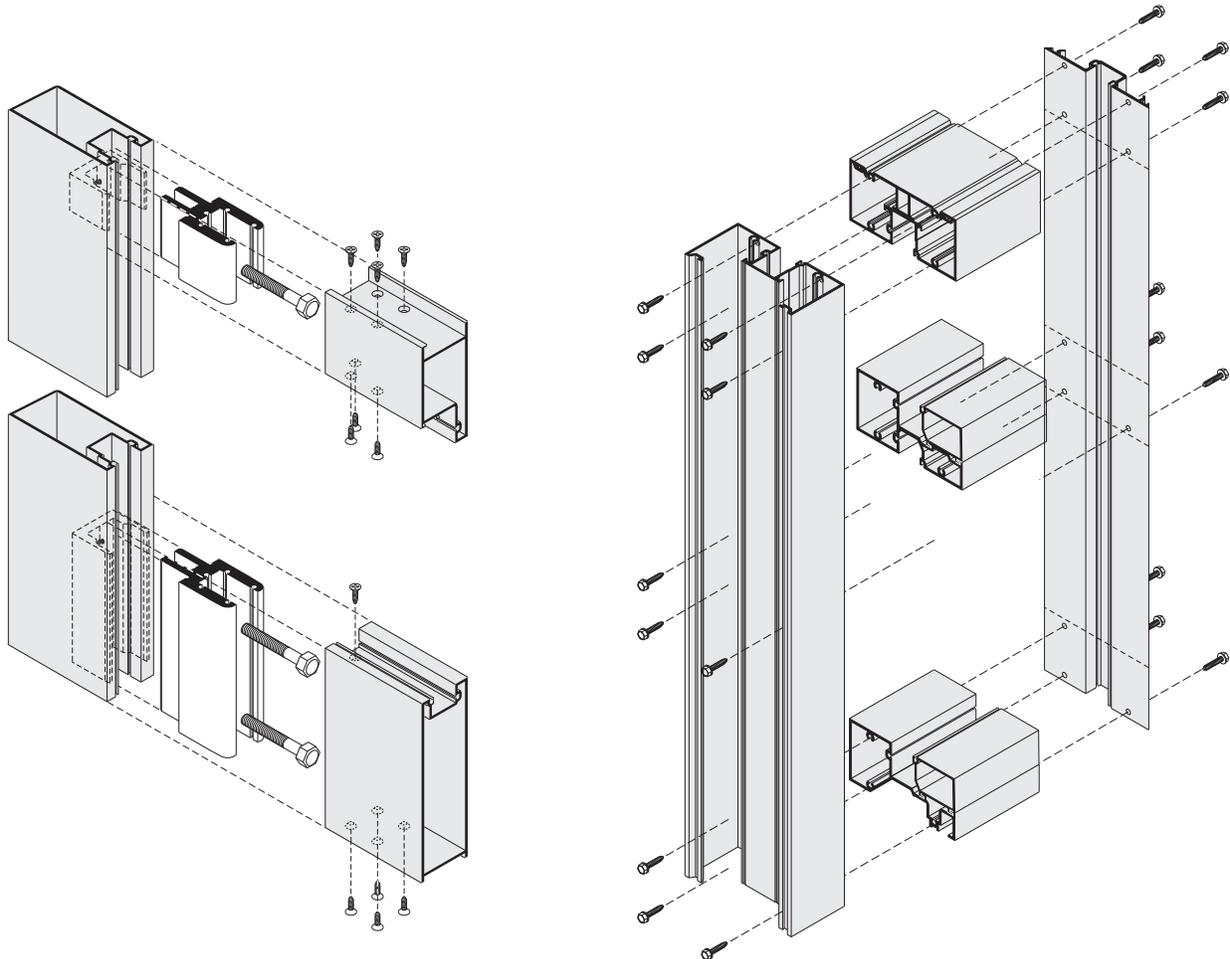
Project: Automotive Dealership, Atlanta, GA

# STORM FRONT™

## Special Features

## Hurricane Resistant Storefronts

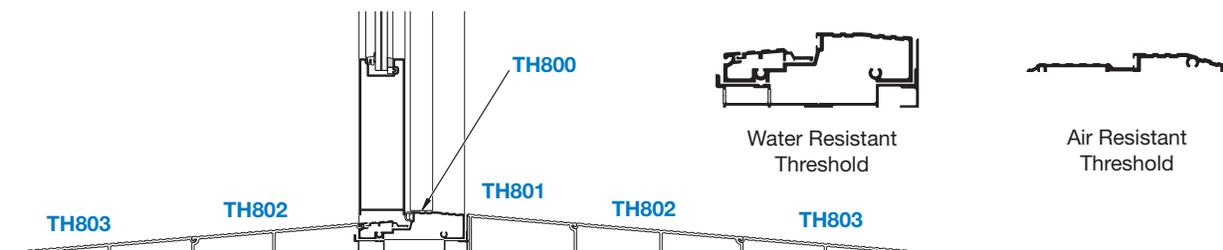
- Series IG500
- Series IG600



Storm Front™ Entrance Doors are 2-3/16" (55.6) thick with a .125" (3.2) wall thickness and feature a One Glass Stop Glazing System for clean sight lines on both sides of the door. Standard corner construction includes heavy-duty blocks. Corners are welded for maximum strength.

A low profile Air Resistant Threshold is offered for installations that have soffit overhangs greater than the entrance frame height. Check local codes for compliance.

High performance Water Resistant Thresholds are offered to provide superior water and air management, along with Ramps to meet project requirements.



# STORM FRONT™

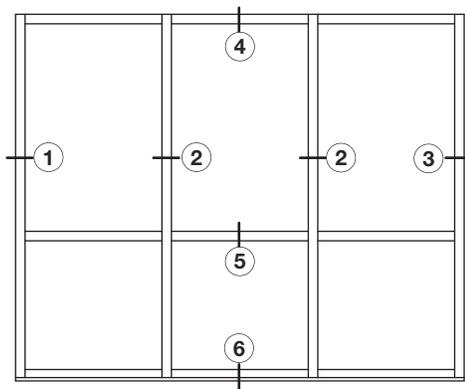
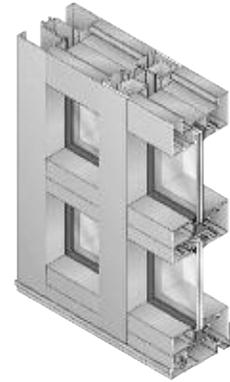
## Typical Details

## Hurricane Resistant Storefronts • Series IG500

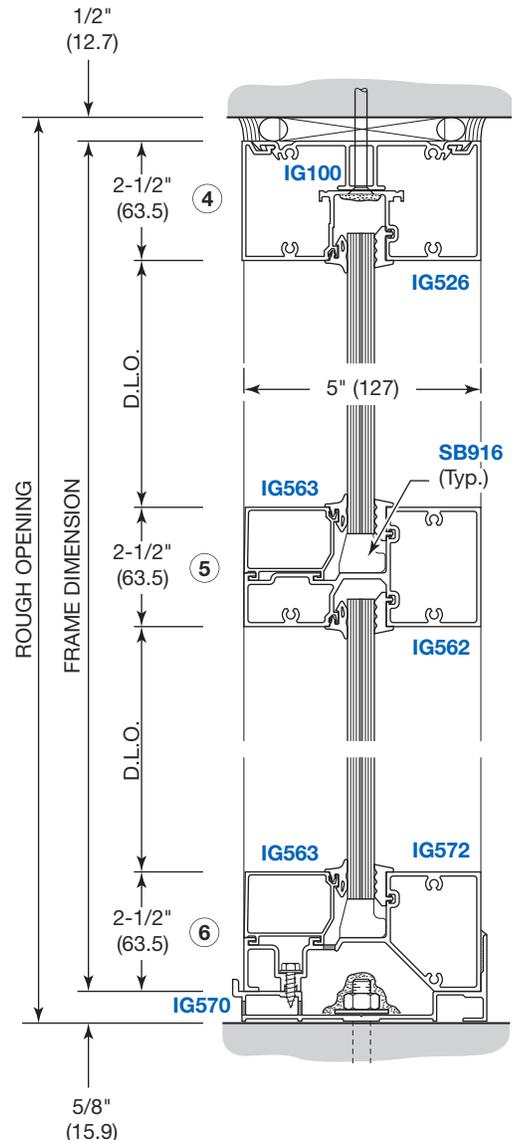
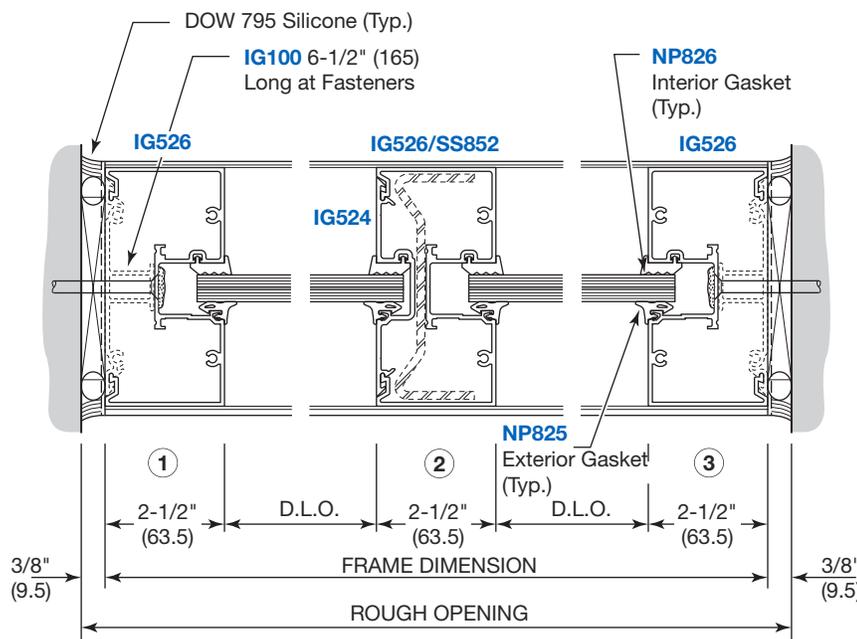
### FOR 9/16" (14) GLASS

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

- Glass Size Maximum: 50 Square Feet (4.65 Square Meters)
- Maximum Frame Height is 10 Feet (3.05 m)



TYPICAL ELEVATION



NOT TO SCALE

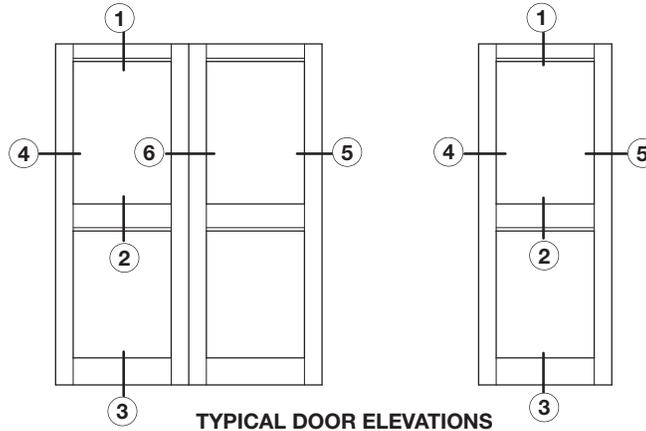
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STORM FRONT™

## Typical Details

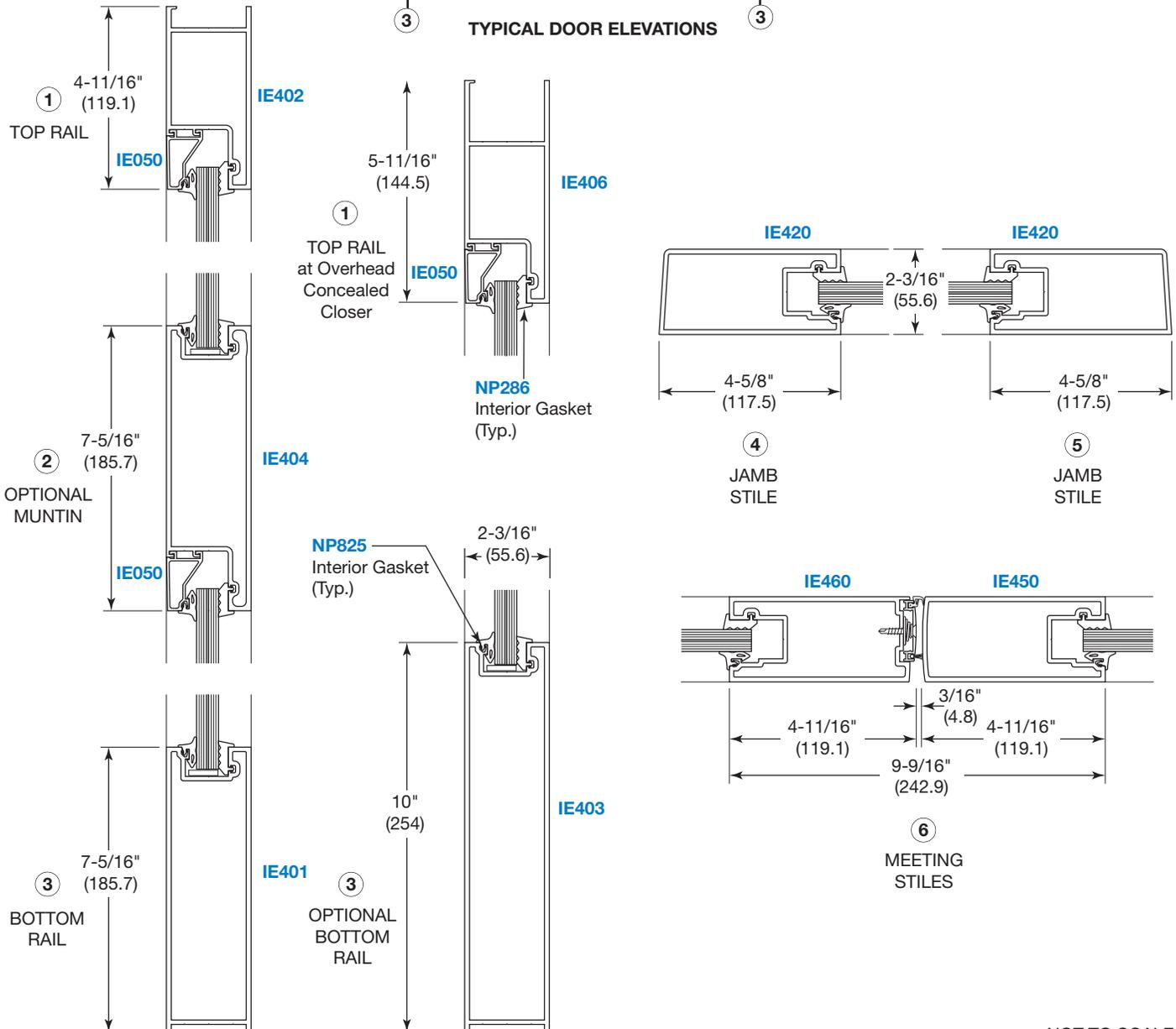
## Hurricane Resistant Storefronts • Series IG500

FOR 9/16" (14) GLASS



**Door Size Maximum:**  
Single Door - 44" x 96"  
(1.1 x 2.4 m)  
Double Door - 88" x 96"  
(2.2 x 2.4 m)

**NOTE:** Doors are designed to withstand a pressure of +/- 65 psf (3112 Pa) without steel reinforcement.

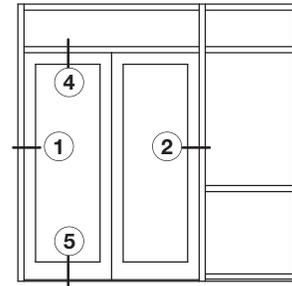
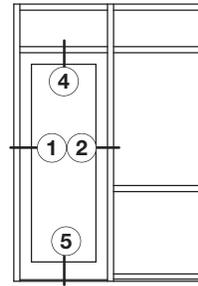
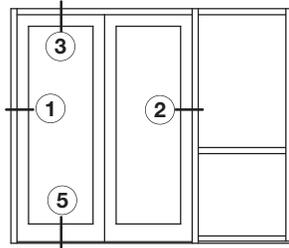
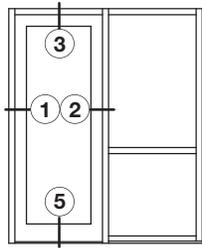


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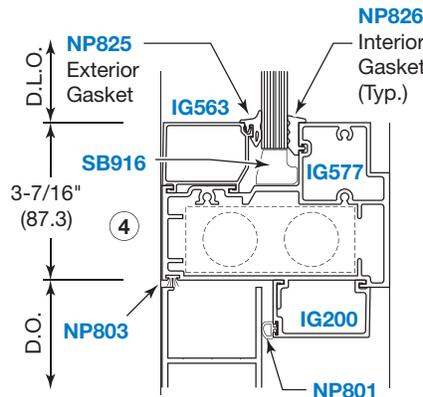
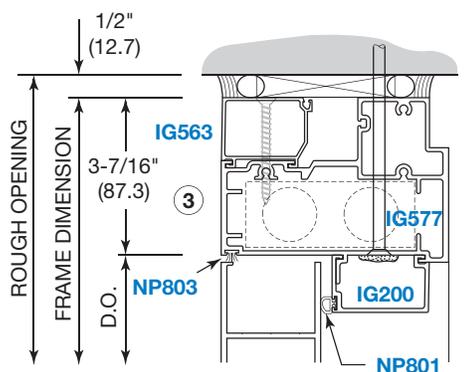
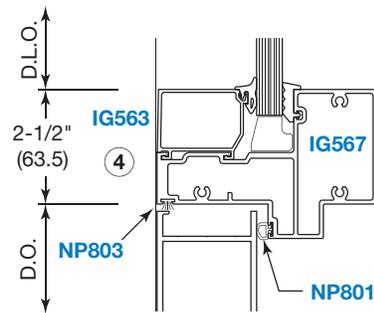
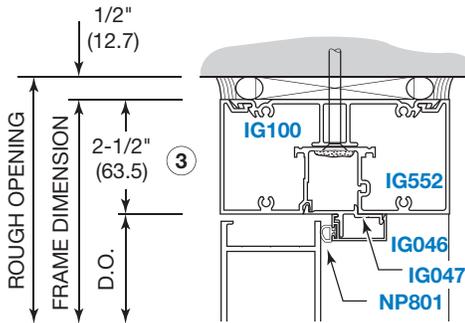
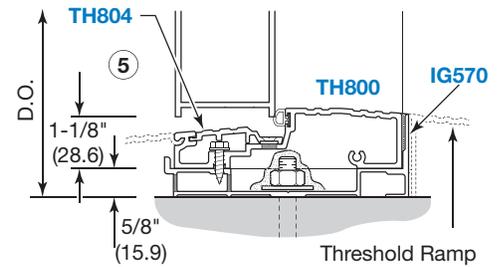
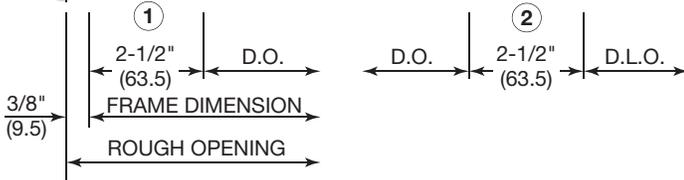
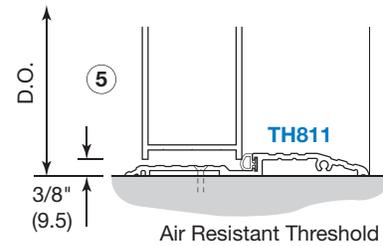
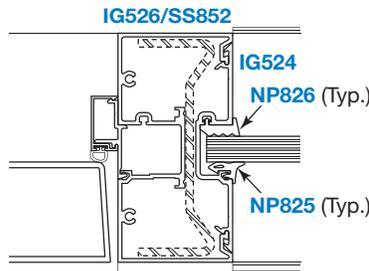
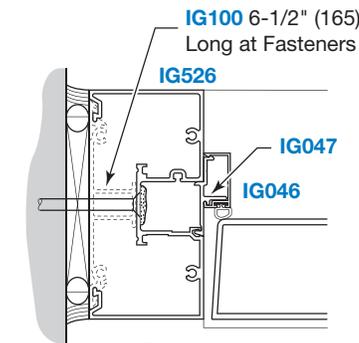
# STORM FRONT™

## Typical Details FOR 9/16" (14) GLASS

## Hurricane Resistant Storefronts • Series IG500



TYPICAL ENTRANCE ELEVATIONS



For Overhead Concealed Closer

For Overhead Concealed Closer With Transom

**NOTE:** Water Resistant Thresholds are required unless entrance is located under a soffit overhang depth that is greater than the door frame height. Check local codes for compliance. Ramps are required when using TH800 Threshold in order to meet project requirements.

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

NOT TO SCALE

## Windload Charts

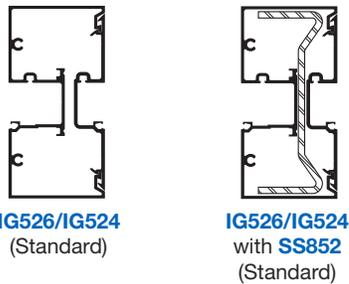
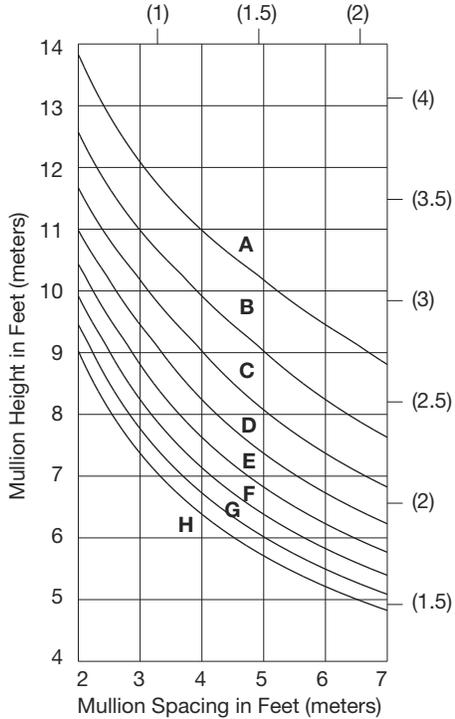
## Hurricane Resistant Storefronts

### VERTICAL MULLIONS FOR 9/16" (14) GLASS

• Series IG500

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

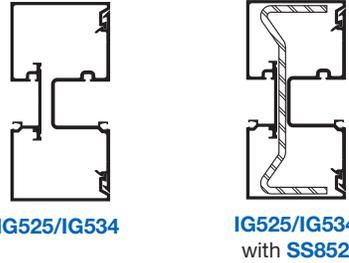
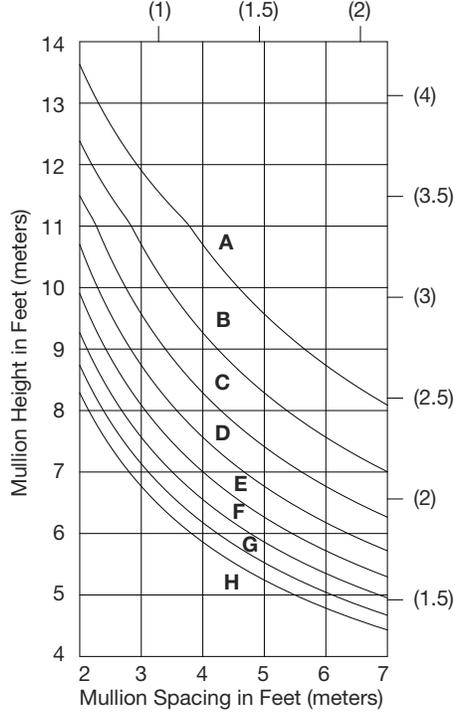
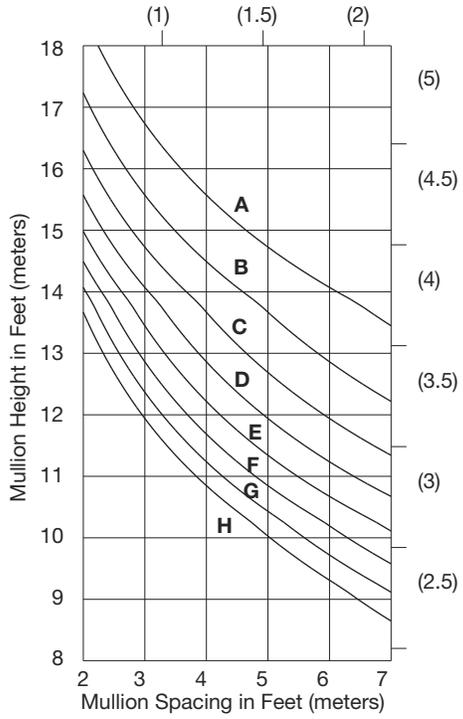
These charts include unbraced length analysis and are based on at least one horizontal being placed at the midpoint of the span. For other applications, please contact U.S. Aluminum Technical Sales at (800) 262-5151, or visit our web site at [usalum.com](http://usalum.com).



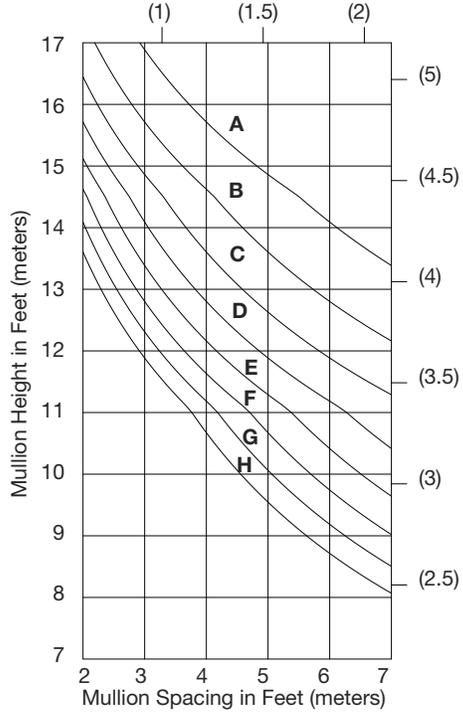
**IG526/IG524 Mullion and Filler**  
 $I = 5.215 (217.06 \times 10^4)$   
 $S = 2.083 (34.13 \times 10^3)$   
**Steel Reinforcement**  
 $I = 3.979 (165.62 \times 10^4)$   
 $S = 1.686 (27.63 \times 10^3)$   
 $I_{AL+STL} = 16.754 (697.36 \times 10^4)$

Limitations of vertical mullions for:

Curves A	= 30 PSF (1436 Pa)
Curves B	= 40 PSF (1915 Pa)
Curves C	= 50 PSF (2393 Pa)
Curves D	= 60 PSF (2872 Pa)
Curves E	= 70 PSF (3351 Pa)
Curves F	= 80 PSF (3829 Pa)
Curves G	= 90 PSF (4308 Pa)
Curves H	= 100 PSF (4787 Pa)



**IG525/IG534 Mullion and Filler**  
 $I = 4.893 (207.41 \times 10^4)$   
 $S = 1.988 (32.58 \times 10^3)$   
**Steel Reinforcement**  
 $I = 3.979 (165.62 \times 10^4)$   
 $S = 1.686 (27.63 \times 10^3)$   
 $I_{AL+STL} = 16.522 (687.70 \times 10^4)$



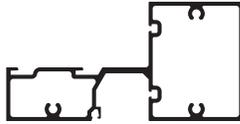
# STORM FRONT™

## Deadload Charts

## Hurricane Resistant Storefronts

• Series IG500

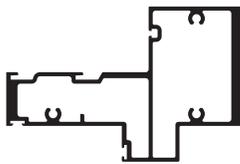
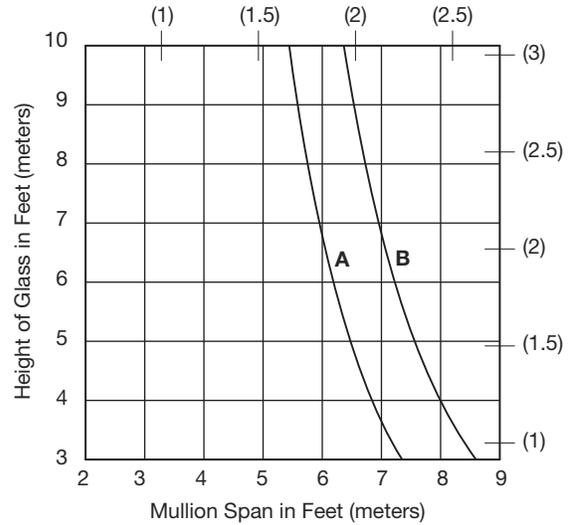
### HORIZONTAL MULLIONS FOR 9/16" (14) GLASS



**IG562**  
 $I_{yy} = 1.127$   
 $S_{yy} = 0.739$

#### INTERMEDIATE HORIZONTAL

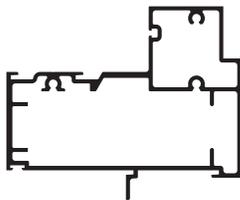
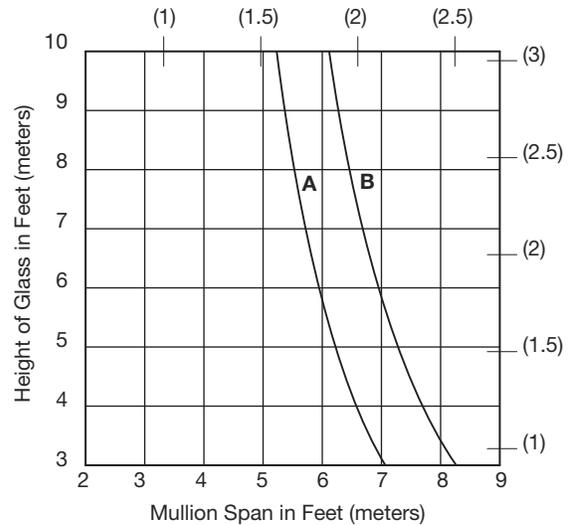
Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>) Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



**IG567**  
 $I_{yy} = 1.924$   
 $S_{yy} = 1.152$

#### DOOR HEADER

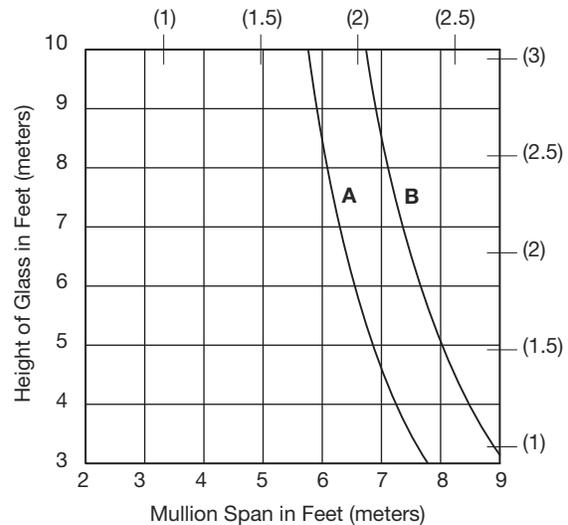
Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>) Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



**IG577**  
 $I_{yy} = 2.837$   
 $S_{yy} = 1.395$

#### DOOR HEADER

Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 6.5 psf (31.74 Kg/m<sup>2</sup>) Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



**STORM FRONT™**

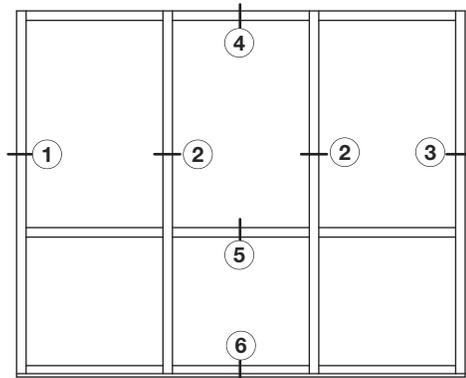
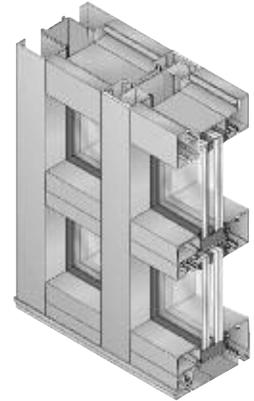
**Typical Details**

**Hurricane Resistant Storefronts**

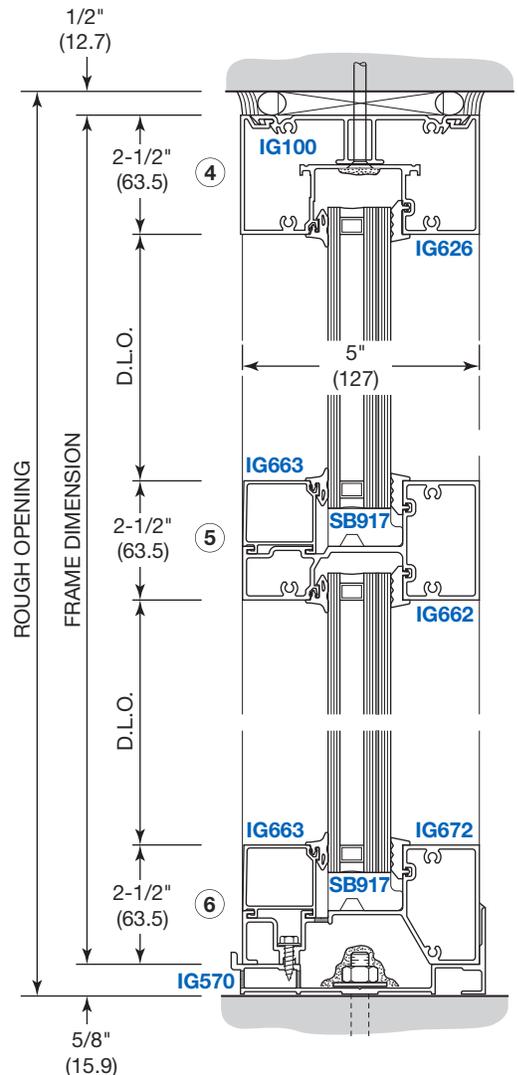
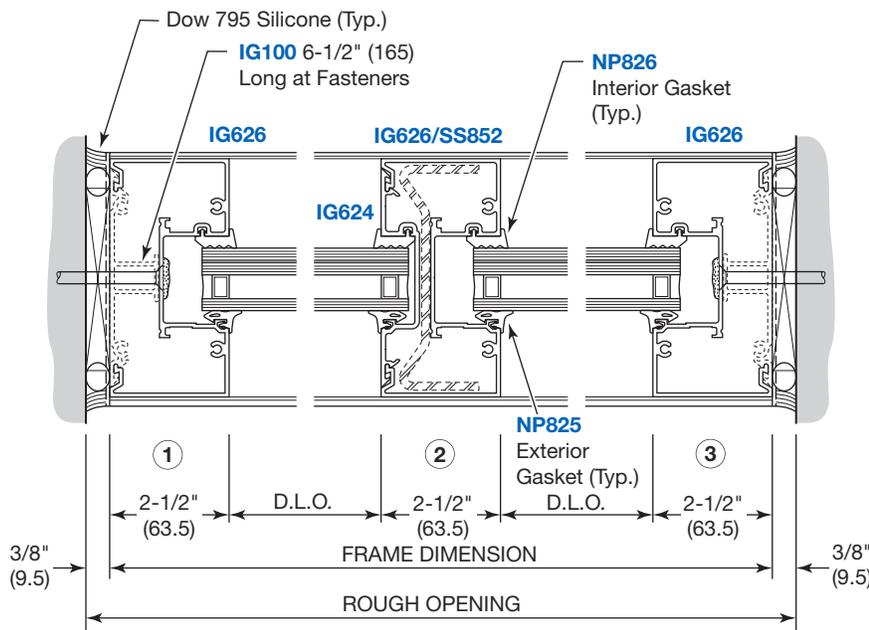
• Series IG600

**FOR 1-5/16" (33) GLASS**

- Glass Size Maximum: 50 Square Feet (4.65 Square Meters)
- Maximum Frame Height is 10 Feet (3.05 m)



TYPICAL ELEVATION



NOT TO SCALE

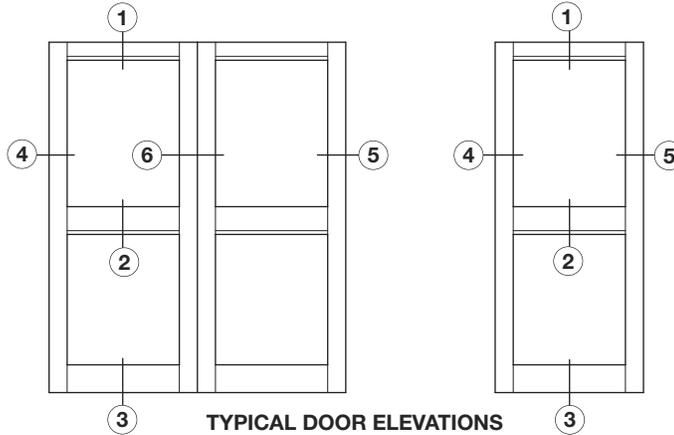
# STORM FRONT™

## Typical Details

## Hurricane Resistant Storefronts

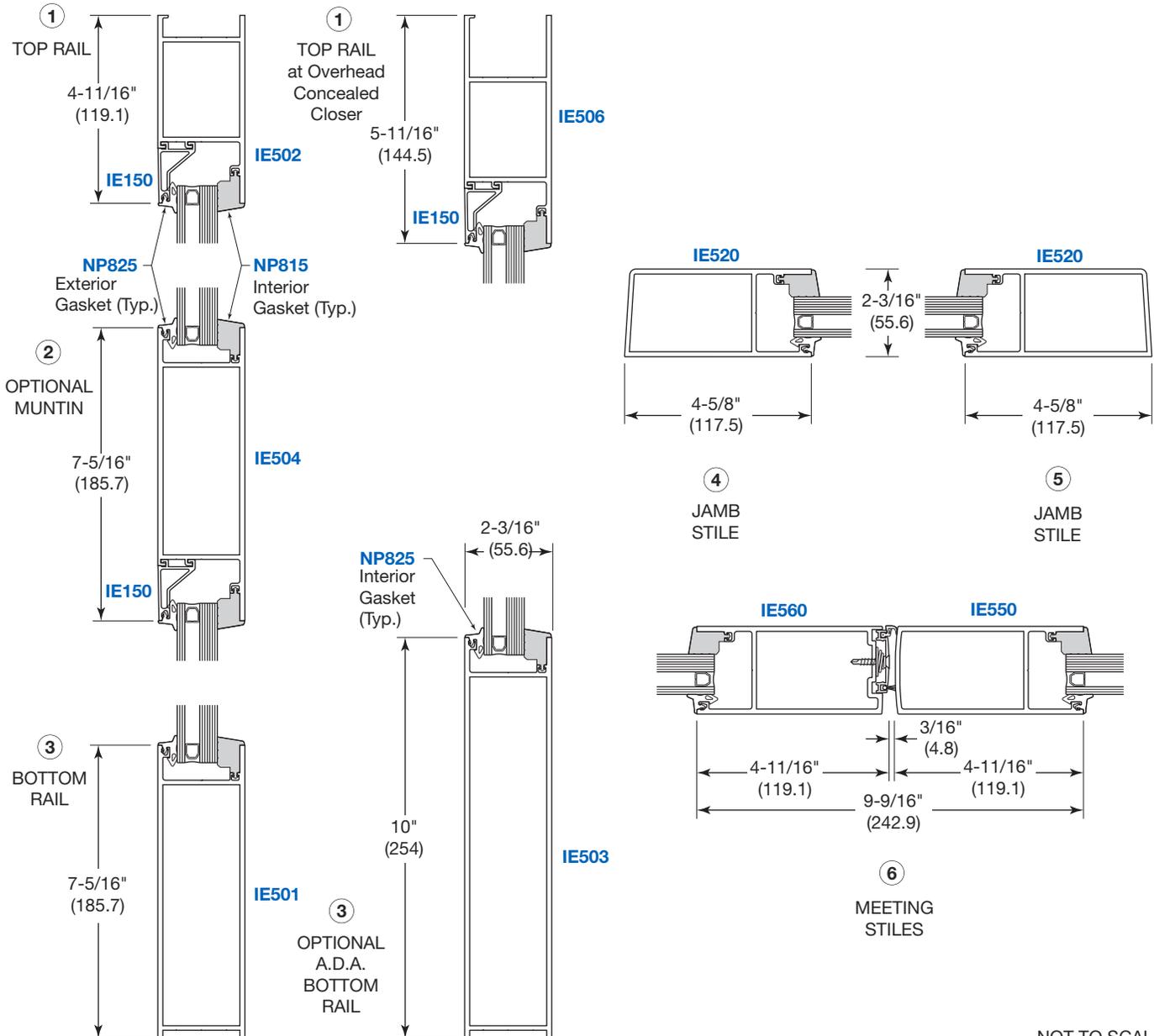
• Series IG600

FOR 1-5/16" (33) GLASS



**Door Size Maximum:**  
 Single Door - 44" X 96"  
 (1.1 x 2.4 m)  
 Double Door - 88" X 96"  
 (2.2 x 2.4 m)

**NOTE:** Doors are designed to withstand a pressure of +/- 65 psf (3112 Pa) without steel reinforcement.



NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

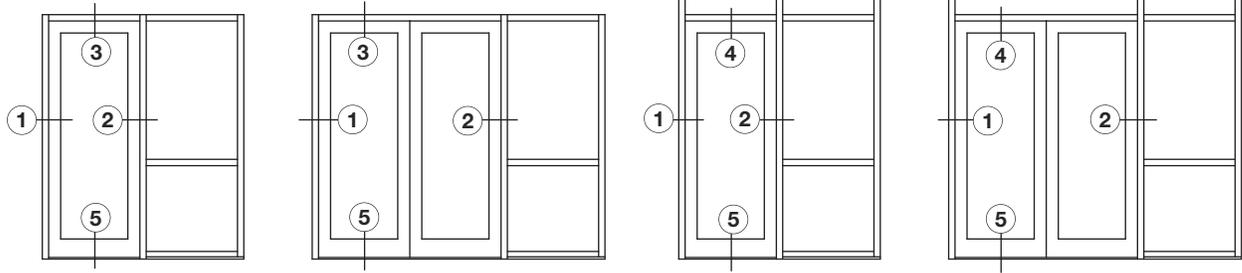
# STORM FRONT™

## Typical Details

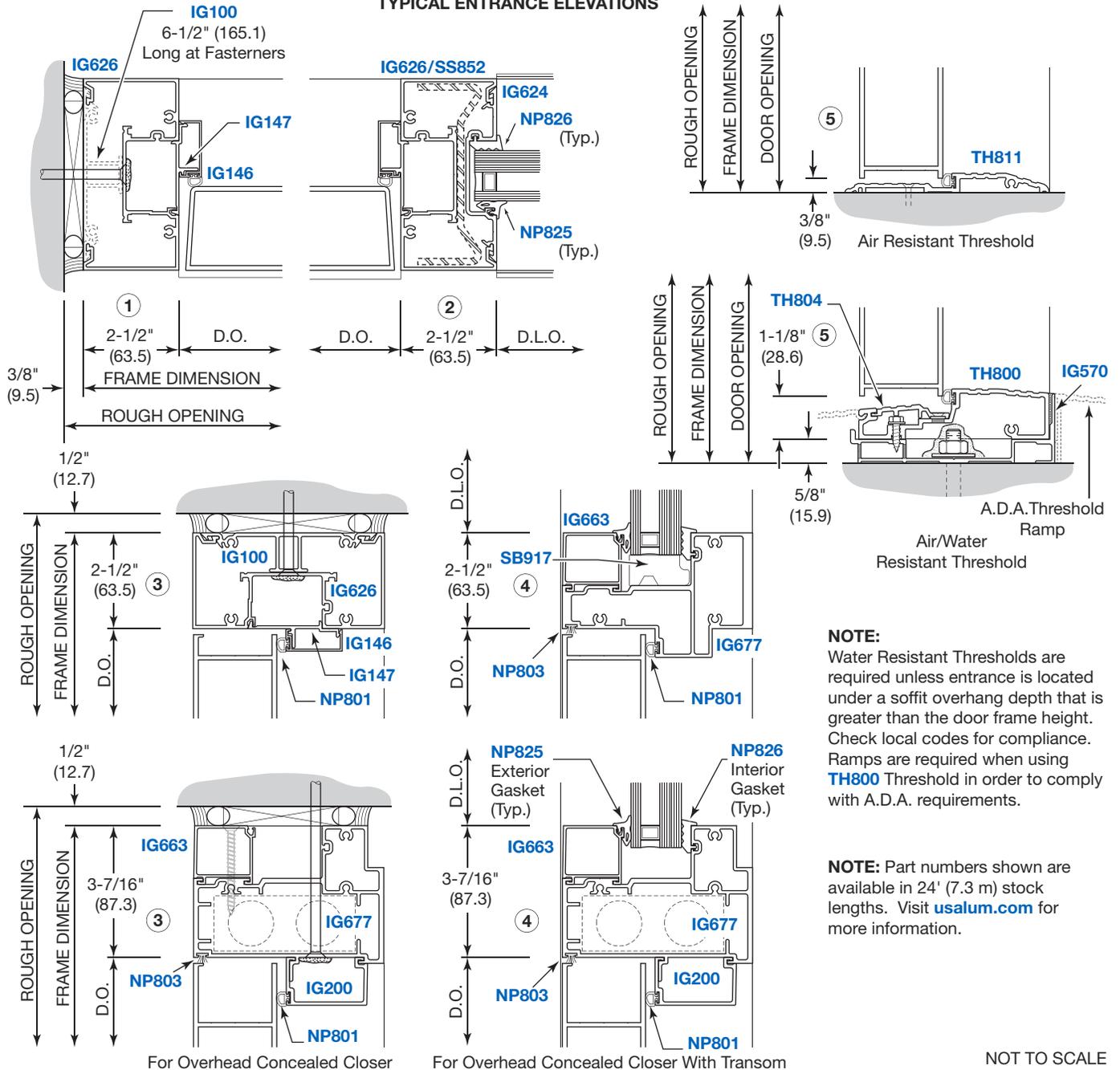
FOR 1-5/16" (33) GLASS

## Hurricane Resistant Storefronts

• Series IG600



TYPICAL ENTRANCE ELEVATIONS



For Overhead Concealed Closer

For Overhead Concealed Closer With Transom

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Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STORM FRONT™

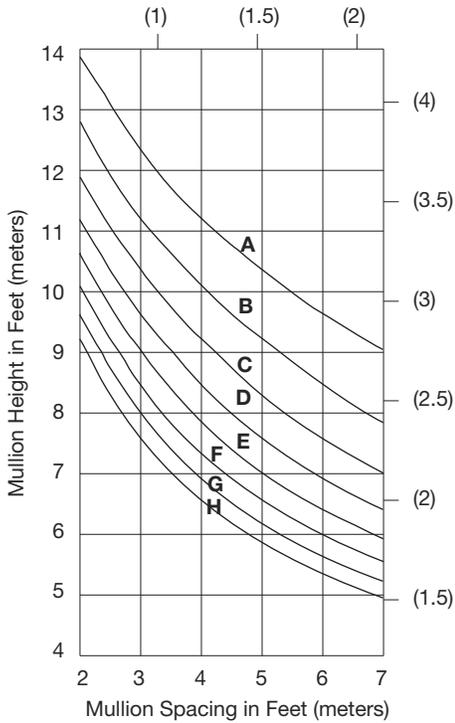
## Windload Charts

## Hurricane Resistant Storefronts • Series IG600

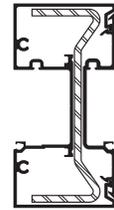
### VERTICAL MULLIONS FOR 1-5/16" (33) GLASS

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

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



**IG626/IG624**  
(Standard)

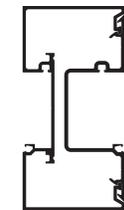
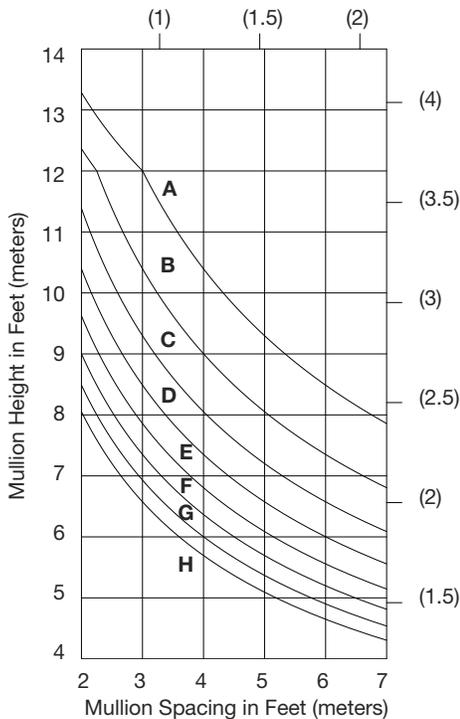


**IG626/IG624**  
with **SS852**  
(Standard)

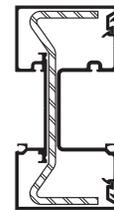
IG626/IG624 Mullion and Filler  
 $I = 5.536 (230.42 \times 10^4)$   
 $S = 2.201 (36.08 \times 10^3)$   
 Steel Reinforcement  
 $I = 3.979 (165.62 \times 10^4)$   
 $S = 1.686 (27.63 \times 10^3)$   
 $I_{AL+STL} = 17.075 (710.72 \times 10^4)$

Limitations of vertical mullions for:

- Curves **A** = 30 PSF (1436 Pa)
- Curves **B** = 40 PSF (1915 Pa)
- Curves **C** = 50 PSF (2393 Pa)
- Curves **D** = 60 PSF (2872 Pa)
- Curves **E** = 70 PSF (3351 Pa)
- Curves **F** = 80 PSF (3829 Pa)
- Curves **G** = 90 PSF (4308 Pa)
- Curves **H** = 100 PSF (4787 Pa)

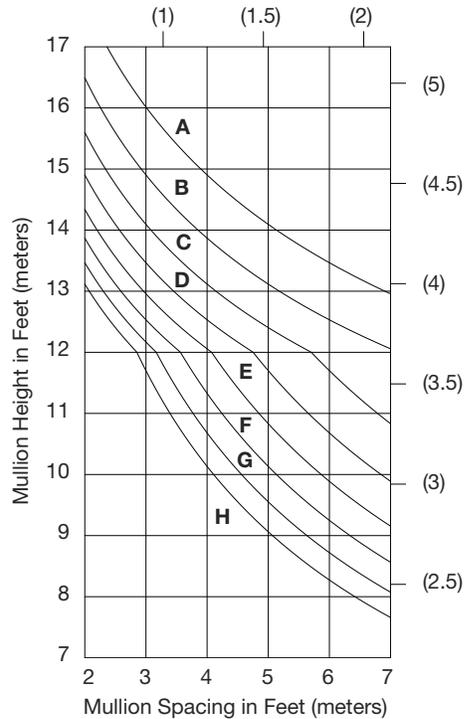
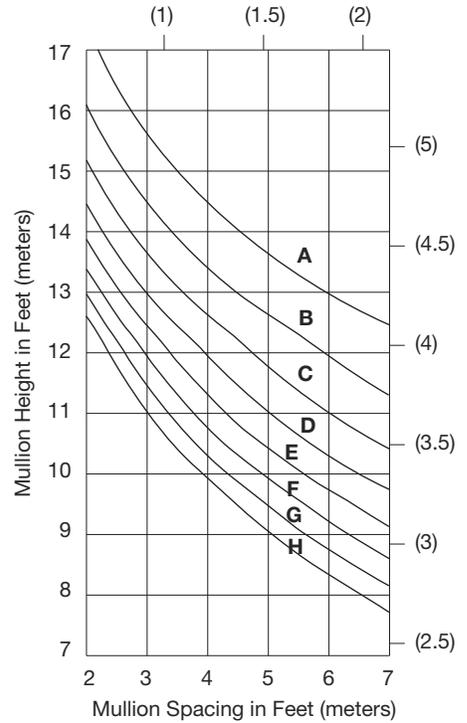


**IG625/IG634**



**IG625/IG634**  
with **SS852**

IG625/IG634 Mullion and Filler  
 $I = 5.325 (221.65 \times 10^4)$   
 $S = 2.130 (34.91 \times 10^3)$   
 Steel Reinforcement  
 $I = 3.979 (165.62 \times 10^4)$   
 $S = 1.686 (27.63 \times 10^3)$   
 $I_{AL+STL} = 16.864 (701.94 \times 10^4)$

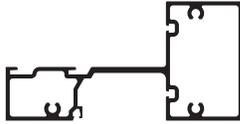


## Deadload Charts

## Hurricane Resistant Storefronts

• Series IG600

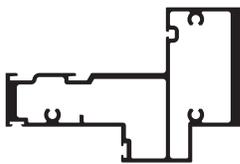
### HORIZONTAL MULLIONS FOR 1-5/16" (33) GLASS



**IG662**  
 $I_{yy} = 1.006$   
 $S_{yy} = 0.661$

#### INTERMEDIATE HORIZONTAL

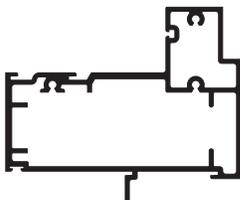
Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



**IG667**  
 $I_{yy} = 1.897$   
 $S_{yy} = 1.118$

#### DOOR HEADER

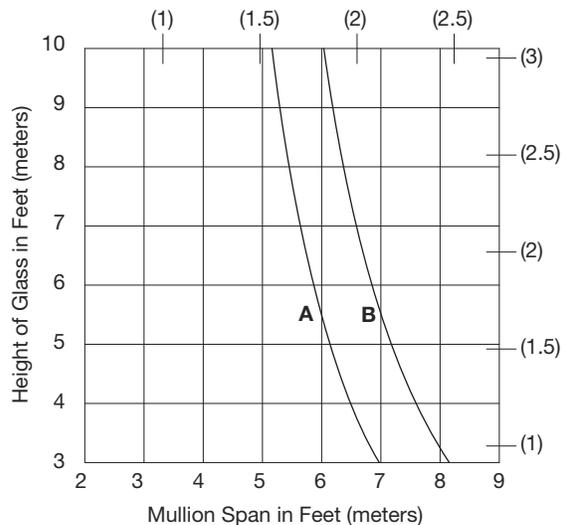
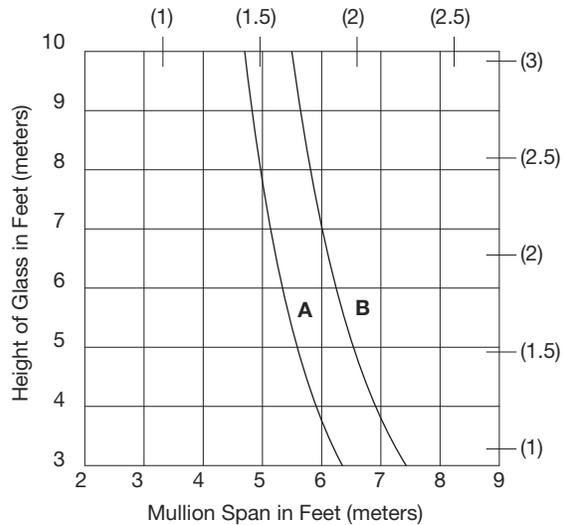
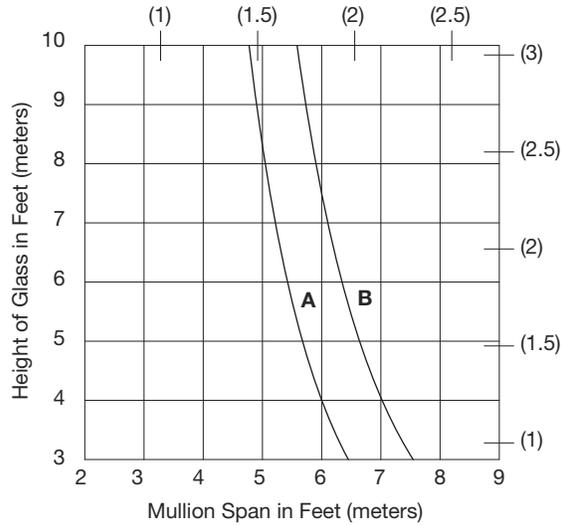
Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



**IG677**  
 $I_{yy} = 2.732$   
 $S_{yy} = 1.335$

#### DOOR HEADER

Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal mullion and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>)  
 Glass shall rest on two setting blocks located at:  
**CURVES A:** 1/4 points.  
**CURVES B:** 1/8 points or 8" (203.2) from corners, whichever is larger.



# STORM FRONT™

## Table of Contents

## Hurricane Resistant Storefronts • Thermal Series IT600



SECTION E3	PAGE
TECHNICAL DATA.....	16-E3
SPECIAL FEATURES.....	17-E3
TYPICAL DETAILS.....	18-E3 thru 21-E3
WINDLOAD CHARTS .....	22-E3
DEADLOAD CHARTS .....	23-E3

U.S. Aluminum warrants its High Impact Glazing Systems to perform at the published values for air and water infiltration and structural performance. Testing standards allow for unit interlayer a maximum rip size after impact and cycle testing. Though considered as successfully passing the test, water infiltration can occur through the glazing material in such cases. U.S. Aluminum does not warrant any glazing materials resulting from impact from wind-borne debris and subsequent cycling under storm conditions.

When using this product, U.S. Aluminum recommends specifying a uniform overall glazing thickness of plus or minus .020" (0.5) over the entire area of the glazing unit. This must include edges and center of unit. It is critical to check the glazing unit prior to glazing to ensure the proper thickness of the interlayer. The monolithic glass must be two pieces of 1/4" (6) thick, heat strengthened with a .090" (2.3) SentryGlas® Plus interlayer. For insulating units the glass must be two pieces of 1/4" (6) thick, heat strengthened with a .090" (2.3) SentryGlas® Plus interlayer, 1/2" (12.7) air space, and 1/4" (6) thick, heat strengthened outboard lite.

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal



# STORM FRONT™

## Specifications

## Hurricane Resistant Storefronts

- Thermal Series IT600

### SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	FACE WIDTH	DEPTH	GLAZING INFILLS	GLAZING METHOD
IT600	2-1/2" (63.5)	5" (127)	1-5/16" (33)	Exterior

#### I. GENERAL DESCRIPTION

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

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

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series IT600 Thermal System as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air infiltration:** Shall be tested in accordance with ASTM E 283-91. Infiltration shall not exceed:

- IT600 Storefront - .06 cfm/ft<sup>2</sup> @ 6.24 psf = (5.08 L/s/m<sup>2</sup>)
- IT600 Pair of Doors - 1.00 cfm/ft<sup>2</sup> @ 6.24 psf = (5.08 L/s/m<sup>2</sup>)

**Water infiltration:** Shall be tested in accordance with ASTM E 331-93. No water penetration at test pressure of:

- IT600 Storefront - 12 psf
- IT600 Single Door - 12 psf (Water resistant threshold at single door only)

**Structural Performance:** Shall be tested in accordance with ASTM 330-96 and based on:

- Maximum deflection of L/180 of the span.
- Allowable stress with a safety factor of 1.65. The system shall perform to this criteria under a windload of (Specify) psf
- IT600 Storefront
  - Design 65 psf
  - Structural +/- 97.5 psf
- IT600 Pair of Doors
  - Design 65 psf
  - Structural +/- 97.5 psf

**Forced Entry Resistance** - Shall be tested with a 300 lb. force applied to the active door panel simultaneously with a 150 lb. force applied in both perpendicular directions to the 300 lb. force.

• IT600 Pair of Doors Large Missile Impact Test - Shall be tested in accordance with:

Dade County Protocol TAS 201-94 with a 9 lb. 2x4 traveling at 50 fps.

- IT600 Storefront
  - IT600 Pair of Doors
- Cycle Load Test** - Shall be tested in accordance with:

Dade County Protocol TAS 201-94 for 9,000 cycles.

- IT600 Storefront
- IT600 Pair of Doors

**Thermal Performance** - IT600 storefront framing shall be tested in accordance with:

- NFRC 100 Fenestration Product U-Factor
- NFRC 200 Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
- NFRC 500 Fenestration Product Condensation Resistance Values
- AAMA 1503

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... (Specify one of the following):

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2-1/2" (63.5). Overall depth shall be 5" (127). Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### GLAZING

Dade County

- IT600 Storefront and IT600 Pair of Doors. 1-5/16" (33) Glazing must meet Impact and Cycle Testing requirements according to Local Building Codes.

# STORM FRONT™

## Specifications

## Hurricane Resistant Storefronts

- Thermal Series IT600

### SECTION 08 41 13 ALUMINUM STOREFRONTS

#### SEALANTS

The framing system shall use Tremco Proglaze SSG or DOW 995 Structural Silicone to adhere glass to framing. All metal-to-metal joints shall use Tremco Spectrum II or DOW 795 Silicone.

Door seal gaskets shall require small joint sealer.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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



Project: Orlando Immigration Center, Orlando, FL

# STORM FRONT™

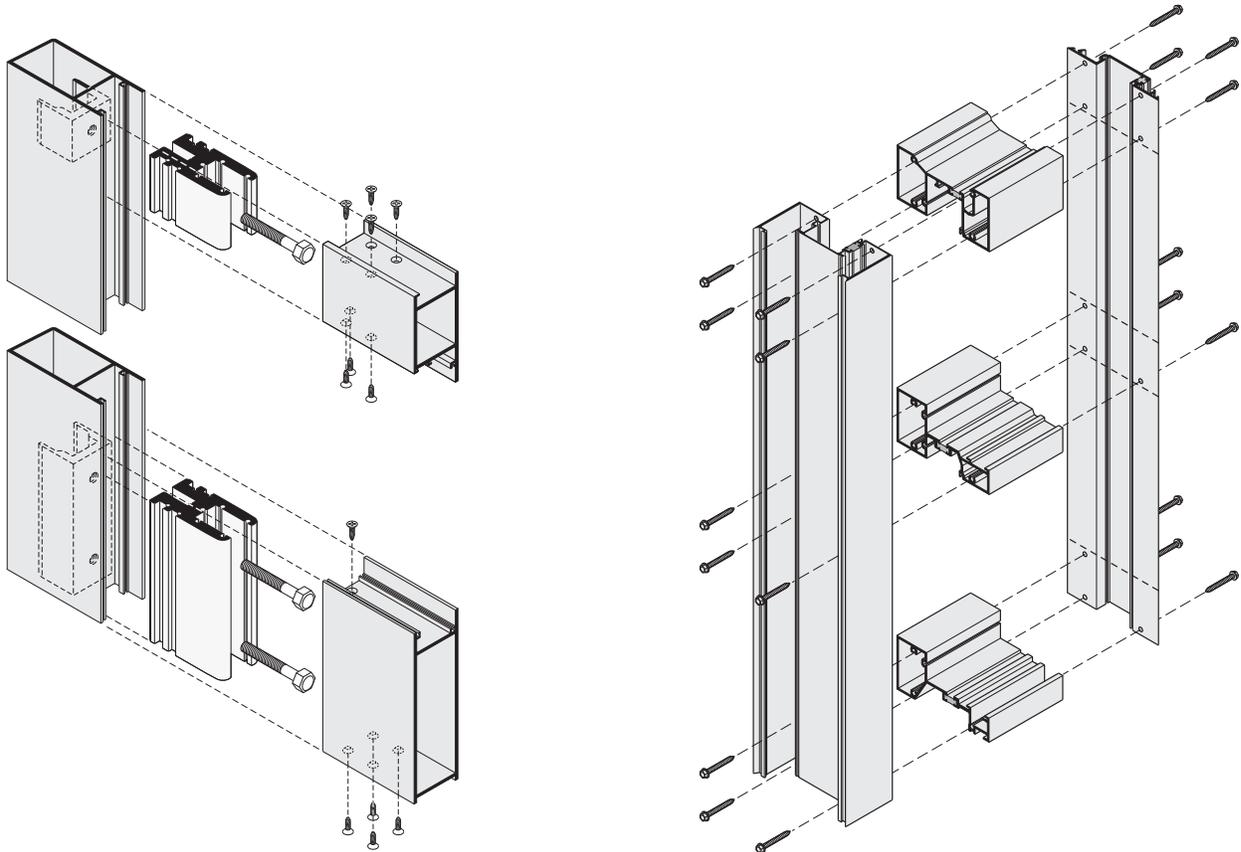
## Special Features

## Hurricane Resistant Storefronts

- Thermal Series IT600

This Storm Front™ System is thermally insulated, allowing it to comply with the Department of Energy's Building Energy Codes Program. Storm Front™ Hurricane Resistant Framing Systems comply with stringent Dade County Protocols TSA-201, 202, and 203 to provide maximum protection in wind-borne debris regions.

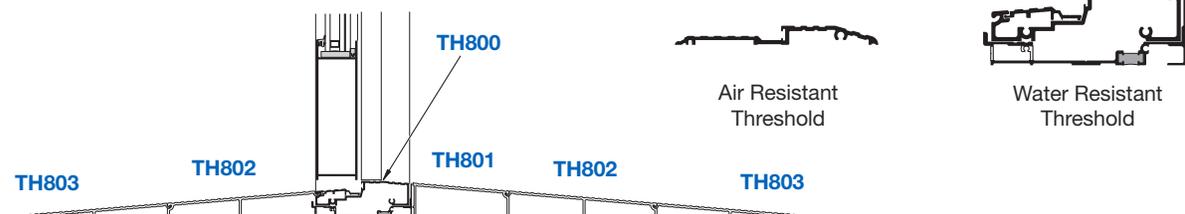
Series IT600 for 1-5/16" (33) insulating laminated glass has a 2-1/2" (63.5) face dimension and a 5" (127) overall depth. This system is center glazed and offers screw spline construction, continuous subsill, and steel reinforced door frames.



Storm Front Entrance Doors are 2-3/16" (55.6) thick with a .125" (3.2) wall thickness and feature a One Glass Stop Glazing System for clean sight lines on both sides of the door. Standard corner construction includes heavy-duty blocks. Corners are welded for maximum strength.

A low profile Air Resistant Threshold is offered for installations that have soffit overhangs greater than the entrance frame height. Check local codes for compliance.

High performance Water Resistant Thresholds are offered to provide superior water and air management, along with ramps to meet A.D.A. requirements when required.



# STORM FRONT™

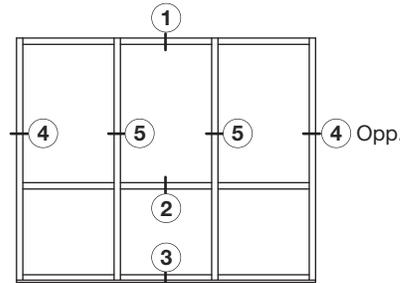
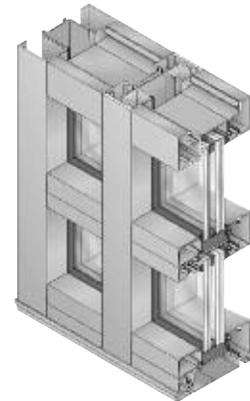
## Typical Details

## Hurricane Resistant Storefronts

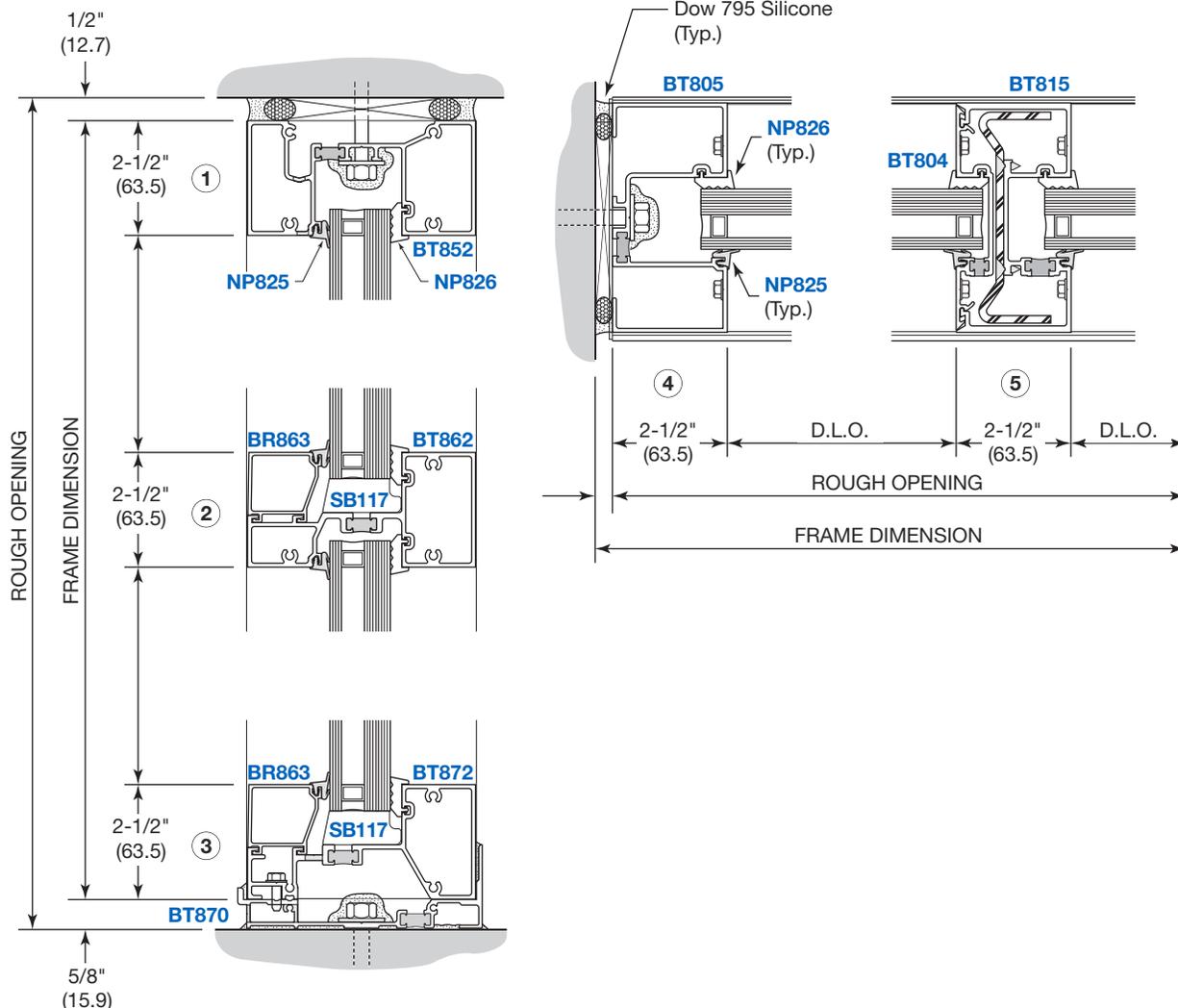
• Thermal Series IT600

### FOR 1-5/16" (33) GLASS

- Glass Size Maximum: 50 Square Feet (4.65 Square Meters)
- Maximum Frame Height is 10 Feet (3.05 m)



TYPICAL ELEVATION



NOT TO SCALE

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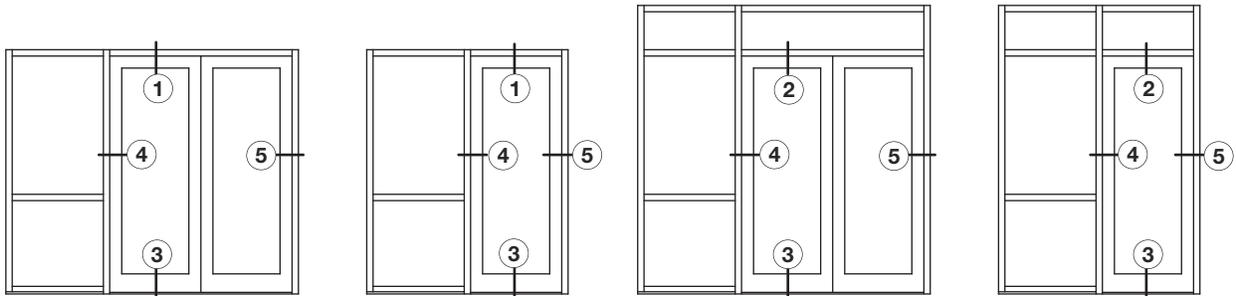
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**Typical Details**

**Hurricane Resistant Storefronts**

• Thermal Series IT600

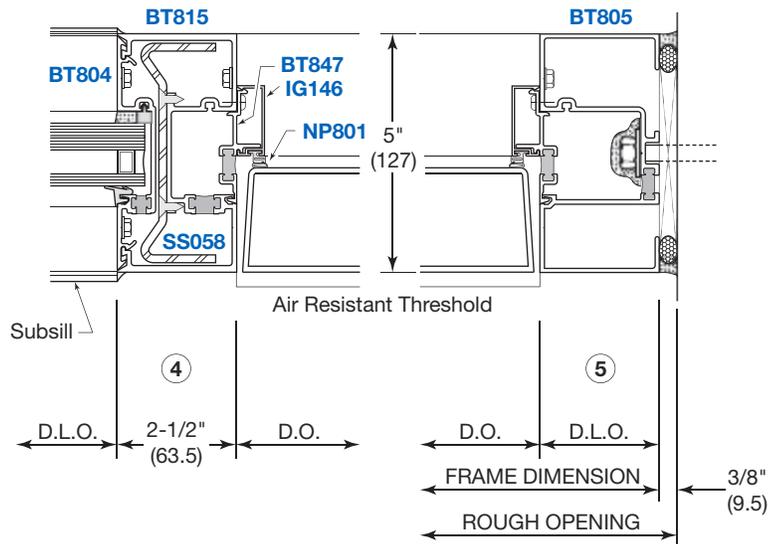
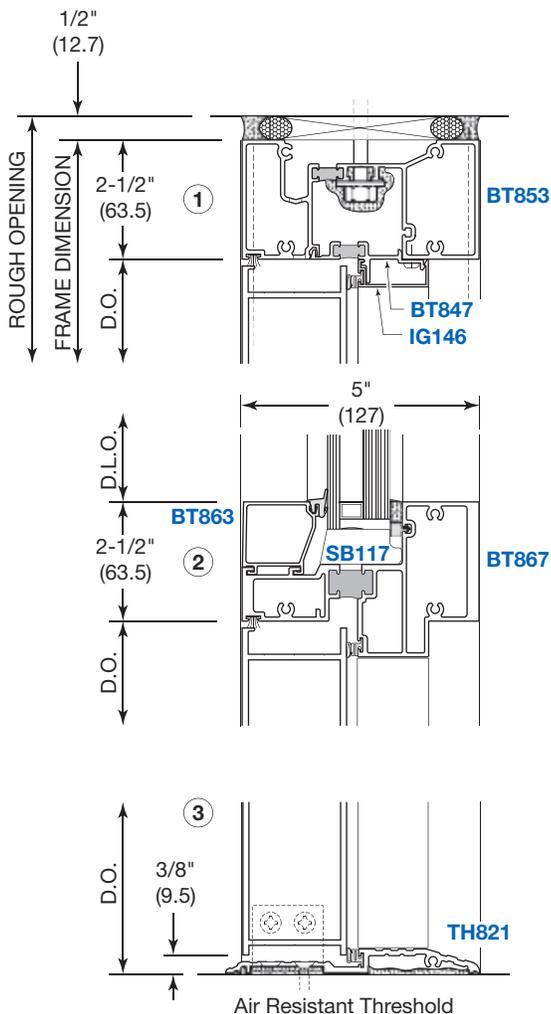
FOR 1-5/16" (33) GLASS



TYPICAL ENTRANCE ELEVATIONS

**Door Size Maximum:**  
 Single Door - 44" x 96"  
 (1.1 x 2.4 m)  
 Double Door - 88" x 96"  
 (2.2 x 2.4 m)

**NOTE:** Doors are designed to withstand a pressure of +/- 65 psf (3112 Pa) without steel reinforcement.



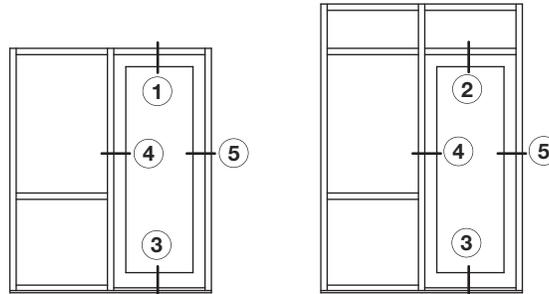
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# STORM FRONT™

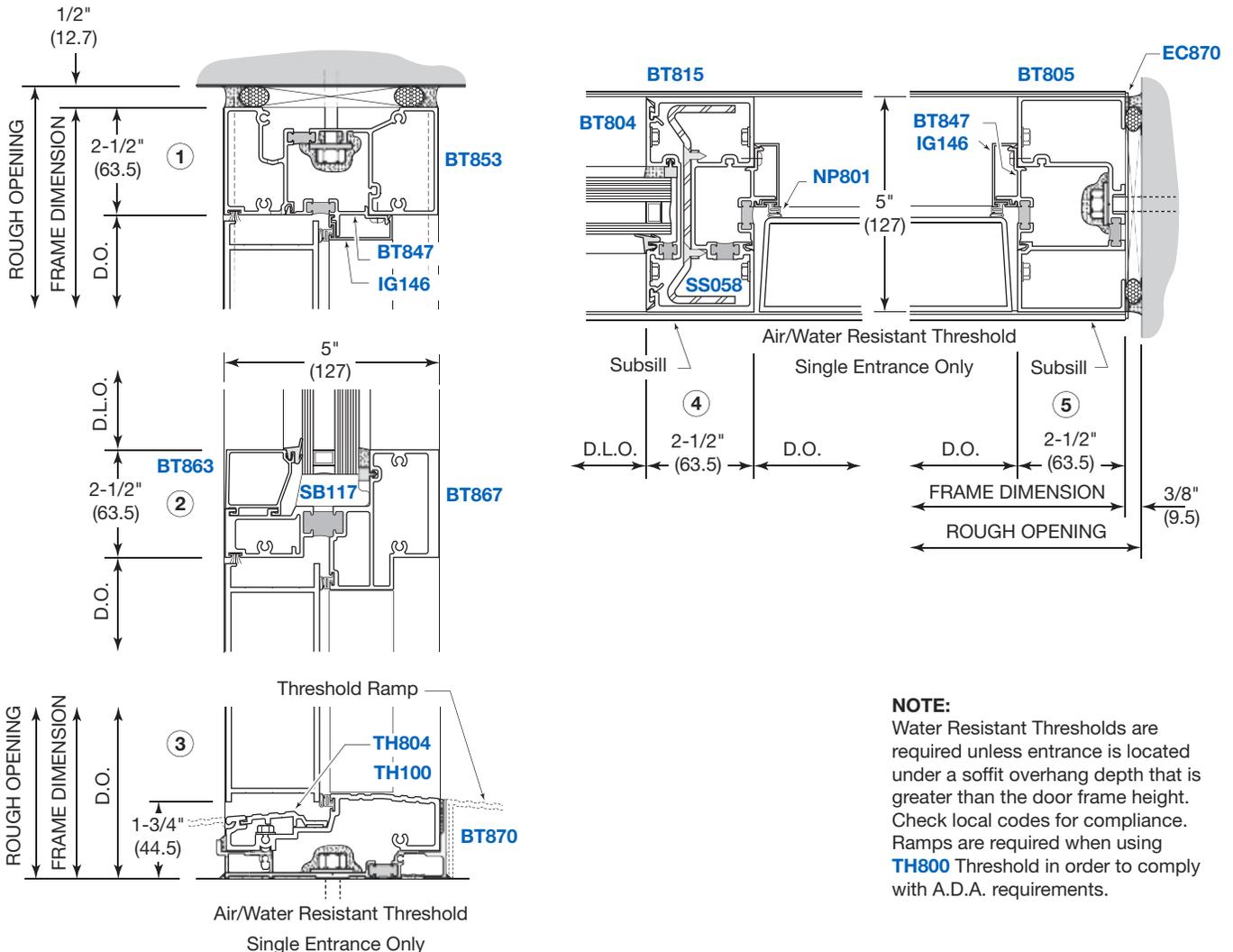
## Typical Details FOR 1-5/16" (33) GLASS

## Hurricane Resistant Storefronts • Thermal Series IT600

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



TYPICAL ENTRANCE ELEVATIONS



**NOTE:** Water Resistant Thresholds are required unless entrance is located under a soffit overhang depth that is greater than the door frame height. Check local codes for compliance. Ramps are required when using **TH800** Threshold in order to comply with A.D.A. requirements.

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# STORM FRONT™

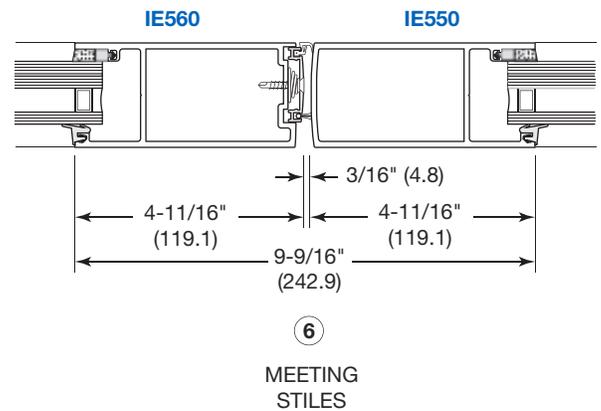
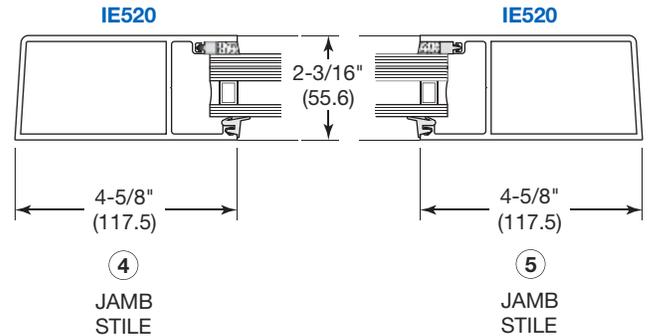
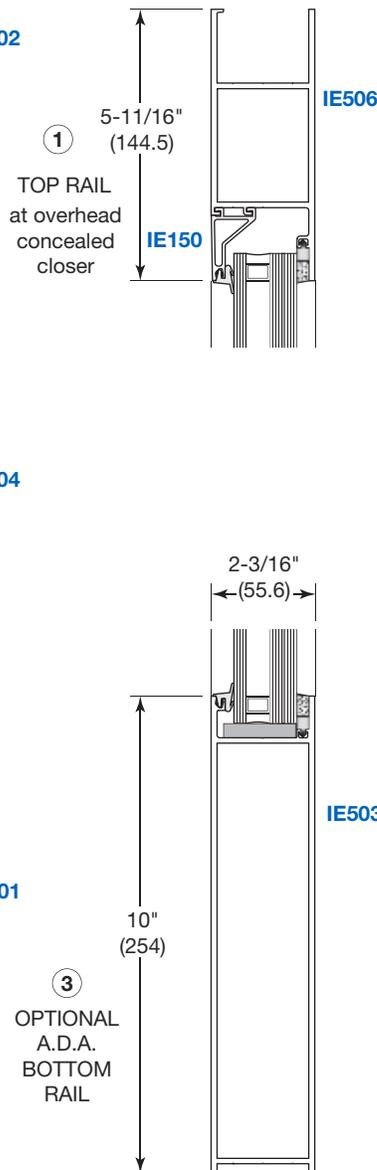
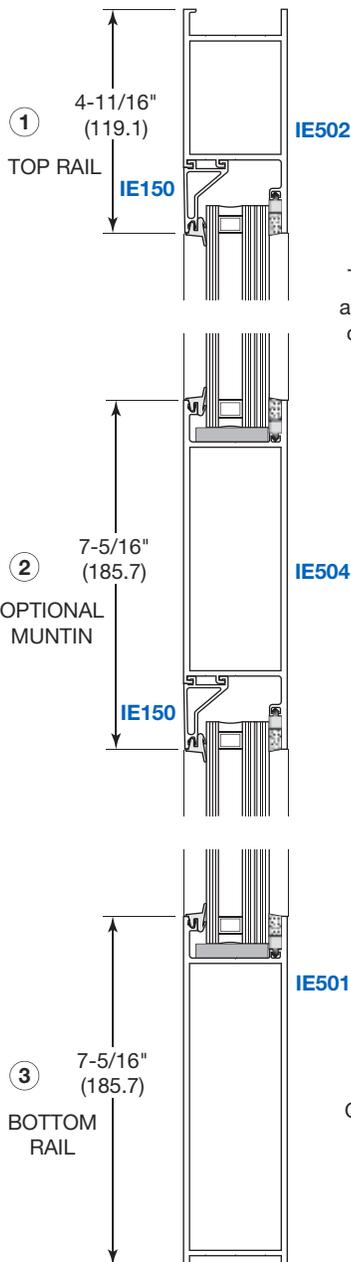
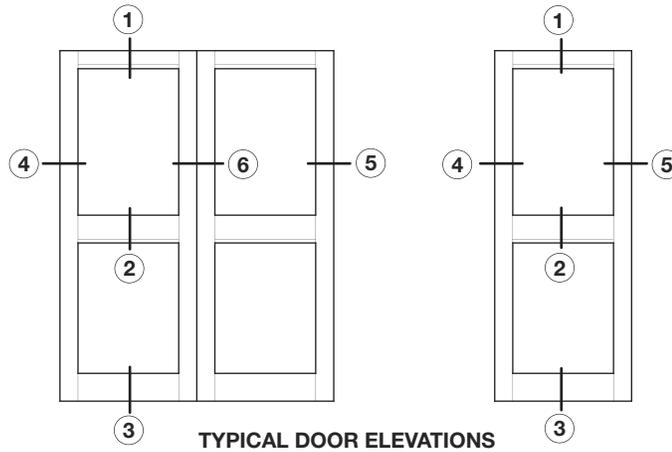
## Typical Details

## Hurricane Resistant Storefronts

- Thermal Series IT600

FOR 1-5/16" (33) GLASS

**Door Size Maximum:**  
 Single Door - 44" x 96"  
 (1.1 x 2.4 m)  
 Double Door - 88" x 96"  
 (2.2 x 2.4 m)



NOT TO SCALE

# STORM FRONT™

## Windload Charts

## Hurricane Resistant Storefronts

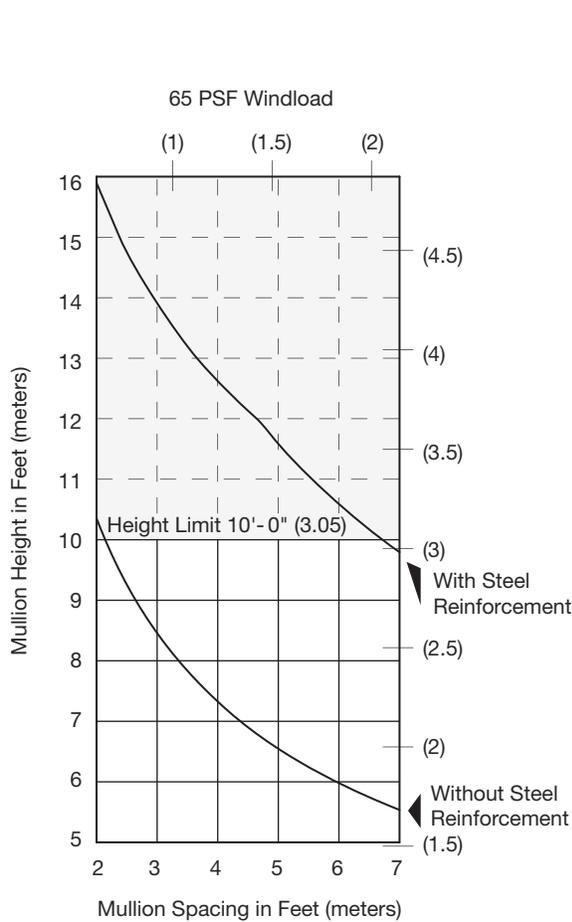
- Thermal Series IT600

### VERTICAL MULLIONS FOR 1-5/16" (33) GLASS

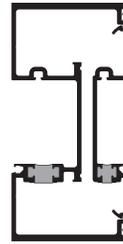
Mullions designed for L/180 deflection ratio and for the following allowable working stresses:

Aluminum alloy 6063-T5: allowable stress for windload 9,500 psi (89 MPa)  
 Steel reinforcing: allowable stress for windload 36,000 psi (183 MPa)

Curves represent the limit values and are based on criteria for simple beam, uniformly loaded, using the distribution of wind forces on the wall with rectangular loading. Glass is not considered as contributing to resistance of deflection.

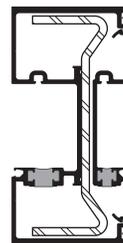


**BT815/BT804**  
(Standard)



**BT815/BT804** Mullion and Filler  
 $I_{xx} = 7.289 (303.38 \times 10^4)$   
 $S_{xx} = 2.201 (36.07 \times 10^3)$

**BT815/BT804/SS058**  
(Standard)



**BT815/BT804** Mullion and Filler  
 $I_{xx} = 7.289 (303.38 \times 10^4)$   
 $S_{xx} = 2.201 (36.07 \times 10^3)$

**SS058** Steel Reinforcement  
 $I_{xx} = 3.564 (148.34 \times 10^4)$   
 $S_{xx} = 1.550 (25.40 \times 10^3)$

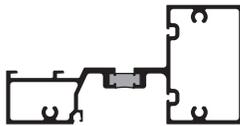
Aluminum + Steel  
 $I_{xx} = 17.625 (733.59 \times 10^4)$

## Deadload Charts

## Hurricane Resistant Storefronts

- Thermal Series IT600

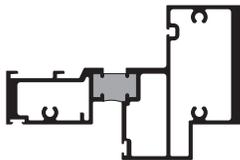
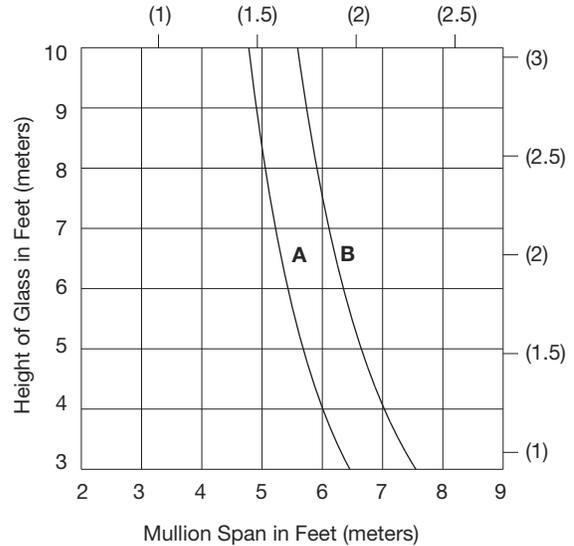
### HORIZONTALS FOR 1-5/16" (33) GLASS



**BT862**  
 $I_{yy} = 1.006$   
 $S_{yy} = 0.664$   
 $(41.87 \times 10^4)$

#### INTERMEDIATE HORIZONTAL

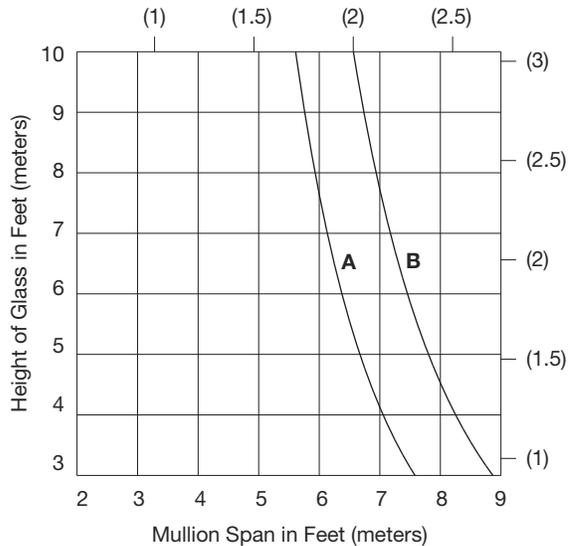
Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal member and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>)  
 CURVES **A**: 1/4 points.  
 CURVES **B**: 1/8 points or 8" (203) from corners, whichever is larger.



**BT867**  
 $I_{yy} = 1.912$   
 $S_{yy} = 1.123$   
 $(79.58 \times 10^4)$

#### DOOR HEADER

Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal member and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>)  
 CURVES **A**: 1/4 points.  
 CURVES **B**: 1/8 points or 8" (203) from corners, whichever is larger.



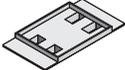
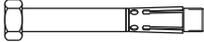
# STORM FRONT™



## Accessories

## Hurricane Resistant Storefronts

- Series IG500
- Series IG600
- Series IT600

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED		
				SERIES IG500	SERIES IG600	SERIES IT600
SB916		Setting Block for 9/16" (14) Glass	100	●		
SB917		Setting Block for 1-5/16" (33) Glass	100		●	
SB117		Setting Block for 1-5/16" (33) Glass	100			●
CP801		End Cap for Vertical Mullions	50	●	●	
WD801		Water Deflector for IG524	50	●		
WD802		Water Deflector for IG526	50	●		
WD911		Water Deflector for IG624 and BT804	50		●	●
WD912		Water Deflector for IG626 and BT815	50		●	●
WD913		Water Deflector for BT805	50			●
EC801		End Caps for Jamb at Subsill	20	●	●	●
SV102		Splice Sleeve for Subsill	10	●	●	●
DJ801		Drill Jig for Horizontals	1	●	●	●
ST286		Assembly Screw #12 x 2" (51) HWH SMS	100			●
ST268		Sill to Subsill Attachment #12 x 3/4" (19) HWH SMS	100	●	●	●
ST266		Reinforcement to Vertical Attachment #12 x 1" (25) HWH SMS	100	●	●	●
ST173		End Dam Attachment #8 x 1/2" (12.7) FH SMS	100			●
ST206		Splice Sleeve Attachment #8 x 1/2" (12.7) PH SMS	100			●
MF302		Perimeter Anchor for Concrete 3/8" - 16 x 3" (76)	50	●	●	

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# STORM FRONT™



## Specifications

## Hurricane Resistant Balcony/Terrace Doors

• Series BAL-350

### SECTION 08 39 80

### HURRICANE RESISTANT DOORS

NOA: 10-1102.01 Out-Swing

SERIES	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
BAL-350	3-3/4" (95.3)	2" (50.8)	9/16" (14)	Factory Pre-Glazed

#### I. GENERAL DESCRIPTION

Work Included: The glazing contractor shall furnish all necessary materials, labor, and equipment for the complete installation of aluminum terrace doors and framing as detailed on the drawings and specified herein. Work Not Included: A Structural support of the framing system, wood framing, structural steel, masonry, interior trim, and final cleaning.

#### QUALITY ASSURANCE

For purposes of designating type and quality for work in this section, drawings and specifications are based on U.S. Aluminum, Series BAL-350 Balcony/Terrace Door, 3-3/4" (95.3) vertical face dimension and 2" (50.8) depth. A 1" x 5" (25.4 x 127) or 1-3/4" x 5" (44.5 x 127) frame is available for moderate traffic applications. When substitute products are to be considered, supporting technical literature, samples, and drawings must be submitted 10 days prior to bid date in order to make a valid comparison of the products involved.

#### PERFORMANCE REQUIREMENTS

Meets all Miami-Dade County, Florida air, water, structural, and impact requirements.

**Air Infiltration:** When closed and locked, the test specimen shall be tested in accordance with ASTM E 283 and shall not exceed 0.27 cfm/sq. ft. at a test pressure differential of 6.24 PSF.

**Water Resistance:** When closed and locked, the test specimen shall be tested in accordance with ASTM E 331 and ASTM E 547 there shall be no uncontrolled leakage as defined in the test method at a static air pressure differential of 18 PSF. (single doors) Large and Small Missile Impact Test: Maximum design pressure of +100 psf +/-100 psf (large missile impact) and +120 psf/-120 psf (small missile impact).

Forced Entry Resistance - 300 pound concentrated load.

#### II. PRODUCTS/MATERIALS

Door members shall be extruded architectural aluminum 6063-T6 alloy and temper. Major portions of all door sections, shall be nominal .125" (3.2). Wall thickness of frame members shall be nominal .125" (3.2). Screws, nuts, washers, bolts, rivets, and other fastening devices shall be aluminum, stainless steel or other non-corrosive materials.

#### DOOR AND FRAME CONSTRUCTION

Door corners are to be accurately joined using "Secure Bolt" construction. The weather seals shall be open cell urethane foam core bonded to a U.V. stabilized polyurethane liner. Doors shall have non-removable interior glass stops with custom E.P.D.M. spacer by Tremco, DOW 995 Structural Silicone, and E.P.D.M. Wedge by Tremco. No exposed screws shall be permitted except for anchoring.

#### HARDWARE

Four-point locking hardware shall be as recommended by manufacturer. Finishes available are: Polished Brass, Brushed Brass, Matte Aluminum, Polished Chrome, Brushed Aluminum, White, and Black. Door leaves shall have a pair and a half (minimum) of heavy-duty mortised 4" x 4-1/2" (101.6 x 114.3) long butt hinges with non-removable stainless steel pins. If hardware is to be furnished by others, templates and physical hardware must be submitted prior to any fabrication being started.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Standard aluminum extrusions shall be given a Kynar 500 AAMA 2605 paint.

(Specify one of the following):

- \_\_\_ Bone White
- \_\_\_ Statuary Bronze
- \_\_\_ Kynar 500 (Special Order) with the requirements of AAMA 2605. Color shall be (specify).
- Class 1 anodized extrusions shall be given a caustic etch followed by a anodic oxide treatment to obtain...
- \_\_\_ Clear Anodize
- \_\_\_ Bronze Anodize

#### III. EXECUTION INSTALLATION

All items under this heading shall be set by a qualified installer in their correct locations as shown in the details and shall be level, square, plumb, and at proper elevation and in alignment with other work in accordance with the manufacturer's installation instructions and approved shop drawings. All joints between entrance framing and the building structure shall be sealed in order to secure a watertight installation. Upon completion of the installation of the entrances, it shall be the contractor's responsibility to make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.

#### PROTECTION AND CLEANING

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

#### IV. OPTIONS

- Concealed Overhead Closers
- Exposed Heavy-Duty Closers
- Standard 1" (25.4) Round Push/Pull Sets
- Three Point Locking System With Exterior Cylinder and Interior Thumbturn

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## Technical Data

## Hurricane Resistant Balcony/Terrace Doors

- Series BAL-350

The BAL-350 Hurricane Resistant Balcony/Terrace Door is elegantly designed for high rise applications such as hotels, condominiums, and office buildings. Being tested for both small and large missile impact resistance, as well as its high performance for water resistance, makes the BAL-350 meet and exceed all commercial and high-rise condominium developer requirements with the highest level of quality. With the growing need for a commercial impact resistant product in the residential market, the BAL-350 by U.S. Aluminum has topped the list for single terrace and balcony doors.



Series BAL-350 Impact Resistant  
Out-Swing Balcony/Terrace Door  
(Exterior View)

### Standard Features:

- Factory Pre-Glazed With Structural Silicone
- Maximum Panel Size: 42" x 108" (1067 x 2743)
- Heavy Commercial Grade
- Maximum Frame Height 120" (3048), Including Transom
- 4-7/16" (112.7) Top Rail and 8" (203.2) Bottom Rail
- 3" (76.2) High Water Threshold
- Heavy-Duty Internal Corner Clips
- 1" x 5" (25 x 127) or 1-3/4" x 5" (44.5 x 127) Door Frame
- 0.125 (3.2) Nominal Wall Thickness, Door and Frame
- 1-1/2 Pair of 4" x 4-1/2" (101.6 x 114.3) Mortised Aluminum Butt Hinges With Non-Removable Stainless Steel Hinge Pins for Door Opening Heights Up to 84" (2137)
- Two Pairs of 4" x 4-1/2" (101.6 x 114.3) Mortised Aluminum Butt Hinges With Non-Removable Stainless Steel Hinge Pins for Door Opening Heights Greater Than 84" (2137)
- Double Rows of Weather Seals
- Stainless Steel Four-Point Locking System Including Latch Lock, Deadbolt Lock With Shoot-Bolts Top and Bottom
- Solid Brass Lever Handle by Ashland
- Non-Removable Interior Glass Stops
- Wet Glazing Method

### Options:

- Custom Finishes: AAMA 2605 Compliant Painted Finishes
- Concealed Overhead Closers
- Surface Mounted Heavy-Duty Closers
- Large Missile 9/16" (14) VS Laminated Impact Glass  
Laminated Glass Composition:  
1/4" (6) Heat Strengthened Laminated Glass  
0.075" VS02 Interlayer  
1/4" (6) Heat Strengthened Glass
- Small Missile 9/16" (14) PVB Laminated Impact Glass  
Laminated Glass Composition:  
1/4" (6) Heat Strengthened Glass  
0.90" PVB Interlayer  
1/4" (6) Heat Strengthened Glass
- Glass Tint Available as Selected by the Architect/Owner
- Designer Latch Lock Hardware Finishes Available: Black, Brushed Aluminum, Brushed Brass, Matte Aluminum, Polished Brass, Polished Chrome, and White.
- Open for Glazing by Customer



Designer Latch Lock

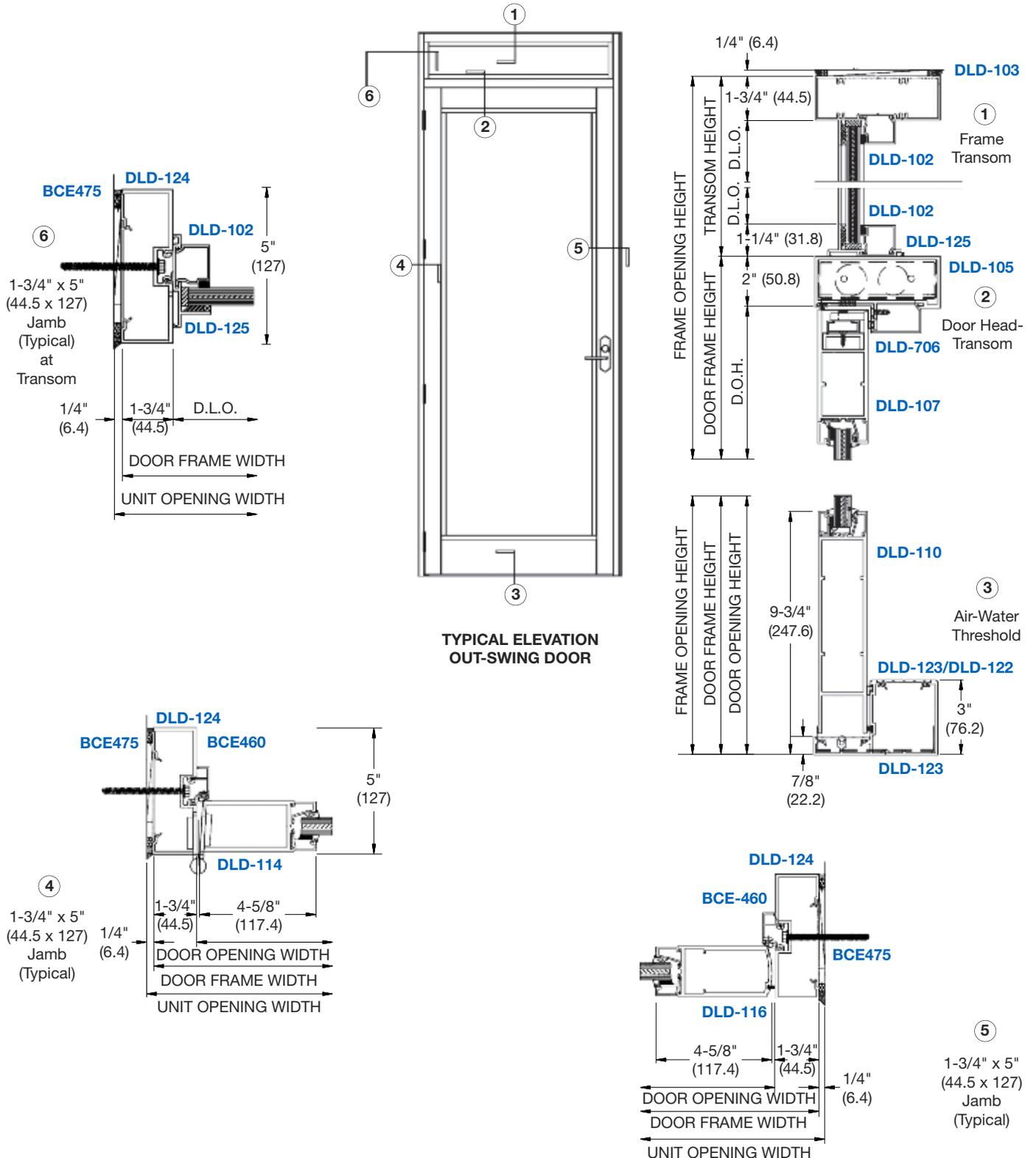
# STORM FRONT™

## Typical Details

## Hurricane Resistant Balcony/Terrace Doors

• Series BAL-350

### OUT-SWING DOORS AND FRAMES



TYPICAL ELEVATION OUT-SWING DOOR

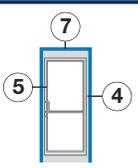
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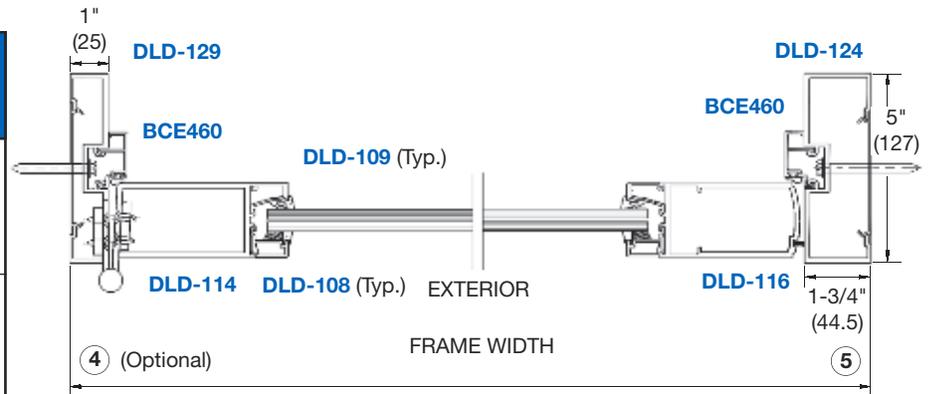
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## OUT-SWING DOOR FRAMES

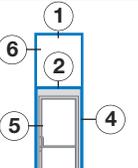
## Hurricane Resistant Balcony/Terrace Doors

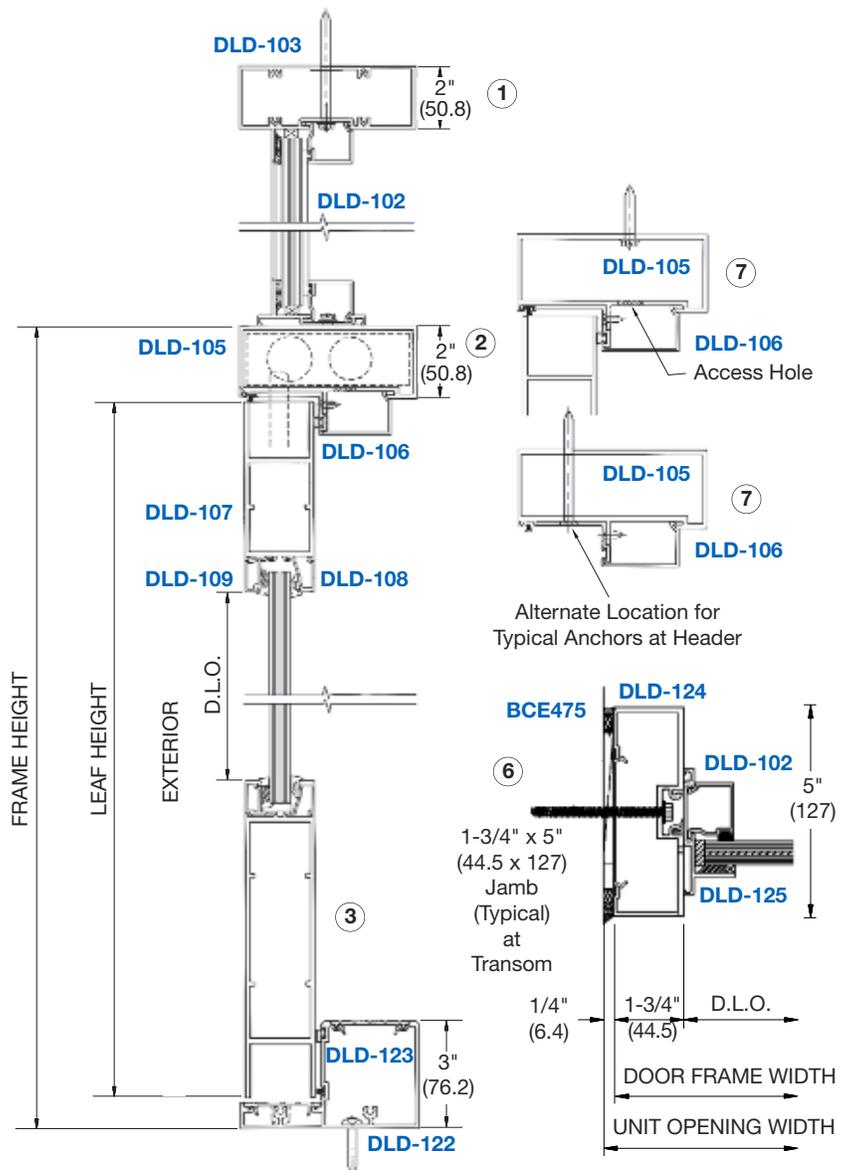
• Series BAL-350

UP/OVER FRAME FOR SINGLE DOOR	HARDWARE	PART NO.*
 <p>Frame without Transom 39-1/2" x 86" or 39-1/2" x 98"</p>	3 Butt Hinges	<b>BAL350W10FN</b>
	4 Butt Hinges	<b>BAL350W11FN</b>



\* Specify Right or Left Hand when ordering.

TRANSOM FRAME	HARDWARE	PART NO.*
 <p>Frame with Transom 39-1/2" x 120"</p>	3 Butt Hinges	<b>BAL350W10FT</b>
	4 Butt Hinges	<b>BAL350W11FT</b>



\* Specify Right or Left Hand when ordering.  
Maximum door frame size 39-1/2" x 10' (1003 x 3048) with Transom; 39-1/2" x 9' 2" (1003 x 2794) without Transom

### BAL-350 Balcony Door Frame Standard Features:

- Factory Assembled
- 1-3/4" x 5" (44.5 x 127) Door Jamb
- Stainless Steel Butt Hinges With Aluminum Back-Up Plates
- 3" (76.2) Water Resistant Threshold
- Pre-Drilled for Anchors
- Stainless Steel Water Resistant Keeper
- Silicone Sealed Corner Joinery

### BAL-350 Balcony Door Frame Options:

- 1" (25) Door Jambs



## Specifications

### SECTION 08 56 40

#### HURRICANE RESISTANT WINDOWS

## Hurricane Resistant Concealed Vent Windows

- Series IW7500
- Series IW7600

#### PART 1 GENERAL

##### 1.01 Work Included

- A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.
- B. All windows shall be U.S. Aluminum Series IW7500 C75 or Series IW7600 CW100 Rated Hurricane Resistant Concealed Vent Thermal Windows (*Specify*). Other manufacturers requesting approval to bid their product as an equal must submit the following information 10 days prior to close of bidding.
1. A sample window, 36" x 24" (914 x 610) single unit, as per requirements of architect.
  2. Test reports documenting compliance with requirements of Section 1.05 or 11.15 of CSA A440.
- (Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00).*
- C. Glass and Glazing
1. Reference Section 08 80 00 for Glass and Glazing.

##### 1.02 Related Work

- Section 08 40 00 - Entrances and Storefronts
- Section 08 44 00 - Glazed Curtain Walls
- Section 08 50 00 - Windows
- Section 08 88 19 - Hurricane Resistant Glazing

##### 1.03 Testing and Performance Requirements

- A. Test Units
1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.
  2. Thermal test unit sizes shall be 36" x 60" (914 x 1524). Unit shall consist of a casement, fixed or projected window.
- B. Test Procedures and Performances
1. Windows shall conform to all AAMA/ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
  2. Air Infiltration Test
    - a. With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf.
    - b. Air infiltration shall not exceed .30 cfm per foot of crack.
  3. Water Resistance Test
    - a. With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf.
    - b. There shall be no uncontrolled water leakage.
  4. Uniform Load Deflection Test
    - a. With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure.
    - b. No member shall deflect over L/175 of its span.
  5. Condensation Resistance Test (CRF)
    - a. With ventilators closed and locked, test unit in accordance with AAMA 1503.
    - b. Condensation Resistance Factor (CRF) shall not be less than 49.
  6. Thermal Transmittance Test (Conductive U-Value)
    - a. With ventilators closed and locked, test unit in accordance with NFRC 100, 200, and AAMA 1503.

- b. Conductive thermal transmittance (U-Value) shall not be more than 0.63 BTU/hr/ft<sup>2</sup>/°F.
7. AAMA C75 Rating Testing Procedures-AAMA/WDMA/CSA 101/I.S.2/A440-0.8 - Laboratory Performance Testing. AAMA 502-08 - Newly Installed Fenestration Products. AAMA 511-08 - Installed Fenestration Products After 6 Months.
8. Hurricane Resistant Testing as per Miami/Dade County Protocols TAS 201, 202, and 203.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

- A. Total Window System
1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulated units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

# STORM FRONT™ WINDOWS

## Specifications

### SECTION 08 56 40

#### HURRICANE RESISTANT WINDOWS

##### PART 2 PRODUCTS

###### 2.01 Materials

###### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

1. Locking handles shall be supplied by U.S. Aluminum.
2. Operating hardware shall be 4-Bar Stainless Steel Arms or equal.

###### C. Weatherstrip

1. All weatherstrip shall be E.P.D.M. or equal.

###### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

###### E. Accepts Laminated 1" (25) Glazing

###### 2.02 Fabrication

###### A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2)
2. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.
3. Depth of frame and vent shall not be less than 3" (76.2) for 1" (25) glazing.

###### B. Frame

1. Frame components shall be mechanically fastened.

###### C. Ventilator

1. All vent extrusions shall be tubular.
2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
3. Each vent shall be pressure equalized utilizing two rows of E.P.D.M. weatherstripping (or equal) installed in dovetail grooves in the extrusion.
4. The vent shall present a flush appearance with the main frame when in the closed position.

###### D. Screens

1. Screen frames shall be extruded.
2. Screen mounting holes in the window frame shall be factory drilled.
3. Screen mesh shall be aluminum or fiberglass (if applicable).

###### E. Glazing

1. All units shall be glazed with spacer and structural silicone.

###### F. Finish

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

*(Specify one of the following):*

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating

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

## Hurricane Resistant Concealed Vent Windows

- Series IW7500
- Series IW7600

##### PART 3 EXECUTION

###### 3.01 Inspection

###### A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

###### 3.02 Installation

A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

B. Plumb and align window faces in a single plane for each wall plane, and erect windows and materials square and true. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

C. Adjust windows for proper operation after installation.

D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections, and at opening perimeters.

###### 3.03 Protection and Cleaning

A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

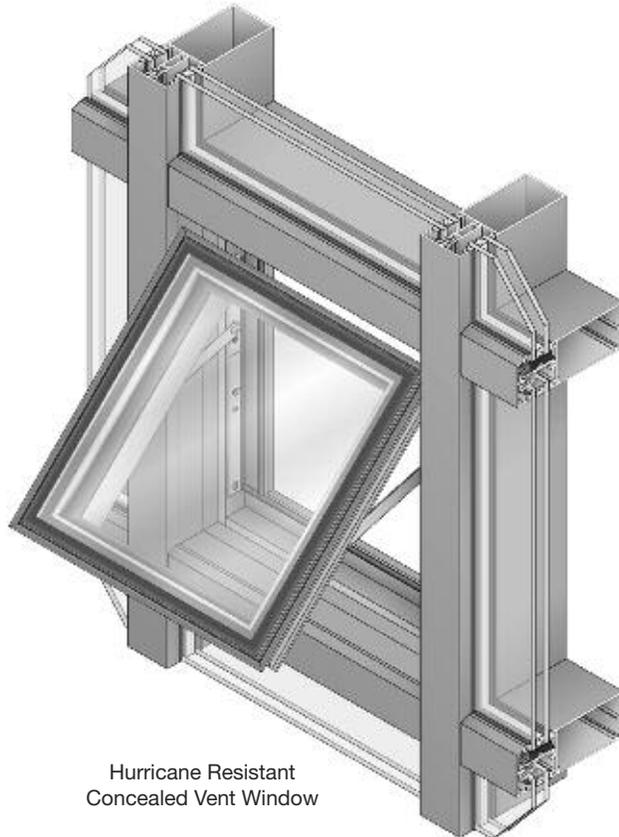
# STORM FRONT™ WINDOWS

## Special Features

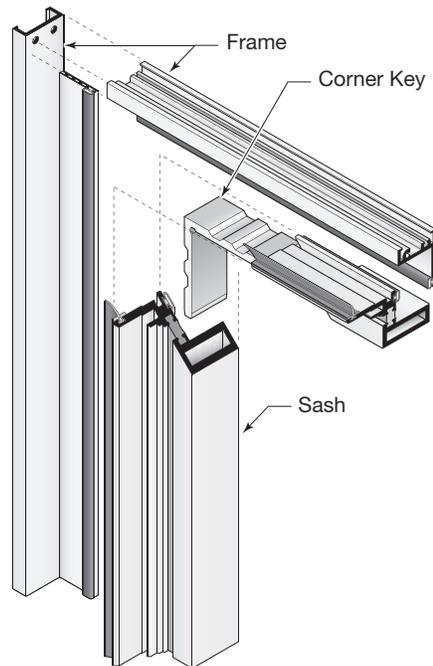
FOR 1" (25) GLAZING

## Hurricane Resistant Concealed Vent Window

• Series IW7500



The Series IW7500 Hurricane Resistant Concealed Vent is a minimal sightline out-swing thermally broken window perfect for use in storefront, ribbon wall, and curtain wall openings in coastal areas requiring Hurricane Resistant Systems. Stainless steel 4-bar hinges and cam locking handles complete the heavy-duty hardware used on the Hurricane Resistant Window. As with all of our operable windows, vent construction is accomplished with tubular vent components, mitered, reinforced with corner keys, and crimped.



When closed, the vent is sealed to the frame with E.P.D.M. bulb gaskets ensuring an air tight seal. The 1" (25) laminated glazing is held in place with structural silicone.

### HARDWARE SELECTION GUIDE

#### SERIES IW7500 HURRICANE RESISTANT CONCEALED VENT WINDOW

 <p><b>WH601</b>        Locking Handle</p>	 <p><b>WH602</b>        Keeper</p>	 <p><b>WH603</b>        Handle Base</p>	 <p><b>WH765</b>        Snubber Driver</p>	 <p><b>WH766</b>        Snubber Receiver</p>
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# STORM FRONT™ WINDOWS

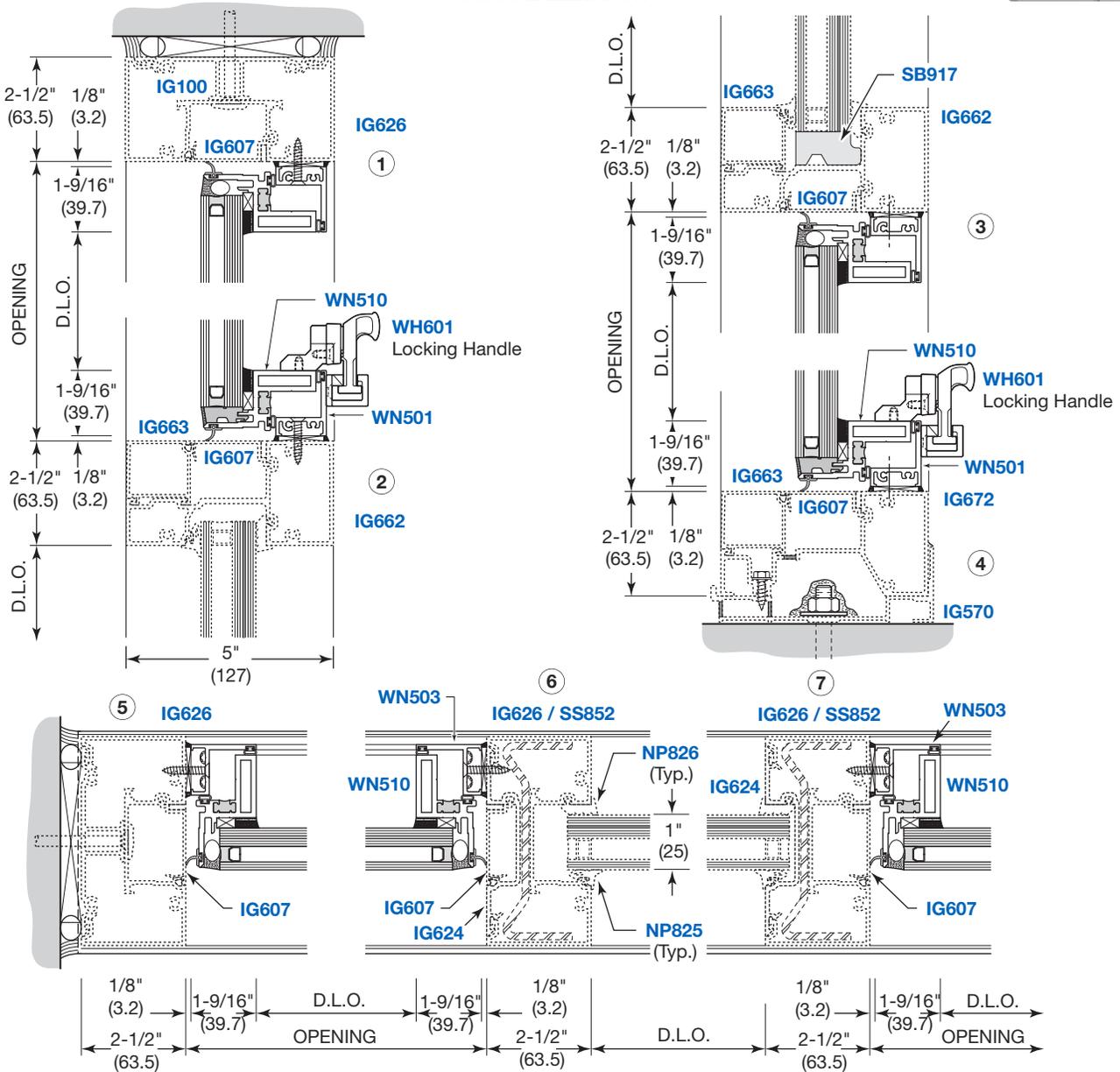
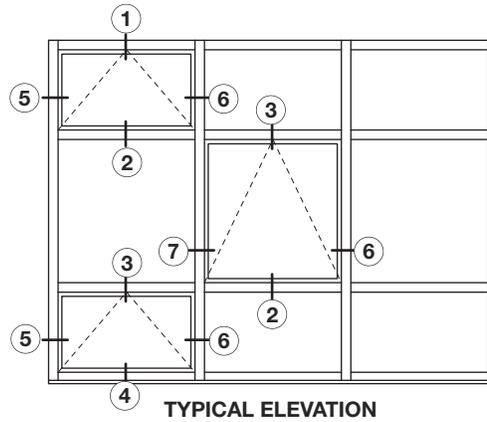
## Typical Details

## Hurricane Resistant Concealed Vent Window • Series IW7500

### FOR 1" (25) GLAZING

Series IW7500 Concealed Vent Window  
With Storm Front™ IG600 Storefront System

For specifications, details, and testing data go to [usalum.com](http://usalum.com)



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# STORM FRONT™ WINDOWS

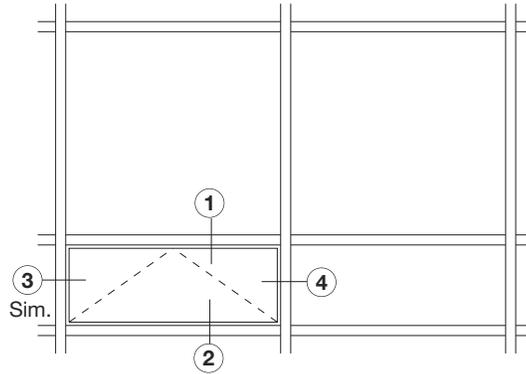
## Typical Details

### Hurricane Resistant Concealed Vent Window • Series IW7500

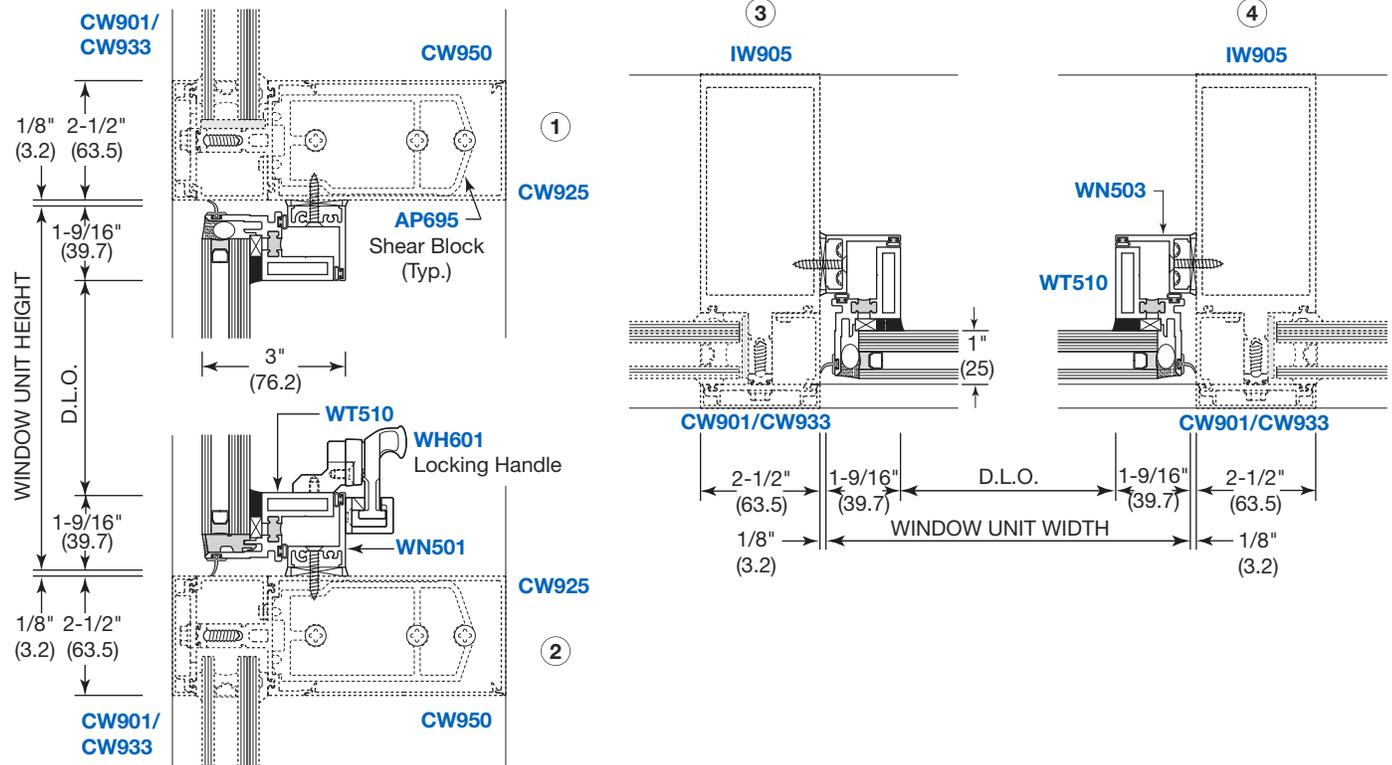
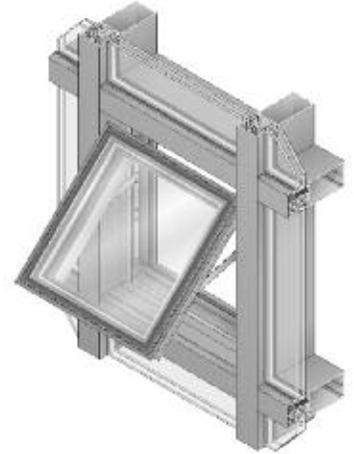
#### FOR 1" (25) GLAZING

Series IW7500 Concealed Vent Window  
 With Storm Wall® IW3250 Curtain Wall System

For specifications, details, and testing data go to [usalum.com](http://usalum.com)



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# STORM FRONT™ WINDOWS

## Special Features

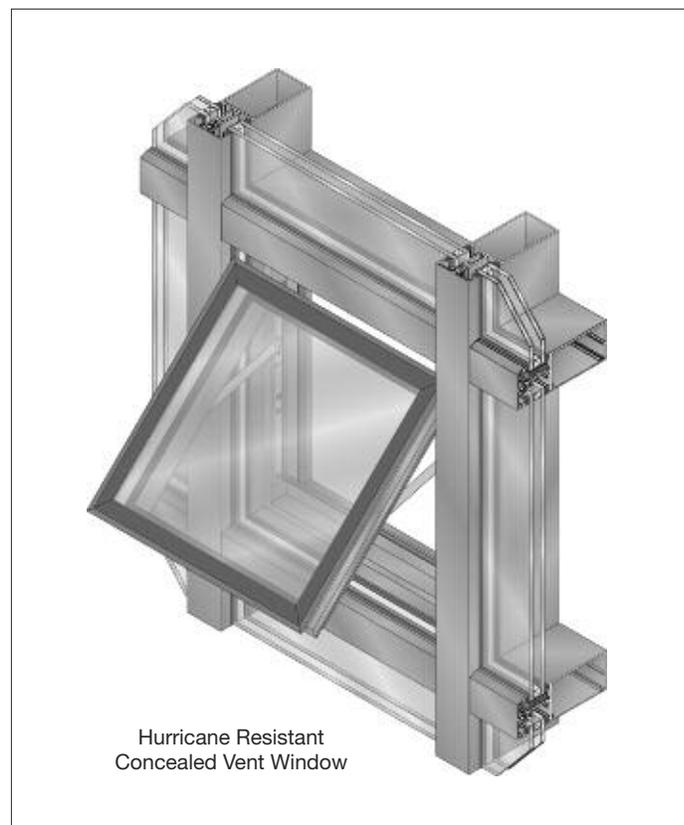
FOR 1" (25) GLAZING

**Hurricane Resistant  
Concealed Vent Window**  
• Series IW7600



The Series IW7600 Concealed Vent is a minimal sightline window perfect for use in storefront, ribbon window, and curtain wall openings. Standard hardware includes a single Multi-Point Locking Handle. As with all of our operable windows, vent construction starts with tubular vent components that are mitered, reinforced with corner keys, and crimped at all corners. When closed, the vent is sealed to the frame with bulb gaskets ensuring an air tight seal. The high performance IW7600 Window meets the stringent requirements of the Miami/Dade County protocol for maximum protection from high winds and wind-borne debris.

- AAMA CW100-Rated
- Accepts 1" (25) Glazing
- Minimal Sightline
- Structural Silicone Glazed
- Euro Multi-Point Locking Handles
- Use With Storefront or Curtain Wall
- Thermally Broken
- U-Factor 0.56 to 0.34
- Reinforced Corner Construction
- Made in the U.S.A.



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# STORM FRONT™ WINDOWS

## Typical Details

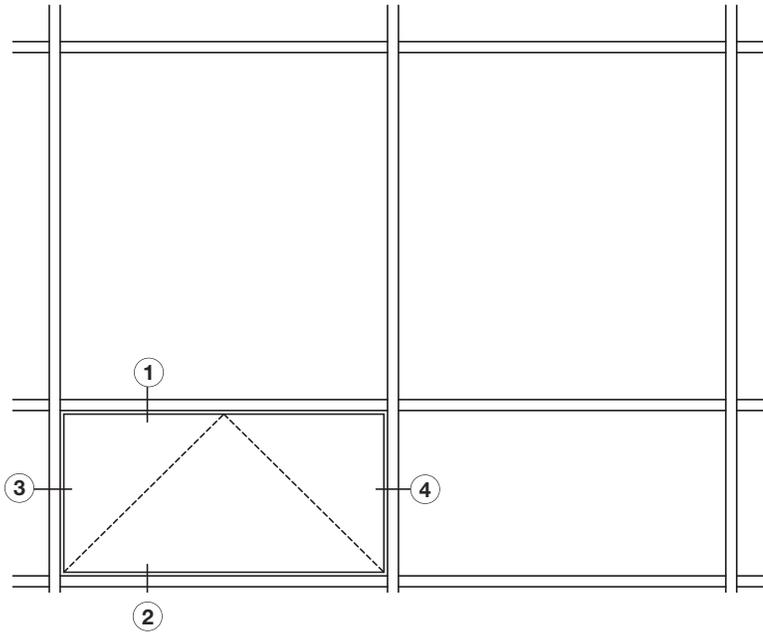
### FOR 1" (25) GLAZING

Series IW7600 Concealed Vent Window With Storm Front™ IG600 Storefront System

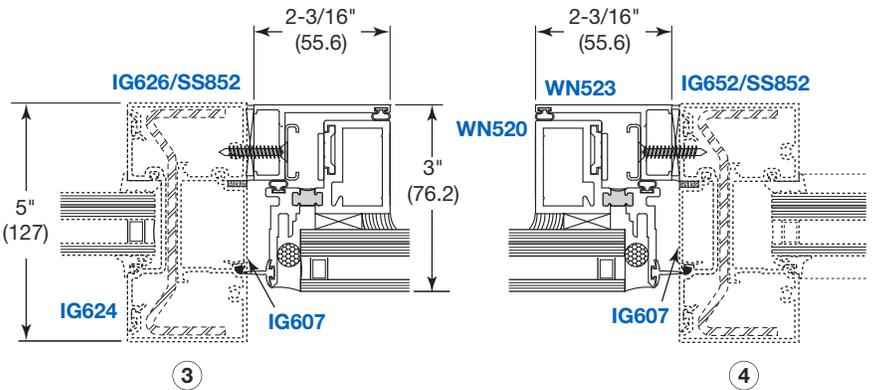
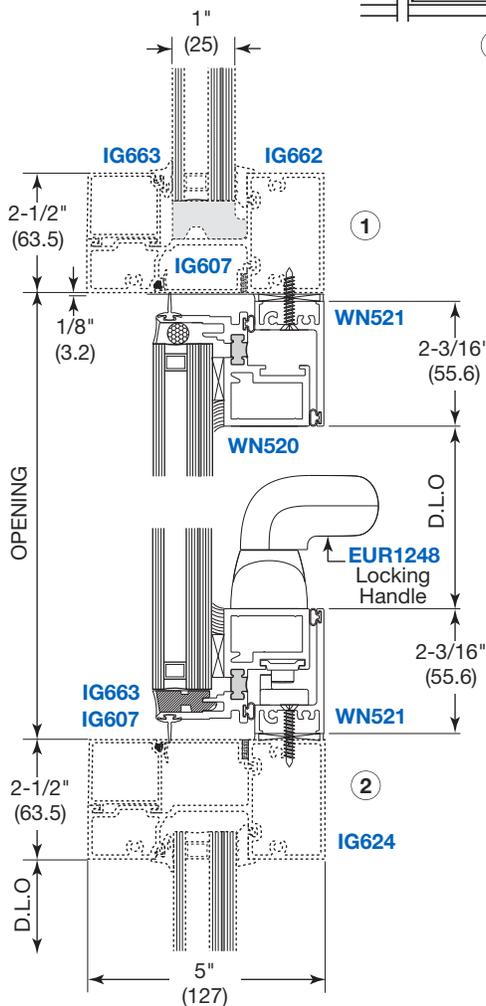
## Hurricane Resistant Concealed Vent Window

• Series IW7600

For specifications, details, and testing data go to [usalum.com](http://usalum.com)



TYPICAL ELEVATION



### EURO MULTI-POINT LOCKING HANDLES

PART NO.	FINISH
EUR1248W	Powder Coat White
EUR1248BL	Powder Coat Black
EUR1248SN	Satin Nickel
EUR1248SC	Satin Chrome



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# STORM FRONT™ WINDOWS

## Specifications

## Hurricane Resistant Single Hung, Sliding, and Fixed Windows

- Series IW8000
- Series IW8100
- Series IW8200

### SECTION 08 51 13 ALUMINUM WINDOWS

#### QUALITY ASSURANCE

Drawings and specifications are based on Series IW8000 Single Hung, IW8100 Fixed, or IW8200 Horizontal Sliding (*Specify*) CW60 Hurricane Resistant Thermal Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section. (*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*)

B. 1-7/32" (31) Thick Glass and Glazing

1. All units shall be factory glazed.
- OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
 Section 08 44 00 - Glazed Curtain Walls  
 Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

###### A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.
2. Thermal test unit sizes shall be 47-1/4" x 59" (1200 x 1500) for Series IW8000 and IW8100, 59" x 47-1/4" (1500 x 1200) for Series IW8200. Unit shall consist of a single hung, fixed or horizontal sliding window.

###### B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
2. Air Infiltration Test - With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.
3. Water Resistance Test - With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
4. Uniform Load Deflection Test - With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 90 psf positive and negative pressure. No member shall deflect over L/175 of its span.
5. Condensation Resistance Test (CRF) - With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49 for Series IW8100 and IW8200. Not less than 50 for Series IW8000.

###### 6. Thermal Transmittance Test (Conductive U-Value) -

With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) for Series IW8000 and IW8200 Windows shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F and Series IW8100 Windows shall have a range between 0.33 to 0.56 BTU/hr/ft<sup>2</sup>/°F.

###### 7. AAMA CW60 Rating Testing Procedures -

- AAMA/WDMA/CSA 101/I.S.2/A440-0.8 - Laboratory Performance Testing.
- AAMA 503-08 - Newly Installed Fenestration Products.
- AAMA 511-08 - Installed Fenestration Products After 6 Months.

###### 8. Hurricane Resistant Testing as per Miami/Dade County Protocols TAS 201, 202, and 203.

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

## Specifications

## Hurricane Resistant Single Hung, Sliding, and Fixed Windows

- Series IW8000
- Series IW8100
- Series IW8200

### SECTION 08 51 13 ALUMINUM WINDOWS

#### 1.06 Warranties

##### A. Total Window System

1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

### PART 2 PRODUCTS

#### 2.01 Materials

##### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

##### B. Hardware

1. Series IW8000 and IW8200 Windows have spring loaded self-locking latches as supplied by U.S. Aluminum.

##### C. Weatherstrip

1. For Series IW8000 and IW8200 Windows weatherstrip shall be fin seal or equal. For Series IW8100 Windows all weatherstrip shall be E.P.D.M.

##### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

##### E. Glass

1. Insulating glass shall be 1-7/32" (31) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

#### 2.02 Fabrication

##### A. General

1. All primary aluminum frame, extrusions or vent extrusions shall have a minimum wall thickness of .062 (1.57)
2. Depth of frame 4-1/2" (114.3) for 1-7/32" (31) glazing.

##### B. Frame - Frame components shall be mechanically fastened.

##### C. Ventilator (Series IW8000 and IW8200)

1. All vent extrusions shall be notched .

##### D. Screens (Series IW8000 and IW8200)

1. Screen frames shall have springs locking the screen in place.
2. Screen mesh shall be aluminum or fiberglass. (if applicable)

##### E. Glazing - All units shall be either shop or field glazed.

##### F. Finish

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

\_\_\_\_\_ #11 Clear anodic coating

\_\_\_\_\_ #22 Dark Bronze anodic coating

\_\_\_\_\_ #33 Black anodic coating

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

### PART 3 EXECUTION

#### 3.01 Inspection

##### A. Job Conditions

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

#### 3.02 Installation

##### A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

##### B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

##### C. Adjust windows for proper operation after installation.

##### D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

#### 3.03 Protection and Cleaning

##### A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# STORM FRONT™ WINDOWS

## Special Features

FOR 1-7/32" (31) GLAZING

**Hurricane Resistant  
Single Hung Window**

• Series IW8000



As part of the 8000 Series of heavy commercial windows, the IW8000 Hurricane Resistant Single Hung Window offers a 4-1/2" (114) deep frame designed to match typical building conditions, including our entrances and storefronts. An efficient, thermally insulated frame accepts 1-7/32" (31) glazing, with extruded pulls at the interlock and bottom rail. The window features a self-locking latch and Class 5 balances for ease of operation. Accessories such as Mulling Bars, Subsills, Head and Jamb Channels are available.

The high performance IW8000 Window is both AAMA CW60 Rated and NFRC Certified, and meets the stringent requirements of the Miami/Dade County Protocols TAS 201, 202, and 203 for maximum protection from high winds and wind-borne debris.

- AAMA CW60 Rated Window
- Accepts 1-7/32" (31) Glazing
- 4-1/2" (114) Deep Frame to Match Entrances and Storefronts
- Thermally Insulated-NFRC Certified
- Choice of Block or Fin Frame
- Class 5 Balance for Ease of Operation
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



Hurricane Resistant  
Single Hung Window

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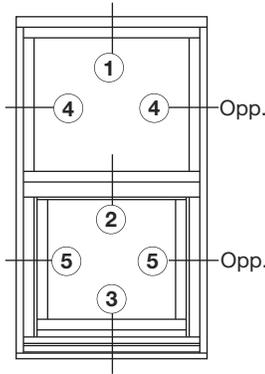
# STORM FRONT™ WINDOWS

## Typical Details

FOR 1-7/32" (31) GLAZING

## Hurricane Resistant Single Hung Window

• Series IW8000



TYPICAL ELEVATION

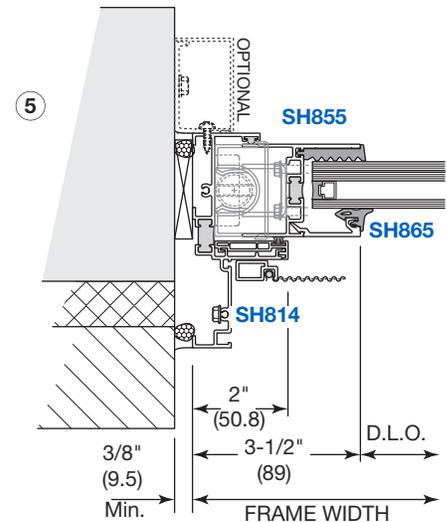
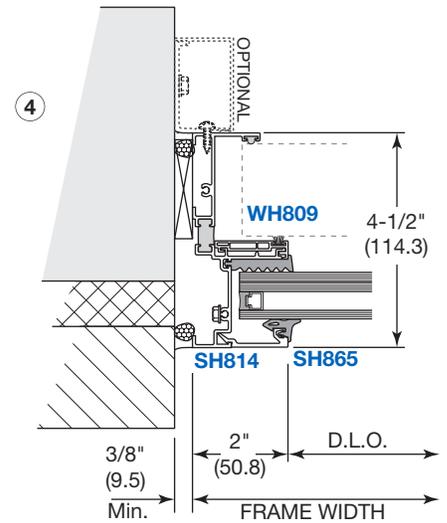
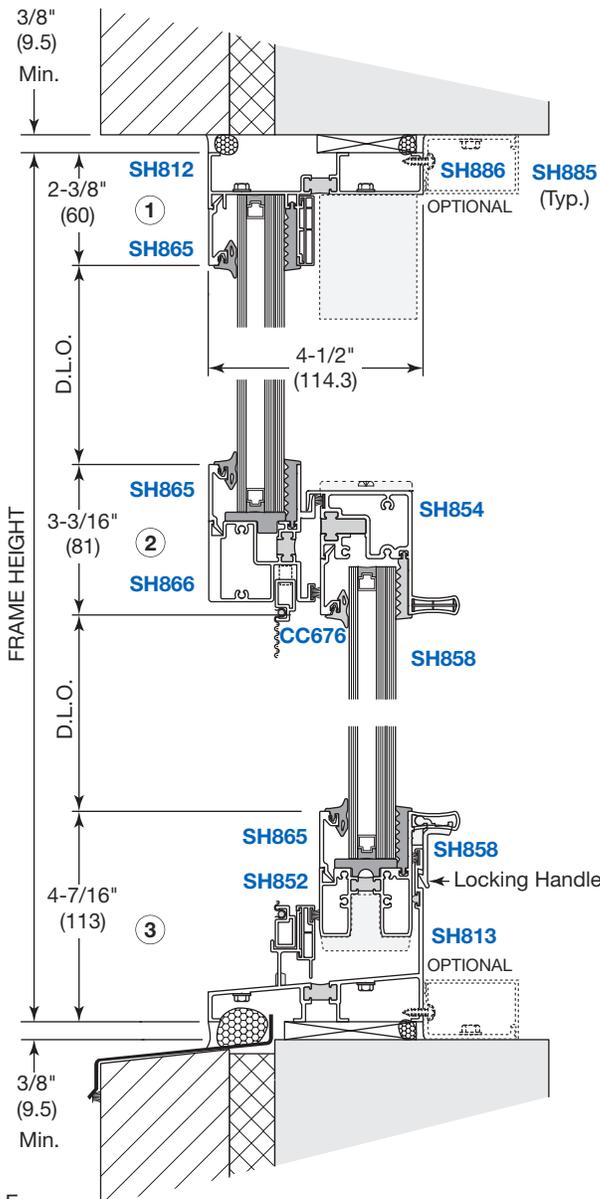
Block Frame  
Installation Method Shown

Maximum Frame Size  
65" x 91" (1651 x 2311)

A complete set of details  
in DWG format is available  
at [usalum.com](http://usalum.com)

Meets or Exceeds Specifications:

- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- MIAMI/DADE COUNTY PROTOCOLS
  - TAS 201
  - TAS 202
  - TAS 203



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# STORM FRONT™ WINDOWS

## Special Features

FOR 1-7/32" (31) GLAZING

Hurricane Resistant  
Horizontal Sliding Window

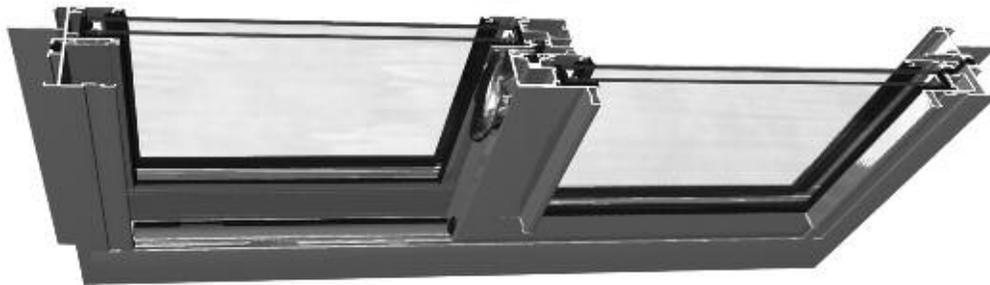
• Series IW8200



# Storm Front™

The Series IW8200 Horizontal Sliding Window offers that rare combination of smooth operation, durability, and toughness to meet stringent requirements of the Miami/Dade County Protocols TAS 201, 202, and 203 for maximum protection from high winds and wind-borne debris.

- Tested to AAMA CW60
- Accepts 1-7/32" (31) Glazing
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.34
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Dry Glazed
- Self-Locking Latch and Tandem Adjustable Rollers for Ease of Operation
- Accessories Such as Screens, Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



Hurricane Resistant Horizontal Sliding Window



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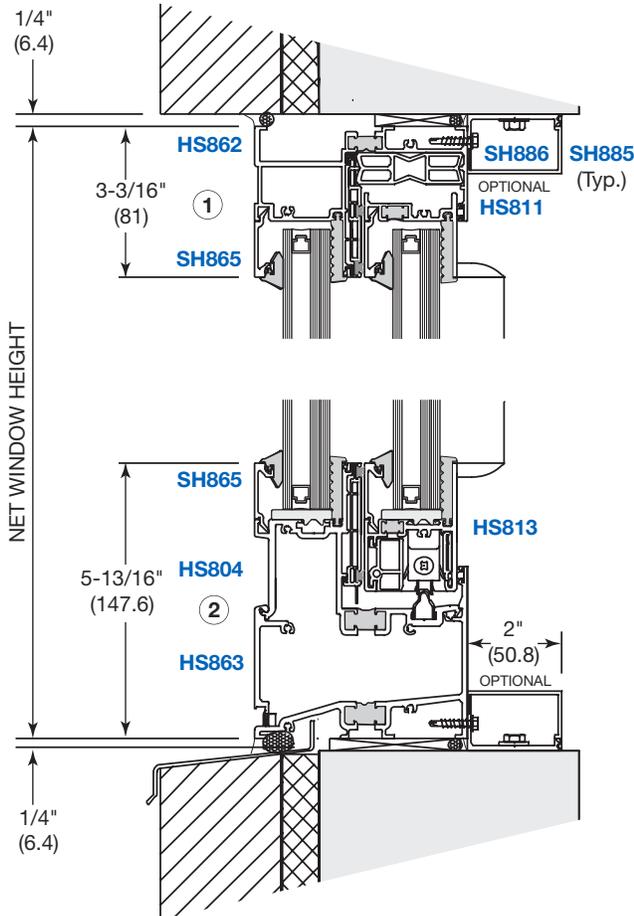
# STORM FRONT™ WINDOWS

## Typical Details

FOR 1-7/32" (31) GLAZING

## Hurricane Resistant Horizontal Sliding Window

• Series IW8200



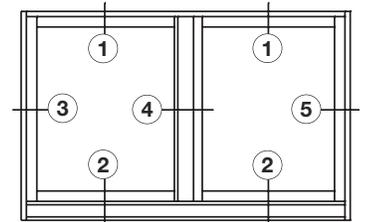
Meets or Exceeds Specifications:

- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- MIAMI/DADE COUNTY PROTOCOLS
  - TAS 201
  - TAS 202
  - TAS 203

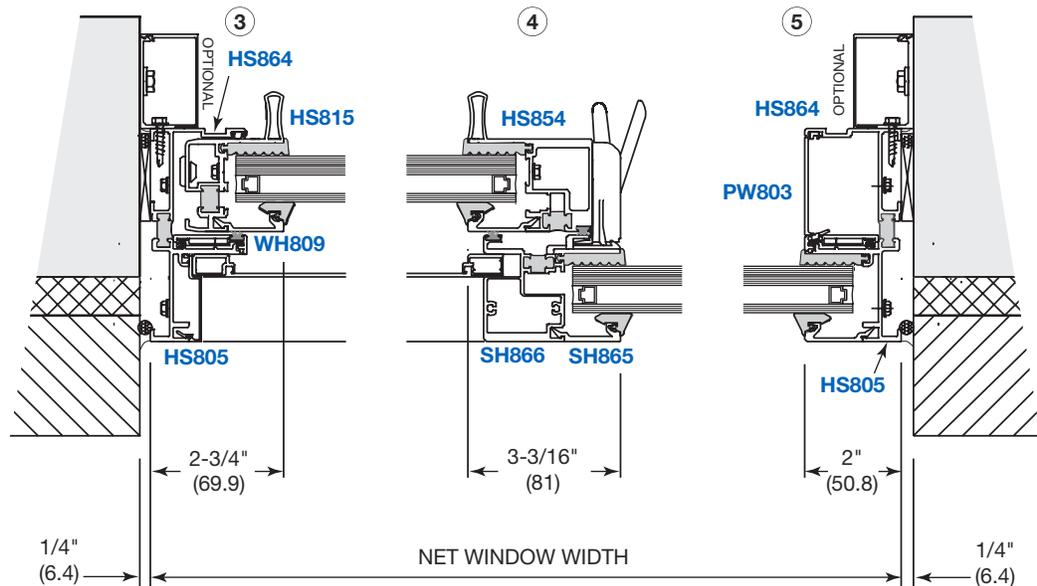
Block Frame  
 Installation Method Shown

Maximum Frame Size  
 96" x 60" (2438 x 1524)

A complete set of details  
 in DWG format is available  
 at [usalum.com](http://usalum.com)



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# STORM FRONT™ WINDOWS

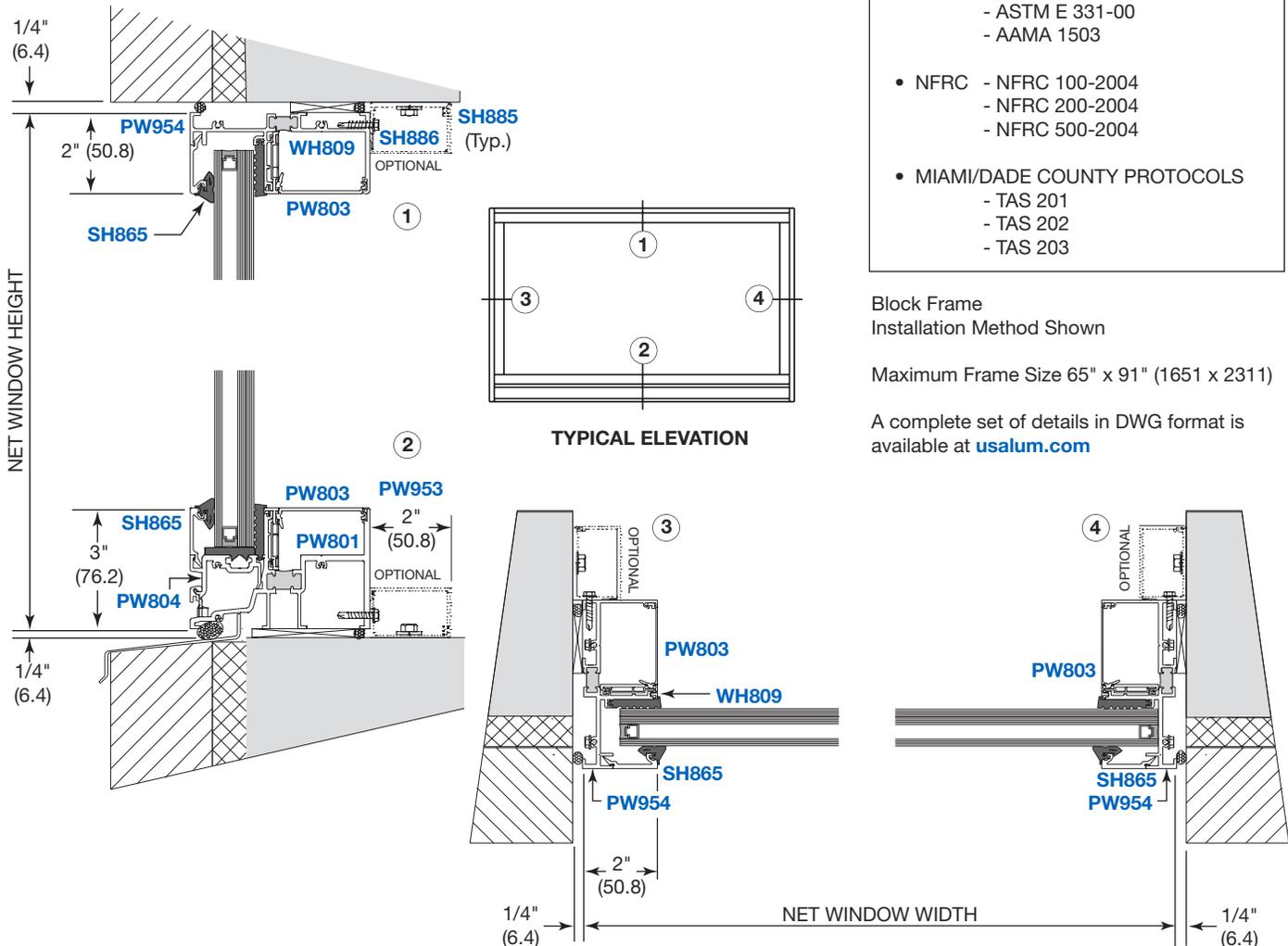
## Special Features

### FOR 1-7/32" (31) GLAZING

The Series IW8100 Fixed Window offers that rare combination of durability and toughness to meet stringent requirements of the Miami/Dade County Protocols TAS 201, 202, and 203 for maximum protection from high winds and wind-borne debris.

- Tested to AAMA CW60
- Accepts 1-7/32" (31) Glazing
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.34
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Accessories Such as Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.

## Typical Details



## Hurricane Resistant Fixed Window

• Series IW8100



Meets or Exceeds Specifications:

- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- MIAMI/DADE COUNTY PROTOCOLS
  - TAS 201
  - TAS 202
  - TAS 203

Block Frame  
Installation Method Shown

Maximum Frame Size 65" x 91" (1651 x 2311)

A complete set of details in DWG format is available at [usalum.com](http://usalum.com)

NOT TO SCALE



# F

## **BLAST MITIGATION**

- **BR604/BR606/BT601  
Storefront**
  - **BR7500/BW7600/BW8000  
BW8100/BW8200 Windows**
  - **Accessory Hardware**
- 

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**U.S. and Canada**

**GRL<sup>®</sup>**  
**U.S. ALUMINUM**

**usalum.com**



National Guard Readiness Center  
Spokane, WA

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U.S. Aluminum Blast Mitigation Systems are engineered and successfully tested to withstand explosions from pressure levels of one to six pounds per square inch. The Series BT601 has been engineered and tested to perform in accordance with UFC 4-010-01 (Jan 07) Protocols, allowing the system to be specified for DoD, GSA, and private sector projects.

Our Defender Blast Resistant Windows are available in single hung, fixed, and horizontal sliding versions that are all DoD Blast Rated for one PSI. All of these windows utilize high performance glazing, are AAMA Rated, NFRC Certified, and can be ordered in an array of architectural coatings and anodized finishes.

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## SYSTEM

## PAGES

- **BR604/BR606/BT601 Storefront** .....01-F1 thru 21-F1
- **BR7500 Windows** .....01-F2 thru 05-F2
- **BW7600 Windows**.....01-F3 thru 05-F3
- **BW8000/BW8100/BW8200 Windows** .....01-F4 thru 09-F4

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

Toll Free Phone (800) 262-5151

Toll Free Fax (866) 262-3299

Contact us through our web site at [usalum.com](http://usalum.com)

# BLAST MITIGATION

## Table of Contents

## Blast Resistant Storefronts

- Defender Series BR604
- Defender Series BR606



SECTION F1	PAGE
SPECIFICATIONS .....	02-F1 and 03-F1
SPECIAL FEATURES .....	04-F1
TYPICAL DETAILS .....	05-F1 thru 10-F1
DEADLOAD CHARTS .....	11-F1

U.S. Aluminum warrants its Blast Resistant Storefront Systems to perform at the published values for air and water infiltration and structural performance. U.S. Aluminum does not warrant any glazing materials.

When using this product, U.S. Aluminum recommends specifying a uniform overall glazing thickness of plus or minus .004" (0.1) over the entire area of the glazing unit. This must include edges and center of unit. It is critical to check the glazing unit prior to installing to ensure the proper thickness of the interlayer.

Glazing 4.4 psi Blast Load: BR604 Storefront - 1-5/16" (33) thick IG unit made up of 1/4" (6) annealed, 1/2" (12.7) air space, and 1/2" (12.7) annealed laminate using .030 butacite by Dupont®. BR604 Entrance Door - 1-5/16" (33) thick made up of 1/4" (6) tempered, 1/2" (12.7) air space and 1/2" (12.7) laminate using .030 butacite by Dupont®.

Glazing 6.0 psi Blast Load: BR606 Storefront - 1-5/16" (33) thick IG unit made up of 1/4" (6) annealed, 1/2" (12.7) air space, and 1/2" (12.7) annealed laminate using .060 butacite by Dupont®. BR606 Entrance Door - 1-5/16" (33) thick made up of 1/4" (6) tempered, 1/2" (12.7) air space, and 1/2" (12.7) annealed laminate using .060 butacite by Dupont®.

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- |                  |                  |
|------------------|------------------|
| m - meter        | Kg - kilogram    |
| Pa - pascal      | KPa - kilopascal |
| MPa - megapascal |                  |

# BLAST MITIGATION

## Specifications

## Blast Resistant Storefronts

- Defender Series BR604
- Defender Series BR606

### SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	BLAST LOAD	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
BR604	4.4 PSI	2-1/2" (63.5)	5" (127)	1-5/16" (33)	Exterior
BR606	6.0 PSI	2-1/2" (63.5)	5" (127)	1-5/16" (33)	Exterior

#### I. GENERAL DESCRIPTION

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

Work not included: Structural support of the framing system, interior closures, trim. (*Specifier list other exclusions*). Related Work Specified Elsewhere: (*Specifier list*).

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series BR604/BR606 System as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** Shall be tested in accordance with ASTM E 283-91 (99). Infiltration shall not exceed:

- BR604/BR606 Storefront - 1.00 cfm/ft<sup>2</sup> @ 6.24 psf = (5.08 L/s/m<sup>2</sup>) (IG500 Test)
- BR604/BR606 Doors - 1.00 cfm/ft<sup>2</sup> @ 6.24 psf = (5.08 L/s/m<sup>2</sup>) (IG500 Test)

**Water Infiltration:** Shall be tested in accordance with ASTM E 331-93. No water penetration at test pressure of:

- BR604/BR606 Storefront - 12 psf (IG500 Test)

**Structural Performance:** Shall be tested in Accordance with ASTM 330-96 and based on:

- Maximum deflection of L/175 of the span. [3/4" (19.1) max.]
- Allowable stress with a safety factor of 1.65. The system shall perform to this criteria under a wind load of (Specify) psf

BR604 Storefront (IG500 Test)

- Design 65 psf (1.59)
- Structural +/- 97.5 psf (195 mph)

BR606 Storefront (IG500 Test)

- Design 75 psf (171 mph)
- Structural +/- 112.5 psf (210 mph)

BR604 Doors (IG500 Test)

- Design 65 psf (1.59)
- Structural +/- 97.5 psf (195 mph)

BR606 Doors (IG500 Test)

- Design 75 psf (171 mph)
- Structural +/- 112.5 psf (210 mph)

**Forced Entry Resistance:** Shall be tested with a 300 lb. force applied to the active door panel simultaneously with a 150 lb. force applied in both perpendicular directions to the 300 lb. force.

**Blast Test:** Shall be tested in accordance with DoD, GSA, and ASTM test proceeds. Three test units 8' x 8' (2.4 x 2.4 m) made up of a 3' x 7' (.9 x 2.1 m) door, 5' x 6' (1.5 x 1.8 m) sidelite, 5' x 2' (1.5 x 0.6 m) sidelite and transom passed:

BR604

- 4.4 psi
- 32 psi - msec impulse
- 19 msec duration
- DoD response - High and medium
- GSA response - Condition 1 and 2
- ASTM response - No hazard and minimal hazard

BR606

- 6 psi
- 45 psi - msec impulse
- 19 msec duration
- DoD response - Medium and very low
- GSA response - Condition 2 and 4
- ASTM response - Minimal hazard

#### Testing Procedures:

ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

# BLAST MITIGATION

## Specifications

### SECTION 08 41 13 ALUMINUM STOREFRONTS

#### FINISH

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

- \_\_\_ #11 Clear anodic coating
- \_\_\_ #22 Dark Bronze anodic coating
- \_\_\_ #33 Black anodic coating

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

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2-1/2" (63.5). Overall depth shall be 5" (127). Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### GLAZING

4.4 psi Blast Load

- BR604 Storefront - 1-5/16" (3.3) thick IG unit made up of 1/4" (6) annealed + 1/2" (12.7) air space + 1/2" annealed laminate using .030 butacite by Dupont®.
- BR604 Entrance Door - 1-5/16" (3.3) thick made up of 1/4" (6) tempered + 1/2" (12.7) air space + 1/2" (12.7) laminate using .030 butacite by Dupont®.

6.0 psi Blast Load

- BR606 Storefront - 1-5/16" (3.3) thick IG unit made up of 1/4" (6) annealed + 1/2" (12.7) air space + 1/2" (12.7) annealed laminate using .060 butacite by Dupont®.
- BR606 Entrance Door - 1-5/16" (3.3) thick IG unit made up of 1/4" (6) tempered + 1/2" (12.7) airspace + 1/2" (12.7) annealed laminate using .060 butacite by Dupont®.

#### SEALANTS

The framing system shall use DOW 995 Structural Silicone to adhere glass to framing. All metal-to-metal joints shall use DOW 795, except at fillers

### Blast Resistant Storefronts

- Defender Series BR604
- Defender Series BR606

where DOW 995 Silicone is used (see installation instructions). Door seal gaskets shall require small joint sealer.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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



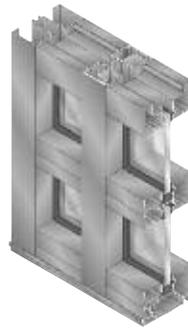
Project: Orlando Immigration Center, Orlando, FL

# BLAST MITIGATION

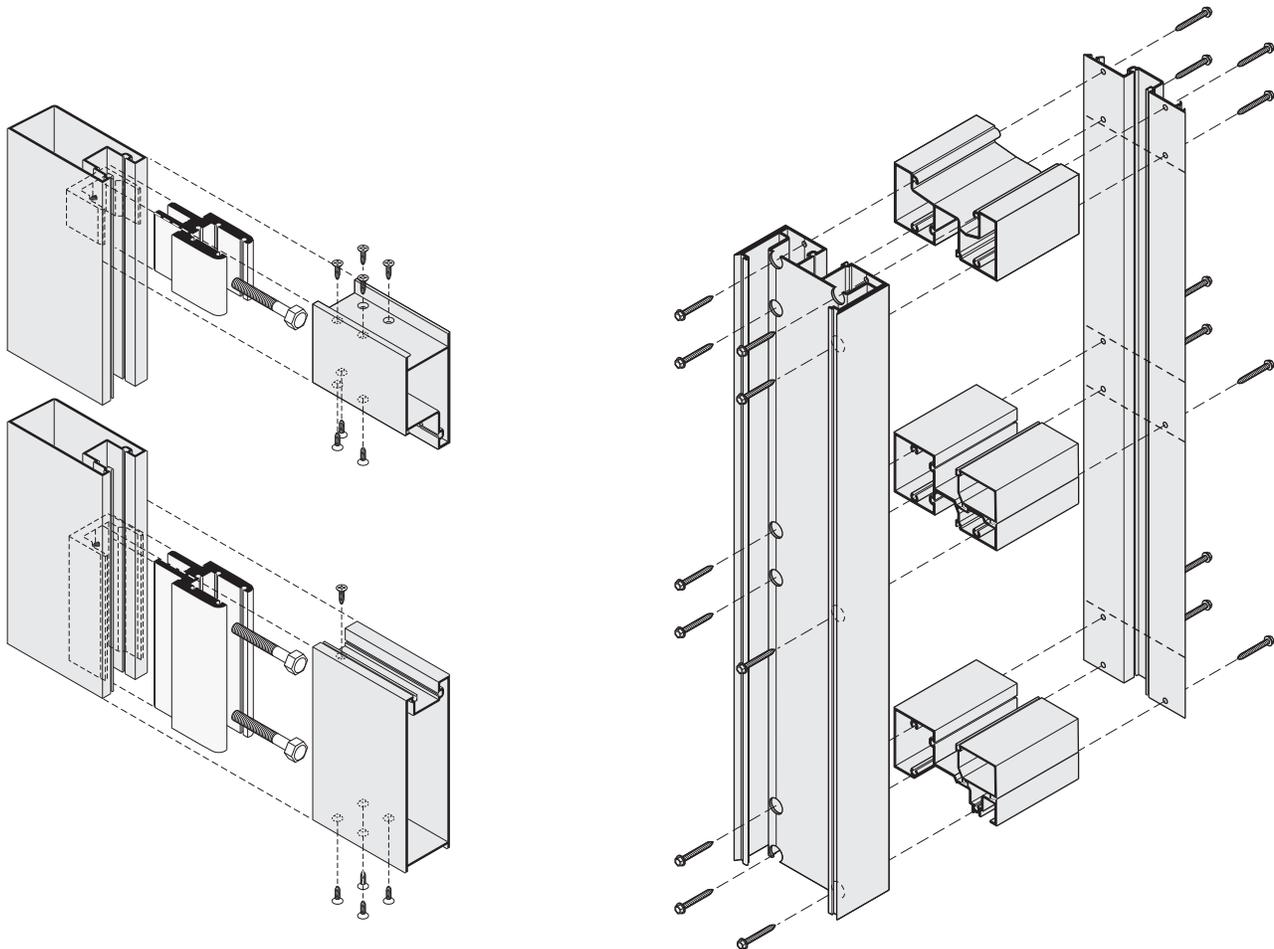
## Special Features

## Blast Resistant Storefronts

- Defender Series BR604
- Defender Series BR606



BR604 and BR606 are Blast Resistant Storefront Systems engineered and successfully tested to withstand blast pressures of 1 to 6 psi. These unique Storefront Systems utilize our Storm Front™ Entrance as well as: screw spline panel assembly and erection, insulating and laminated glass siliconed in place, high performance subsill, and steel reinforced mullions. Made in the U.S.A.



A Low Profile Air Resistant Threshold is offered for installations that have soffit overhangs greater than the entrance frame height. High Performance Water Resistant Thresholds are offered to provide superior water and air management, along with ramps to meet A.D.A. requirements.



Low Profile  
Air Resistant Threshold



High Performance  
Water Resistant Threshold

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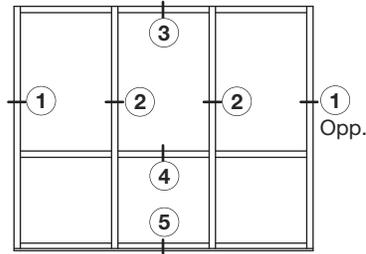
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## Typical Details

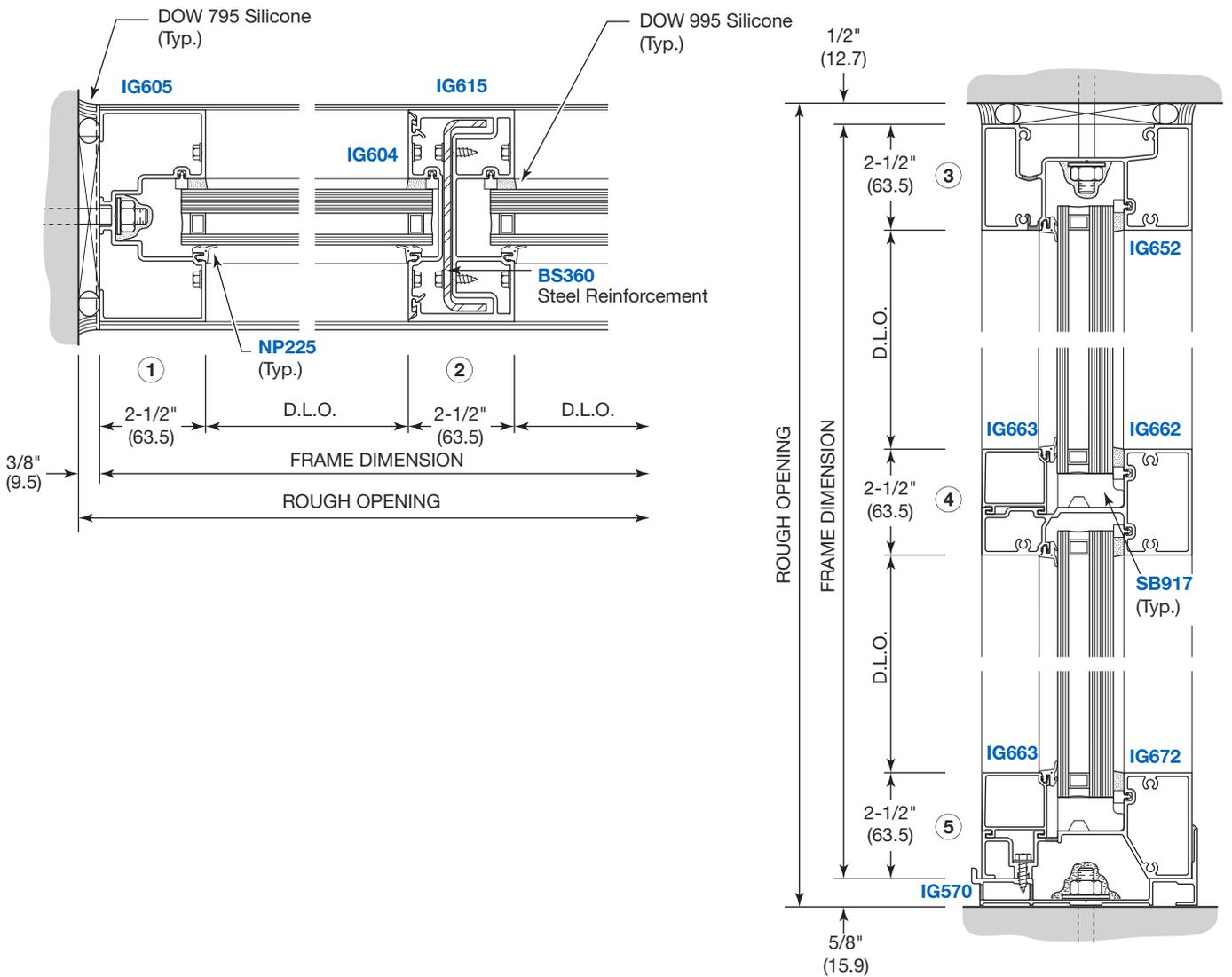
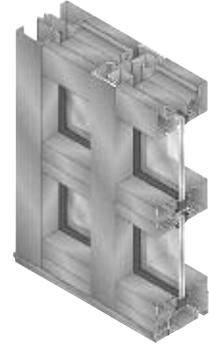
## Blast Resistant Storefronts • Defender Series BR604

FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m).  
Consult your nearest U.S. Aluminum  
Service Center for deviation approval.



TYPICAL ELEVATION



NOT TO SCALE

# BLAST MITIGATION

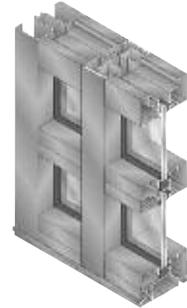
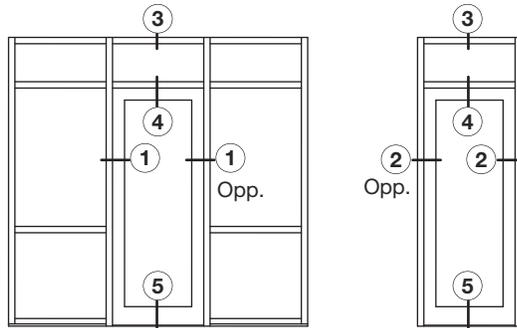
## Typical Details

## Blast Resistant Storefronts

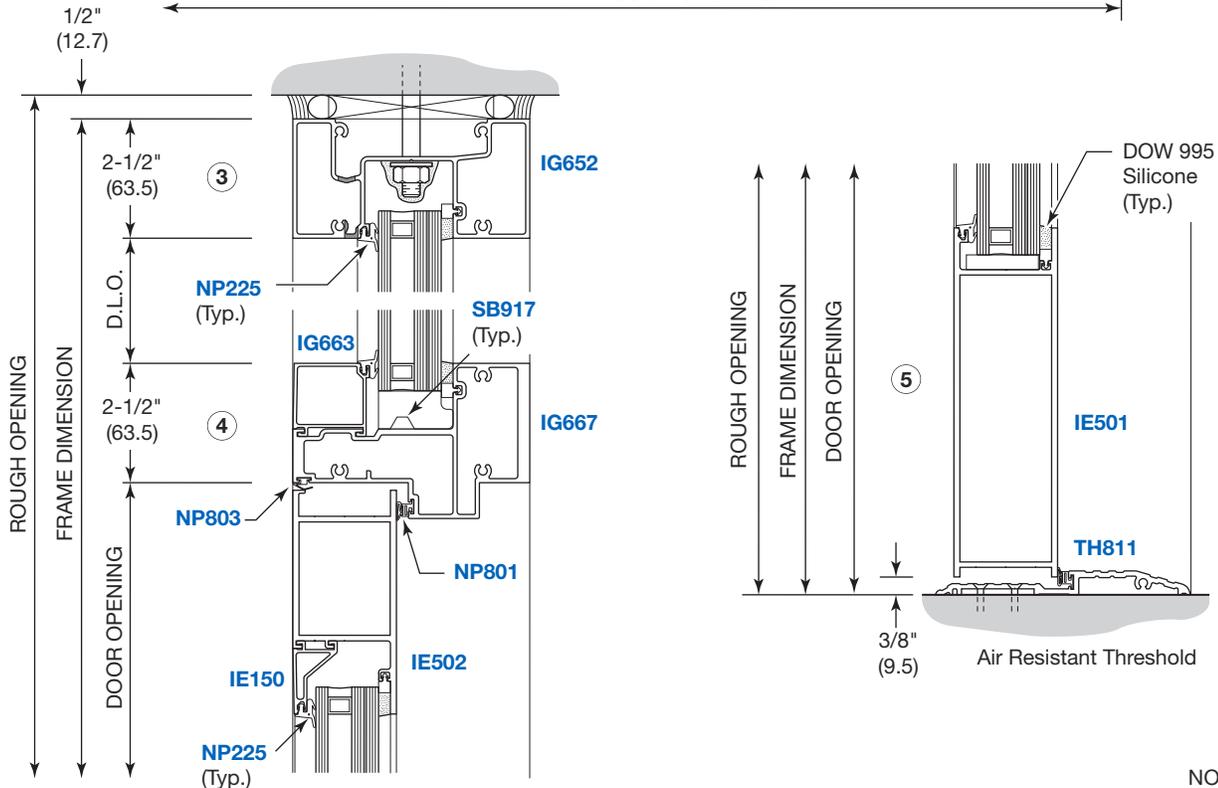
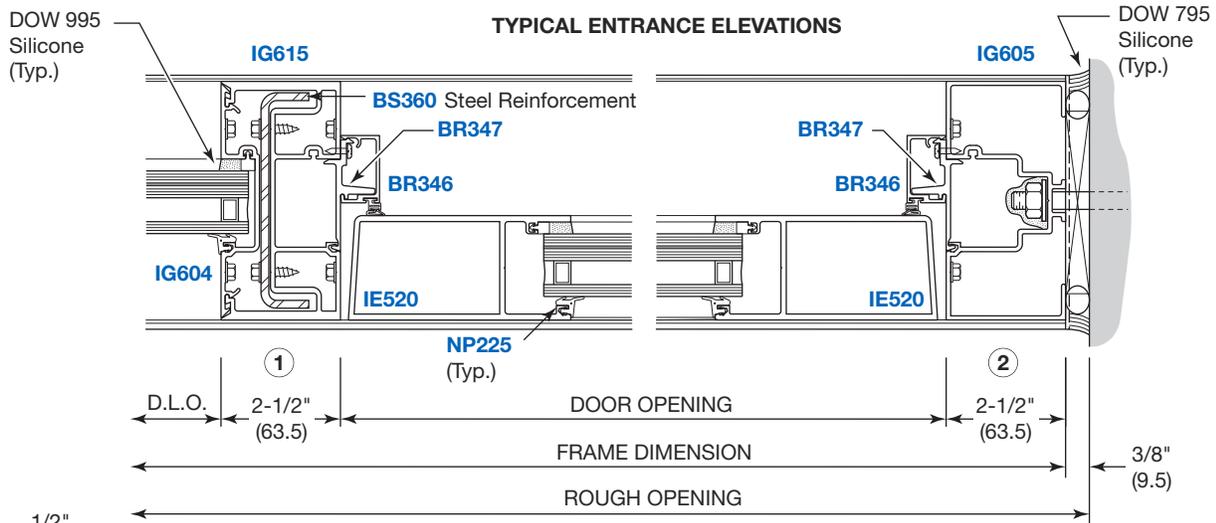
- Defender Series BR604

FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m). Consult your nearest U.S. Aluminum Service Center for deviation approval.



TYPICAL ENTRANCE ELEVATIONS



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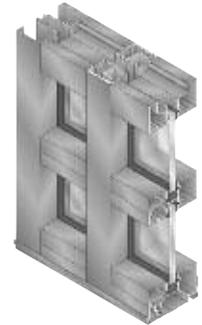
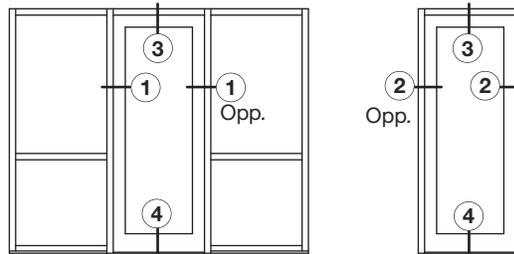
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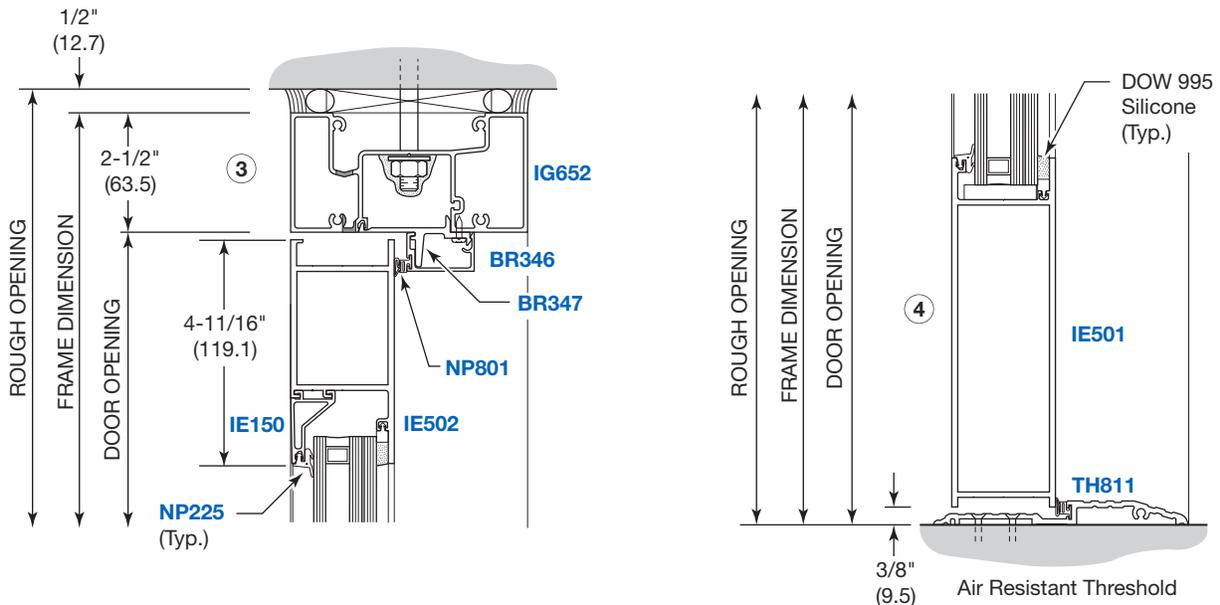
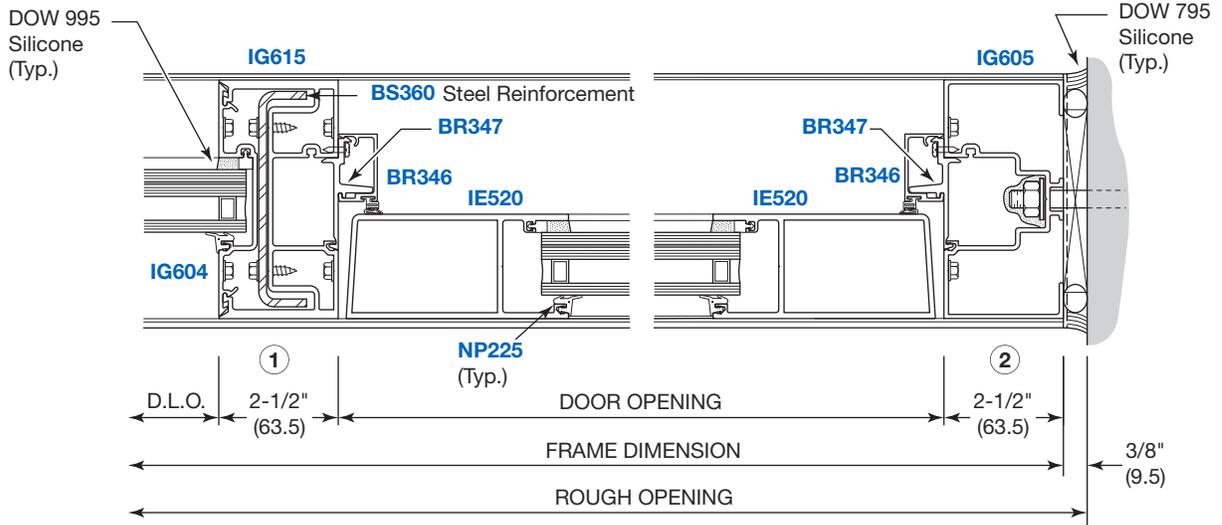
### Blast Resistant Storefronts • Defender Series BR604

FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m).  
 Consult your nearest U.S. Aluminum  
 Service Center for deviation approval.



TYPICAL ENTRANCE ELEVATIONS



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# BLAST MITIGATION

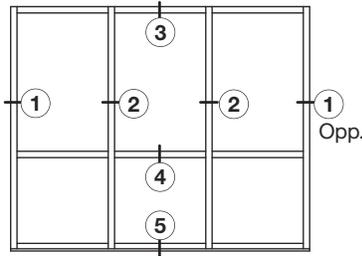
## Typical Details

## Blast Resistant Storefronts

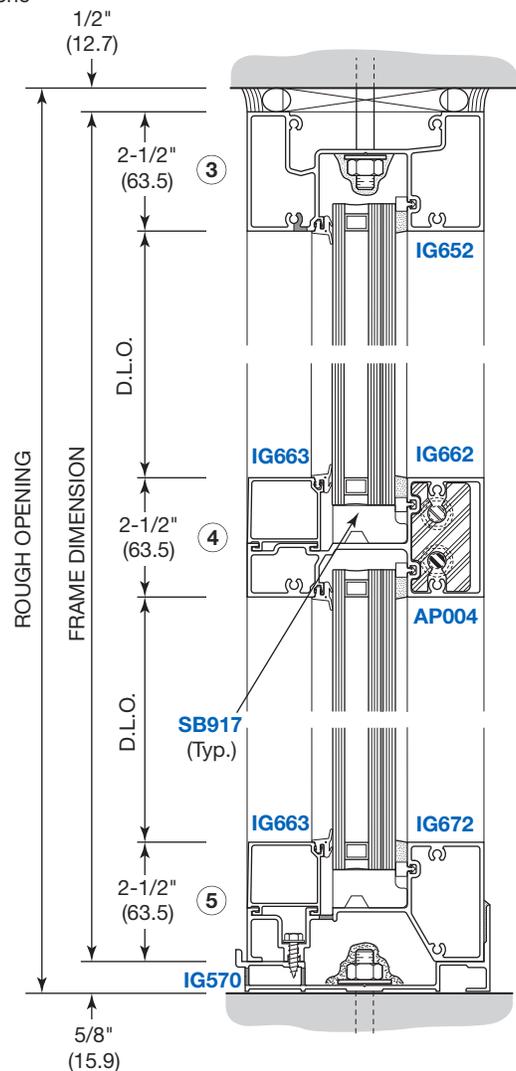
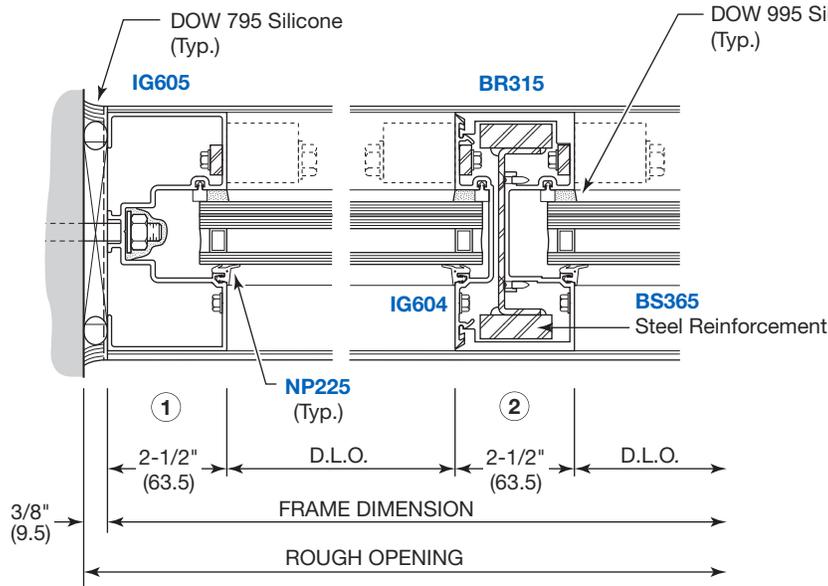
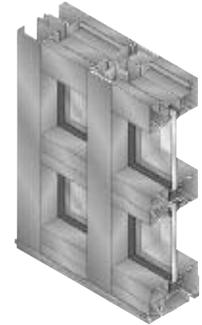
- Defender Series BR606

FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m).  
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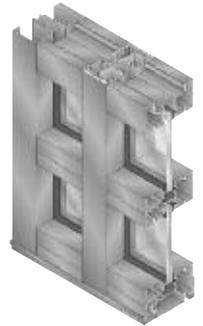
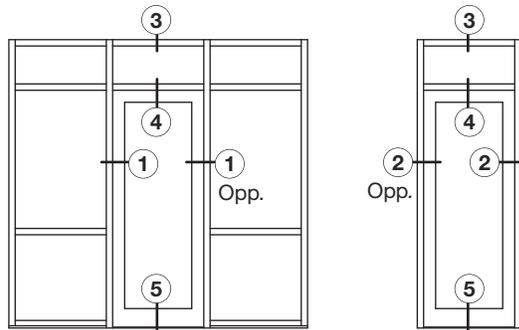
## Typical Details

## Blast Resistant Storefronts

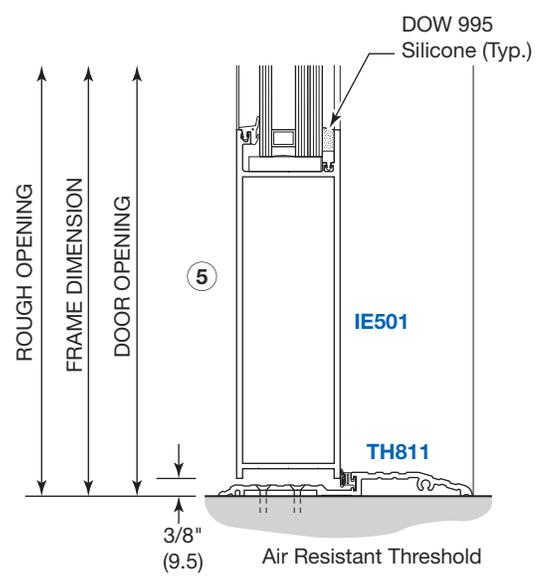
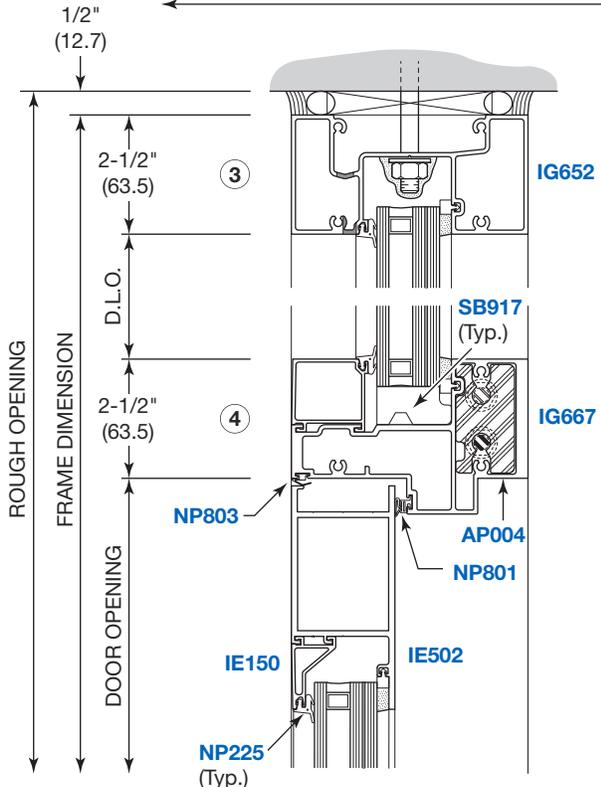
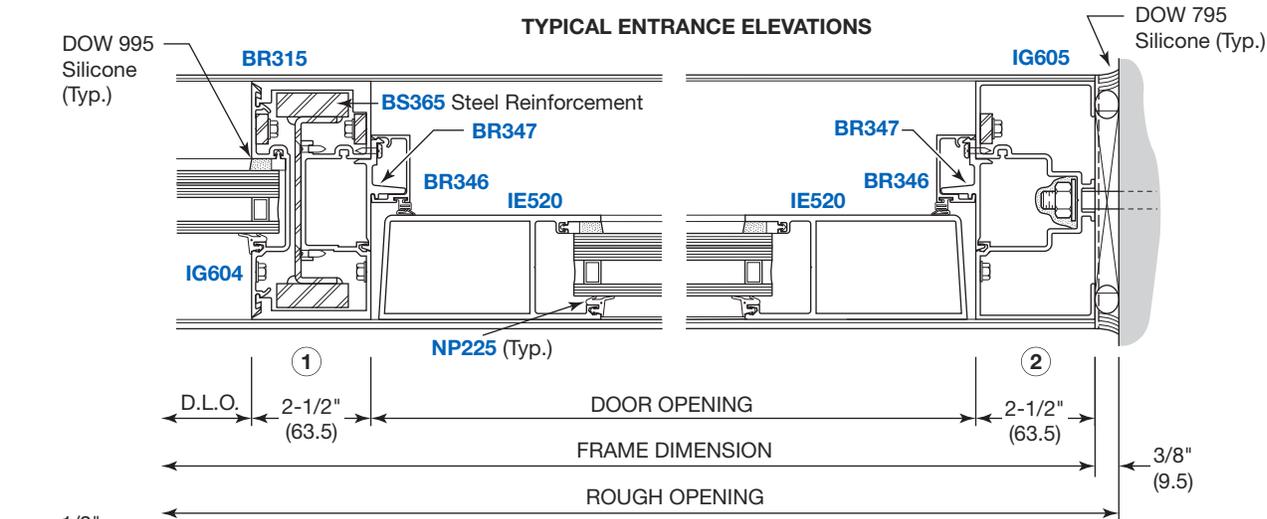
- Defender Series BR606

FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m). Consult your nearest U.S. Aluminum Service Center for deviation approval.



TYPICAL ENTRANCE ELEVATIONS



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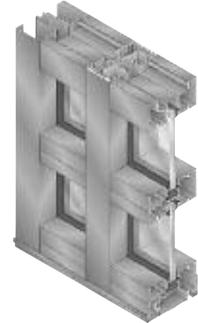
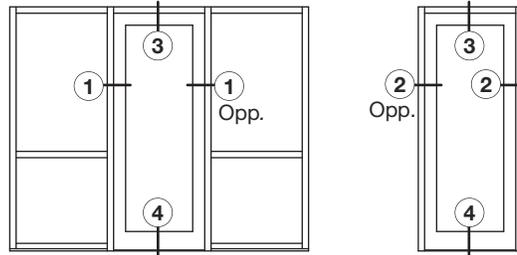
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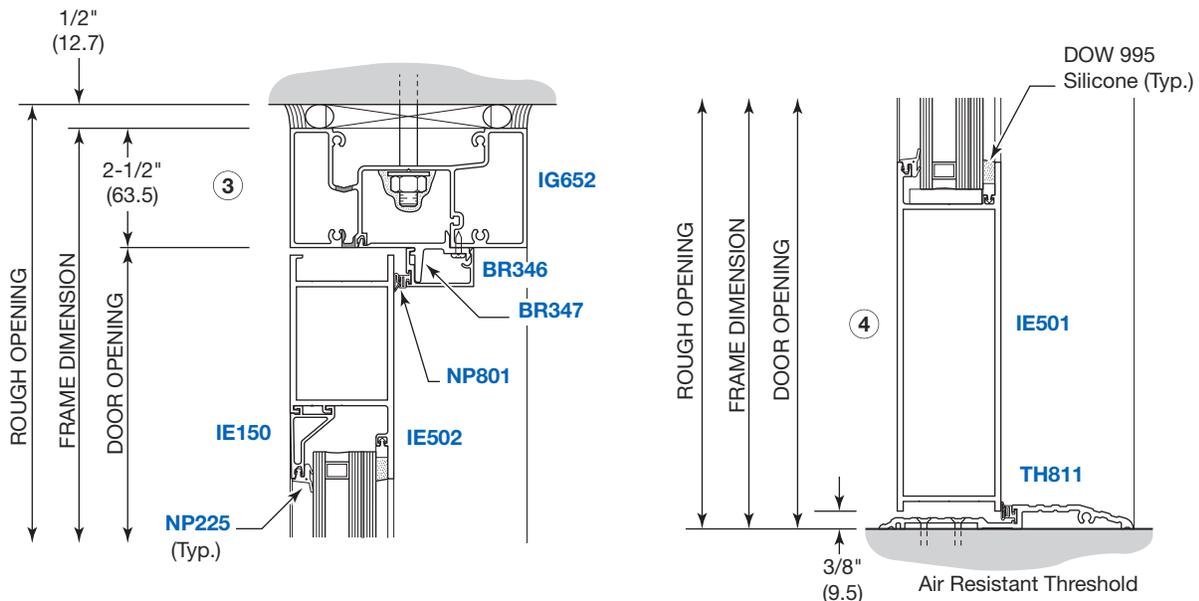
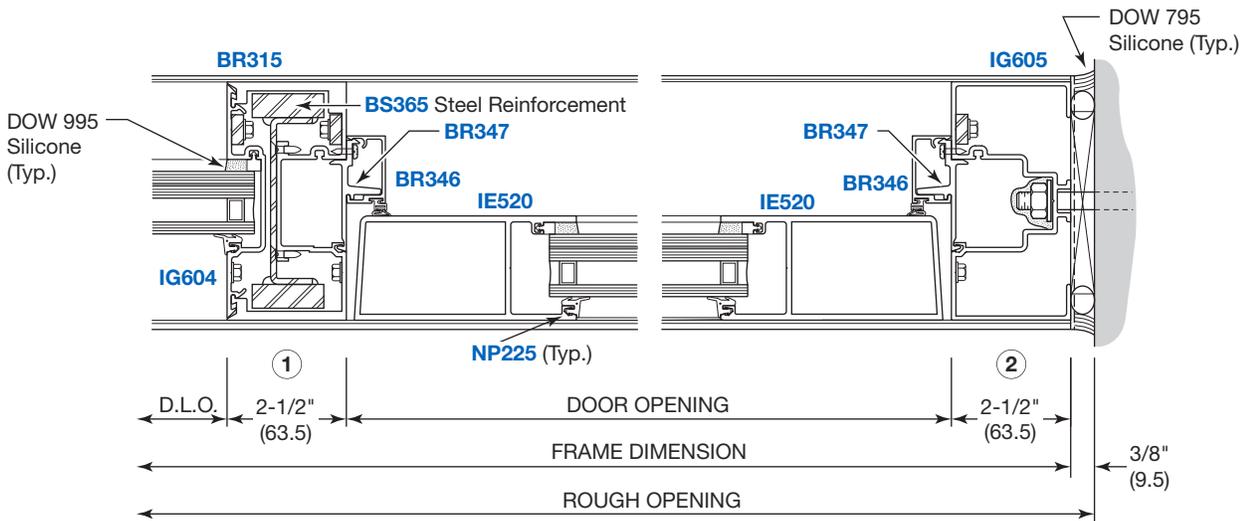
## Blast Resistant Storefronts • Defender Series BR606

### FOR 1-5/16" (33) GLAZING

**NOTE:** Frame height is limited to 8' (2.4 m). Consult your nearest U.S. Aluminum Service Center for deviation approval.



TYPICAL ENTRANCE ELEVATIONS



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# BLAST MITIGATION

## Deadload Charts

### INTERMEDIATE HORIZONTAL MULLIONS

Deadload charts are based on 1/8" (3.2) maximum allowable deflection at the center point of the horizontal member and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>) for 1-5/16" (33) glass.

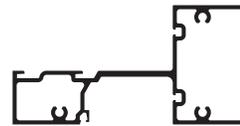
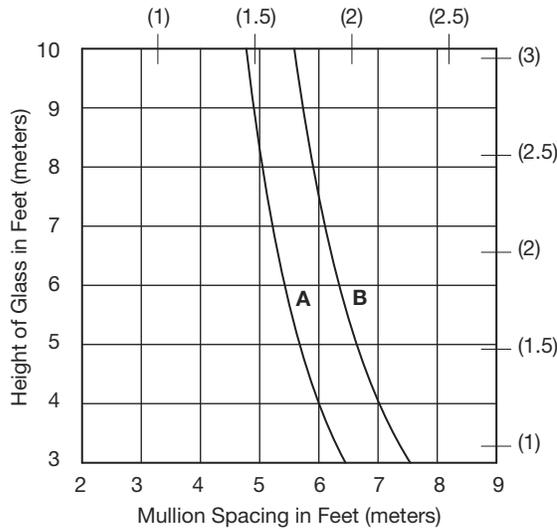
Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points.

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

**NOTE:** Frame height is limited to 8' (2.4 m).

Consult your nearest U.S. Aluminum Service Center for deviation approval.



**IG662**  
 $I_{yy} = 1.006$   
 $S_{yy} = 0.661$   
 $(41.87 \times 10^4)$

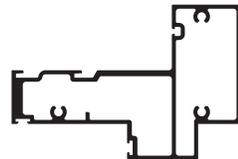
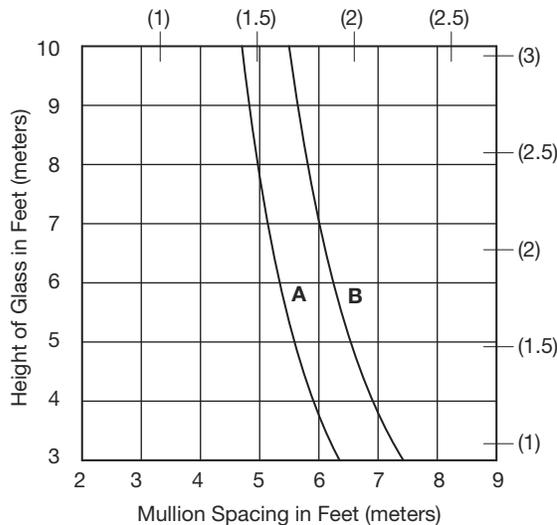
### DOOR HEADERS

Deadload charts are based on 1/16" (1.6) maximum allowable deflection at the center point of the horizontal member and with a glass weight of 9.75 psf (47.61 Kg/m<sup>2</sup>) for 1-5/16" (33) glass.

Glass shall rest on two setting blocks located at:

CURVES A: 1/4 points.

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



**IG667**  
 $I_{yy} = 1.897$   
 $S_{yy} = 1.118$   
 $(78.96 \times 10^4)$





# BLAST MITIGATION

## Specifications

### Blast Resistant Storefront • Defender Series BT601

#### SECTION 08 41 13 ALUMINUM STOREFRONTS

SERIES	BLAST LOAD	FACE WIDTH	DEPTH	GLAZING INFILL	GLAZING METHOD
BT601	1 PSI	2-1/2" (63.5)	5" (127)	1-5/16" (33)	Exterior

#### I. GENERAL DESCRIPTION

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

Work not included: Structural support of the framing system, interior closures, trim. *(Specifier list other exclusions).* Related Work Specified Elsewhere: *(Specifier list).*

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series BT601 System as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.

#### PERFORMANCE REQUIREMENTS

**Air Infiltration:** Shall be tested in accordance with ASTM E 283-91 (99). Infiltration shall not exceed:

- BT601 Storefront - .06 cfm/ft<sup>2</sup> @6.24 psf = (5.08 L/s/m<sup>2</sup>)

**Water Infiltration:** Shall be tested in accordance with ASTM E 331-93. No water penetration at test pressure of:

- BT601 Storefront - 12 psf

**Structural Performance:** Shall be tested in accordance with ASTM 330-96 and based on:

- Maximum deflection of L/175 of the span. (3/4" (19.1) max.)
- Allowable stress with a safety factor of 1.65. The system shall perform to this criteria under a windload of *(Specify)* psf.

- BT601 Storefront and Doors
- Design 65 psf (1.59)
- Structural +/- 97.5 psf (195 mph)

**Forced Entry Resistance:** Shall be tested with a 300 lb. force applied to the active door panel simultaneously with a 150 lb. force applied in both perpendicular directions to the 300 lb. force.

**Blast Test:** Shall be tested in accordance with DoD, GSA, and ASTM test proceeds:

- 1 psi
- 32 psi - msec impulse
- 19 msec duration
- DoD response - High and medium
- GSA response - Condition 1 and 2
- ASTM response - No hazard and minimal hazard

**Large Missile Impact Test:** Shall be tested in accordance with: Dade County Protocol PA 201-94 with a 9 lb. 2x4 traveling at 50 fps.

**Cycle Load Test:** Shall be tested in accordance with: Dade County Protocol PA 201-94 for 9,000 cycles.

#### Testing Procedures:

ASTM 283, E 331, and E 330 - Laboratory performance testing. AAMA 503-08 - Newly installed storefronts. AAMA 511-08 - Installed storefronts after six months.

#### II. PRODUCTS MATERIALS

Extrusions shall be 6063-T5 alloy and temper (ASTM B221 alloy T5 temper). Fasteners, where exposed, shall be aluminum, stainless steel or zinc plated steel in accordance with ASTM A 164. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum. Glazing gaskets shall be E.P.D.M. elastomeric extrusions.

#### FINISH

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... *(Specify one of the following):*

- \_\_\_ #11 Clear anodic coating
  - \_\_\_ #22 Dark Bronze anodic coating
  - \_\_\_ #33 Black anodic coating
- A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be *(Specify a U.S. Aluminum standard color).*

#### FABRICATION

The framing system shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2-1/2" (63.5). Overall depth shall be 5" (127). Entrance framing members shall be compatible with glass framing in appearance. Provide for internal drainage of infiltrated water into an extruded aluminum subsill channel where it is drained to the exterior through weep slots.

#### GLAZING - UFC 4-010-9

- BT601 Storefront and Entrance doors: 1-5/16" (33) thick IG unit made up of 1/4" HS + 1/2" air space + 1/2" HS laminate using .090 butacite by Dupont®.

# BLAST MITIGATION

## Specifications

## Blast Resistant Storefront • Defender Series BT601

### SECTION 08 41 13 ALUMINUM STOREFRONTS

#### SEALANTS

The framing system shall use Tremco Proglaze SSG or DOW 995 Structural Silicone to adhere glass to framing. All metal-to-metal joints shall use Tremco Spectrum II or DOW 795 Silicone, except at fillers where Tremco Proglaze SSG or DOW 995 Silicone is used (see installation instructions). Door seal gaskets shall require small joint sealer.

#### III. EXECUTION INSTALLATION

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

#### PROTECTION AND CLEANING

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



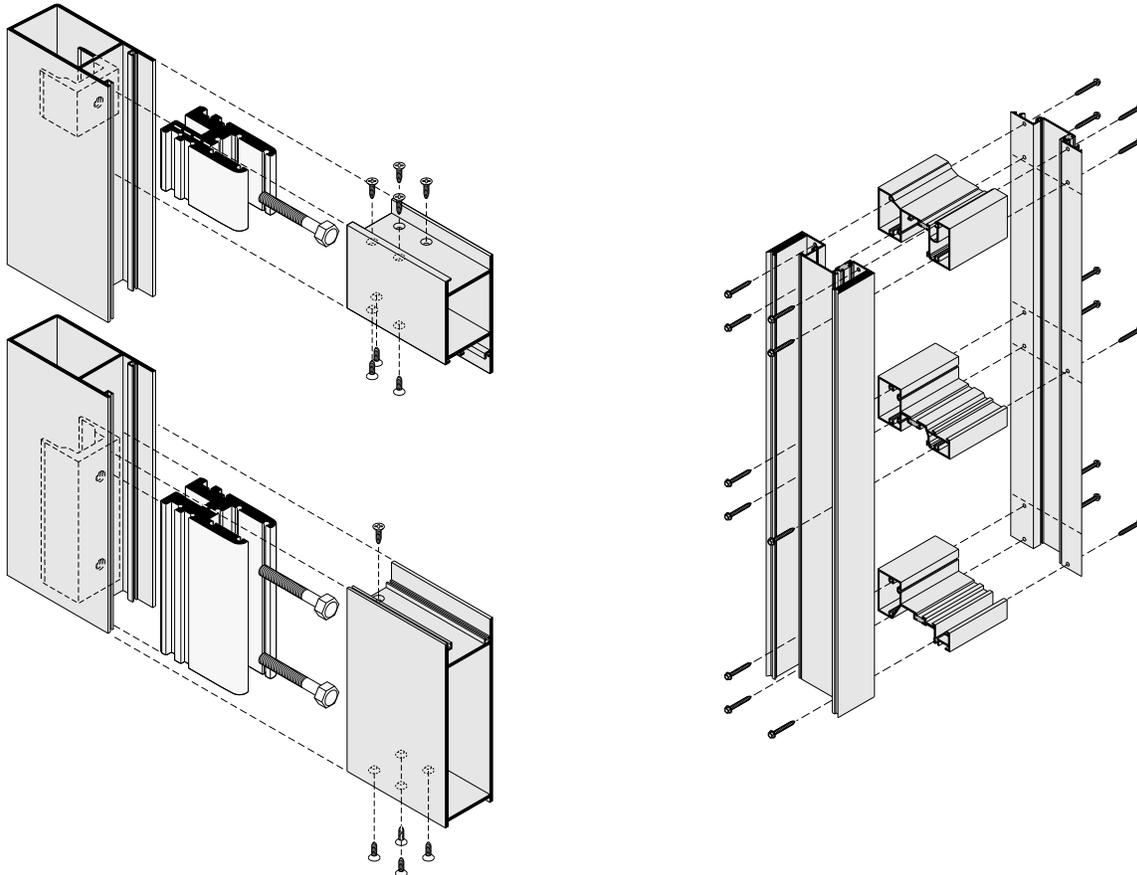
Project: National Guard Readiness Center, Spokane, WA

# BLAST MITIGATION

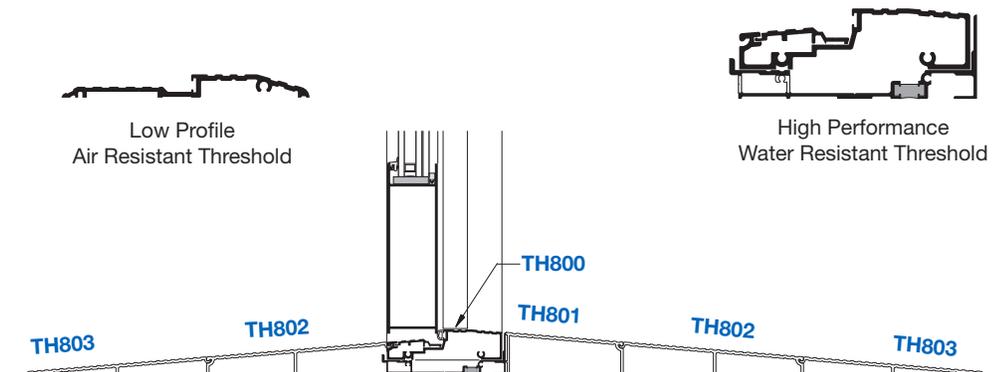
## Special Features

## Blast Resistant Storefront • Defender Series BT601

The BT601 Blast Resistant Storefront System is engineered and successfully tested to withstand a blast pressure of 1 psi. This unique Storefront System utilizes our High Performance BT601 Entrance and features screw spline assembly for panel erection, insulating glass silenced in place, high performance subsill, and steel reinforced mullions. Made in the U.S.A.



A Low Profile Air Resistant Threshold is offered for installations that have soffit overhangs greater than the entrance frame height. High Performance Water Resistant Thresholds are offered to provide superior water and air management, along with ramps to meet A.D.A. requirements.



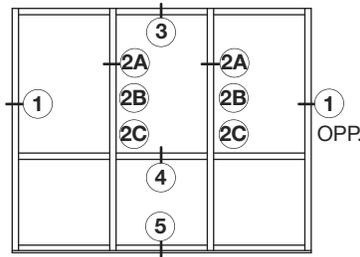
# BLAST MITIGATION

## Typical Details

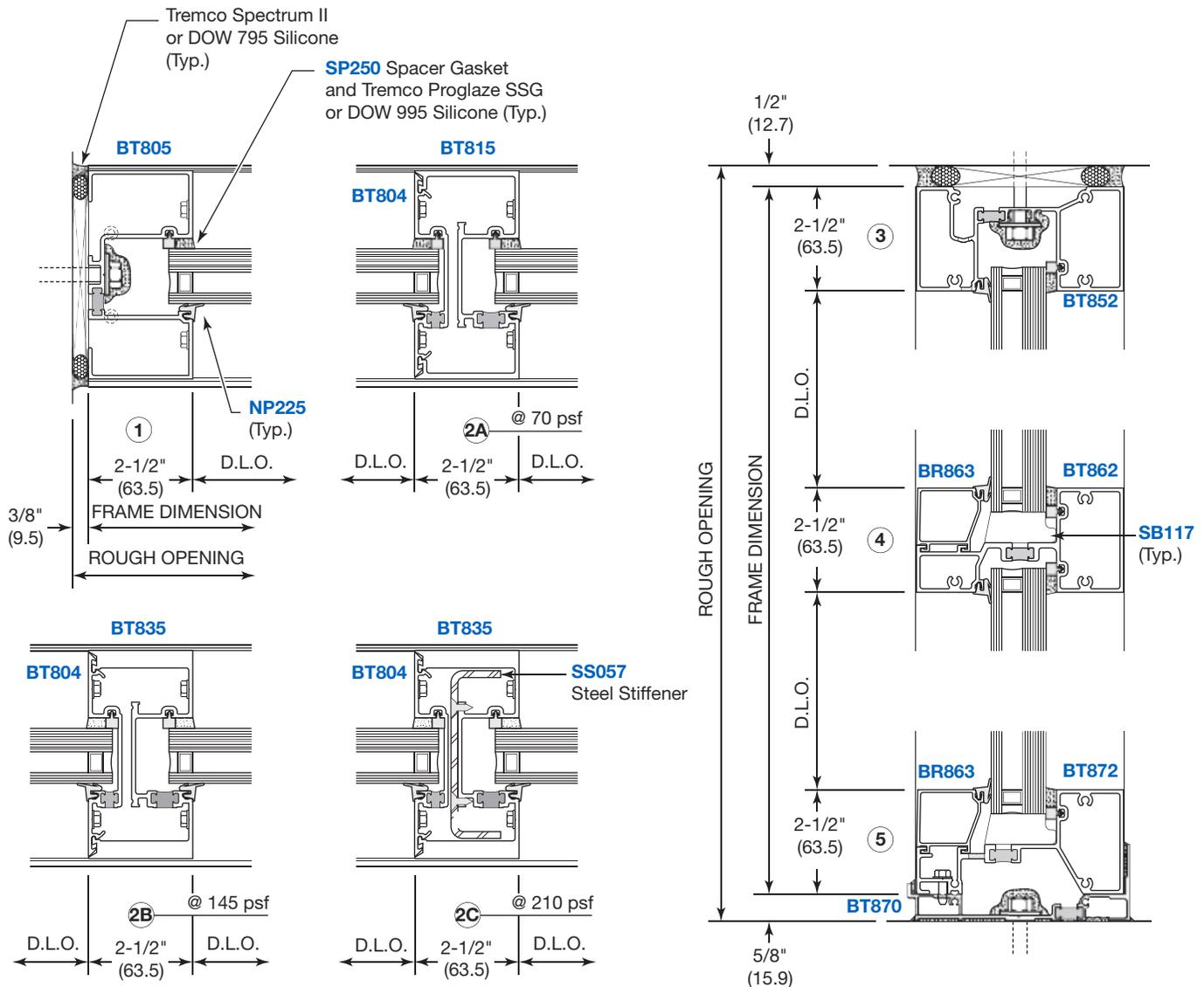
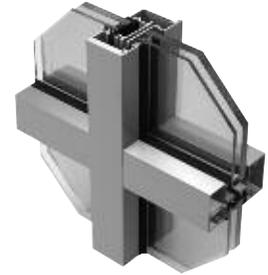
## Blast Resistant Storefront • Defender Series BT601

### FOR 1-5/16" (33) GLAZING

**NOTE:** Consult your nearest U.S. Aluminum Service Center for frame size limitations.



TYPICAL ELEVATION



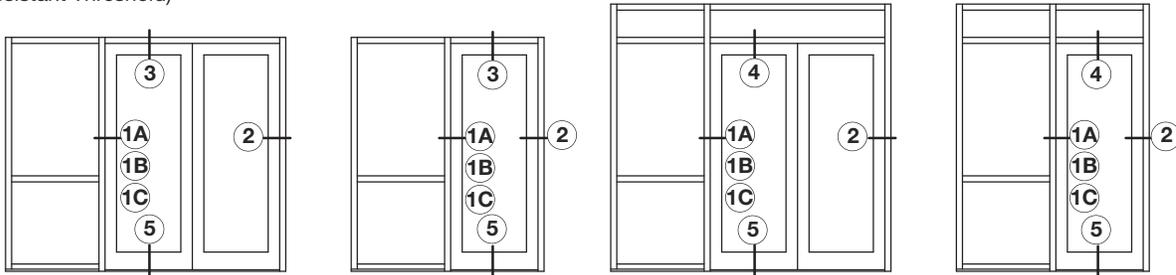
NOT TO SCALE

# BLAST MITIGATION

## Typical Details

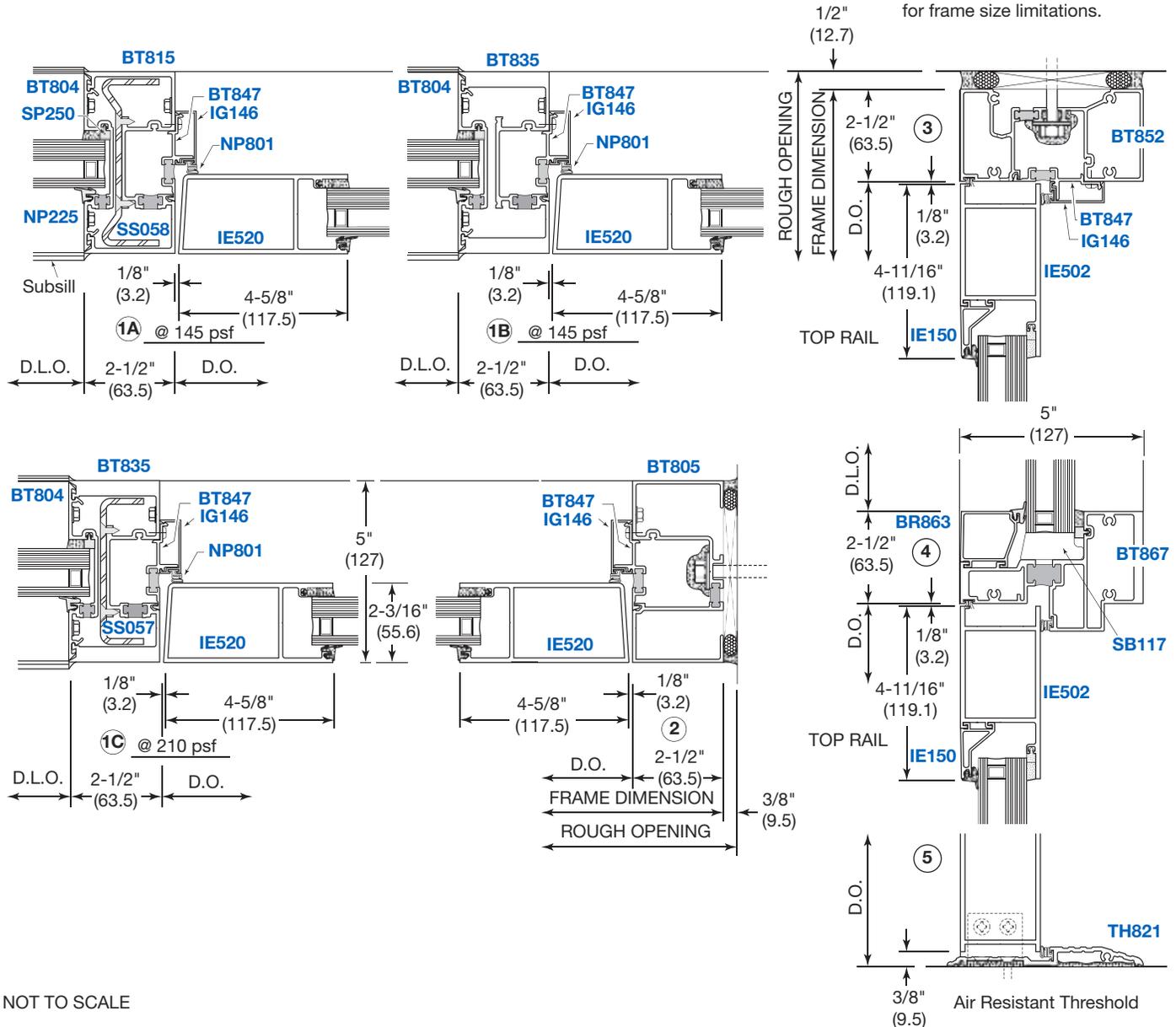
## Blast Resistant Storefront • Defender Series BT601

**FOR 1-5/16" (33) GLAZING**  
(With Air Resistant Threshold)



TYPICAL ENTRANCE ELEVATIONS

**NOTE:** Consult your nearest U.S. Aluminum Service Center for frame size limitations.



NOT TO SCALE

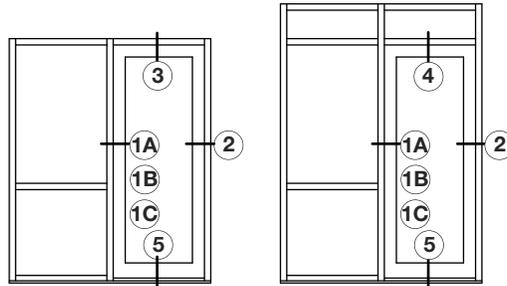
# BLAST MITIGATION

## Typical Details

## Blast Resistant Storefront • Defender Series BT601

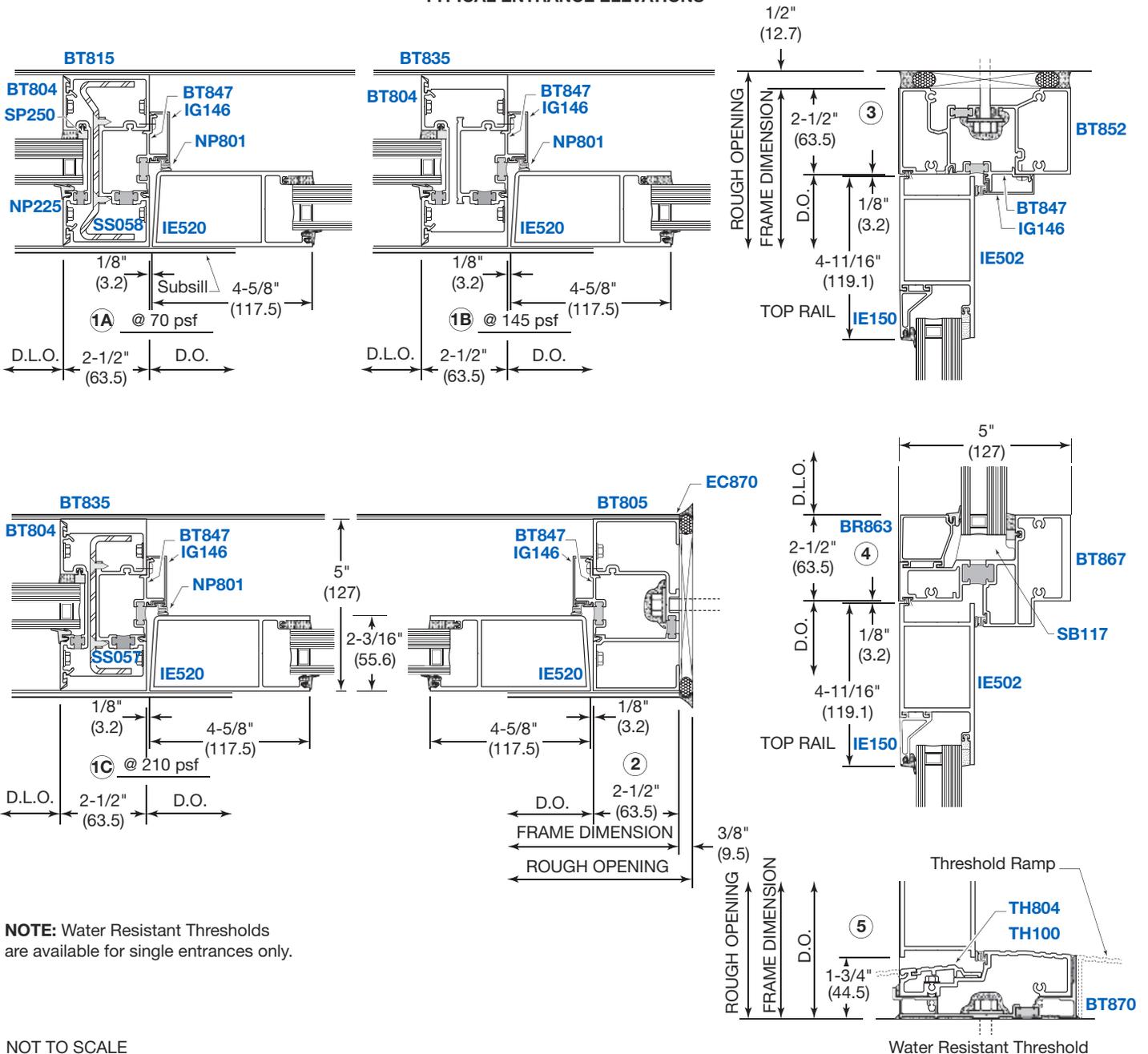
### FOR 1-5/16" (33) GLAZING (With Water Resistant Threshold)

(With Water Resistant Threshold)



TYPICAL ENTRANCE ELEVATIONS

**NOTE:** Consult your nearest U.S. Aluminum Service Center for frame size limitations.



**NOTE:** Water Resistant Thresholds are available for single entrances only.

NOT TO SCALE

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# BLAST MITIGATION

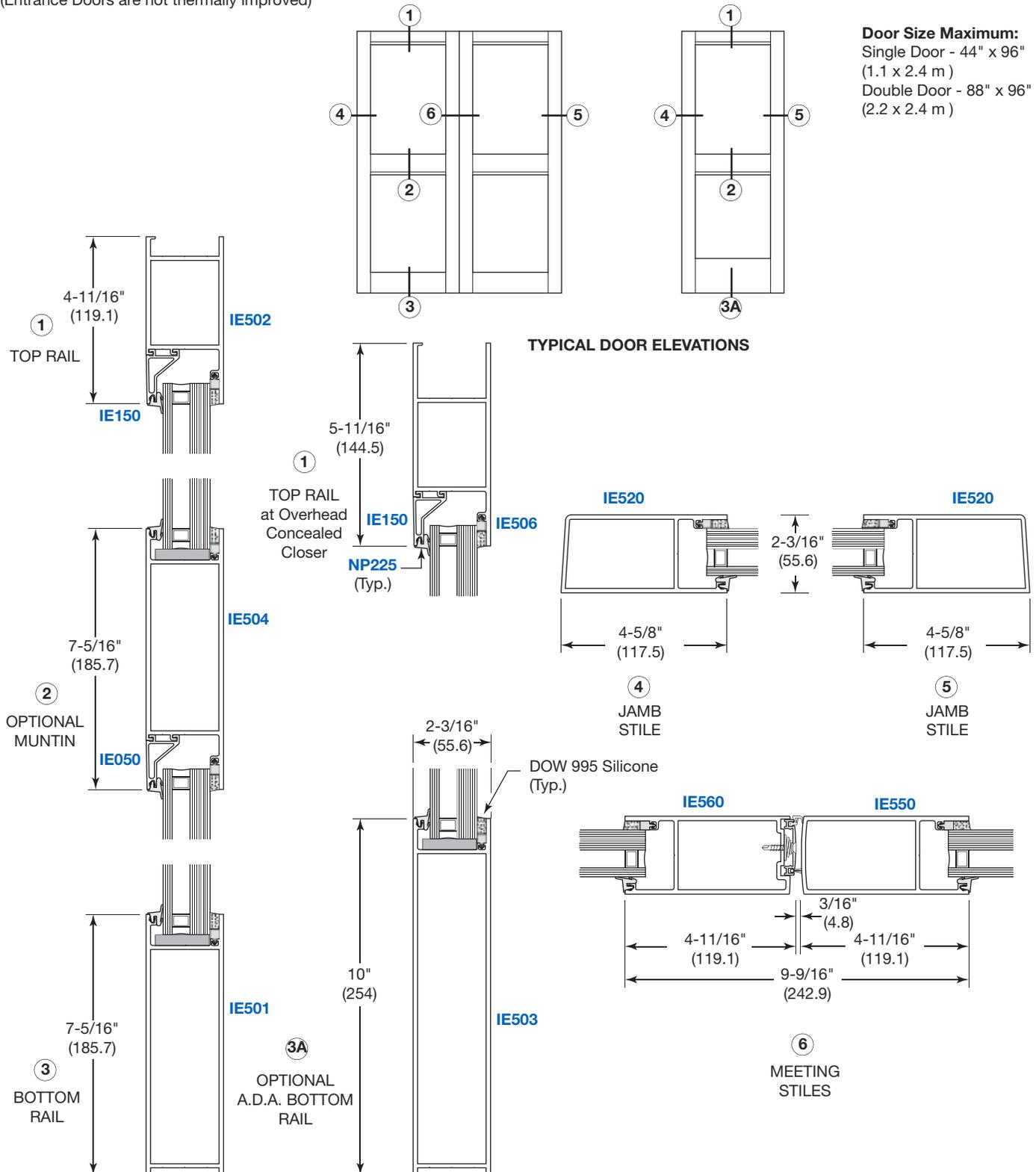
## Typical Details

## Blast Resistant Storefront • Defender Series BT601

### FOR 1-5/16" (33) GLAZING

(Entrance Doors are not thermally improved)

**Door Size Maximum:**  
Single Door - 44" x 96"  
(1.1 x 2.4 m)  
Double Door - 88" x 96"  
(2.2 x 2.4 m)



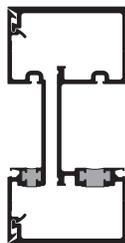
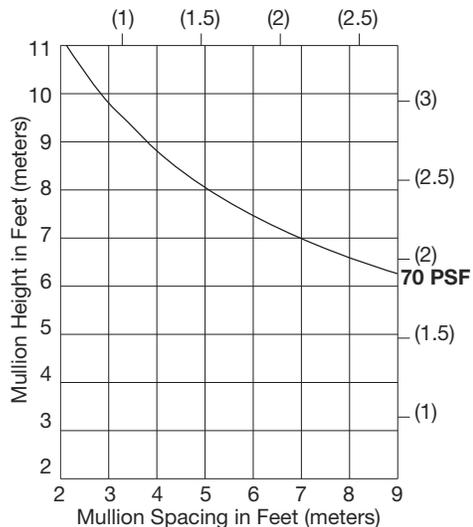
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# BLAST MITIGATION

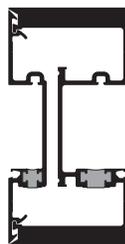
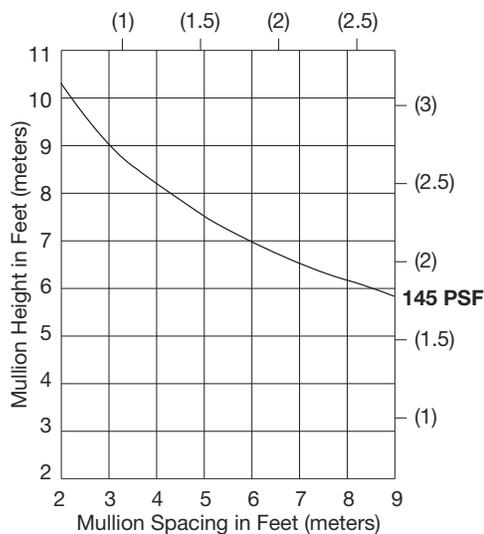
## Windload and Deadload Charts

## Blast Resistant Storefront • Defender Series BT601

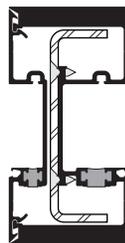
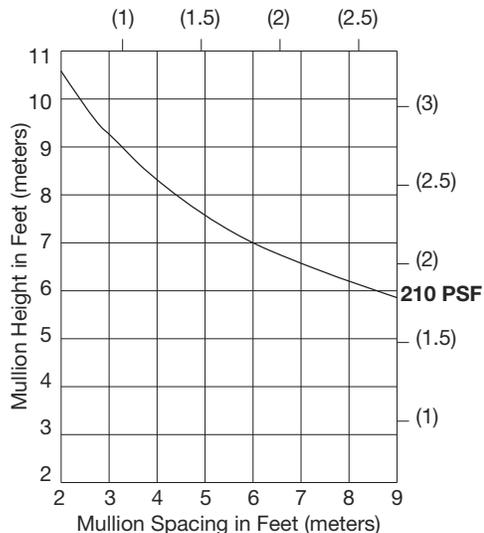
### WINDLOAD CHARTS



**BT815/BT804**  
Mullion and Filler (Combined)  
 $I_{xx} = 6.509 (270.93 \times 10^4)$   
 $S_{xx} = 2.865 (46.95 \times 10^3)$

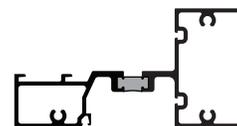
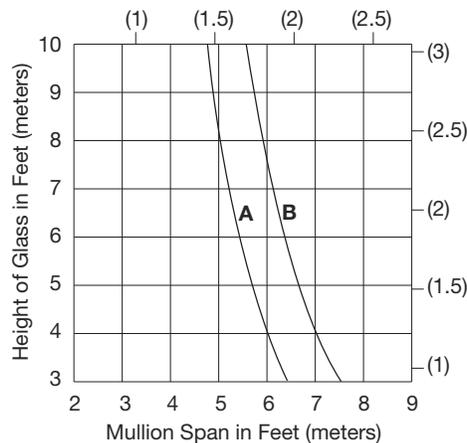


**BT835/BT804**  
Mullion and Filler (Combined)  
 $I_{xx} = 10.500 (437.04 \times 10^4)$   
 $S_{xx} = 5.174 (84.78 \times 10^3)$



**BT835/BT804/SS057**  
Mullion, Filler, and Steel (Combined)  
 $I_{xx} = 10.500 (437.04 \times 10^4)$   
 $S_{xx} = 5.174 (84.78 \times 10^3)$   
Aluminum + Steel  
 $I_{xx} = 16.390 (682.20 \times 10^4)$

### DEADLOAD CHART



**BT862**  
Intermediate Horizontal  
 $I_{yy} = 1.006 (41.872 \times 10^4)$   
 $S_{yy} = 0.664 (10.88 \times 10^3)$

**NOTE:** Consult your nearest U.S. Aluminum Service Center for frame size limitations.

# BLAST MITIGATION

## Accessories

### Blast Resistant Storefronts

- Defender Series BR604
- Defender Series BR606
- Defender Series BT601

PART NO.	DETAIL	DESCRIPTION	PKG. QTY.	WHERE USED		
				BR604	BR606	BT601
SB117		Setting Block for 1-5/16" (33) Glass	100			•
SB917		Setting Block for 1-5/16" (33) Glass	100	•	•	
WD911		Water Deflector	50	•	•	•
WD912		Water Deflector for BT815/BT835	50	•		
WD913		Water Deflector for BT805	50	•	•	•
EC801		End Caps for Jambs at Subsill for BR604/BR606	20	•	•	
EC870		End Caps for Jambs at Subsill for BT601	20			•
SV102		Splice Sleeve for Subsill	10	•	•	•
AP004		Shear Block Includes: (1) AC004 Shear Block (1) TB601 Back-up Plate (2) MF281 Bolts (2) MF254 Lock Washers	10		•	
DJ801		Drill Guide for Horizontals	1	•	•	•
ST286		Assembly Screw #12 x 2" (51) HWH SMS	100	•	•	•
ST268		Sill to Subsill Attachment #12 x 3/4" (19) HWH SMS	100	•	•	•
ST266		Reinforcement to Vertical Attachment #12 x 1" (25) HWH Tek	100	•		
ST248		Reinforcement to Vertical Attachment #10 x 3/4" (19) FH Tek	100		•	
ST238		Reinforcement to Vertical Attachment #10 x 3/8" (9.5) FH SMS	100			•
ST173		End Dam Attachment #8 x 1/2" (12.7) FH SMS	100	•	•	•
ST206		Splice Sleeve Attachment #8 x 1/2" (12.7) PH SMS	100	•	•	•

# BLAST MITIGATION

## Table of Contents

## Blast Resistant Concealed Vent • Defender Series BR7500



### SECTION F2

### PAGE

SPECIFICATIONS .....02-F2 and 03-F2

SPECIAL FEATURES .....04-F2

TYPICAL DETAILS .....05-F2



Project: National Guard Readiness Center, Spokane, WA

Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

Other metric units shown in this publication are:

- m - meter
- Pa - pascal
- MPa - megapascal
- Kg - kilogram
- KPa - kilopascal

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# BLAST MITIGATION

## Specifications

## Blast Resistant Concealed Vent

### • Defender Series BR7500

### SECTION 08 51 13 ALUMINUM WINDOWS

Drawings and specifications are based on the Series BR7500 Blast Resistant Concealed Vent Thermal C-75 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

B. 1-1/32" (26) Thick Glass and Glazing  
 1. All units shall be factory glazed.  
 OR  
 1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
 Section 08 44 00 - Glazed Curtain Walls  
 Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

A. Test Units  
 1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101

I.S. 2-97 and AAMA 910-93 or CSA A440.  
 2. Thermal test unit sizes shall be 36" x 60" (914 x 1524). Unit shall consist of a casement, fixed or projected window.  
 B. Test Procedures and Performances  
 1. Windows shall conform to all AAMA/ ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.  
 2. **Air Infiltration Test:**  
 With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.  
 3. **Water Resistance Test:**  
 With ventilators closed and locked, test unit in accordance with ASTM E 331-96 /ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.  
 4. **Uniform Load Deflection Test:**  
 With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.  
 5. **Condensation Resistance Test (CRF):** With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49.  
 6. **Thermal Transmittance Test (Conductive U-Value):** With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F.  
 7. AAMA C75 Rating Testing Procedures -

AAMA/WDMA/CSA 101/I.S.2/ A440-0.8 - Laboratory Performance Testing.  
 AAMA 502-08 - Newly Installed Fenestration Products.  
 AAMA 511-08 - Installed Fenestration Products After 6 Months.  
 8. DoD - UFC 4-010-01 (Jan 07)  
 - ATFP  
 - ISC Security Design Criteria for Blast Protection for Windows  
 - ASTM F 1642  
 - FAR 52.225-9, 11, and 12 Buy America ACT

##### 1.04 Quality Assurance

A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.  
 B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

A. Total Window System  
 1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

# BLAST MITIGATION

## Specifications

## Blast Resistant Concealed Vent • Defender Series BR7500

### SECTION 08 51 13 ALUMINUM WINDOWS

#### PART 2 PRODUCTS

##### 2.01 Materials

- A. Aluminum
1. Extruded aluminum shall be 6063-T5 alloy and tempered.
- B. Hardware
1. Locking handles shall be cam type as supplied by U.S. Aluminum.
  2. Operating hardware shall be 4-bar stainless steel arms or equal.
- C. Weatherstrip
1. All weatherstrip shall be E.P.D.M. or equal.
- D. Thermal Barrier
1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
  2. Specified hardware shall not bridge the thermal barrier.
- E. Glass
1. Insulating glass shall be 1-1/32" (26) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

##### 2.02 Fabrication

- A. General
1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125 (3.2).
  2. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers.

- Thermal barriers shall align at all frame and vent corners.
3. Depth of frame shall be 3" (76.2) for 1-1/32" (26) glazing.
- B. Frame
1. Frame components shall be mechanically fastened.
- C. Ventilator
1. All vent extrusions shall be tubular.
  2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
  3. Each vent shall be pressure equalized utilizing two rows of E.P.D.M. weatherstripping (or equal) installed in dovetail grooves in the extrusion.
  4. The vent shall present a flush appearance with the main frame when in the closed position.
- E. Screens
1. Screen frames shall be extruded.
  2. Screen mounting holes in the window frame shall be factory drilled.
  3. Screen mesh shall be aluminum or fiberglass. (if applicable)
- F. Glazing
1. All units shall be glazed with spacer and structural silicone.
- G. Finish
- All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain...  
(Specify one of the following)
- \_\_\_ #11 Clear anodic coating  
\_\_\_ #22 Dark Bronze anodic coating  
\_\_\_ #33 Black anodic coating
- A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (Specify a U.S. Aluminum standard color).

#### PART 3 EXECUTION

##### 3.01 Inspection

- A. Job Conditions
1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

- A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
- B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.
- C. Adjust windows for proper operation after installation.
- D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

##### 3.03 Protection and Cleaning

- A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# BLAST MITIGATION

## Special Features

FOR 1-1/32 (26) GLAZING

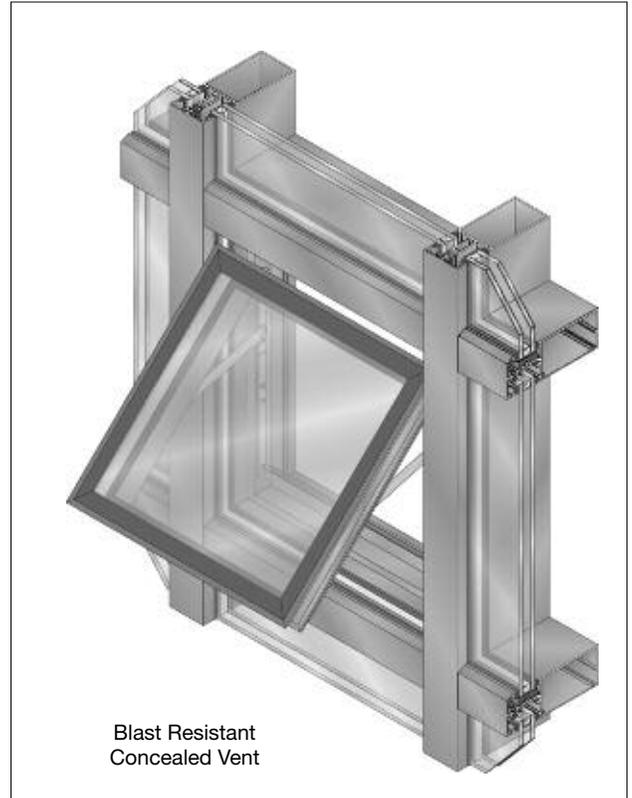
**Blast Resistant  
Concealed Vent Window**  
• Defender Series BR7500

## DEFENDER

BLAST MITIGATION PRODUCTS

The Series BR7500 Blast Resistant Concealed Vent is a minimal sightline window perfect for use in blast mitigation storefront and curtain wall openings. Standard hardware includes Stainless Steel 4-Bar Hinges and Cam Locking Handles. As with all of our operable windows, vent construction starts with tubular vent components that are mitered, reinforced with corner keys, and crimped at all corners. When closed, the vent is sealed to the frame with bulb gaskets, ensuring an airtight seal.

- DoD UFC 4-010-01 (Jan 07), ATFP, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- C-75 Rated Project Out Window
- Accepts 1-1/32" (26) Laminated Glazing
- Minimal Sightline
- Use With BR604, BR606 and BT601 Storefront or BW3250 Curtain Wall
- Structural Silicone Glazed
- Thermally Improved Design
- Reinforced Corner Construction
- Finishes Range From Clear, Bronze or Black Anodic Finishes to a Wide Selection of Custom Matched Painted Coatings
- Made in the U.S.A.



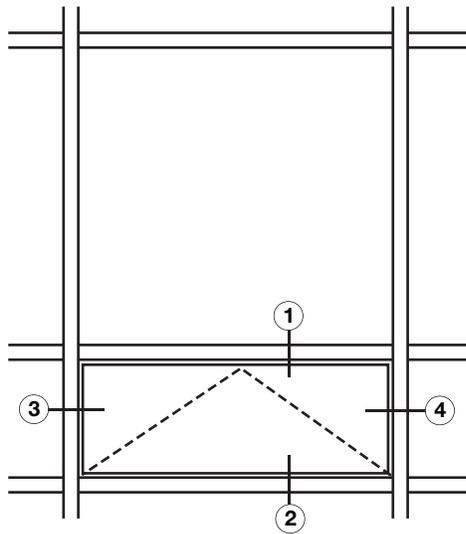
# BLAST MITIGATION

## Typical Details

### Blast Resistant Concealed Vent Window • Defender Series BR7500

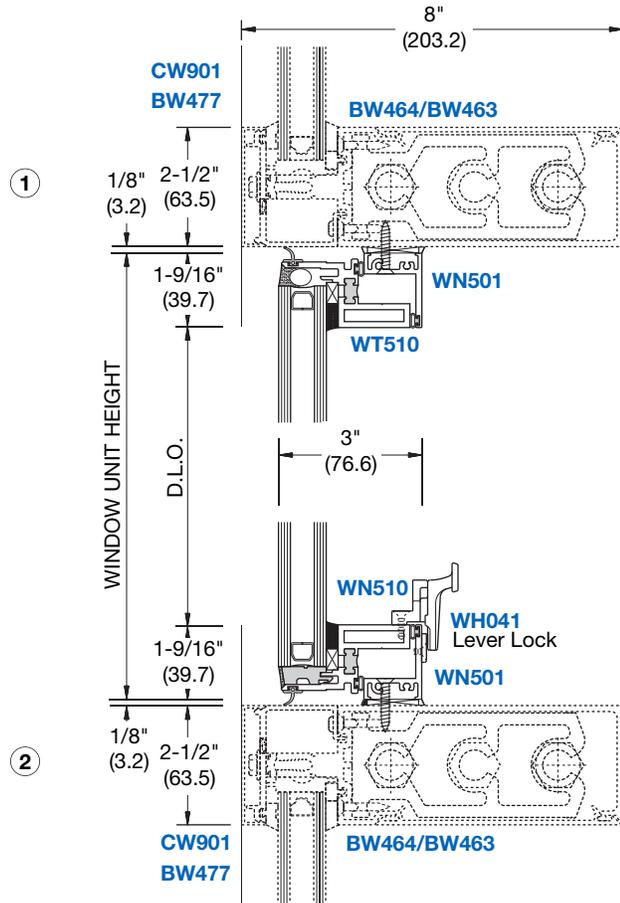
#### FOR 1-1/32 (26) GLAZING

Shown with Series BW3250 2-1/2" x 8" (63.5 x 203.2) Curtain Wall



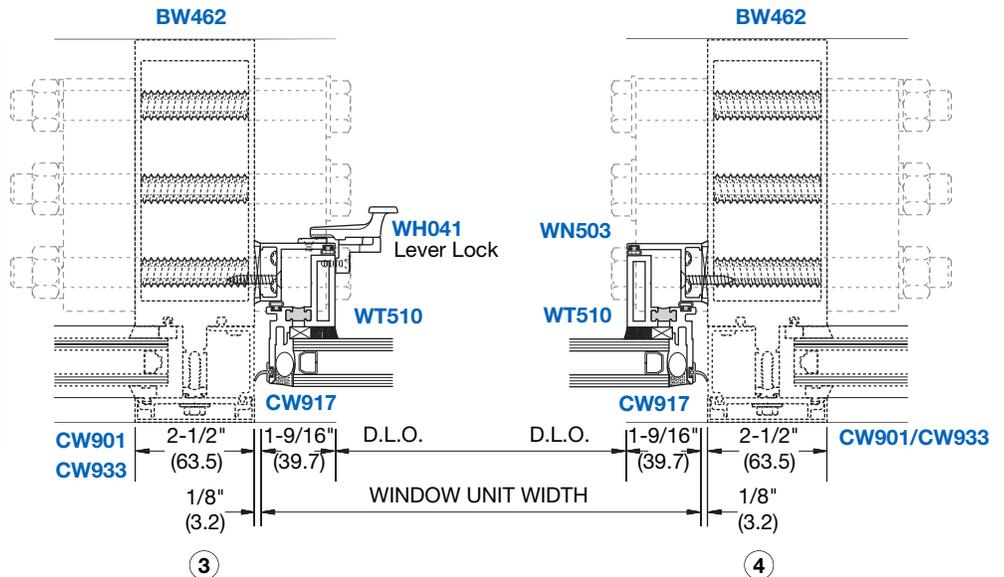
TYPICAL ELEVATION

Maximum Frame Size:  
60"w x 32"h (1524 x 813).



For complete details and installation instructions visit [usalum.com](http://usalum.com)

- Meets or Exceeds Specifications:
- DoD - UFC 4-010-01 - (Jan 07)
    - ATFP
    - ISC - Security Design Criteria for Blast Protection for Windows
    - ASTM F 1642
  - AAMA/WDMA/CSA 101/1.S.2/A 440-08
    - ASTM E 283-04
    - ASTM E 330-02
    - ASTM E 331-00
    - AAMA 1503
  - NFRC - NFRC 100-2004
    - NFRC 200-2004
    - NFRC 500-2004
  - Buy America Act - FAR 52.225-9, 11 & 12



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# BLAST MITIGATION

## Specifications

### SECTION 08 51 13 ALUMINUM WINDOWS

#### QUALITY ASSURANCE

Drawings and specifications are based on the Series BW7600 Blast Resistant Concealed Vent Thermal CW100 Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

B. 1-1/32" (26) Thick Glass and Glazing

1. All units shall be factory glazed.
- OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

##### 1.03 Testing and Performance Requirements

A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.
2. Thermal test unit sizes shall be 36" x 60" (914 x 1524). Unit shall consist of a casement, fixed or projected window.
- B. Test Procedures and Performances
  1. Windows shall conform to all AAMA/ANSI/NWWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.

##### 2. Air Infiltration Test:

With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.

##### 3. Water Resistance Test:

With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.

##### 4. Uniform Load Deflection Test:

With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 112.5 psf positive and negative pressure. No member shall deflect over L/175 of its span.

##### 5. Condensation Resistance Test (CRF):

With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49.

##### 6. Thermal Transmittance Test (Conductive U-Value):

With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F.

7. AAMA CW100 Rating Testing Procedures - AAMA/WDMA/CSA 101/I.S.2/A440-8 - Laboratory Performance Testing.  
AAMA 503-08 - Newly Installed Fenestration Products.  
AAMA 511-08 - Installed Fenestration Products After 6 Months.
8. DoD - UFC 4-010-01 (Jan 07)
  - ATFP
  - ISC Security Design Criteria for Blast Protection for Windows
  - ASTM F 1642
  - FAR 52.225-9, 11, and 12 Buy America Act

##### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

##### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

##### 1.06 Warranties

- A. Total Window System
  1. The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

# BLAST MITIGATION

## Specifications

### Blast Resistant Concealed Vent Window • Defender Series BW7600

#### SECTION 08 51 13 ALUMINUM WINDOWS

#### PART 2 PRODUCTS

##### 2.01 Materials

###### A. Aluminum

1. Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

1. Locking handles shall be Single Multi-Point as supplied by U.S. Aluminum.
2. Operating hardware shall be 4-bar stainless steel arms or equal.

###### C. Weatherstrip

1. All weatherstrip shall be E.P.D.M. or equal.

###### D. Thermal Barrier

1. Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
2. Specified hardware shall not bridge the thermal barrier.

###### E. Glass

1. Insulating glass shall be 1-1/32" (26) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

##### 2.02 Fabrication

###### A. General

1. All primary aluminum frame and vent extrusions shall have a minimum wall thickness of .125" (3.2)

2. Mechanical fasteners, welded components, and hardware items shall not bridge thermal barriers. Thermal barriers shall align at all frame and vent corners.

3. Depth of frame 3" (76.2) for 1-1/32" (26) glazing.

###### B. Frame - Frame components shall be mechanically fastened.

###### C. Ventilator

1. All vent extrusions shall be tubular.
2. Each corner shall be mitered, reinforced with an extruded corner key, and hydraulically crimped.
3. Each vent shall be pressure equalized utilizing two rows of E.P.D.M. weatherstripping (or equal) installed in dovetail grooves in the extrusion.
4. The vent shall present a flush appearance with the main frame when in the closed position.

###### D. Screens

1. Screen frames shall be extruded.
2. Screen mounting holes in the window frame shall be factory drilled.
3. Screen mesh shall be aluminum or fiberglass. (if applicable)

###### E. Glazing - All units shall be glazed with spacer and structural silicone.

###### F. Finish

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

- \_\_\_\_ #11 Clear anodic coating
- \_\_\_\_ #22 Dark Bronze anodic coating
- \_\_\_\_ #33 Black anodic coating
- A Fluoropolymer paint coating conforming with the requirements of

AAMA 2605. Color shall be *(Specify a U.S. Aluminum standard color)*.

#### PART 3 EXECUTION

##### 3.01 Inspection

###### A. Job Conditions-

Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

C. Adjust windows for proper operation after installation.

D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

##### 3.03 Protection and Cleaning

A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# BLAST MITIGATION

## Special Features

FOR 1-1/32" (26) GLAZING

**Blast Resistant  
Concealed Vent Window**  
• Defender Series BW7600

## DEFENDER BLAST MITIGATION PRODUCTS

The Series BW7600 Blast Resistant Concealed Vent is a minimal sightline window offering a DoD 1 psi blast resistance capability. Standard hardware includes a single Multi-Point Locking Handle. As with all of our operable windows, vent construction starts with tubular vent components that are mitered, reinforced with corner keys, and crimped at all corners. When closed, the vent is sealed to the frame with bulb gaskets, ensuring an air tight seal.

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- AAMA CW100-Rated
- Accepts 1-1/32" (26) Laminated Glazing
- Minimal Sightline
- Structural Silicone Glazed
- Use With BR604, BR606, and BT601 Storefront or BW3250 Curtain Wall
- Reinforced Corner Construction
- Thermally Broken
- U-Factor 0.56 to 0.34
- Multi-Point Locking Handles
- Made in the U.S.A.



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# BLAST MITIGATION

## Typical Details

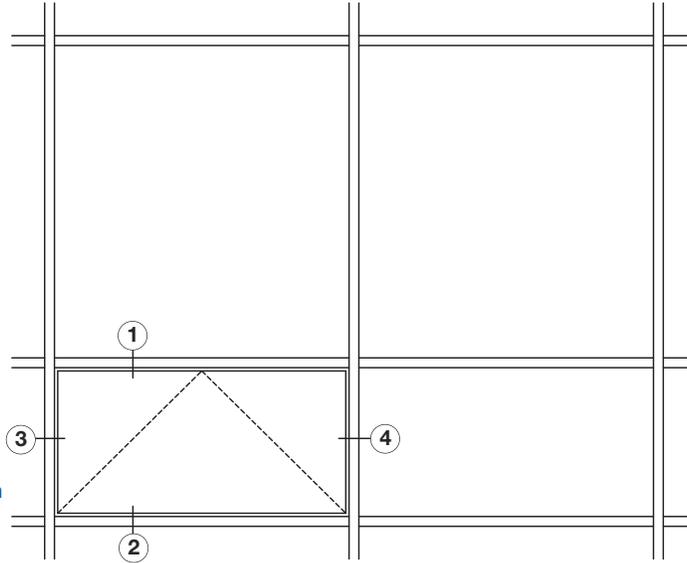
### FOR 1-1/32" (26) GLAZING

Series BW7600 Shown With Series BR604 Storefront

## Blast Resistant Concealed Vent Window

- Defender Series BW7600

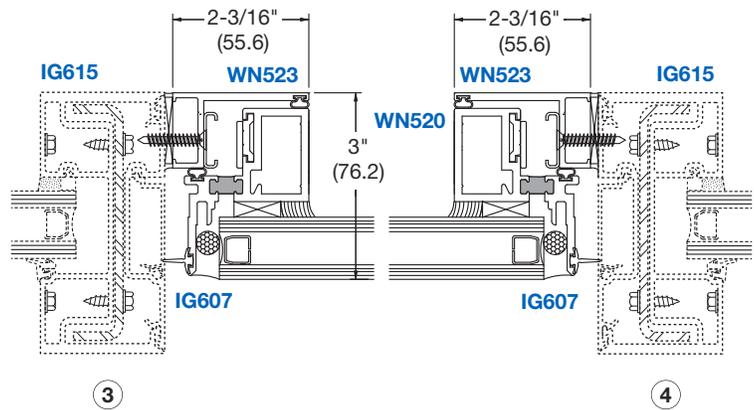
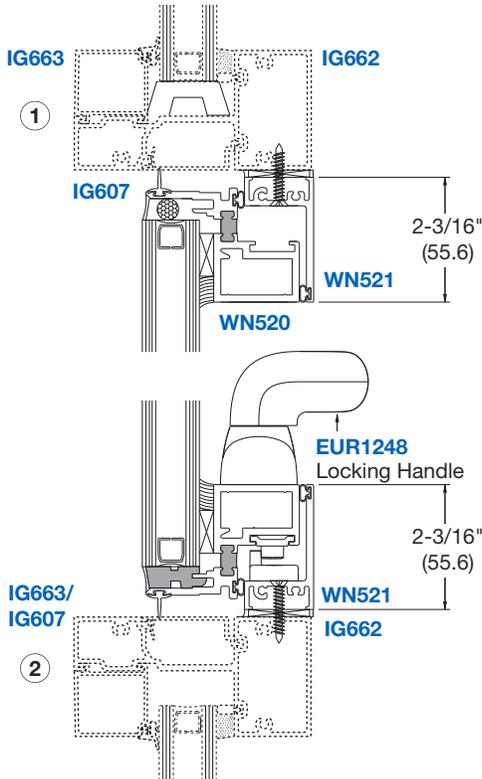
For specifications, details, and testing data go to [usalum.com](http://usalum.com)



TYPICAL ELEVATION

Meets or Exceeds Specifications:

- DoD - UFC 4-010-01 - (Jan 07)
  - ATFP
  - ISC - Security Design Criteria for Blast Protection for Windows
  - ASTM F 1642
- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12



### EURO MULTI-POINT LOCKING HANDLES

Finishes Available:  
Powder Coat White  
Powder Coat Black  
Satin Nickel  
Satin Chrome



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# BLAST MITIGATION

## Table of Contents

### Blast Resistant Single Hung, Fixed, and Sliding Windows

- Defender Series BW8000
- Defender Series BW8100
- Defender Series BW8200



## SECTION F4

## PAGE

SPECIFICATIONS SERIES BW8000, BW8100, and BW8200 WINDOWS .....02-F4 and 03-F4

SPECIAL FEATURES SERIES BW8000 SINGLE HUNG WINDOW .....04-F4

TYPICAL DETAILS SERIES BW8000 SINGLE HUNG WINDOW .....05-F4

SPECIAL FEATURES SERIES BW8100 FIXED WINDOW .....06-F4

TYPICAL DETAILS SERIES BW8100 FIXED WINDOW .....07-F4

SPECIAL FEATURES SERIES BW8200 HORIZONTAL SLIDING WINDOW .....08-F4

TYPICAL DETAILS SERIES BW8200 HORIZONTAL SLIDING WINDOW .....09-F4



Due to the diversity in state/provincial, local, and federal laws and codes that govern the 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 applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

**NOTE:** Dimensions in parentheses ( ) are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
  - Pa - pascal
  - MPa - megapascal
  - Kg - kilogram
  - KPa - kilopascal

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# BLAST MITIGATION

## Specifications

### SECTION 08 51 13 ALUMINUM WINDOWS

#### QUALITY ASSURANCE

Drawings and specifications are based on Series BW8000 Single Hung, BW8100 Fixed, or BW8200 Horizontal Sliding (*Specify*) CW60 Blast Resistant Thermal Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

#### PART 1 GENERAL

##### 1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

*Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.*

B. 1-1/32" (26) Thick Glass and Glazing

1. All units shall be factory glazed.  
OR
1. Reference Section 08 80 00 for Glass and Glazing.

*List work and materials related to this section but specified in other sections.*

##### 1.02 Related Work

Section 08 40 00 - Entrances and Storefronts  
Section 08 44 00 - Glazed Curtain Walls  
Section 08 50 00 - Windows

#### 1.03 Testing and Performance Requirements

##### A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.
2. Thermal test unit sizes shall be 47-1/4" x 59" (1200 x 1500) for Series BW8000 and BW8100, 59" x 47-1/4" (1500 x 1200) for Series BW8200. Unit shall consist of a single hung, fixed or horizontal sliding window.

##### B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ANSI/NWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
2. **Air Infiltration Test:**  
With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.
3. **Water Resistance Test:**  
With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
4. **Uniform Load Deflection Test:**  
With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 90 psf positive and negative pressure. No member shall deflect over L/175 of its span.
5. **Condensation Resistance Test (CRF):** With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49 for Series BW8100 and BW8200. Not less than 50 for Series BW8000.

## Blast Resistant Single Hung, Fixed, and Sliding Windows

- Defender Series BW8000
- Defender Series BW8100
- Defender Series BW8200

#### 6. Thermal Transmittance Test (Conductive U-Value):

With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) for Series BW8000 and BW8200 Windows shall have a range between 0.35 to 0.56 BTU/hr/ft<sup>2</sup>/°F and Series BW8100 Windows shall have a range between 0.33 to 0.56 BTU/hr/ft<sup>2</sup>/°F.

#### 7. AAMA CW60 Rating Testing Procedures -

- AAMA/WDMA/CSA 101/I.S.2/A440-0.8 - Laboratory Performance Testing.
- AAMA 503-08 - Newly Installed Fenestration Products.
- AAMA 511-08 - Installed Fenestration Products After 6 Months.

#### 8. DoD - UFC 4-010-01 (Jan 07)

- ATFP
- ISC Security Design Criteria for Blast Protection for Windows
- ASTM F 1642
- FAR 52.225-9, 11, and 12 Buy America Act

#### 1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

#### 1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

# BLAST MITIGATION

## Specifications

### SECTION 08 51 13 ALUMINUM WINDOWS

#### 1.06 Warranties

##### A. Total Window System

- The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

#### PART 2 PRODUCTS

##### 2.01 Materials

###### A. Aluminum

- Extruded aluminum shall be 6063-T5 alloy and tempered.

###### B. Hardware

- Series BW8000 and BW8200 Windows have spring loaded self-locking latches as supplied by U.S. Aluminum.

###### C. Weatherstrip

- For Series BW8000 and BW8200 Windows weatherstrip shall be fin seal or equal. For Series BW8100 Windows all weatherstrip shall be E.P.D.M.

###### D. Thermal Barrier

- Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
- Specified hardware shall not bridge the thermal barrier.

###### E. Glass

- Insulating glass shall be 1-1/32" (26) as manufactured by ( ) consisting of ( ) exterior, ( ) air spacer, and ( ) interior.

#### 2.02 Fabrication

##### A. General

- All primary aluminum frame, extrusions or vent extrusions shall have a minimum wall thickness of .062 (1.57)
- Depth of frame 4-1/2" (114.3) for 1-1/32" (26) glazing.

##### B. Frame - Frame components shall be mechanically fastened.

##### C. Ventilator (Series BW8000 and BW8200)

- All vent extrusions shall be notched .

##### D. Screens (Series BW8000 and BW8200)

- Screen frames shall have springs locking the screen in place.
- Screen mesh shall be aluminum or fiberglass. (if applicable)

##### E. Glazing - All units shall be either shop or field glazed.

##### F. Finish

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

\_\_\_\_ #11 Clear anodic coating

\_\_\_\_ #22 Dark Bronze anodic coating

\_\_\_\_ #33 Black anodic coating

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

## Blast Resistant Single Hung, Fixed, and Sliding Windows

- Defender Series BW8000
- Defender Series BW8100
- Defender Series BW8200

#### PART 3 EXECUTION

##### 3.01 Inspection

###### A. Job Conditions-

Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

##### 3.02 Installation

###### A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

###### B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

###### C. Adjust windows for proper operation after installation.

###### D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

##### 3.03 Protection and Cleaning

###### A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

# BLAST MITIGATION

## Special Features

FOR 1-1/32" (26) GLAZING

## Blast Resistant Single Hung Window

- Defender Series BW8000

# DEFENDER

## BLAST MITIGATION PRODUCTS

As part of the 8000 Series of heavy commercial windows, the BW8000 Blast Resistant Single Hung Window offers a DoD 1 psi blast resistance capability to the product line. The 4-1/2" (114) deep frame is designed to match typical building conditions, including our entrances and storefronts. An efficient thermally insulated frame accepts 1-1/32" (26) glazing infills, with extruded pulls at the interlock and bottom rail. The window features a self-locking latch and Class 5 balances for ease of operation. Accessories such as mulling bars, subsills, and head and jamb channels are available.

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Thermally Insulated - NFRC Certified
- 4-1/2" (114) Deep Frame
- Accepts 1-1/32" (26) Laminated Glazing
- Choice of Block or Fin Frame
- AAMA CW60 Rated Window
- Class 5 Balance for Ease of Operation
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.

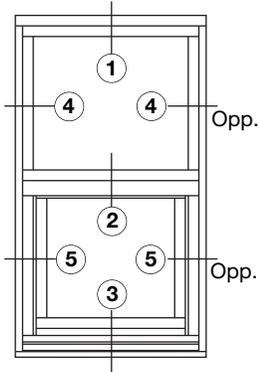


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# BLAST MITIGATION

## Typical Details

FOR 1-1/32" (26) GLAZING



Meets or Exceeds Specifications:

- DoD - UFC 4-010-01 - (Jan 07)
  - ATFP
  - ISC - Security Design Criteria for Blast Protection for Windows - ASTM F 1642
- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12

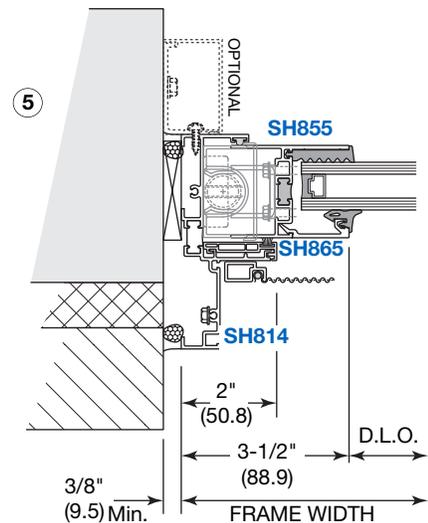
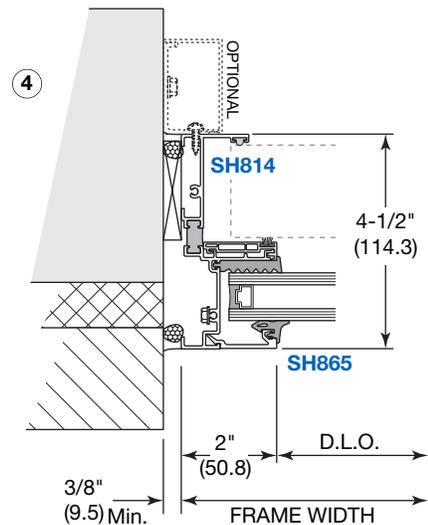
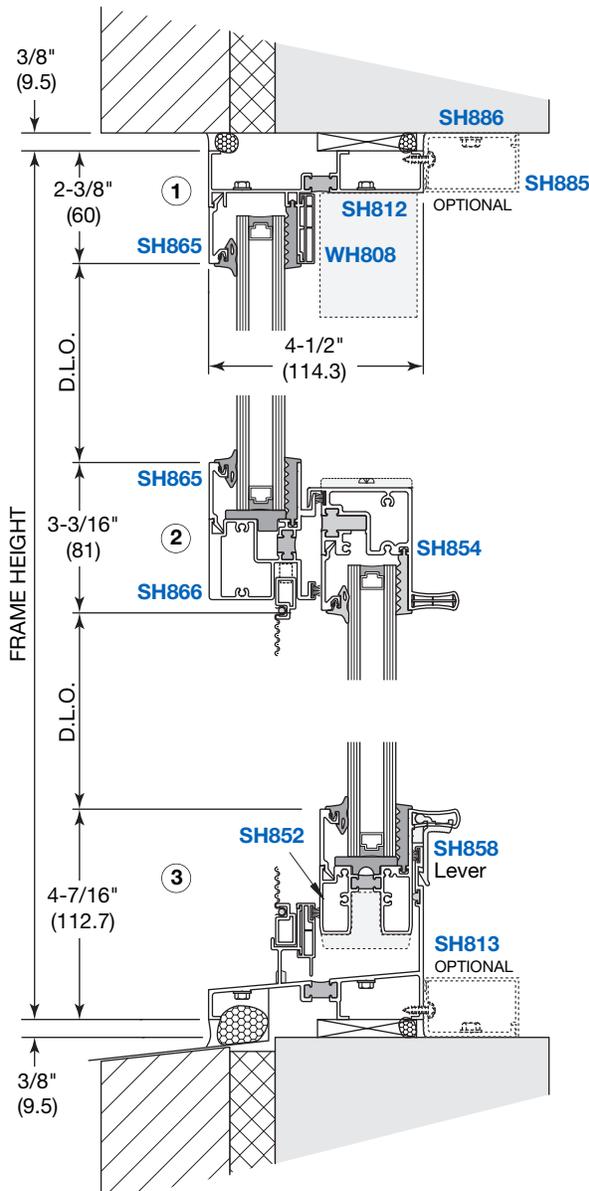
## Blast Resistant Single Hung Window

- Defender Series BW8000

Block Frame Installation Method Shown

Maximum Frame Size 54-7/8" x 90" (1394 x 2286)

A complete set of details in DWG format is available at [usalum.com](http://usalum.com)



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# BLAST MITIGATION

## Special Features

FOR 1-1/32" (26) GLAZING

## Blast Resistant Fixed Window

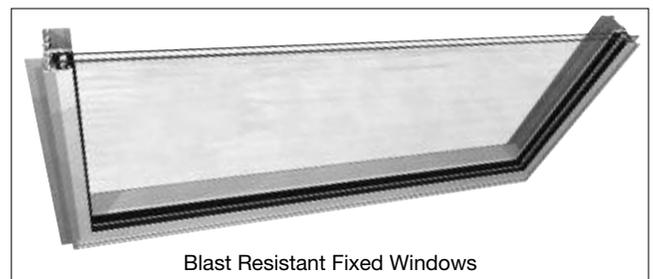
- Defender Series BW8100

# DEFENDER

## BLAST MITIGATION PRODUCTS

The Series BW8100 Blast Resistant Fixed Window offers that rare combination of durability and toughness to meet blast mitigation requirements. The Defender Series of Blast Mitigation products are designed to provide protection for DoD and private sector facilities. Other Defender Series products include Storefront, Curtain Wall, Projected Windows, Horizontal Sliding, and Single Hung Windows.

- DoD UFC 4-010-01 (Jan 07), ATFP, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Accepts 1-1/32" (26) Laminated Glazing
- Tested to AAMA CW60
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.33
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Accessories Such as Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



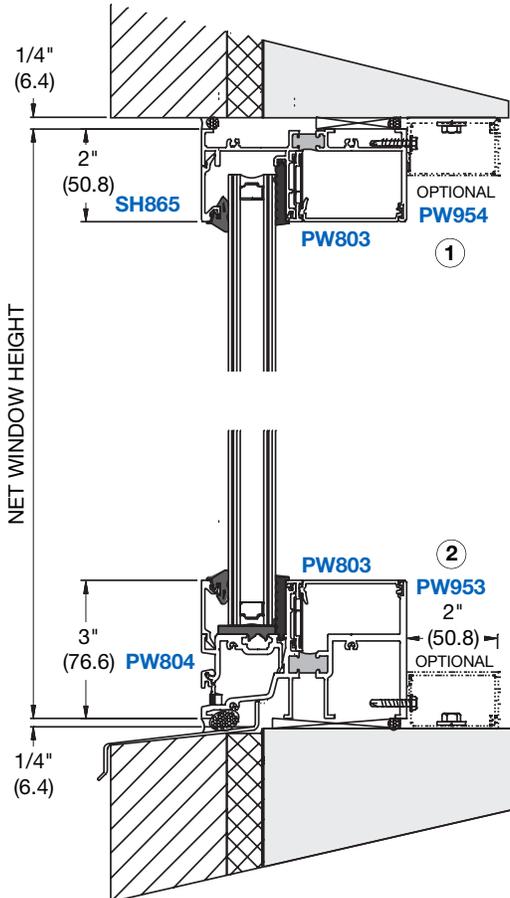
# BLAST MITIGATION

## Typical Details

FOR 1-1/32" (26) GLAZING

## Blast Resistant Fixed Window

• Defender Series BW8100



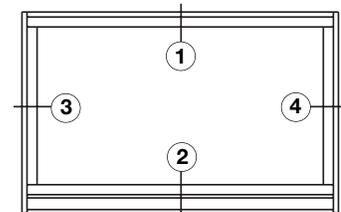
Block Frame  
Installation Method Shown

Maximum Frame Size  
60" x 90" (1524 x 2226)

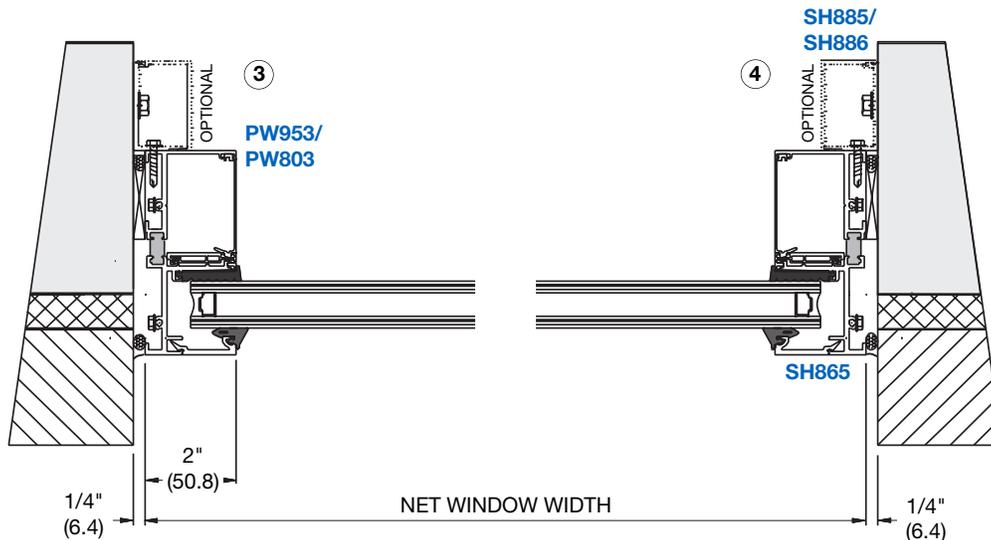
A complete set of details  
in DWG format is available  
at [usalum.com](http://usalum.com)

Meets or Exceeds Specifications:

- DoD - UFC 4-010-01 - (Jan 07)
  - ATFP
  - ISC - Security Design Criteria for Blast Protection for Windows
  - ASTM F 1642
- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12



TYPICAL ELEVATION



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# BLAST MITIGATION

## Special Features

## Blast Resistant Horizontal Sliding Window

FOR 1-1/32" (26) GLAZING

• Defender Series BW8200



The BW8200 Blast Resistant Horizontal Sliding Window offers that rare combination of smooth operation, durability, and toughness to meet blast mitigation requirements. The Defender Series of Blast Mitigation products are designed to provide protection for DoD and private sector facilities. Other Defender Series products include Storefront, Curtain Wall, Projected, Fixed, and Single Hung Windows

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Accepts 1-1/32" (26) Laminated Glazing
- Tested to AAMA CW60
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.35
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Even Sightlines
- Self Locking Latch and Adjustable Tandem Rollers for Ease of Operation
- Accessories Such as Screens, Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Complemented by the Series BW8000 Single Hung and Series BW8100 Fixed Windows
- Made in the U.S.A.



Blast Resistant Horizontal Sliding Windows

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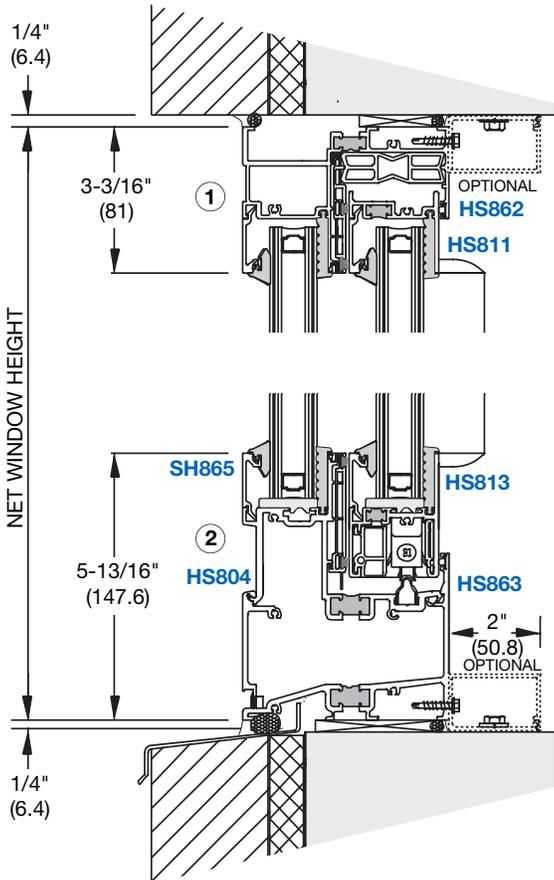
# BLAST MITIGATION

## Typical Details

FOR 1-1/32" (26) GLAZING

## Blast Resistant Horizontal Sliding Window

• Defender Series BW8200



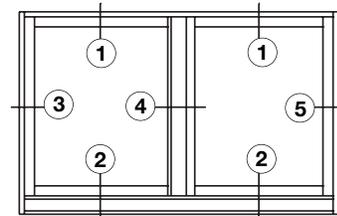
Block Frame  
Installation Method Shown

Maximum Frame Size  
71" x 51" (1803 x 1295)

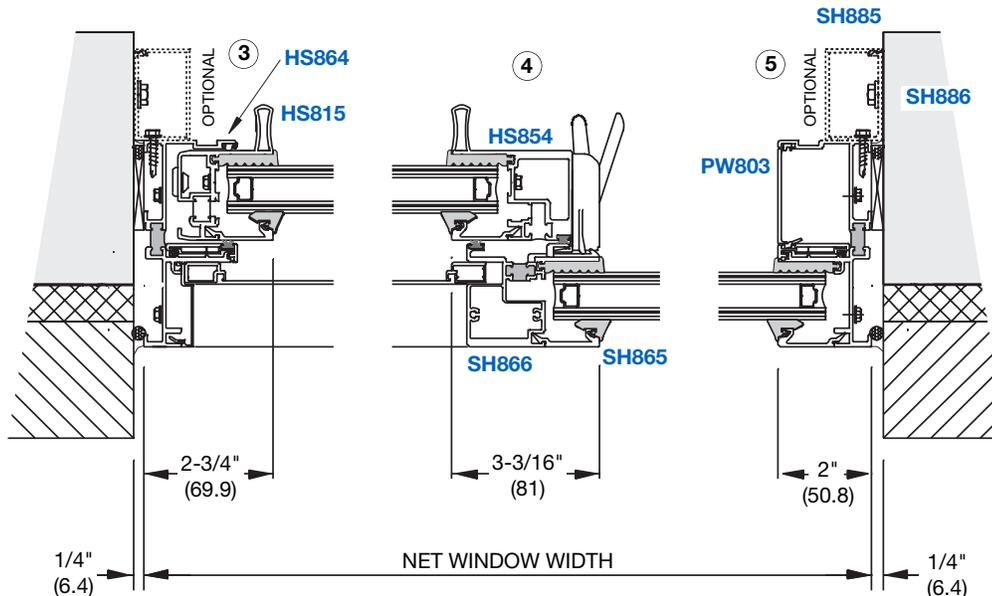
A complete set of details  
in DWG format is available  
at [usalum.com](http://usalum.com)

Meets or Exceeds Specifications:

- DoD - UFC 4-010-01 - (Jan 07)
  - ATPF
  - ISC - Security Design Criteria for Blast Protection for Windows
  - ASTM F 1642
- AAMA/WDMA/CSA 101/1.S.2/A 440-08
  - ASTM E 283-04
  - ASTM E 330-02
  - ASTM E 331-00
  - AAMA 1503
- NFRC - NFRC 100-2004
  - NFRC 200-2004
  - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12



TYPICAL ELEVATION



NET WINDOW WIDTH

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



# G

## ARCHITECTURAL SYSTEMS

- 'All-Glass' Door Systems
- Patch Hardware
- Laguna Series Door Hardware
- Heavy Glass Sliding Door Systems
- SPS Stacking Partition System
- Interior Office Partition Systems
- Architectural Railing Systems
- Architectural Metals
- Frameless Shower Hardware

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Toll Free Phone Service  
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Toll Free Fax Service  
**(866) 262-3299**

U.S. and Canada

**GRL**<sup>®</sup>  
**US ALUMINUM**

[usalum.com](http://usalum.com)



Stacking Glass Retail Storefront  
Los Angeles, CA

C.R. Laurence Company continues to offer the glazing industry innovative, high quality products as it has for over 40 years.

In the following pages you will find an extensive selection of architectural hardware for the construction of beautiful 'all-glass' storefronts and entrances, beginning with our patented Wedge-Lock™ Door Rails and our impressive line of Blumcraft Hardware. We have also included our newest product lines, the CRL Stacking Partition System, Interior Office Partition System, Sliding Glass Door Systems, Laguna Series 'All-Glass' Door Hardware, Patch Hardware, Railing Systems, Frameless Shower Hardware, and our rapidly growing line of Architectural Metals.

CRL supports our extensive product lines with a Technical Sales Department through our web site at [crlaurence.com](http://crlaurence.com). From the home page click on Contact Us, and then click on Technical Sales for Commercial Products. It's that easy!

## SYSTEM

## PAGES

• 'All-Glass' Door Systems .....	02-G1 thru 15-G1
• Patch Hardware .....	16-G1 thru 18-G1
• Laguna Series Door Hardware .....	19-G1 thru 21-G1
• Heavy Glass Sliding Door Systems.....	22-G1 thru 31-G1
• SPS Stacking Partition System .....	32-G1 thru 35-G1
• Interior Office Partition Systems.....	36-G1 thru 39-G1
• Architectural Railing Systems .....	40-G1 and 41-G1
• Architectural Metals .....	42-G1 and 43-G1
• Frameless Shower Hardware.....	44-G1 and 45-G1

For information or other assistance about C.R. Laurence Architectural Products, use our toll free phone or fax service numbers from anywhere in the U.S. or Canada

Toll Free Phone (800) 421-6144

Toll Free Fax (800) 262-3299

Contact CRL through our web site at [crlaurence.com](http://crlaurence.com)

# ARCHITECTURAL WEB SITE

CRL PRESENTS THE NEW HOME FOR ARCHITECTS, DESIGNERS, AND SPECIFIERS



## Architectural Products & Services

INSTANT ACCESS TO:

- SPECIFICATIONS | CAD DWG's | ENGINEERING REPORTS
- LEED STATEMENTS | PROJECT GALLERY | VIDEO LIBRARY

## INTRODUCING CRL-ARCH.com

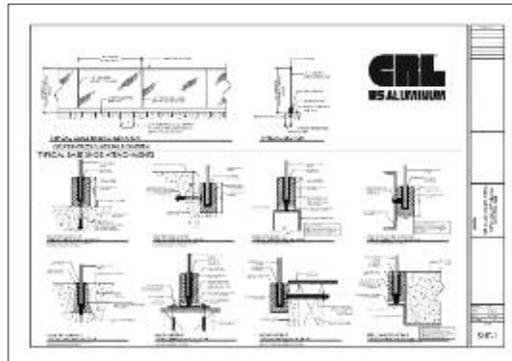
**CRL-ARCH.com** is the online reference for CRL Architectural Systems, designed with the architect, designer, specifier, and contractor in mind. Here you will find instant access to CAD Drawings, CSI Format Specifications, Engineering Reports, LEED® Statements, BIM Models, Project Galleries, and our extensive catalog library.

In addition to our array of online tools, all of our products are backed by a team of project managers, engineers, estimators, designers, and specialists, ready to help you with your project needs.

C.R. Laurence is the leading manufacturer of Architectural Railings, "All-Glass" Entrance Hardware, Storefronts, Exit Devices, Commercial Doors, Custom Cladding, Balanced Doors, Curtain Walls, Sunshades, and Frameless Shower Door Hardware. **CRL-ARCH.com** is the new home for CRL Architectural Products, including the family of dependable brands you've come to trust: C.R. Laurence, U.S. Aluminum, Blumcraft, Jackson, and Tajima.



Easy to find specifications, cad files, LEED® information, project galleries, catalogs, and much more!



Cad Files in both dwg and pdf formats.



Specifications in both doc and pdf formats.

# 'ALL-GLASS' SYSTEMS

## CRL Architectural Products

- Enhancing the World Through the Beauty of Glass
- Innovative Award Winning Systems for Commercial and Residential Environments

### GLASS ENTRANCE SYSTEM HARDWARE DRS DOOR RAIL SYSTEM

- Exclusive CRL Wedge-Lock™ Glass Securing System for Rapid Installation and Steadfast Holding Power
- Door Assembly Can Be Ready for Installation in Less Than 10 Minutes
- Universal Top and Bottom Rails Cut Inventory and Make Ordering Easier
- Dry Glazing Allows for Field Replacement
- Kwik-Adjust™ Pivot Alignment System Allows Jamb Alignment Without Removing the Door
- Internal Components Do Not Require Removal Before Installation
- Rigid Single Component Housing Will Not Shift or Fall Out of Adjustment
- Glass Securing Pads are Designed for Longevity in Extreme Environments



The CRL63A Architectural Hardware Master Catalog features more than 500 full-color pages containing the most comprehensive line of heavy glass hardware we've ever offered, including an extensive A-Z Product Index for quick look-up of products. The CRL63A is available for viewing, download or order through the Catalog Library at [crlaurence.com](http://crlaurence.com).



10", 6", and 4" Square

4" Tapered

2-5/16" Low Profile

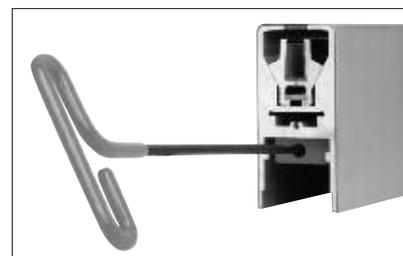
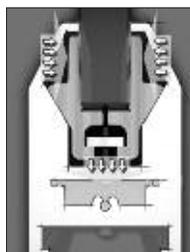


### HOW THE WEDGE-LOCK™ GLASS SECURING SYSTEM WORKS

The patented Wedge-Lock™ Glass Securing System is a totally original concept for securing the glass in the Door Rail. No more fumbling with multiple pieces, trying to align them properly. No more time wasted waiting for cement to dry, or in clean up.

The Wedge-Lock™ System works by applying pressure evenly along both sides of the glass. Simply tighten the jaw screws, accessed from the hardware pocket of the rail. The screws then draw down a flat stainless steel bar. The steel bar in turn pulls down the gripping jaws. This action then forces the jaws towards one another, creating a tremendous amount of force against the glass, holding it securely in place.

The Wedge-Lock™ Glass Securing System is so unique that it is covered by U.S. Patents 6,434,905 and 6,912,818 B2. Foreign Patents Pending.



U.S. Patents 6,434,905 and 6,912,818 B2.  
Foreign Patents Pending.

- Six Standard Finishes Plus Custom Finishes on Special Order



Black Powder Coat   Polished Brass   Brushed Stainless   Polished Stainless   Black Bronze Anodized   Satin Anodized

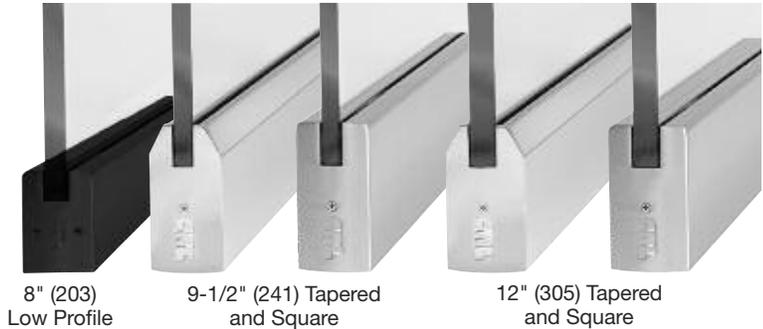
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# 'ALL-GLASS' SYSTEMS

## CRL Glass Entrance System Hardware

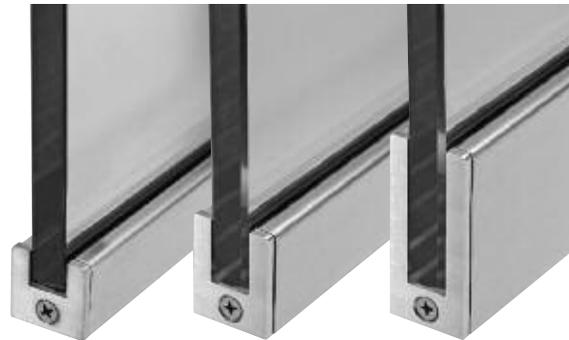
### CRL PATCH DOOR RAILS

- Patented Wedge-Lock™ Glass Securing System
- Adjust and Align Doors Without Removal
- Available With or Without Locks
- Six Standard Architectural Finishes, With Custom Finishes Available
- Ready-to-Ship Models From CRL Inventory
- Matching Sidelite Rails



### CRL SLENDER PROFILE DOOR RAILS

- Dry Glaze Slender Profile Door Rails Are Only 1" (25) Wide
- For Use With 1/2" (12) Tempered Glass
- Available in Three Heights With or Without a Lock
- Brushed or Polished Stainless Steel Finishes
- Custom 1" (25) Slender Profile Vertical Stiles Available on Special Order



### CRL WET GLAZED DOOR RAILS

- Three Popular Designs Available in Six Architectural Finishes
- Stock and Custom Sizes Available
- Available Matching Sidelite Rails
- Complete Door Kits Featuring These Rails Are Also Available



### ACCESSORIES



# 'ALL-GLASS' SYSTEMS

## CRL Door Rails



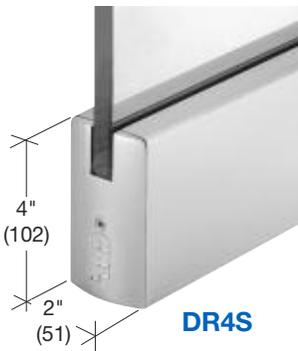
Black Powder Coat    Polished Brass    Brushed Stainless    Polished Stainless    Black Bronze Anodized    Satin Anodized



- **Unmatched Selection of Square or Tapered Models**

We offer the most comprehensive Door and Sidelite Rail program in the industry. We stock 2-5/16", 4", 6", and 10" tall Door and Sidelite Rails in six standard architectural finishes, and offer a large variety of powder-coated options as well as custom finishing. Our Door Rails are prepped to accept most all of the standard hardware on the market today, but we don't stop there. We also offer custom fabrication to handle the rest, and we do it faster than any of our competitors.

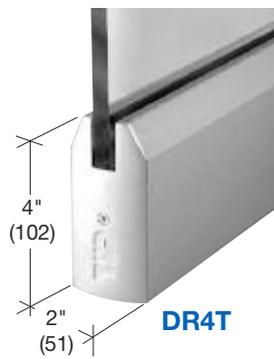
- **Six Standard Finishes Plus Optional Custom Finishes**



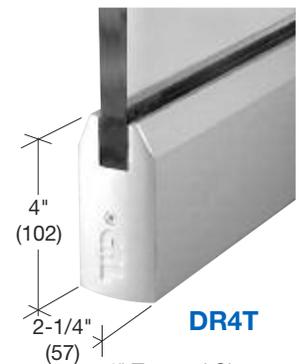
**DR4S**  
4" Square Shape  
Full Length Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



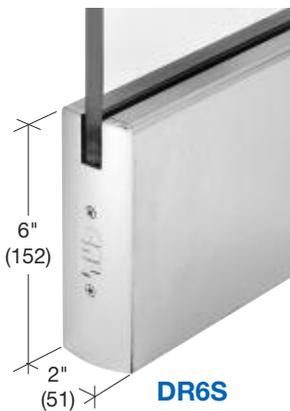
**DR4S**  
4" Square Shape  
Full Length Door Rails  
for 5/8" (16) or  
3/4" (19) Glass



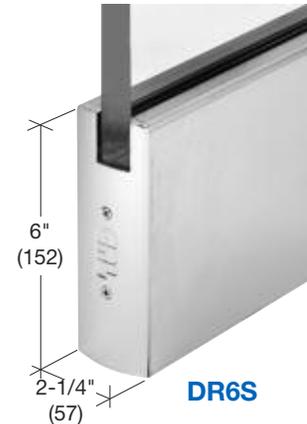
**DR4T**  
4" Tapered Shape  
Full Length Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



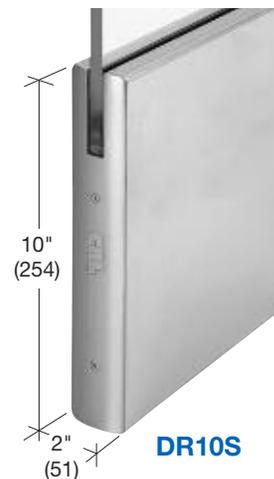
**DR4T**  
4" Tapered Shape  
Full Length Door Rails  
for 5/8" (16) or  
3/4" (19) Glass



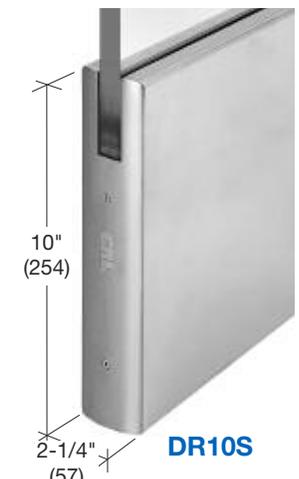
**DR6S**  
6" Square Shape  
Full Length Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



**DR6S**  
6" Square Shape  
Full Length Door Rails  
for 5/8" (16) or  
3/4" (19) Glass



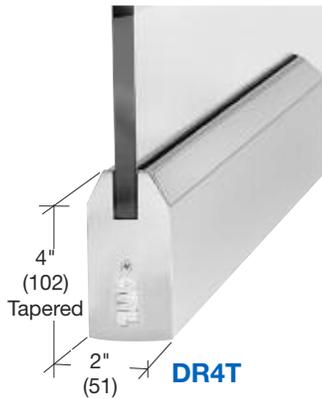
**DR10S**  
10" Square Shape  
Full Length Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



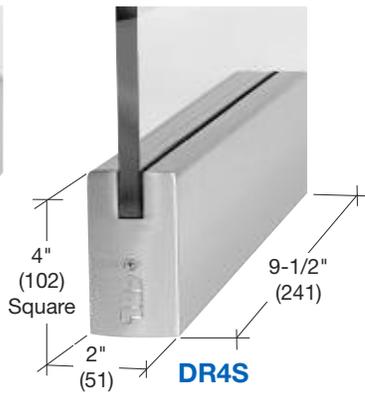
**DR10S**  
10" Square Shape  
Full Length Door Rails  
for 5/8" (16) or  
3/4" (19) Glass

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# 'ALL-GLASS' SYSTEMS



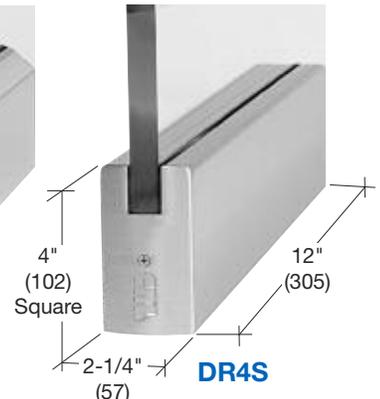
**DR4T**  
9-1/2" Patch Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



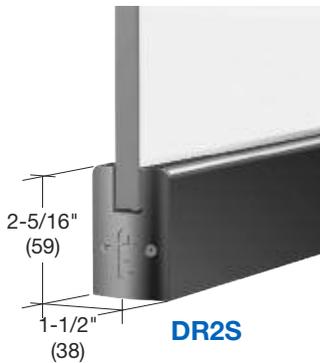
**DR4S**  
9-1/2" Patch Door Rails  
for 3/8" (10) or  
1/2" (12) Glass



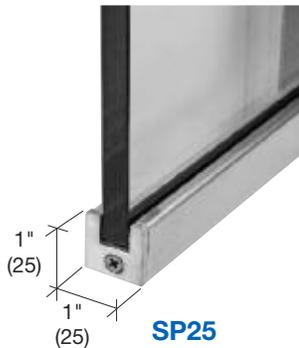
**DR4T**  
12" Patch Door Rails  
for 5/8" (16) or  
3/4" (19) Glass



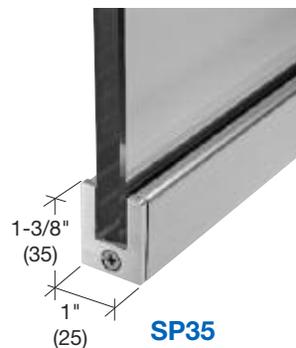
**DR4S**  
12" Patch Door Rails  
for 5/8" (16) or  
3/4" (19) Glass



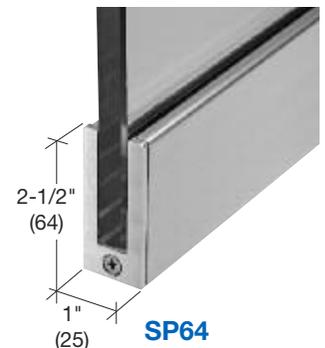
**DR2S**  
Low Profile Door Rails  
for 1/2" (12) Glass



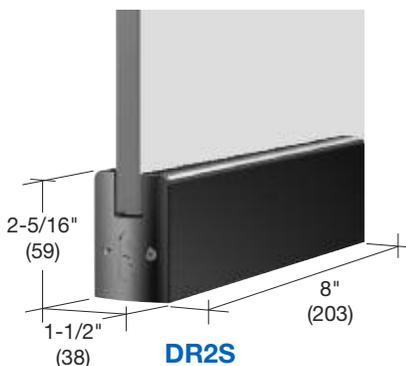
**SP25**  
Slender Profile Door Rails  
for 1/2" (12) Glass



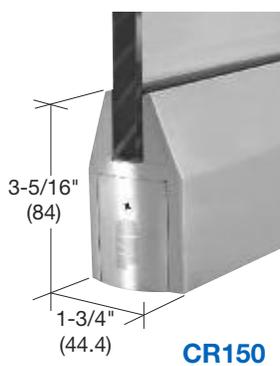
**SP35**  
Slender Profile Door Rails  
for 1/2" (12) Glass



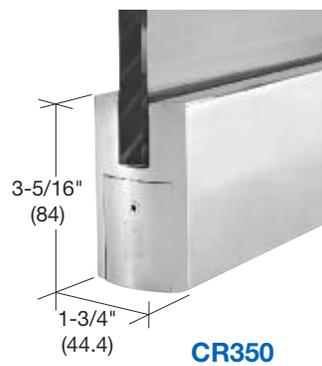
**SP64**  
Slender Profile Door Rails  
for 1/2" (12) Glass



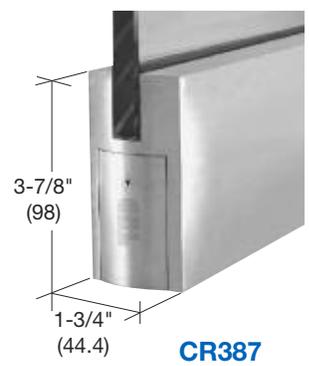
**DR2S**  
Low Profile Patch Door Rails  
8" (203) Length  
for 1/2" (12) Glass



**CR150**  
3-5/16" Tapered Wet  
Glazed Door Rails  
for 3/8" (10) to  
1/2" (12) Glass



**CR350**  
3-5/16" Square Wet  
Glazed Door Rails  
for 3/8" (10) to  
1/2" (12) Glass



**CR387**  
3-7/8" Square Wet  
Glazed Door Rails  
for 3/8" (10) to  
1/2" (12) Glass

# 'ALL-GLASS' SYSTEMS

## CRL Dry Glazed Frameless Glass Door Kits



- Door Only or Complete Entrance Kits Available
- 3'-0" Single Door or 6'-0" Double Door Kits for Use With 1/2" (12) Tempered Glass
- Brushed or Polished Stainless Steel, Clear or Black/Bronze Anodized Finishes

CRL now offers Dry Glazed Frameless Glass Door Kits for single or double door entrances in Door Only or Complete Entrance Kits. All you supply is the 1/2" (12) tempered glass.

All Kits utilize our patented Dry Glaze Rails, and are available in 'P' or 'BP' style door types in brushed or polished stainless steel, clear or black/bronze anodized finishes. They all work with 1/2" (12) clear fully tempered glass, and require only two 5/8" (16) holes 12" (305) on center for the Pull Handle. Net door width is 35-3/4" (908).

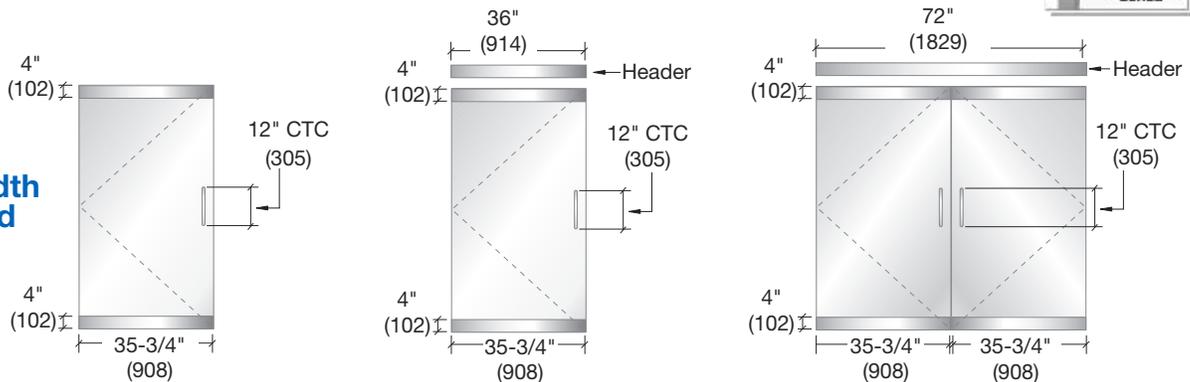
Door Only Kits include Rails, Jackson Overhead Concealed Door Closer with Bottom Pivot, and a Pull Handle. Complete Entrance Kits also include a 1-3/4" x 4" (45 x 102) Header prepped for a Jackson Overhead Concealed Door Closer. All Kits are also available with Locks in the Bottom Rails.



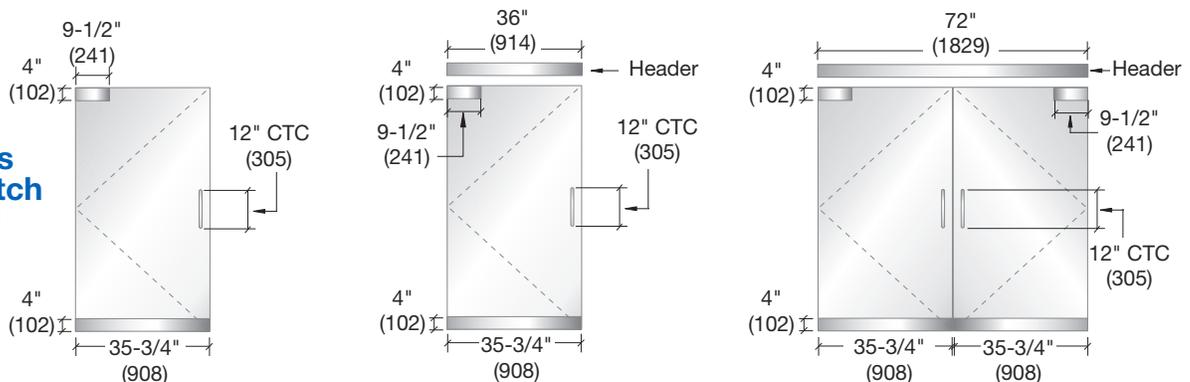
**Series DR4S**  
Wedge-Lock™  
Dry Glaze Rail



### P-Style Kits With Full Width Rails Top and Bottom



### BP-Style Kits With Top Patch Rail and Full Bottom Rail



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

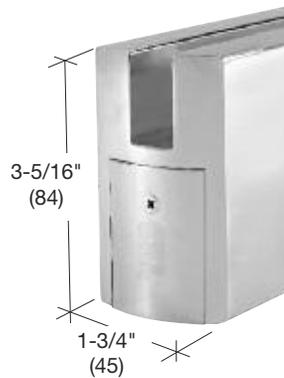
## CRL Wet Glazed Frameless Glass Door Kits

- Door Only or Complete Entrance Kits
- 3'-0" Single Door or 6'-0" Double Door Kits for Use With 3/8" to 1/2" (10 to 12) Tempered Glass
- Brushed or Polished Stainless Steel, Clear or Black/Bronze Anodized Finishes

CRL now stocks Wet Glazed Frameless Glass Door Kits for single or double door entrances in Door Only or Complete Entrance Kits. All you supply is the 3/8" to 1/2" (10 to 12) tempered glass.

All Kits utilize our Series CR350 Wet Glaze Rails, and are available in 'P' or 'BP' style door types in brushed or polished stainless steel, clear or black/bronze anodized finishes. They all work with 3/8" to 1/2" (10 to 12) fully tempered glass, and require only two 5/8" (16) holes 12" (305) on center for the Pull Handle. Net door width is 35-3/4" (908).

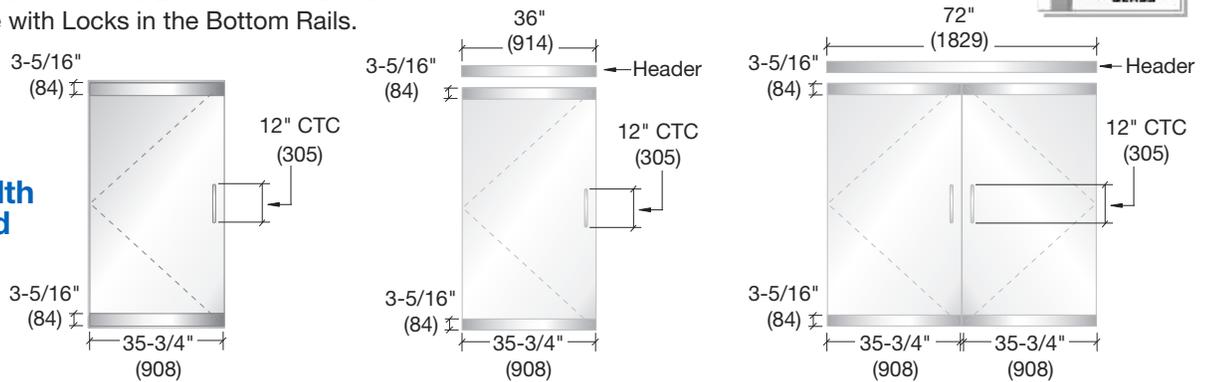
Door Only Kits include Rails, Jackson Overhead Concealed Door Closer with Bottom Pivot, and a Pull Handle. Complete Entrance Kits also include a 1-3/4" x 4" (45 x 102) Header prepped for a Jackson Overhead Concealed Door Closer. All Kits are also available with Locks in the Bottom Rails.



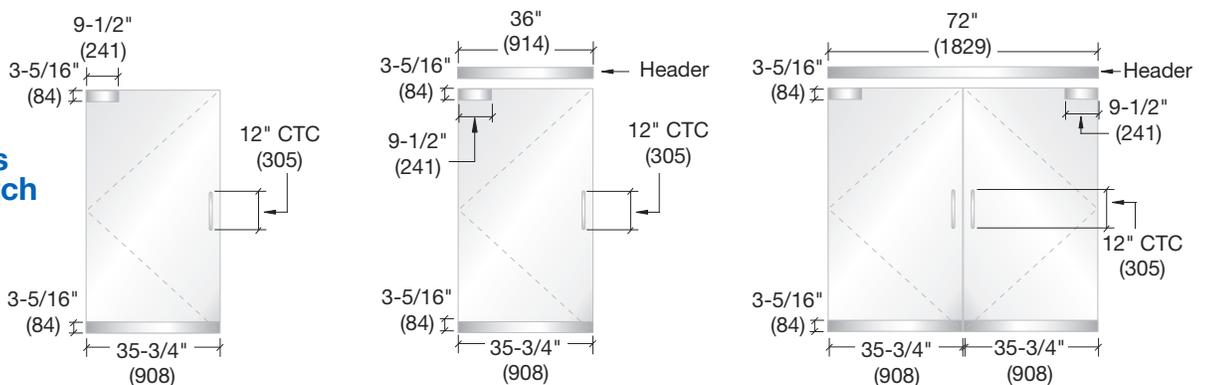
Series CR350 Wet Glaze Rail



### P-Style Kits With Full Width Rails Top and Bottom



### BP-Style Kits With Top Patch Rail and Full Bottom Rail



# 'ALL-GLASS' SYSTEMS

## CRL Sidelite Rails and U-Channel

### CRL SIDELITE RAILS WITH TOP LOAD ROLL-IN GASKET



- Five Styles in Up to 11 Architectural Finishes
- Sidelite Rails Match Our Door Rails for Even Sightline

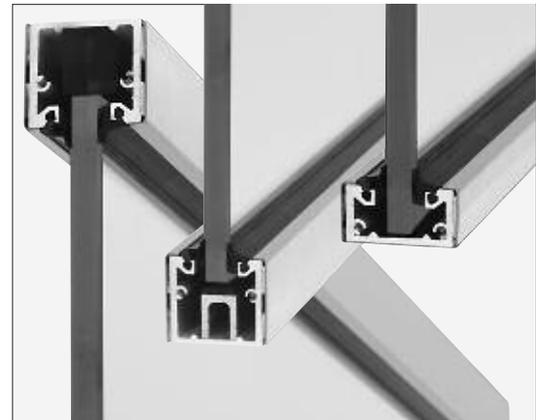


10" Square 6" Square 4" Square 4" Tapered 2-5/16" Low Profile

### CRL COMBINATION WIDE U-CHANNEL AND NARROW HEADER

- Available in Stock Lengths, Fabricated Headers, or Headers With Side Pockets for "Lift and Drop" Panel Glazing
- Matches the Width of Our Door and Sidelite Rails
- Accepts Roll-In Gasket, Top Pivot Block, and Flush Snap-In Insert
- Accepts 3/8", 1/2", 5/8", and 3/4" (10 to 19) Glass
- 11 Architectural Finishes
- Custom Sizes and Finishes Available

Combination Wide U-Channel and Narrow Header



Regular U-Channel with Aluminum/Neoprene Setting Block

Shallow U-Channel

### CRL REGULAR AND SHALLOW U-CHANNELS WITH TOP LOAD ROLL-IN GASKET

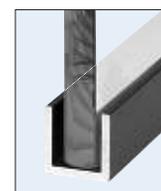
- Accepts 3/8" (10) or 1/2" (12) Glass
- Both Depths Available in Six Standard Architectural Finishes

### CRL WET/DRY GLAZE U-CHANNELS

- Accepts 3/8" (10) or 1/2" (12) Glass
- Offered in Three Standard Heights
- 120" (3.05 m) and 240" (6.1 m) Stock Lengths Available in Six Finishes
- Custom Finishes Available



Wet Glaze U-Channel



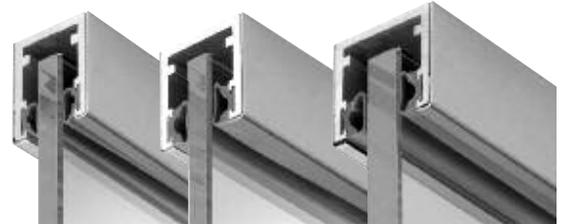
Wet/Dry Glaze U-Channel



# 'ALL-GLASS' SYSTEMS

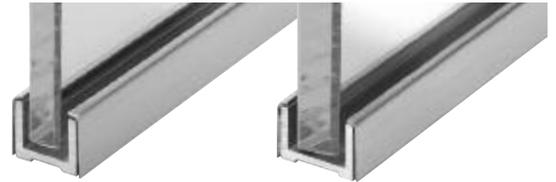
## CRL-Blumcraft Head Channels

- Channels for 1/2" or 3/4" (12 or 19) Tempered Glass
- Accepts Glazing Gaskets, Top Pivots, and Snap-In Filler Strips
- Available in Five Architectural Finishes
- Custom Finishes, Including Oil Rubbed Bronze, Are Available on Special Order



## CRL-Blumcraft Wet Glaze U-Channels

- Channels for 1/2" or 3/4" (12 or 19) Tempered Glass
- Available in Five Architectural Finishes
- Custom Finishes, Including Oil Rubbed Bronze, Are Available on Special Order



## CRL-Blumcraft Floating Transom System

- Suspended Stainless Steel Rods
- No Holes or Notches in Transom or Sidelites
- For 1/2" or 3/4" (12 or 19) Tempered Glass
- Available in Five Architectural Finishes
- Custom Finishes Including Oil Rubbed Bronze Available on Special Order



## CRL-Blumcraft Catalogs



**CAT. NO. B2010**  
Tempered Glass Doors, Panic, Deadbolt, and Dummy Hardware



**CAT. NO. D2010**  
Display Case Door Series 1301



**CAT. NO. HW2010**  
Tubular Architectural Hardware



**CAT. NO. M2010**  
Railings, Smoke Baffles, Glass Gates

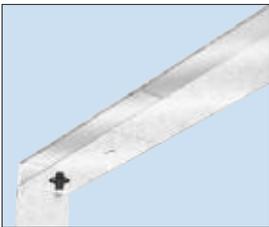
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL Commercial Glass Door Accessories

### CRL STOCK SIZE HEADERS FOR OVERHEAD CONCEALED DOOR CLOSERS

- Five Stock Architectural Finishes
- Includes Snap-In Cover Plates
- 4" and 4-1/2" (102 and 114) Widths



Typical Installation Showing Exposed Spindle of Overhead Closer



36" (914) Single Door  
72" (1829) Double Door  
Custom Lengths



### CRL CUSTOM LENGTH DOOR HEADERS WITH GLAZING POCKET



Fixed Panel Section With Glazing Gasket



Header Section

- Five Stock Finishes
- Available in 4" or 4-1/2" (102 and 114) Widths for 3/8", 1/2", 5/8", and 3/4" (10 to 19) Glass



Typical Double Glass Doors with Sidelites

### CRL FLOATING HEADER FOR OVERHEAD CONCEALED DOOR CLOSERS

- Available for 1/2" (12) Glass-to-Glass or Glass-to-Wall Installations With or Without Overhead Concealed Door Closers
- Stock 36" (914) Single and 72" (1829) Double Headers, With Custom Sizes Available
- Available in Five Stock Architectural Finishes



### CRL HAT CHANNEL DOOR CLOSER HEADER FOR SINGLE AND DOUBLE DOORS

- Surrounded by "L" Angle to Support Ceiling Tiles
- White Finish to Match Ceiling "T" Bar
- Provides an Almost Invisible Look



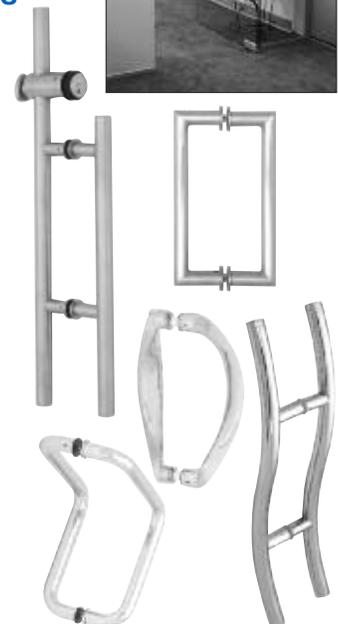
### CRL HAT CHANNEL FOR FIXED GLAZING

- White Finish to Match Ceiling "T" Bar
- Accepts 3/8" or 1/2" (10 or 12) Glass
- Glass Secured With Silicone Sealant or Roll-in Glazing Vinyl



### COMPLETE LINE OF COMMERCIAL DOOR PULLS

- Beautiful Accessories for Frameless 'All-Glass' Entrance Doors and Sidelites
- Custom Finishes and Sizes Available
- New Selection of Locking Ladder Pulls



# 'ALL-GLASS' SYSTEMS

## CRL Center Locks for 'All-Glass' Doors

- Available in 4" x 10", 6" x 10", and New Low Profile Models
- Choose From Three Types: Deadlatch, Long Throw Deadlock, and Hook Throw Deadlock
- For Use With 1/2" (12) Tempered Glass; Custom Sizes for Other Glass Thicknesses Available on Special Order
- Installs Easily With Bolts; No Messy Silicone or Cement Required
- Available in Five Stock Finishes Plus Custom Finishes on Special Order



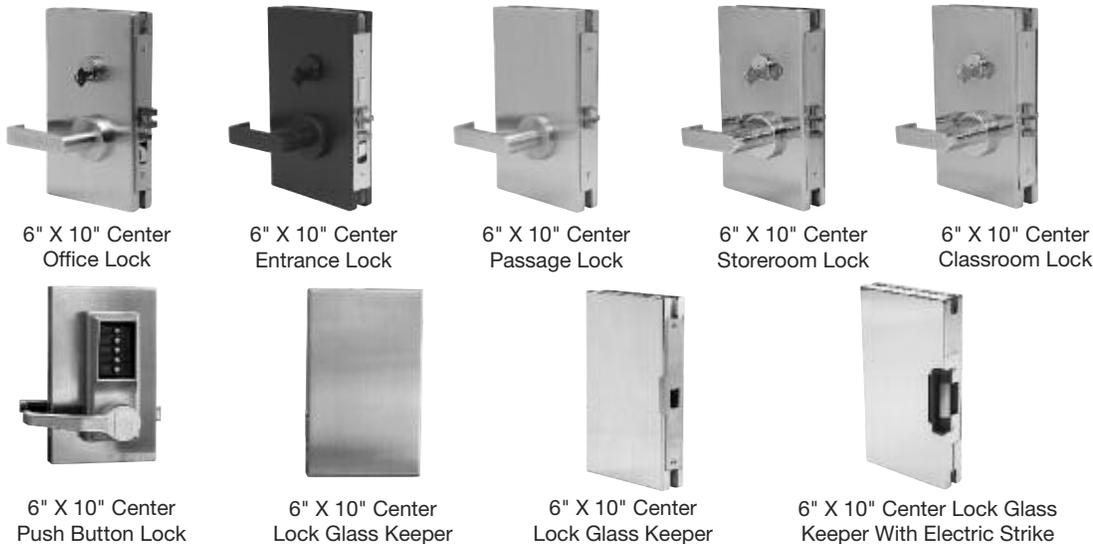
CRL Center Locks are available in three types: Deadlatch, Long Throw Deadlock, and Hook Throw Deadlock. A variety of pull handles and latch-operating devices (Thumbturns, Keyed Cylinders, Lever Handles, and Paddle Handles) are available to accommodate different requirements.

We carry stock units for immediate shipment, and can fabricate custom units that can be shipped within one week.

### 4" X 10" CENTER LOCKS AND GLASS KEEPERS



### 6" X 10" CENTER LOCKS AND GLASS KEEPERS



### LOW PROFILE CENTER LOCKS AND KEEPERS



2-3/4" X 5-5/8" Low Profile Center Lock



1-3/4" X 5-5/8" Low Profile Glass Keeper

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL-Blumcraft 150 Series Doors and Sidelites

- **Narrow Profile Rails Fully Glazed With 1/2", 5/8" or 3/4" (12, 16 or 19) Tempered Glass**
- **Six Standard Architectural Finishes**
- **Custom Finishes Available**
- **Available With Matching Fully Glazed Sidelites**



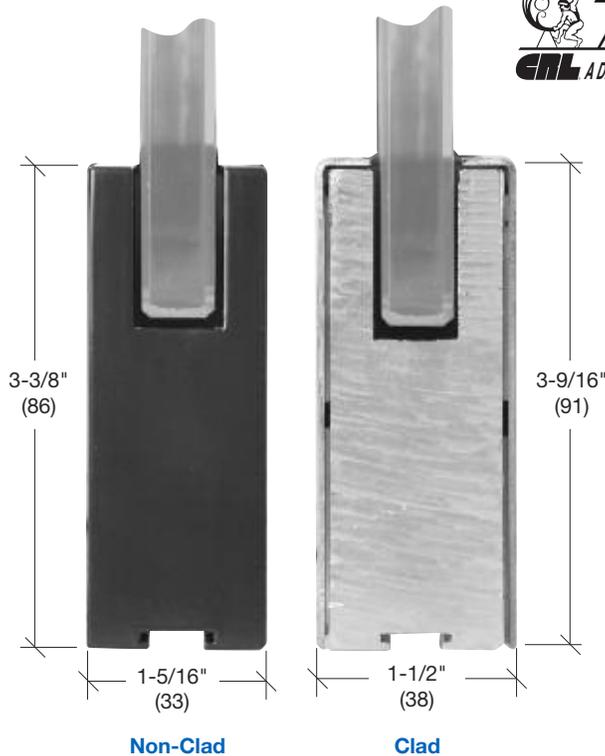
CRL-Blumcraft 150 Series Doors and Sidelites are supplied fully glazed with 1/2", 5/8" or 3/4" (12, 16 or 19) tempered glass in clear, tinted, or low-iron. Rails are bonded to the glass, and can be prepped for a wide variety of door closer and pivot hardware. A Bottom Rail Lock option is available, or the doors can come complete with any of our Egress Handles mounted on the door, ready to install in the opening.

150 Series Doors have a solid aluminum, narrow profile rail design which can be used top or bottom. Available in six standard finishes: satin anodized, black bronze anodized, black powder coat, brushed and polished stainless steel, and polished brass. Custom finishes are available on special order. Maximum door size is 42" (1067) wide by 108" (2743) tall.



**Series 150 Door**

Shown With Panic Handle PA100D



Typical Top or Bottom Rail for 150 and 250 Series Doors and Sidelites

Adjustable pivot blocks are installed in the Rails to suit the door closer hardware selected for the project. When overhead door closers are specified, the 150 Series Doors come with an adjustable pivot arm in the Top Rail, and a heavy-duty bottom pivot designed to work with the narrow profile rails. Similarly, when floor mounted door closers are specified, the Doors come with an adjustable heavy-duty top and bottom inserts to accept the floor mounted door closer and top pivot hardware.

Fully glazed sidelites are available to match the 150 Series Doors. They have Rails made from solid aluminum, anodized or clad, just like the doors, creating a uniform look throughout the opening.

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## CRL-Blumcraft 250 Series Doors and Sidelites

- Narrow Profile Rails With Vertical Stiles
- Fully Glazed With 1/2", 5/8" or 3/4" (12, 16 or 19) Tempered Glass
- Six Standard Architectural Finishes
- Custom Finishes Available
- Available With Matching Fully Glazed Sidelites

CRL-Blumcraft 250 Series Doors and Sidelites are supplied fully glazed with 1/2", 5/8" or 3/4" (12, 16 or 19) tempered glass in clear, tinted, or low-iron. Rails and Vertical Stiles are bonded to the glass, and can be prepped for a wide variety of door closer and pivot hardware. A Bottom Rail Lock option is available, or the doors can come complete with any of our Egress Handles mounted on the door, ready to install in the opening.

250 Series Doors have the same solid aluminum narrow profile rail design found on the 150 Series Doors, but also have narrow vertical stiles with or without weatherstripping. Available in six standard finishes: satin anodized, black bronze anodized, black powder coat, brushed and polished stainless steel, and polished brass. Custom finishes are available on special order. Maximum door size is 42" (1067) wide by 108" (2743) tall.

Adjustable pivot blocks are installed in the Rails to suit the closer hardware selected for the project. When overhead door closers are specified, the 250 Series Doors come with an adjustable pivot arm in the Top Rail, and a heavy-duty bottom pivot designed to work with the narrow profile rails. Similarly, when floor mounted door closers are specified, the Doors come with an adjustable heavy-duty top, and bottom inserts to accept the floor mounted door closer and top pivot hardware.



**250 Series Door**

Shown With Deadbolt Handle DB170JS



**Aluminum**  
250 Series Door Stile  
Without Weatherstripping



**Bronze or Stainless Steel**  
250 Series Door Stile  
With Weatherstripping



Fully glazed sidelites are available to match the 250 Series Doors. They have rails made from solid aluminum, anodized or clad, just like the doors, creating a uniform look throughout the opening.

# 'ALL-GLASS' SYSTEMS

## CRL-Blumcraft 1301 Series Entrance Doors and Sidelites



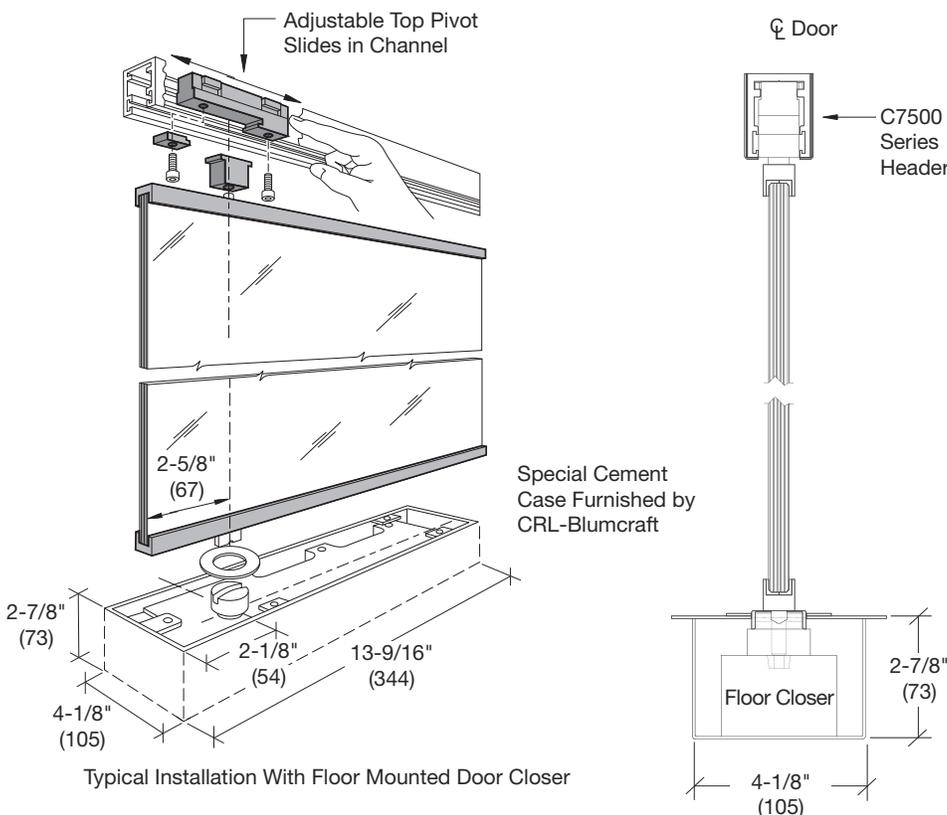
- **More Glass, Less Metal!**
- **Fully Glazed With 1/2", 5/8" or 3/4" (12, 16 or 19) Tempered Glass**
- **Ready to Install, No Assembly Required**
- **Solid Stainless Steel or Bronze Rail Construction**
- **Rails as Slim as 3/4" x 3/4" (19 x 19)**
- **Complete With Egress Handle if Required**



CRL-Blumcraft 1301 Series Entrance Doors are the original. Often imitated but never matched, this system provides the most glass with the least metal of any entrance door system in the industry.

Made from solid stainless steel or bronze and finished in either brushed or mirror finishes, as well as oil rubbed bronze. Top Rail sizes do vary based on types of hardware used on the doors. Consult Tech Sales for more information on your particular application.

A standard 1301 Series System includes our C7500 Series Head Channel with adjustable top pivot and customized floor closer, providing the installer with ample adjustment opportunities. Common 4", 4-1/2", and 6" (102, 114, and 152) Headers are also available to meet design requirements.



- **Compatible With Overhead Door Closers**

When job conditions do not allow for a floor mounted door closer, the 1301 Series Entrance Door can be configured to work with an overhead concealed door closer. A custom 1" (25) high Top Rail with sideload adaptor and specially designed bottom pivot make this application clean and simple, while maintaining the "more glass, less metal" theme.

- **Fully Glazed Matching Fixed Panels**

Fully glazed sidelites are also available with matching Top and Bottom Rails. For those installations that require field glazing of the fixed panels we offer Wet Glaze Channels.



# 'ALL-GLASS' SYSTEMS

## CRL-Blumcraft 1200 Series Doors

- Doors Up to 12 Feet (3.6 m) Tall
- No Top or Bottom Rails
- Fully Glazed With 1/2" (12) Tempered Glass
- Patented Wedge-Lock™ Glass Securing System
- Available in Six Standard Architectural Finishes



CRL-Blumcraft 1200 Series Doors can be made up to 12 feet (3.6 m) tall and have no top or bottom rails. Instead they have a Vertical Pivot Tube that runs the height of the door, achieving what appears to be truly 'all-glass' door.

1200 Series Doors are supplied fully glazed with 1/2" (12) tempered glass in clear, tinted, or low-iron. We have incorporated our patented Wedge-Lock™ Glass Securing System into a 5" (127) diameter Vertical Pivot Tube, ensuring a non-slip environment for the life of the door. The Pivot Tube is clad in one of six architectural finishes: satin anodized, black bronze anodized, black powder coat, brushed and polished stainless steel, and polished brass. Custom finishes are available on special order.

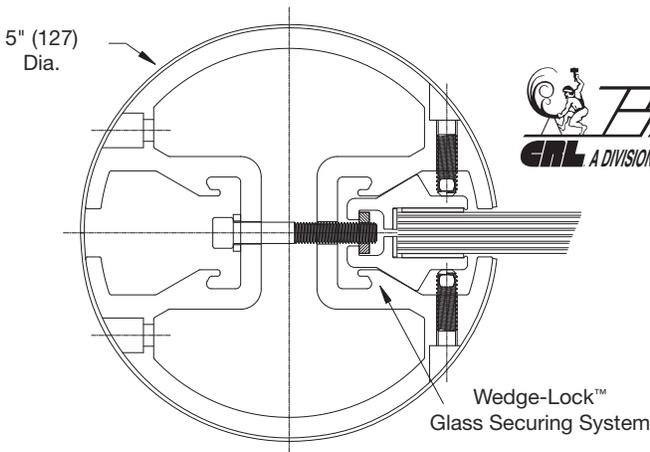
With no rails top or bottom, the entire weight of the door is transferred through the Vertical Pivot Tube to a specially engineered, heavy-duty, load-bearing cement case, independent of the floor mounted door closer. 1200 Series Doors utilize a heavy-duty walking beam pivot at the top of the Vertical Pivot Tube that can be incorporated into a variety of different headers to create the desired look. Floor mounted door closer functionality is preserved in this uniquely different entrance system.



### LOCKING HARDWARE

1200 Series Doors can be equipped with any of our Egress Handles, Locking Ladder Pulls, or Patch Locks to offer a secure opening. All hardware comes mounted to the door and is ready for installation.

### WEDGE-LOCK™ GLASS SECURING SYSTEM



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL Frameless Storefront and Entrance Patch Hardware

- An Excellent Choice for 'All-Glass' Entrances
- Provides Frameless Storefront Appearance for Unobstructed Display of Merchandise
- Allows Combination of Aesthetics and Versatility
- A Complete Selection of Products Including Patch Fittings, Inserts and Pivots, Lever Locks and Latches, Concealed Overhead and Floor Closers, Door Handles, and Many More Accessories



### COMMON APPLICATIONS:

- Mall Fronts
- Retail Outlets
- Hotels
- Arenas and Museums
- Office Buildings
- Restaurants and Clubs



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## POPULAR CONFIGURATIONS OF TEMPERED GLASS ASSEMBLIES



Single Door With Manual Top and Bottom Pivots



Single Door With Floor Closer



Single Door With Concealed Overhead Closer



Single Door and Sidelite With Top and Bottom Manual Pivots



Single Door and Sidelite With Floor Closer



Single Door and Sidelite With Concealed Overhead Closer



Single Door and Transom With Top and Bottom Manual Pivots



Single Door and Transom With Floor Closer



Single Door, Transom, and Sidelite With Top and Bottom Manual Pivots



Single Door, Transom, and Sidelite With Floor Closer



Single Door, Transom, and Sidelites With Top and Bottom Manual Pivots



Single Door, Transom, and Sidelites With Floor Closer



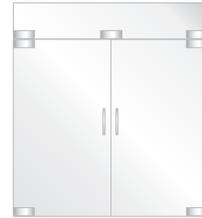
Paired Doors With Top and Bottom Manual Pivots



Paired Doors With Floor Closers



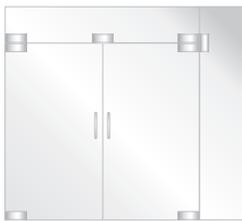
Paired Doors With Concealed Overhead Closers



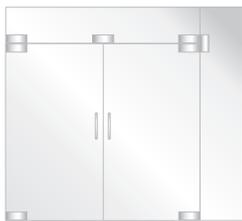
Paired Doors and Transom With Top and Bottom Manual Pivots



Paired Doors and Transom With Floor Closers



Paired Doors, Transom, and Sidelite With Top and Bottom Manual Pivots



Paired Doors, Transom, and Sidelite With Floor Closers



Paired Doors, Transom, and Sidelites With Top and Bottom Manual Pivots



Paired Doors, Transom, and Sidelites With Floor Closers



# 'All-GLASS' SYSTEMS

## CRL Beretta Series Patch Fitting System for Pivoting 'All-Glass' Doors

- New Contemporary Style for Use With 3/8" or 1/2" (10 or 12) Tempered Glass
- Minimal Glass Fabrication Required
- Great for Interior Offices, Conference Rooms or Display Cases
- Available in Polished Chrome and Brushed Nickel Finishes

The Beretta Series is the latest addition to our comprehensive Patch Fitting Program, and it gives the typical 'all-glass' door a totally new look! Beretta's cylindrical design offers a unique and fresh look for interior office or conference room doors. The compact closing mechanism reduces the impact a typical closer has on an opening, and with the availability of free-swinging top and bottom pivots the doors look like they are floating on air.

- Choose From a Complete Array of Components



**Model BS10**  
Self-Closing Floor Closer



**Model BS30**  
Top Door Patch With Pivot



**Model BS60**  
End Mount Light-Duty Fixed Panel Clamp



**Model BS20**  
Self-Closing Floor Closer With Door Patch



**Model BS40**  
Transom/Wall Mount Pivot Patch



**Model BS70**  
End Mount Heavy-Duty Fixed Panel Clamp



**Model BS8X8** 8" CTC Pull Handle  
**Model BS20X20** 20" CTC Pull Handle



**Model BS50**  
Bottom Door Patch With Pivot



**Model BS80**  
Wall Mount Fixed Panel Clamp

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# 'All-GLASS' SYSTEMS

## CRL Laguna Pivot Door System

- All 316 Alloy Brushed Stainless Steel Construction
- Ideal for Interior Room Applications
- For Use With 3/8" or 1/2" (10 or 12) Tempered Glass
- Comes With All Fasteners Needed for Either Flush Mount (Countersunk) or Surface Mount (Straight Hole) Glass Fabrication

Our Laguna Series Hardware brings a contemporary look to interior home or office partitions. Made of high-grade 316 alloy stainless steel, it will give years of reliable function and modern beauty to your projects.

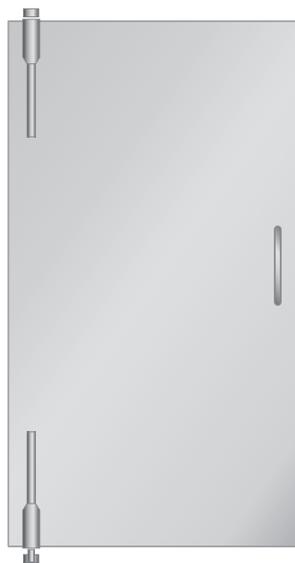
The CRL Laguna Pivot Door System can be used with free-swinging doors, or doors controlled by floor mounted door closers. CRL provides you with all of the Glass Fasteners for either flush mounting, which requires a countersunk hole, or surface mounting, where a straight hole is needed. The Glass Fasteners will accommodate either 3/8" or 1/2" (10 or 12) tempered glass.



Flush Mount Fastener



Surface Mount Fastener



Model LS14BS



Model LS24BS

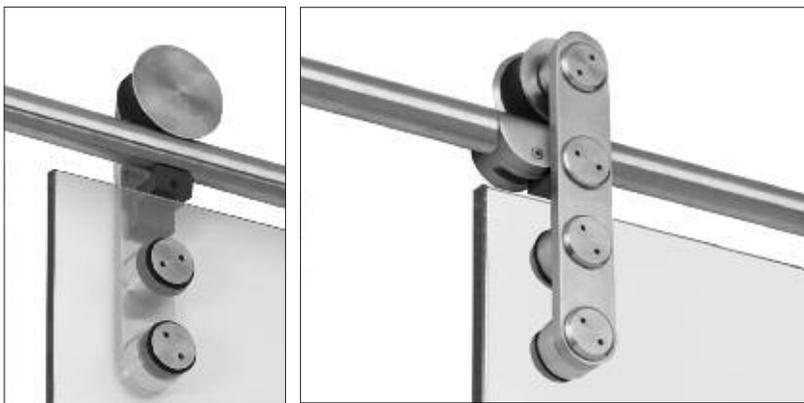


Model LS34BS

# 'All-GLASS' SYSTEMS

## CRL Laguna Series Sliding Glass Door System With Anti-Lift Safety Features

- New Anti-Lift Features for Added Safety
- All 316 Alloy Brushed Stainless Steel Construction
- Ideal for Interior Applications
- For Use With 3/8" or 1/2" (10 or 12) Tempered Glass
- Comes With All Fasteners Needed for Either Flush (Countersunk) or Surface (Straight Hole) Mounting
- Custom Adaptor Kits Available for Wood Door Applications



**Model LS302BS**  
Wall Mount Clamp



**Model LS303BS**  
Glass Mount Clamp

### TYPICAL WALL MOUNT INSTALLATION



### TYPICAL GLASS MOUNT INSTALLATION



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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'All-GLASS' SYSTEMS

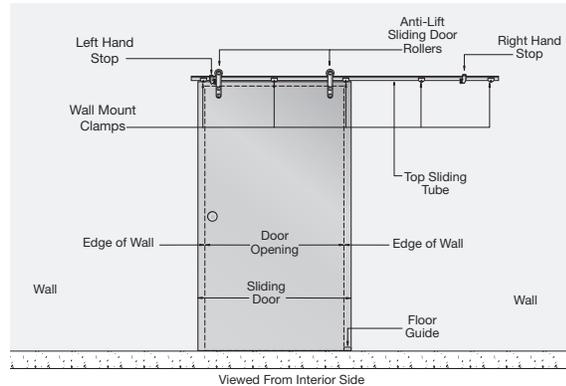
## CRL Laguna Series Sliding Glass Door Kits

### WALL MOUNT SINGLE SLIDER KIT

- All Kits Contain the Necessary Hardware to Complete the Installation (Except the Tempered Glass)



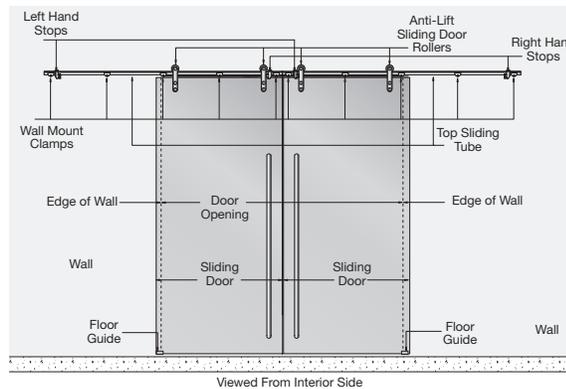
Model LSWM3BS



### WALL MOUNT BI-PARTING SLIDER KIT

- All Kits Can Be Used With 3/8" (10) or 1/2" (12) Tempered Glass

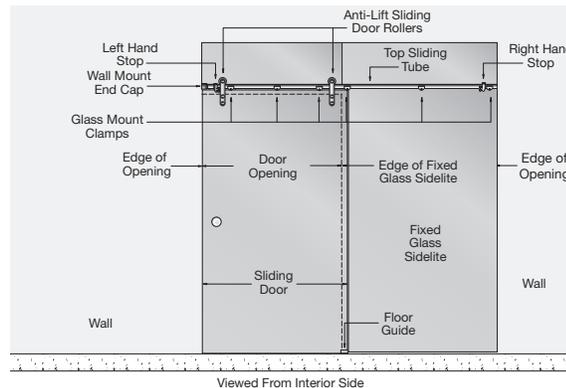
Model LSWM4BS



### GLASS MOUNT SINGLE SLIDER KIT

- Brushed Stainless Steel Construction for Years of Trouble-Free Operation

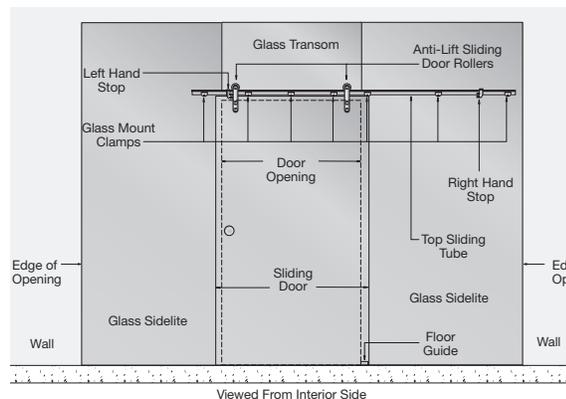
Model LSGM3BS



### GLASS MOUNT SINGLE SLIDER WITH SIDELITES KIT

- Glass Fabrication Details and Drawings Available Online at [crlaurence.com](http://crlaurence.com)

Model LSGM4BS



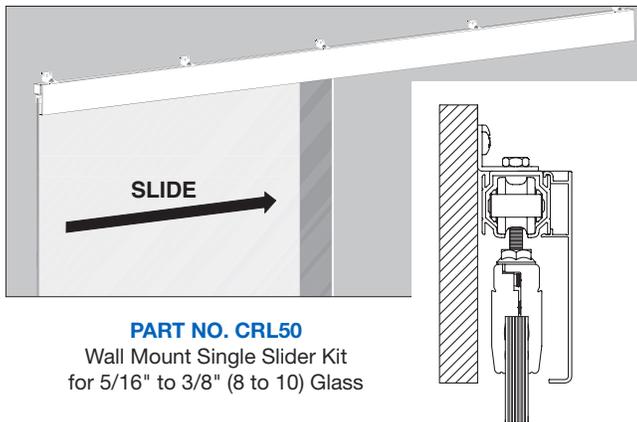
# 'ALL-GLASS' SYSTEMS

## CRL50 Series Top Hung Sliding Door Systems

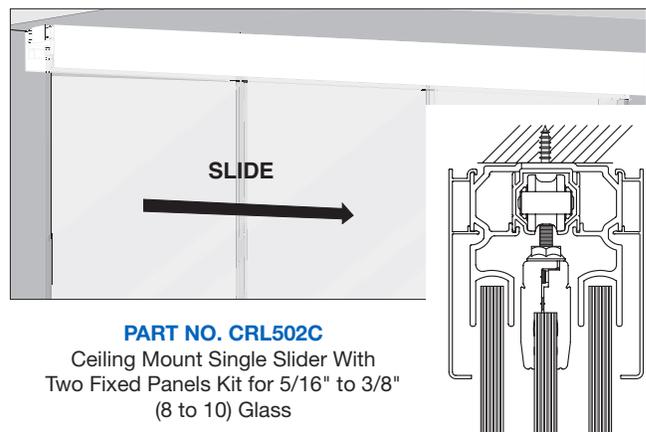
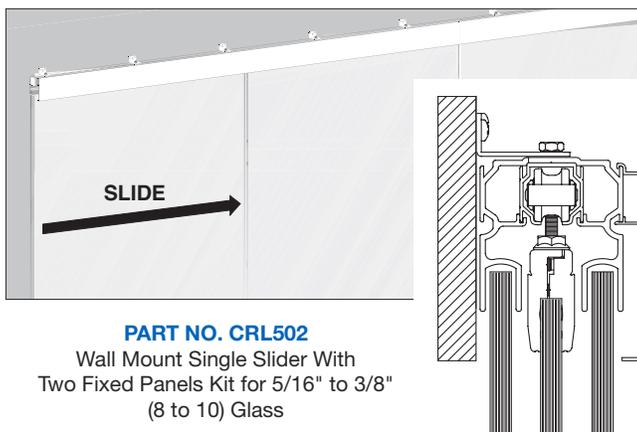
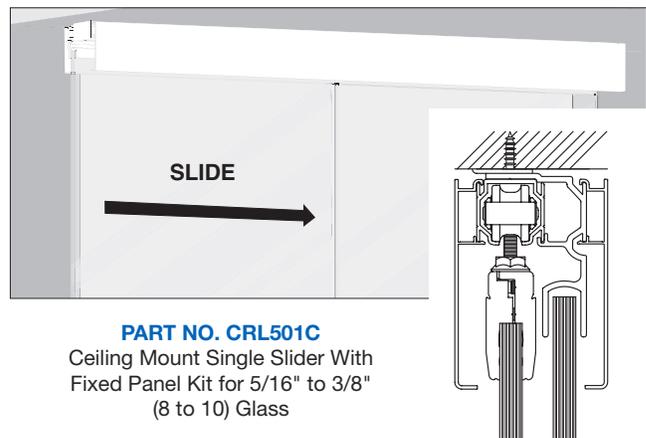
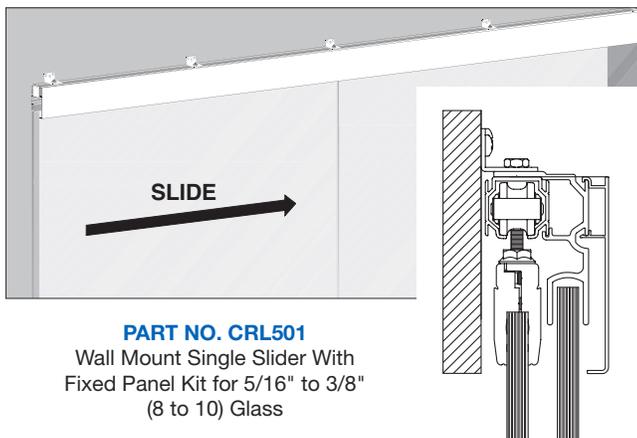
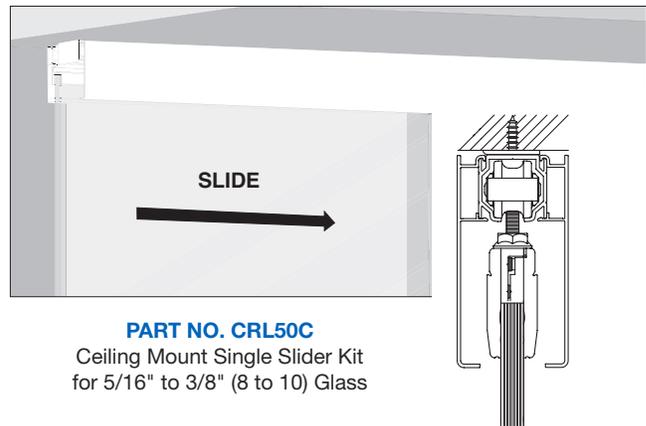
- Models for Single Doors, Synchronized Doors, and Telescoping Doors
- For Use With 5/16" (8) or 3/8" (10) Tempered Glass
- Heavy-Duty Systems Can Accommodate Doors Weighing Up to 176 Pounds (80 kg)
- No Notches or Holes Required in the Glass
- All Kits Have a Satin Anodized Finish



### KITS FOR WALL MOUNT

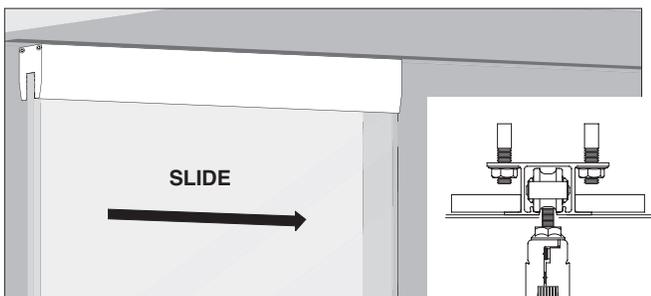


### KITS FOR CEILING MOUNT



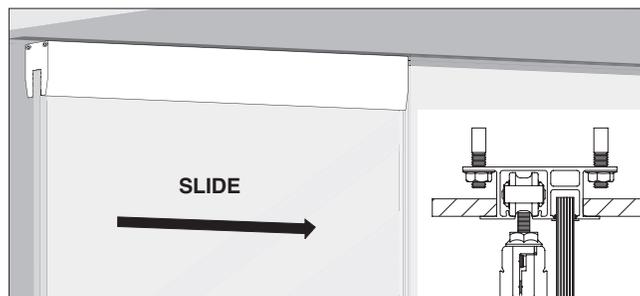
# 'ALL-GLASS' SYSTEMS

## KITS FOR DROPPED CEILING MOUNT



**PART NO. CRL50D**

Dropped Ceiling Mount Single Slider Kit for 5/16" to 3/8" (8 to 10) Glass



**PART NO. CRL501D**

Dropped Ceiling Mount Single Slider With Fixed Panel Kit for 5/16" to 3/8" (8 to 10) Glass



## SYNCHRONIZED BI-PARTING SLIDER KITS

- Synchronized Operation of Two Bi-Parting Panels
- For 5/16" to 3/8" (8 to 10) Tempered Glass
- Wall and Ceiling Mount Models Available
- Satin Anodized Finish

**PART NO. CRL50S2**

Wall Mount Bi-Parting Slider Kit for 5/16" to 3/8" (8 to 10) Glass

**PART NO. CRL50CS2**

Ceiling Mount Bi-Parting Slider Kit for 5/16" to 3/8" (8 to 10) Glass



## SYNCHRONIZED BI-PARTING SLIDER WITH TWO FIXED PANELS KIT

- For 5/16" to 3/8" (8 to 10) Tempered Glass
- Mounts to Wall or Soffit
- Satin Anodized Finish

**PART NO. CRL502S2**

Wall Mount Bi-Parting Slider Kit for 5/16" to 3/8" (8 to 10) Glass

**PART NO. CRL502CS2**

Ceiling Mount Bi-Parting Slider Kit for 5/16" to 3/8" (8 to 10) Glass



## TELESCOPING DOOR KITS

- For 5/16" or 3/8" (8 or 10) Tempered Glass
- Satin Anodized Finish

**PART NO. CRL501CP2L**

Left Direction Stacking Kit for 5/16" to 3/8" (8 to 10) Glass

**PART NO. CRL501CP2R**

Right Direction Stacking Kit for 5/16" to 3/8" (8 to 10) Glass



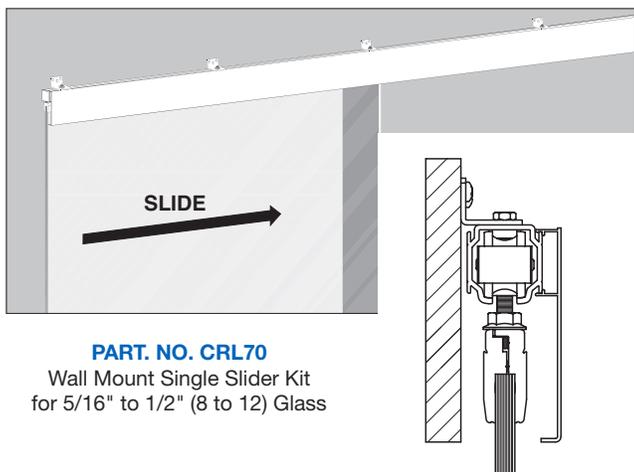
# 'ALL-GLASS' SYSTEMS

## CRL70 Series Top Hung Sliding Door Systems

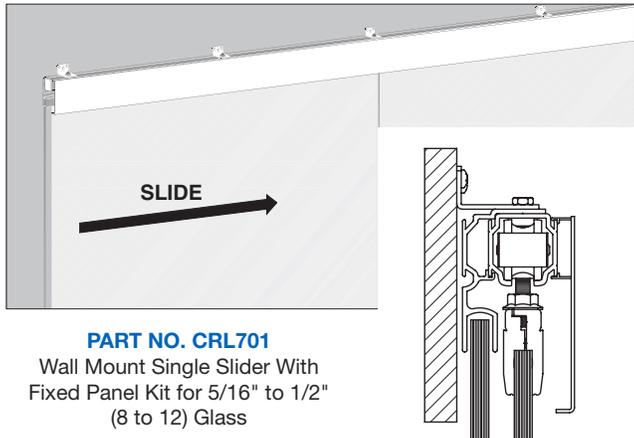
- For Use With 5/16", 3/8 or 1/2" (8, 10 or 12) Tempered Glass or Wood Doors
- Heavy-Duty Systems Can Accommodate Doors Weighing Up to 275 Pounds (125 kg)
- No Notches or Holes Required in the Glass
- All Kits Have a Satin Anodized Finish



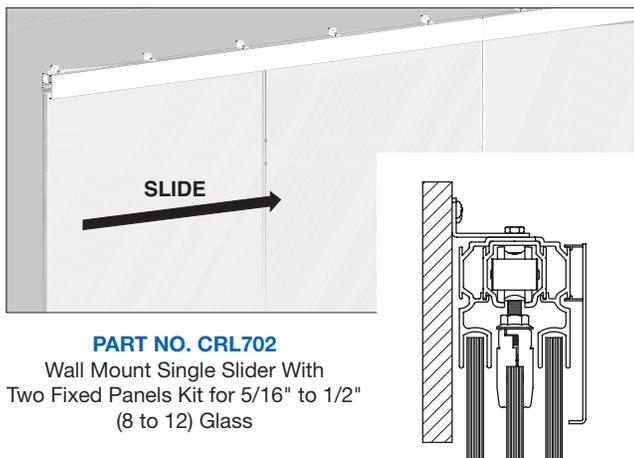
### KITS FOR WALL MOUNT



**PART NO. CRL70**  
Wall Mount Single Slider Kit  
for 5/16" to 1/2" (8 to 12) Glass

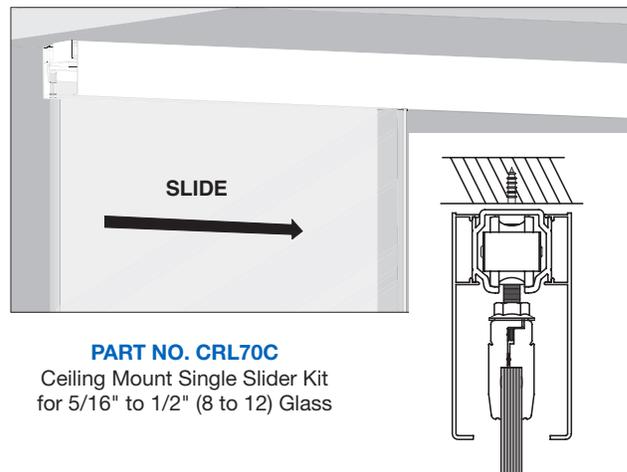


**PART NO. CRL701**  
Wall Mount Single Slider With  
Fixed Panel Kit for 5/16" to 1/2"  
(8 to 12) Glass

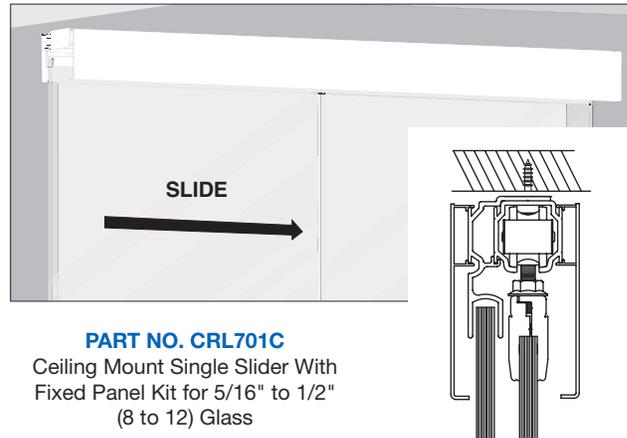


**PART NO. CRL702**  
Wall Mount Single Slider With  
Two Fixed Panels Kit for 5/16" to 1/2"  
(8 to 12) Glass

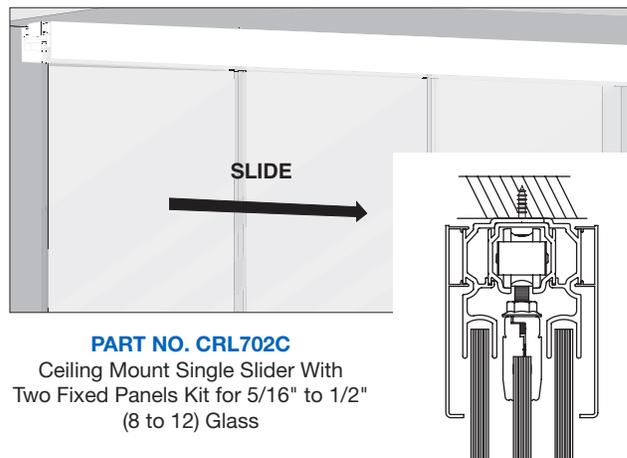
### KITS FOR CEILING MOUNT



**PART NO. CRL70C**  
Ceiling Mount Single Slider Kit  
for 5/16" to 1/2" (8 to 12) Glass



**PART NO. CRL701C**  
Ceiling Mount Single Slider With  
Fixed Panel Kit for 5/16" to 1/2"  
(8 to 12) Glass



**PART NO. CRL702C**  
Ceiling Mount Single Slider With  
Two Fixed Panels Kit for 5/16" to 1/2"  
(8 to 12) Glass

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# 'ALL-GLASS' SYSTEMS

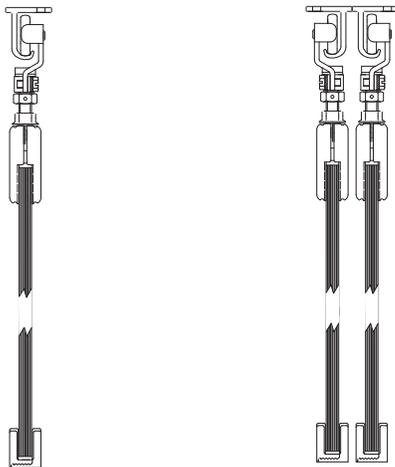
## CRL EZ-Slide Top Hung Single Track Sliding Door Kits

- No Notches or Holes Needed in the Glass for Installation
- Cost Effective 'All-Glass' Doors for Commercial or Residential Use



### 80 SERIES SLIDING DOOR KIT

- This Kit is for 5/16" (8) or 3/8" (10) Tempered Glass
- Rated for Panels Weighing Up to 176 Pounds (80 kg)

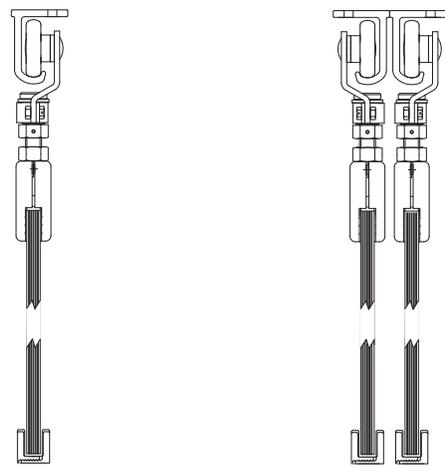


Typical Single Slider Application  
**PART NO. CRL3301**

Typical Bi-Pass Application  
 using two **PART NO. CRL3301**

### 180 SERIES SLIDING DOOR KIT

- This Kit is for 3/8" (10) or 1/2" (12) Tempered Glass
- Rated for Panels Weighing Up to 396 Pounds (180 kg)

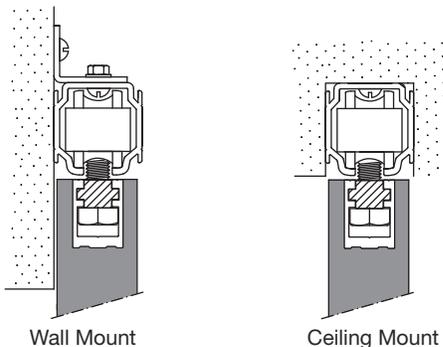


Typical Single Slider Application  
**PART NO. CRL3601**

Typical Bi-Pass Application  
 using two **PART NO. CRL3601**

## CRL70 SERIES SLIDING WOOD DOOR KIT

- Exclusively for Wood Doors Weighing Up to 275 Pounds (125 kg)
- Mounts to Wall or Ceiling
- Top Hanger is Mortised Into the Door



Wall Mount

Ceiling Mount



**PART NO. CRL70W**  
 Wall or Ceiling Mount Sliding Wood Door Kit

# 'ALL-GLASS' SYSTEMS

## CRL280 Series Top Hung Sliding Door System

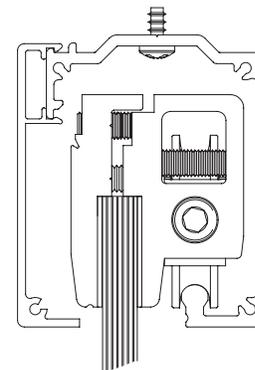
- For Use With 5/16", 3/8", or 1/2" (8, 10, or 12) Tempered Glass
- Rated for Doors Weighing Up to 176 Pounds (80 kg)
- No Notches or Holes Required in the Glass for Installation



### SINGLE SLIDER KITS

This configuration of the CRL280 Series Slider is used for single door applications where the Top Track mounts to a structural ceiling. Kit includes all the components you will need (except the tempered glass and pull hardware) to complete this style of installation. **NOTE:** Laminated glass should not be used.

PART NO.	FOR GLASS THICKNESS
<b>CRL2810</b>	5/16" to 3/8" (8 to 10)
<b>CRL2812</b>	1/2" (12)

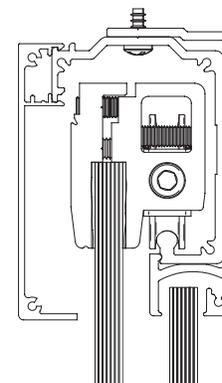


### SINGLE SLIDER WITH FIXED PANEL KITS

This configuration of the CRL280 Series Slider is used for single door with fixed panel applications where the Top Track mounts to a structural ceiling. Kit includes all the components you will need (except the tempered glass and pull hardware) to complete this style of installation. **NOTE:** Laminated glass should not be used.

**NOTE:** Laminated glass should not be used.

PART NO.	FOR GLASS THICKNESS
<b>CRL2810F</b>	5/16" to 3/8" (8 to 10)
<b>CRL2812F</b>	1/2" (12)

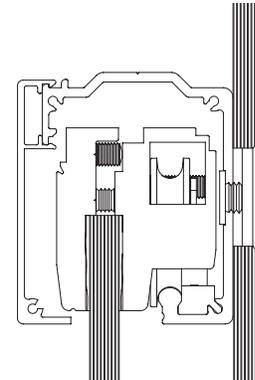


### GLASS MOUNT SINGLE SLIDER KITS

This configuration of the CRL280 Series Slider is used for single door applications where the top track mounts to a 3/8" or 1/2" (10 or 12) fixed glass panel. Kit includes all the components you will need (except the tempered glass and pull hardware) to complete this style of installation. **NOTE:** Laminated glass should not be used.

**NOTE:** Laminated glass should not be used.

PART NO.	FOR GLASS THICKNESS
<b>CRL2810G</b>	5/16" to 3/8" (8 to 10)
<b>CRL2812G</b>	1/2" (12)



For full details and kit prices go to [crlaurence.com](http://crlaurence.com).

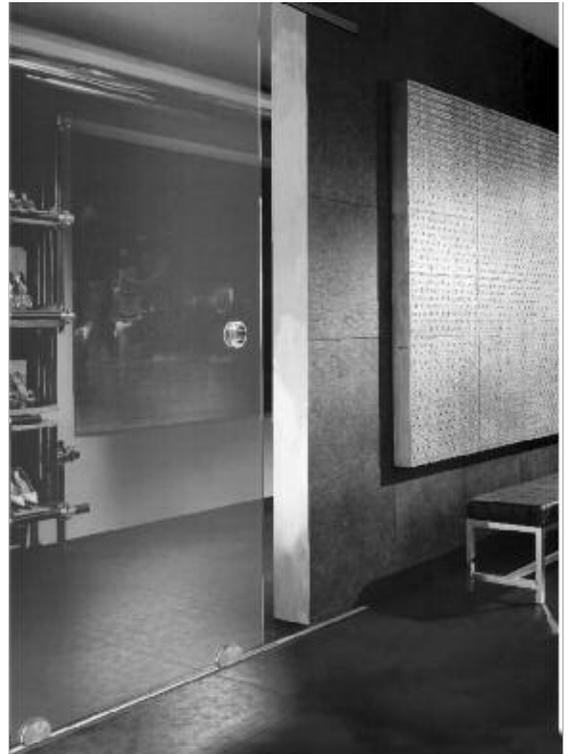
These and other CRL Heavy Glass Sliding Door Systems can be seen in our CRL63A Architectural Hardware Catalog.

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'All-GLASS' SYSTEMS

## CRL GSDH Series Bottom Rolling Door System

- Bottom Rolling Design for Use With 5/16", 3/8" or 1/2" (8, 10 or 12) Tempered Glass
- Top Guide Track Mounts to Wall
- Can Accommodate Doors Weighing Up to 286 Pounds (130 kg)
- Brushed or Polished Stainless Steel Finishes



Single Bottom Rolling Door Installation Assembly



**Model GSDH1**



Top Guide Track at 157" (4 m) in Length and Two End Caps



Top Roller Guides and Four Stops

Bi-Parting Bottom Rolling Door Installation Assembly



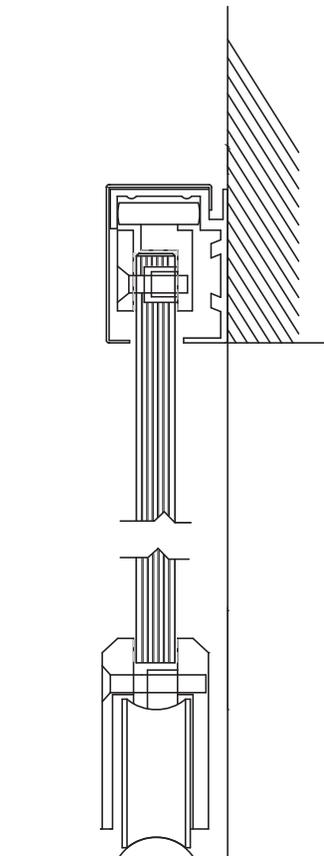
**Model GSDH2**



Bottom Rollers



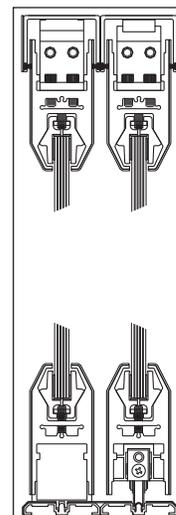
Bottom Roller Track at 118" (3 m) in Length



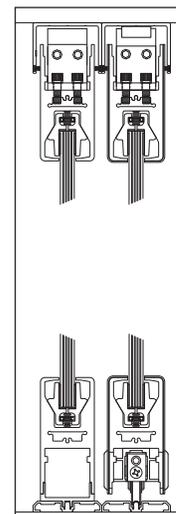
# 'ALL-GLASS' SYSTEMS

## CRL Bottom Rolling Sliding Door Systems

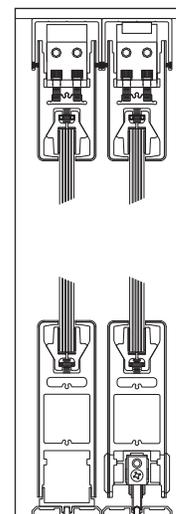
- Variety of Styles and Finishes Available for Use With 3/8" or 1/2" (10 or 12) Tempered Glass
- Three Rail Combinations Featuring 4" (102) Tapered, 4" (102) Square, and 6" (152) Square Rails With Our Wedge-Lock™ Glass Securing System
- Each Unit Custom Built to Fit the Opening
- Available in Seven Architectural Finishes



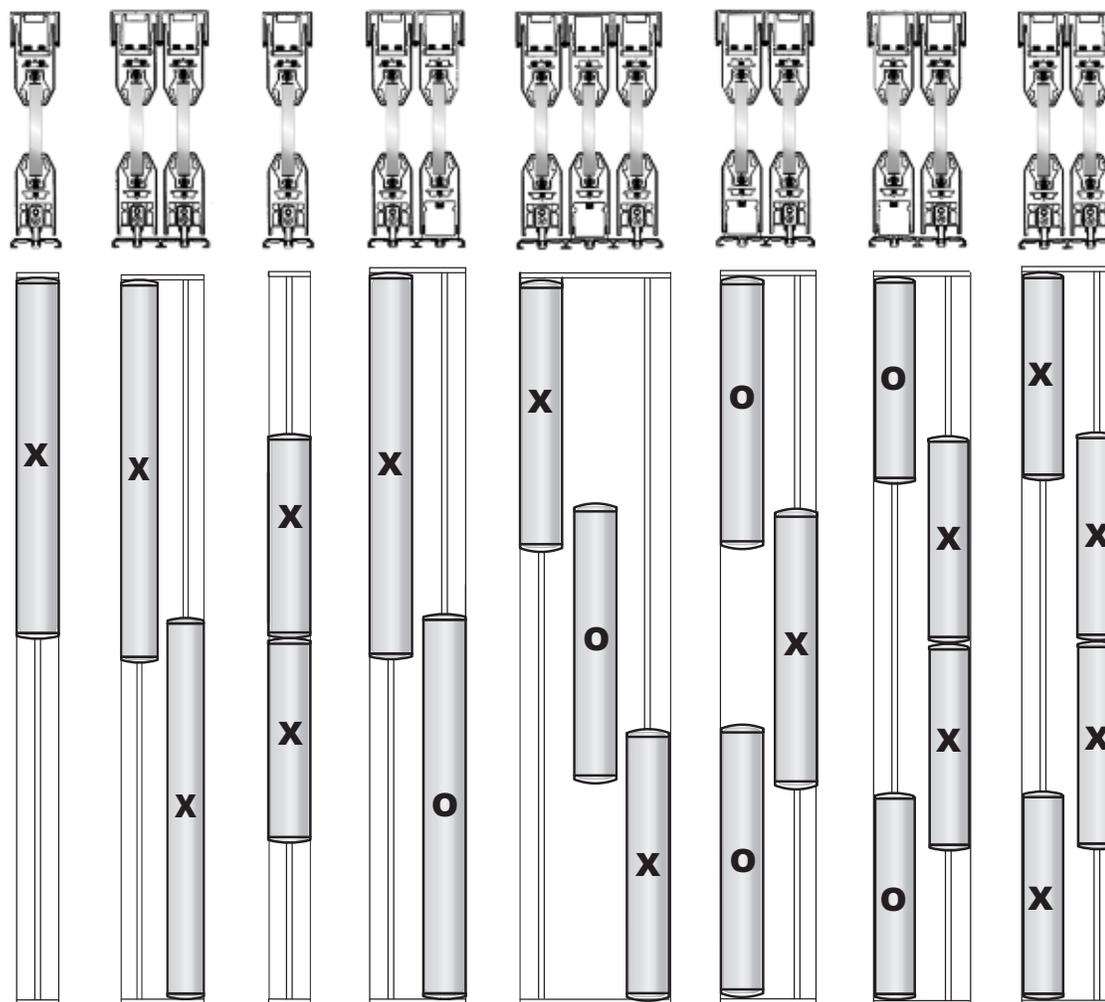
Model SDR



Model 4SDR



Model 6SDR



X = Sliding Panel O = Fixed Panel

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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL SSR Bottom Rolling Sliding Door System

- Three Rail and Sidelite Combinations for Use With 3/8" or 1/2" (10 or 12) Tempered Glass
- Available in Seven Architectural Finishes



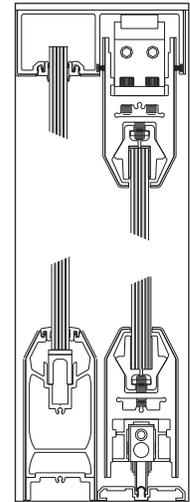
**Model SSR**  
4" (102) Tapered Bottom Rolling Rail



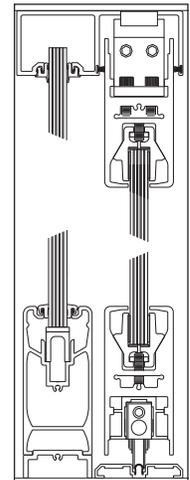
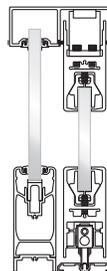
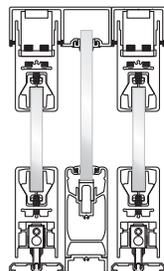
**Model 4SSR**  
4" (102) Square Bottom Rolling Rail



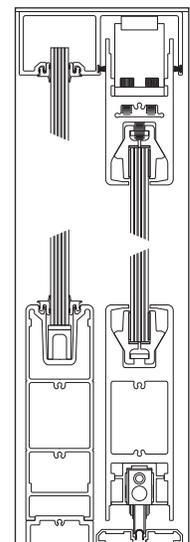
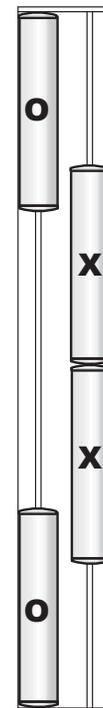
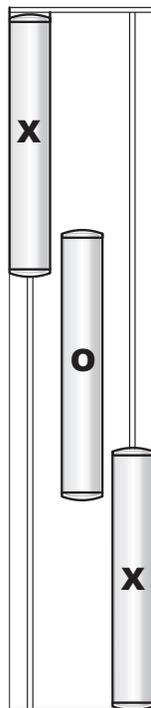
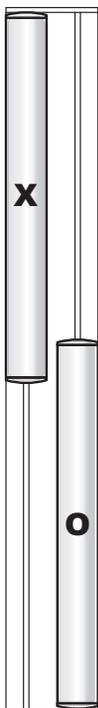
**Model 6SSR**  
6" (152) Square Bottom Rolling Rail



**Model SSR**



**Model 4SSR**



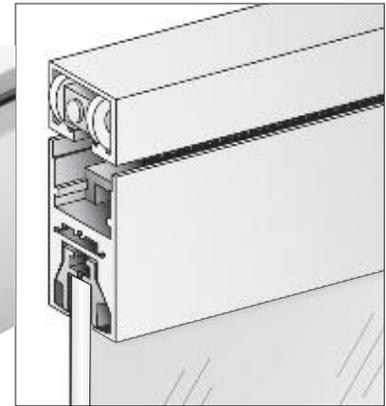
**Model 6SSR**

X = Sliding Panel O = Fixed Panel

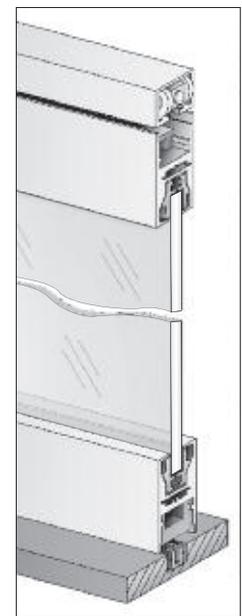
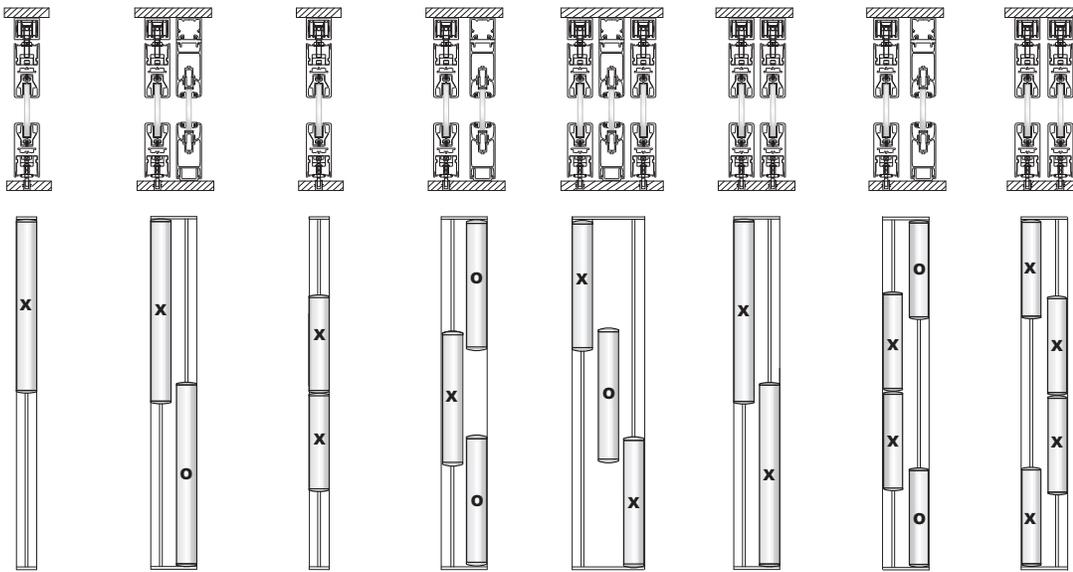
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL Overhead Track Sliding and Bi-Fold Doors



- Custom Built in Eight Standard Sliding Configurations and Eight Standard Bi-Fold Configurations
- Silent Moving Four-Roller Carriage Assemblies
- For Use With 3/8" or 1/2" (10 or 12) Tempered Glass



X = Sliding Panel O = Fixed Panel

X	XO (OX) BYPASS	XX BI-PART	OXO BYPASS	XOX BYPASS	XX BYPASS	OXXO BI-PART	XXXX BYPASS
MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.
0TS1	0TS101	0TS2	0TS102	0TS203	0TS22	0TS202	0TS24

Minimum order: 1 each. Must ship common carrier.

- Available in Six Architectural Finishes
- Custom Finishes Available on Special Order
- Silent Moving Four-Roller Carriage Assemblies

The CRL Overhead Track Sliding and Bi-Fold Door Systems are designed to work in a variety of different applications. Their universal track and roller design allows them to be used as Sliding, Half Panel Bi-Fold or Full Panel Bi-Fold configurations. Each unit is custom built to your specifications for opening size, glass thickness, and locking hardware.

**NOTE:** Available by custom order only. Standard with 4" (102) Square Rails, however, any of our 4", 6", or 10" (102, 152, or 254) Rail combinations are available.



OT Series Carriage Assembly

Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# 'ALL-GLASS' SYSTEMS

## CRL Overhead Track Bi-Fold Door Systems



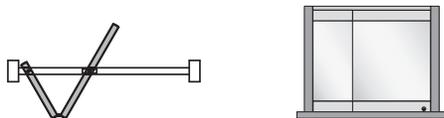
- With 4" (101.6) Square DR4S Series Door Rails
- Custom Built to Your Specs for Fit and Finish
- Available In Six Architectural Finishes

CRL Overhead Track Bi-Fold Door Systems are available in four configurations, with a maximum of three panels on each side of the opening. The end panels act like normal center pivoting doors and connect to the first hanging panel using special hinged end caps. The hanging panels are joined in the same manner, and are hung from a single Cat. No. OTCA Carriage Assembly at the panel's end point.

Maximum panel weight not to exceed 170 pounds (77 kg). Maximum panel width is 39" (990). Minimum panel width is 15" (381).

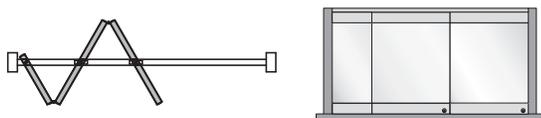
- Panels Hung From Mid-Point, Maximizing Panel Width

### 2 PANEL HALF LEAF BI-FOLD



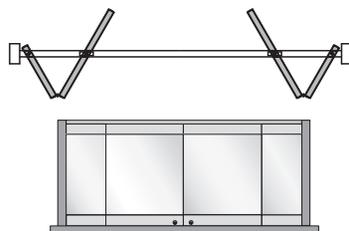
Model No. OTC2

### 3 PANEL HALF LEAF BI-FOLD



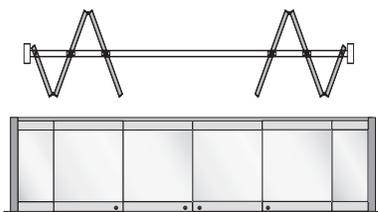
Model No. OTC3

### 4 PANEL HALF LEAF BI-PART



Model No. OTC4

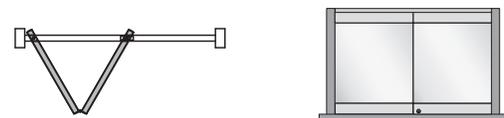
### 6 PANEL HALF LEAF BI-PART



Model No. OTC6

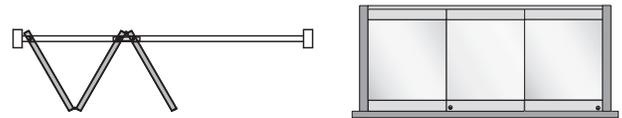
- Panels Hung From End Point, Minimizing Obstruction

### 2 PANEL FULL LEAF BI-FOLD



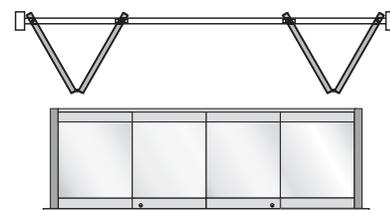
Model No. OTB2

### 3 PANEL FULL LEAF BI-FOLD



Model No. OTB3

### 4 PANEL FULL LEAF BI-PART



Model No. OTB4

### 6 PANEL FULL LEAF BI-PART



Model No. OTB6

# 'ALL-GLASS' SYSTEMS

## CRL SPS Stacking Partition System Featuring Intelli-Track™

- Provides the 'All-Glass' Look When Closed and the 'Wide Open' Look When Opened
- Glass Panels Disappear From Sight When Parked in the Parking Closet
- Convertible System Available When a Pivot Door is Required
- A Large Variety of Parking Configurations to Accommodate Almost Any Installation
- Glass Panels Can Be Simply Stacked Against the End Wall or Stored Out of Sight in a Closet



Intelli-Track™ Roller



- Adaptable to a Variety of Panel Types
- Available Locking Floor Bolts and Dustproof Keepers



### TYPICAL APPLICATIONS:

- Retail Stores and Malls
- Banquet Halls
- Restaurants and Eateries
- Convention Centers
- Automobile Dealerships
- Stadium Club Boxes
- Reception Areas
- Pool Houses
- Recreation Centers
- Commercial Offices

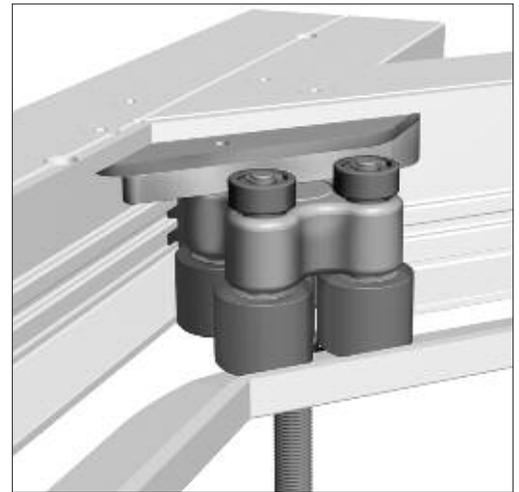


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# 'ALL-GLASS' SYSTEMS

## CRL SPS Stacking Partition System Featuring Intelli-Track™

- Intelli-Track™ Rollers Work With Both Manual and Self-Guiding Intersections to Provide Directional Control and Prevent Accidental Panel Rotation
- Two Rollers Per Panel Will Support 470 Pounds (213 kg)
- Narrow Housing Width Allows for 2-7/8" (73) Center-to-Center Door Rail Spacing in the Parking Area
- Tracks and Intersections Are Available in Mill Aluminum and White Powder Paint (Other Finishes on Special Order)
- A Full Selection of Accessories to Accommodate Most Applications
- In-House Technical Sales Representatives to Assist You in Planning Your Installation

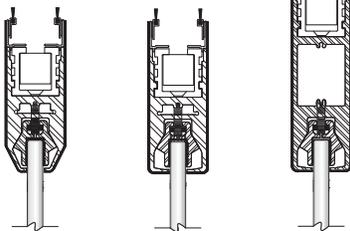


## Top and Bottom Rail Options

- Available in Five Architectural Finishes

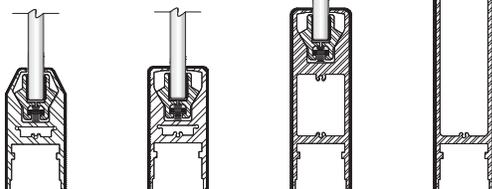
### TOP RAILS

Tapered and Square



### BOTTOM RAILS

Tapered and Square



Our UL Classified Deadbolt Handles are a quick and easy way to lock your SPS Doors from a comfortable 36" (914) above the floor.



# 'ALL-GLASS' SYSTEMS

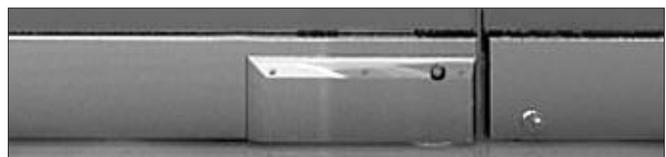
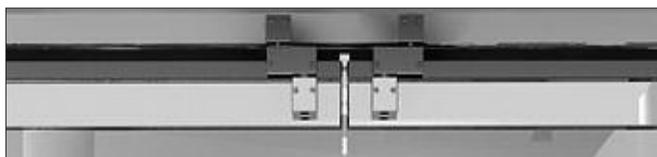
## CRL SPS Stacking Partition System With Convertible Pivoting/Sliding Doors



- SPS Doors Can Now Pivot and Slide
- Fully Adjustable Closing Features
- 6" (152) Rails Top and Bottom
- Available in Five Architectural Finishes
- Custom Finishes Available on Special Order
- Exclusively for Use With 1/2" (12) Tempered Glass



AS EASY AS ONE, TWO, SLIDE!



We have done it again! We have taken a great product and have made it even better! Now you can get our popular SPS System with a Convertible Door Option. Convertible doors not only pivot, but they also slide and stack away, giving you the look of a standard pivoting door entrance with the ability to slide and stack away all the panels, even the pivoting doors. Pivoting Doors are easily converted to Sliding Panels and back again by a simple 'one screw' Coordinator at the top of the door, and our fully concealed 'single lever' Closer Engagement Mechanism at the bottom of the door. A heavy-duty floor closer is concealed in the bottom rail of the door, eliminating the unsightly cover plates across the center of the opening when the panels are stacked away.

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# 'ALL-GLASS' SYSTEMS

## CRL Light Duty Stacking Partition System

- Slide Only or Convertible Options on Any Door
- Free Swinging or With Surface Mounted Closer
- Conversion is Quick and Easy
- Brushed or Polished Stainless Steel Finish

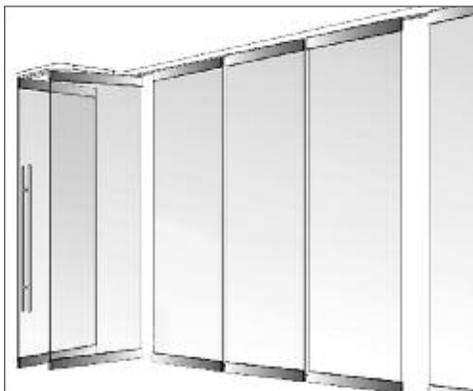
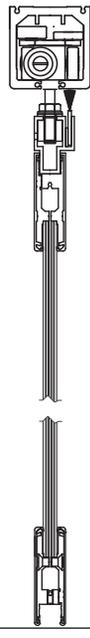


Track Roller

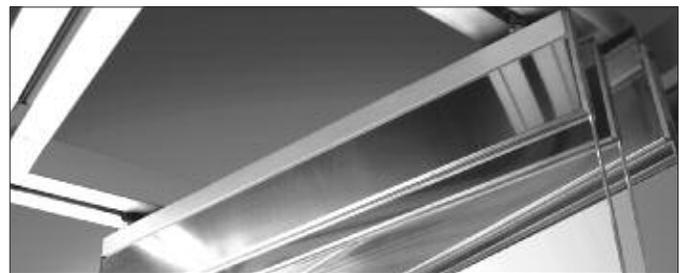


### FULL RAIL SYSTEM

- For Use With 1/2" (12) Tempered Glass

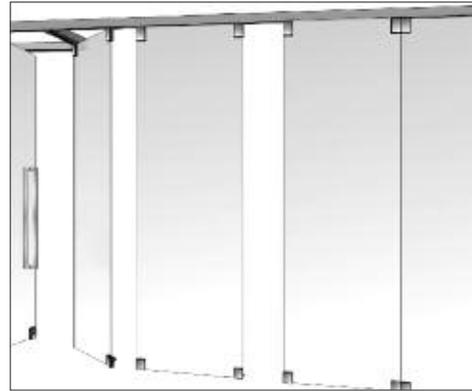
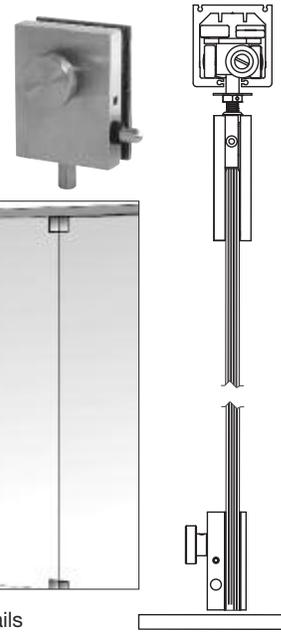


Doors Feature Full Length Rails



### PATCH SYSTEM

- Patch Fittings for That 'All-Glass' Look



Doors Feature Patch Rails

### • Locking Options



Bottom Rail with Cylinder Lock



Bottom Rail with Slide Bolt to Floor Only



Bottom Rail with Slide Bolt to Floor and Out End



Bottom Rail with Locking Bolt - Out End Only



Bottom Rail with Lock Bolt Receiver



Bottom Rail with Blank End

# INTERIOR OFFICE FRONT SYSTEMS

## Interior Office Front Systems

- Create Contemporary Office Space With a Wide Range of Architectural Finishes
- Accommodates Glazing Thickness Range of 1/4" to 9/16" (6 to 14)
- Screw Spline or Clip Joinery Available
- Fabricate On or Off Site
- Wrap Walls in Various Depths
- Doors and Sidelites Available



Conference Room Walls



Office Entrances

As part of our ever-expanding architectural hardware line, U.S. Aluminum is proud to introduce our latest addition, Interior Office Front Systems.

We have involved all our resources to develop a product line that our customers, architects, and designers will come to trust as a viable solution to their interior office design needs. Use our door and window frames for sidelites to doors, clerestory lites, borrowed lites, or continuous glass walls. A great way to divide interior office space, provide acoustical privacy, all while allowing desirable light to enter the indoor spaces.

U.S. Aluminum offers a variety of Interior Office Front Hardware to make state of the art glazing systems available to the glazing industry. Our commitment to our customers is to carry sufficient inventories of popular stock items, and short lead times for special orders. It is a total program that will allow your entry into the Interior Office Front Systems market.

For additional information, contact U.S. Aluminum Technical Sales at (800) 262-5151 in the U.S. and Canada, and ask for Ext. 5305. You can also email us through our web site at [usalum.com](http://usalum.com).



Hallways

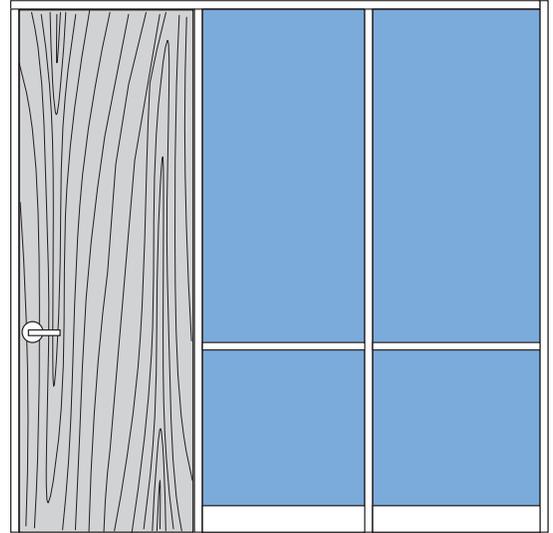
Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144



# INTERIOR OFFICE FRONT SYSTEMS

## Interior Office Front Systems

- Available to Wrap 2-1/4", 3-1/2", 3-3/4", 4-5/8", and 4-7/8" (57, 89, 95, 117, and 124) Walls
- Adjustable Frames Also Available
- Single and Double Door Frames
- Sliding Doors Available
- 24' (7.3 m) Stock Lengths
- Accepts 1/4", 3/8", 1/2", and 9/16" (6 to 14) Glazing
- E.P.D.M. Top Load Glazing Gasket
- Several Trim Profiles Available
- No Exposed Fasteners
- Several Stock Finishes Available, With Custom Finishes on Request



Interior Offices



Office Wall Dividers



Office Fronts

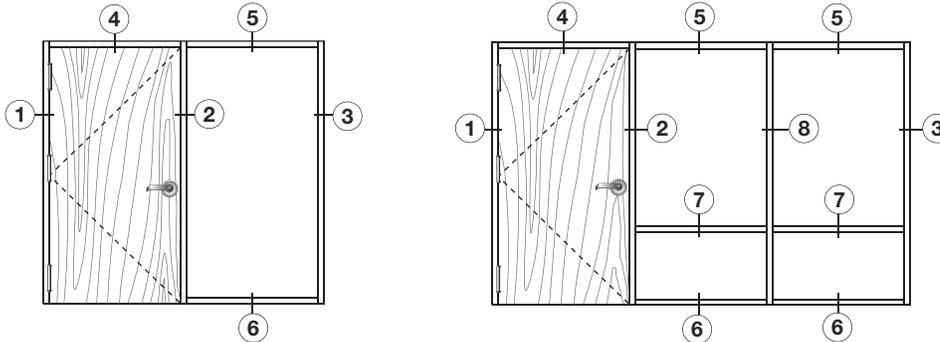
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 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

# INTERIOR OFFICE FRONT SYSTEMS

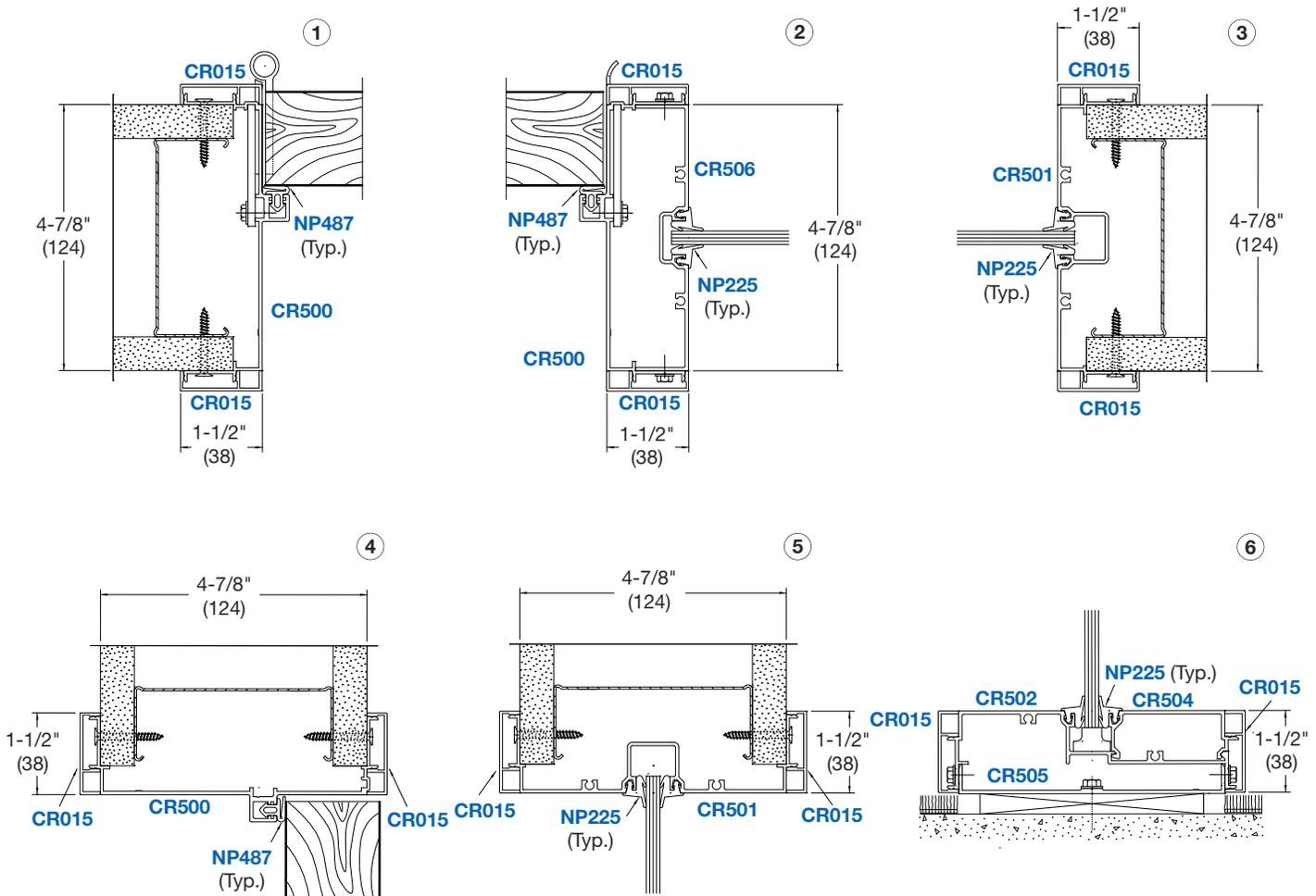
## Typical Details

Details shown with a 1-1/2" (38) face dimension.  
 Also available with a 2" (51) face dimension.  
 Wood door shown, aluminum glazed door optional.  
 Visit [usalum.com](http://usalum.com) for details and drawings.

- Available to Wrap 2-1/4", 3-1/2", 3-3/4", 4-5/8", and 4-7/8" (57, 89, 95, 117, and 124) Walls



TYPICAL INTERIOR OFFICE FRONT ELEVATIONS



NOT TO SCALE

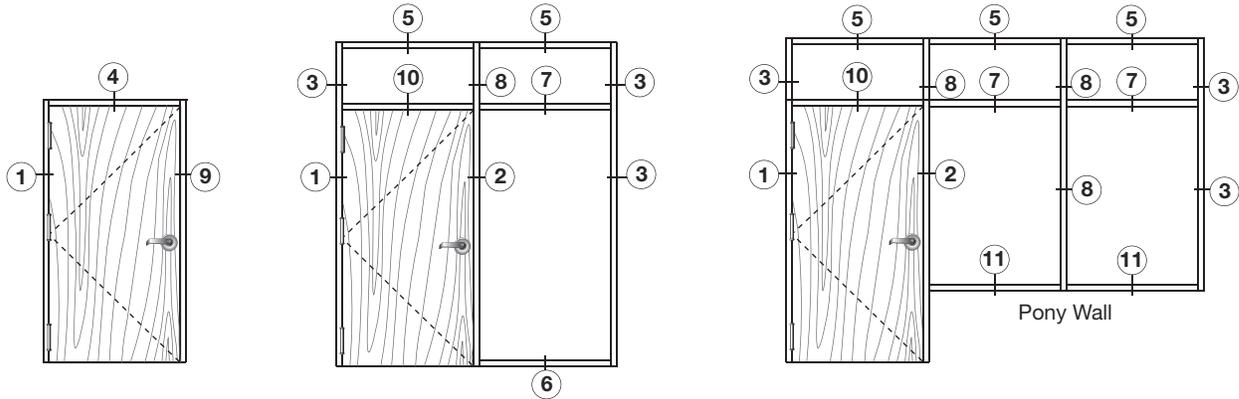
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# INTERIOR OFFICE FRONT SYSTEMS

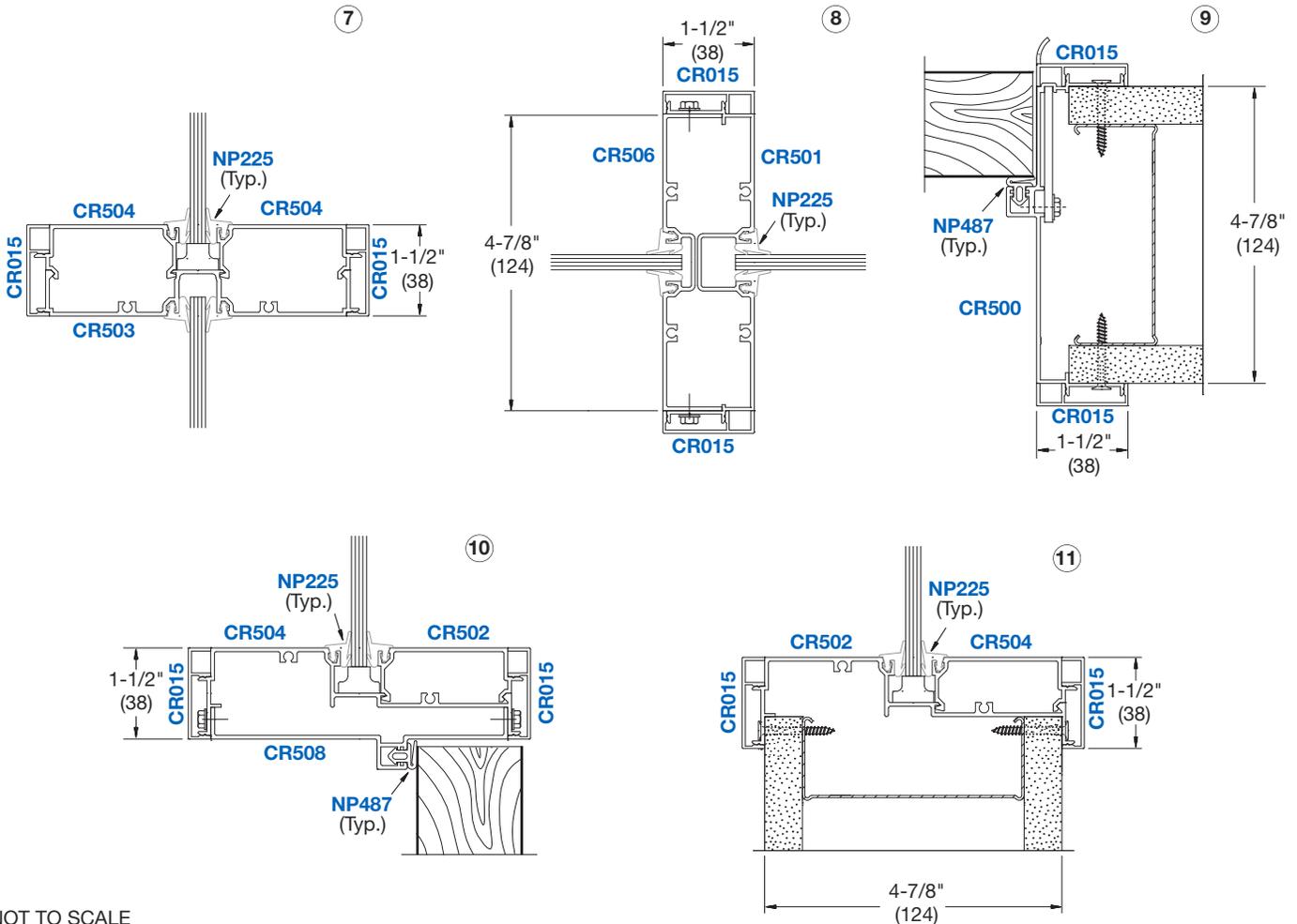
## Typical Details

Details shown with a 1-1/2" (38) face dimension.  
 Also available with a 2" (51) face dimension.  
 Wood door shown, aluminum glazed door optional.  
 Visit [usalum.com](http://usalum.com) for details and drawings.

• Available to Wrap 2-1/4", 3-1/2", 3-3/4", 4-5/8", and 4-7/8" (57, 89, 95, 117, and 124) Walls



TYPICAL INTERIOR OFFICE FRONT ELEVATIONS



NOT TO SCALE

# RAILING SYSTEMS



CRL CAT. NO. HR11

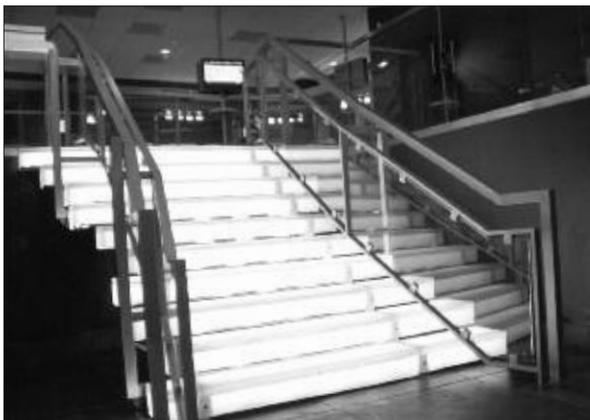
## CRL Architectural Railing Systems

- New Systems for Hand Rails, Guard Rails, Balustrades, Windscreens, and Gates  
Designed and Engineered for Residential, Commercial, and Institutional Needs
- Featuring Our Exclusive TAPER-LOC® 'X' Dry Glazing System for Glass Railings



C.R. Laurence manufactures an extensive selection of architectural railing systems and related hardware for the construction of beautiful, code compliant railings and balustrades, including our very popular Aluminum Railing Systems, and our impressive line of windscreens. We've expanded our complete line of Glass Railing Hardware, from Base Shoe to Cap Rails, simplifying your hardware selection process for balustrades, hand rails, and guard rails. We also produce Stainless Steel Post Railing Kits, Wood Cap Rails, and Hand Rails, as well as a line of Swinging Gates.

Our Architectural Railing Systems Catalog features TAPER-LOC® 'X', the dry glazing system for glass railings. TAPER-LOC® 'X' Tapers can be used with monolithic and laminated tempered glass. This innovative system reduces the installation time and mess associated with wet glaze systems.



Online [usalum.com](http://usalum.com) By Phone (800) 262-5151  
 Online [crlaurence.com](http://crlaurence.com) By Phone (800) 421-6144

## A Total Program Combining Style With Safety



CRL proudly designs and manufactures Architectural Railing Systems for residential, commercial, and institutional needs. It is a comprehensive program that can provide you with Hand Rails, Guard Rails, Balustrades, Windscreens, and Gates that will not only serve their purpose, but will do so in a manner that will add to the aesthetics of the structure into which they are installed.

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Our Technical Sales Professionals can help you select and design the Railing System that will best serve your needs. It's a total program that is unmatched by any firm in our industry. For additional information, contact CRL Railing Technical Sales at (800) 421-6144 in the U.S., (877) 421-6144 from Canada, or (323) 588-1281 International, and ask for Ext. 7730. You can also e-mail us through our web site at [crlaurence.com](http://crlaurence.com). From the home page click on Contact Us, and then click on Technical Sales for Railing Products.

### GLASS RAILING SYSTEMS

- Available in Diameters From 1-1/2" to 4" (38 to 102) and Up to Six Stock Finishes



### HAND RAIL SYSTEMS

- Round and Square Profiles Available in Stainless Steel, Brass, Aluminum, and Wood



### ALUMINUM RAILING SYSTEMS

- Glass, Picket, Cable, and Custom Systems in a Variety of Colors



### ALUMINUM WINDSCREEN SYSTEMS

- For Pools and Spas, Patios, Balconies, and Observation Decks



# ARCHITECTURAL METALS



CRL CAT. NO. AM09

## CRL Architectural Metals

- Column Covers (Cladding)
- Canopies and Sunshades
- Wall Panel Systems
- Perforated Panel Systems
- 'All-Glass' Entrances and Spider Fittings
- Custom Ornamental Metalwork
- Custom Cladding and Brake Metal
- Architectural Wire Cloth



The CRL Architectural Metals Division offers an extensive selection of architectural systems and related hardware for the construction of beautiful, code compliant building façades, including our very popular 'All-Glass' Systems. We offer Wall Panel Systems, Ceiling Systems, Column Cladding, and Perforated Panel Systems, as well as our rapidly growing line of Sunshades and Canopies. We've expanded our complete line of Glass Awnings, from Tension Rods to Universal Brackets, simplifying your hardware selection process for wall mount, storefront mount, and curtain wall mount applications.



### AVAILABLE FINISHES

- US-32 #8 Polished Stainless Steel
- US-32D #4 Satin Stainless Steel
- US-3 Polished Brass
- US-4 Satin Brass
- US-9 464 Polished Bronze
- US-10B Oil Rubbed Bronze\*
- US-10 464 Satin Bronze
- US-28 Satin Aluminum Clear Anodized
- Dark Bronze Anodized
- Custom Powder Coated Finishes
- Custom Plated Finishes
- Custom Brushed Finishes

\* Finish US-10B (613) is unstable and will vary when applied to different alloys or forms of base metal, and to products of different manufacturers.

### FINISH SAMPLES

Finish samples of any of our metal or composite materials are available for color matching or testing. Just contact the CRL Architectural Metals Division with your request.

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## Architectural Metals Designed, Engineered, and Manufactured by C.R. Laurence

- Custom Clad Entrance and Storefront Systems
- Custom Break Shaped Aluminum or Architectural Metals
- Custom Metal Column Covers
- Custom Metal Panel Systems
- Custom Ornamental Metals
- Custom Ornamental Hand Rails and Guard Rails
- Custom Canopies

C.R. Laurence Company fabricates custom metals that are both functionally correct and aesthetically pleasing. We can be involved in all phases of your project, from initial design to delivery, with every step controlled by processes that meet strict ISO standards. Our Los Angeles, California manufacturing staff incorporates fine craftsmanship and experience in the design, fabrication, and finishing of architectural metals.

Some of our work is installed in the finest hotels and retail buildings in North America. You can see examples of it in many commercial and entertainment venues. We're able to be involved in so many projects because we have the versatility to supply what you want, and to do so in a cost-efficient and timely manner.

Custom architectural finishes and textures are always an option, so you won't have to be limited to just a few. We specialize in meeting your requirements.

For more information on custom architectural metals contact CRL Technical Sales at (800) 421-6144 in the U.S., (877) 421-6144 from Canada, or (323) 588-1281 International. Ask for Ext. 7770. You can also send e-mail from the [crlaurence.com](http://crlaurence.com) home page. Click on Contact Us, and then click on Technical Sales for Architectural Metals.



# FRAMELESS SHOWERS



CRL CAT. NO. SD12

## CRL Frameless Shower Door Hardware and Supplies

- Beautiful Architectural Finishes
- Unequaled Selection
- Huge Inventories
- Innovative Solutions
- Online Services
- Expert Technical Assistance



C.R. Laurence offers the largest variety of Frameless Shower Door Hardware in the glass industry. Our initial offering of the basic Wall Mount Hinge in just two finishes has evolved over the years to over 25 series of Shower Door Hinges in various configurations and beautiful finishes, plus Door Pulls and Knobs, Towel Bars, Glass Clamps, Headers, U-Channels, Thresholds, Frameless Door Kits, Wipes and Seals, Sliding Shower Door Kits, Bathroom Mirrors, and Decorator Accessories.

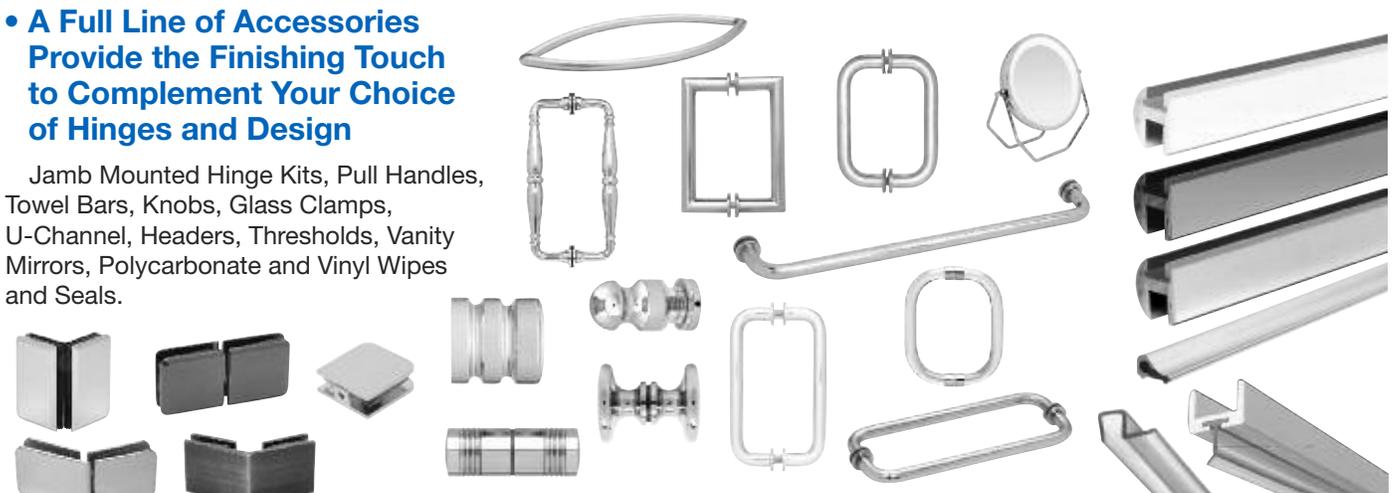
Reacting to the "wish list" of designers and installers has brought about many of the new products that are now part of our extensive selection. Unsurpassed quality combined with technical expertise, full inventories, and the willingness to listen has contributed to create our complete package of quality hardware backed by excellent service.

- CRL Offers Over 25 Varieties of Hinge Series to Accommodate 1/4" to 1/2" (6 to 12) Thick Glass, and Match Most Any Modern Bathroom Décor



- A Full Line of Accessories Provide the Finishing Touch to Complement Your Choice of Hinges and Design

Jamb Mounted Hinge Kits, Pull Handles, Towel Bars, Knobs, Glass Clamps, U-Channel, Headers, Thresholds, Vanity Mirrors, Polycarbonate and Vinyl Wipes and Seals.



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# FRAMELESS SHOWERS

## Innovative Frameless Systems

### COTTAGE SERIES SLIDING SHOWER DOOR KITS

- Clear Polycarbonate or Metal Side Jamb

### HYDROSLIDE SLIDING SHOWER DOOR KITS

- Excellent Design for Compact Areas



### SERENITY SERIES SLIDING DOOR SYSTEM

- Unique Design Gives an Almost Floating Appearance



### FRAMELESS RESTROOM PARTITION SYSTEM

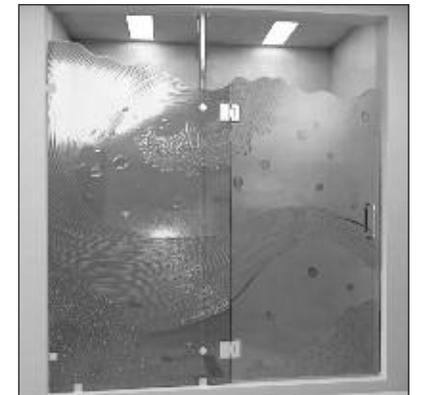
- Custom Built to Your Specifications

### FRAMELESS VERTICAL POST SYSTEM

- Innovative Alternative to Header Systems

### DELUXE SHOWER DOOR HEADER KITS

- Over 15 Beautiful Finishes



# INDEX



50 Series Top Hung Sliding Door System .....	22-G1 to 23-G1
70 Series Top Hung Sliding Door System .....	24-G1
280 Series Top Hung Sliding Door System .....	26-G1

<b>A</b>	
A.D.A. Door Rail Adaptor .....	12-A9
Access Control Handles .....	05-A3 to 08-A3
Accessories	

All OS-2 Window Wall Systems .....	04-C4 to 06-C4
Defender Series BR604, BR606, BT601 Storefronts .....	21-F1
Series 250, 400, 550 Doors .....	15-A1
Series 400, 400S, 450, 450S Storefronts .....	28-B1 to 29-B1
Series 451, 451S, IT451, IT451S Storefronts .....	55-B1 to 56-B1
Series BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....	24-C1 to 25-C1
Series DH-350 Entrance Doors .....	07-E1
Series FF450, FF451, FT451, FF600, FF601, FT601 Storefronts .....	43-B2 to 44-B2, 04-B3
Series IG500, IG600, IT600 Storefronts .....	25-E3
Series TN451, TT451, TN601, TT601 Window Walls .....	13-C2 to 14-C2

Addresses of Service Centers .....	V, VII
------------------------------------	--------

Adhesive-Backed Windo-Pile Weatherstrip .....	10-D5
---	-------

Adjustable Multi-Cutter Tool .....	01-B3, 03-C4
------------------------------------	--------------

Adjustable Power Door Closers .....	03-A9 to 06-A9
-------------------------------------	----------------

All Glass Systems	
-------------------	--

Beretta Door Hardware .....	18-G1
Blumcraft Doors and Sidelites .....	12-G1 to 15-G1
Center Locks .....	11-G1
DRS Door Rail System .....	02-G1 to 10-G1
Laguna Door Hardware .....	19-G1 to 21-G1
Patch Hardware .....	16-G1 to 17-G1

Aluminum Thresholds .....	12-A1 to 13-A1, 13-A9 to 17-A9
---------------------------	--------------------------------

A-Maz Water Stain Remover .....	11-D5
---------------------------------	-------

Angle Extrusions .....	03-B3
------------------------	-------

Architectural Metal Systems .....	42-G1 to 43-G1
-----------------------------------	----------------

Architectural Railing Systems .....	40-G1 to 41-G1
-------------------------------------	----------------

Architectural Web Site .....	01-G1
------------------------------	-------

Astragal, Security .....	16-A1
--------------------------	-------

<b>B</b>	
----------	--

Backer Rods .....	02-C4
-------------------	-------

Balancer Series Balanced Doors .....	01-A5 to 09-A5
--------------------------------------	----------------

Beretta Door Hardware .....	18-G1
-----------------------------	-------

Bi-Folding Door Systems .....	30-G1 to 31-G1
-------------------------------	----------------

Bio-Clean Water Stain Remover .....	11-D5
-------------------------------------	-------

Blast Mitigation Systems .....	01-F1 to 09-F4
--------------------------------	----------------

Blast Resistant Fixed Windows .....	02-F4 to 03-F4, 06-F4 to 07-F4
-------------------------------------	--------------------------------

Blast Resistant Single Hung Windows .....	02-F4 to 05-F4
---	----------------

Blast Resistant Sliding Windows .....	02-F4 to 03-F4, 08-F4 to 09-F4
---------------------------------------	--------------------------------

Blumcraft Access Control Handles .....	05-A3 to 08-A3
--	----------------

Blumcraft Doors and Sidelites .....	12-G1 to 15-G1
-------------------------------------	----------------

Blumcraft Glass Entrance Hardware .....	09-G1
---	-------

Bottom Rolling Door Systems .....	28-G1 to 29-G1
-----------------------------------	----------------

<b>C</b>	
----------	--

C.R. Laurence Service Centers .....	VI to VII
-------------------------------------	-----------

Ceiling Mounted Sliding Door Systems .....	22-G1 to 26-G1
--	----------------

Center Glazed Storefronts .....	01-B1 to 56-B1
---------------------------------	----------------

Center Locks .....	11-G1
--------------------	-------

Center Pivot Doors and Frames .....	08-A1 to 09-A1
-------------------------------------	----------------

Cleaning Products .....	12-D5
-------------------------	-------

Commercial Door Thresholds .....	12-A1 to 13-A1, 13-A9 to 17-A9
----------------------------------	--------------------------------

Concealed Overhead Door Closers .....	05-A9 to 06-A9
---------------------------------------	----------------

Continuous Hinges .....	07-A9 to 08-A9
-------------------------	----------------

Corner Construction Series 250, 400, 550 Doors .....	14-A1
--	-------

Corner Construction Series 250T, 400T Thermal Doors .....	05-A6
---	-------

Corner Construction Series 800, 850 Durafront Entrance System .....	11-A2
---	-------

Corner Construction Series FFM1, FFN1, FFW1 Entrance Doors .....	07-A4
--	-------

CRL Silicone Building Sealant .....	01-C4
-------------------------------------	-------

Custom Architectural Metals .....	42-G1 to 43-G1
-----------------------------------	----------------

Custom Thresholds .....	17-A9
-------------------------	-------

## D

### Deadload Charts

Defender Series BR604, BR606 Storefronts .....	11-F1
Series 400, 400S Storefronts .....	17-B1
Series 450, 450S Storefronts .....	27-B1
Series 451, 451S Storefronts .....	40-B1
Series BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....	22-C1
Series FF450 Storefront .....	14-B2
Series FF451, FT451 Storefronts .....	24-B2
Series FF600 Storefront .....	32-B2
Series FF601, FT601 Storefronts .....	42-B2
Series IG500 Storefront .....	09-E3
Series IG600 Storefront .....	14-E3
Series IT451 Storefront .....	54-B1
Series IT600 Storefront .....	24-E3
Series OS450, OS450SG Window Walls .....	18-C3
Series OS451, OS451SG Window Walls .....	29-C3
Series OS600, OS600SG Window Walls .....	38-C3
Series OS601, OS601SG Window Walls .....	49-C3
Series TN451, TT451 Window Walls .....	09-C2
Series TN601, TT601 Window Walls .....	11-C2

Defender Blast Mitigation Products .....	01-F1 to 09-F4
--	----------------

Division Bars .....	02-B3
---------------------	-------

### Door

Chime .....	09-A9
Closers .....	03-A9 to 06-A9
Frames for Entrance Doors .....	09-A1, 11-A1
Headers .....	10-G1
Hinges .....	07-A9 to 09-A9
Pivots .....	10-A9
Pulls .....	01-A9 to 02-A9
Rails .....	02-G1 to 05-G1
Retainers .....	09-A9
Stops and Holders .....	11-A9 to 12-A9

Doors From Stock .....	08-A1 to 11-A1
------------------------	----------------

Dow Silicone Building Sealant .....	01-C4
-------------------------------------	-------

Drill Jigs .....	04-B3
------------------	-------

DRS Door Rail System .....	02-G1 to 10-G1
----------------------------	----------------

## E

Entrance Door Headers .....	12-A1 to 13-A1
-----------------------------	----------------

Entrance Door Muntins .....	15-A1
-----------------------------	-------

Entrance Door Options .....	01-A3 to 04-A3
-----------------------------	----------------

Entrance Doors From Stock .....	08-A1 to 11-A1
---------------------------------	----------------

Estimating Software for Storefronts .....	IX
---	----

Extruded Aluminum Division Bars .....	02-B3
---------------------------------------	-------

Extruded Aluminum Pull Handles and Push Bars .....	02-A9
--	-------

Extruded Aluminum Thresholds .....	12-A1 to 13-A1, 13-A9 to 17-A9
------------------------------------	--------------------------------

Extrusions for Framing .....	02-B3 to 03-B3
------------------------------	----------------

EZ Slide Top Hung Sliding Door System .....	25-G1
---	-------

EZ Tone Door Chime .....	09-A9
--------------------------	-------

## F

Fixed Windows .....	01-D5 to 03-D5, 06-D5 to 07-D5
---------------------	--------------------------------

Fixed Windows, Blast Resistant .....	02-F4 to 03-F4, 06-F4 to 07-F4
--------------------------------------	--------------------------------

Fixed Windows, Hurricane Resistant .....	09-E5 to 10-E5, 15-E5
--	-----------------------

Frameless Glass Door Kits .....	06-G1 to 07-G1
---------------------------------	----------------

Frameless Shower Products .....	44-G1 to 45-G1
---------------------------------	----------------

Framing Extrusions .....	02-B3 to 03-B3
--------------------------	----------------

## G

### Glass

Cleaners .....	12-D5
----------------	-------

Door Kits .....	06-G1 to 07-G1
-----------------	----------------

Entrance System Hardware .....	02-G1 to 19-G1
--------------------------------	----------------

Mounted Sliding Door Systems .....	21-G1, 26-G1
------------------------------------	--------------

Railing Systems .....	40-G1 to 41-G1
-----------------------	----------------

Glazing Gaskets for Storefront Products .....	01-B3
---	-------

Glazing Gaskets for Window Wall Products .....	03-C4
--	-------

GSDH Series Bottom Rolling Door System .....	27-G1
--	-------

Gypsum Board Adaptors .....	07-C4
-----------------------------	-------

## H

Hand Cleaners.....12-D5  
 Hand Rail Systems .....40-G1 to 41-G1  
 Headers and Head Channels.....08-G1 to 10-G1  
 Headers for Entrance Doors.....12-A1 to 13-A1  
 Hinges for Entrance Doors.....07-A9 to 09-A9  
 Horizontal Sliding Windows .....01-D5 to 03-D5, 08-D5 to 09-D5  
 Horizontal Sliding Windows, Blast Resistant .....02-F4 to 03-F4, 08-F4 to 09-F4  
 Horizontal Sliding Windows, Hurricane Resistant 09-E5 to 10-E5, 13-E5 to 14-E5  
 Hurricane Resistant  
     Balcony/Terrace Doors.....01-E4 to 05-E4  
     Concealed Vent Windows .....02-E5 to 08-E5  
     Entrance Doors .....01-E1 to 07-E1  
     Fixed Windows.....09-E5 to 10-E5, 15-E5  
     Single Hung Windows .....09-E5 to 12-E5  
     Sliding Windows .....09-E5 to 10-E5, 13-E5 to 14-E5  
     Storefronts .....01-E2 to 25-E3  
     Windows .....01-E5 to 15-E5

## I

Interior Office Partition Systems .....36-G1 to 39-G1

## J

Jackson Overhead Door Closers .....05-A9 to 06-A9  
 Jackson Panic Exit Devices .....03-A3 to 04-A3  
 Jamb Moldings .....03-B3

## K

Kits for Glass Doors.....06-G1 to 07-G1  
 Kits for Shower Doors.....45-G1

## L

Ladder Pull Handles .....02-A9  
 Laguna Door Hardware .....19-G1 to 21-G1  
 Lever Handles and Locks .....07-A7  
 Light Duty Stacking Partition System .....35-G1

## M

Magnetic Door Retainers.....09-A9  
 Maps of Service Centers.....V, VII  
 Metal Cleaners .....12-D5  
 Mid-Panel Panic Exit Devices .....01-A3

## O

Office Partition Systems .....36-G1 to 39-G1  
 Offset Pivot Doors and Frames .....10-A1 to 11-A1  
 Offset Pivots .....10-A9  
 Offset Pull Handles.....01-A9 to 02-A9  
 Overhead Concealed Door Closers .....05-A9 to 06-A9  
 Overhead Track Sliding and Bi-Fold Doors .....30-G1 to 31-G1

## P

Partition Systems .....32-G1 to 39-G1, 45-G1  
 Patch Hardware.....16-G1 to 17-G1  
 Phone Numbers for Service Centers.....V, VII  
 Pivot Door Hardware.....19-G1  
 Plastic Cleaners.....12-D5  
 Platinum Series Full Framed Doors .....01-A4 to 07-A4  
 Premium Series Balanced Doors .....01-A5 to 09-A5  
 Prepared Headers and Thresholds for Entrance Doors .....12-A1 to 13-A1  
 Product Information on the Web Site .....XI to XVI  
 Pull Handles and Push Bars.....01-A9 to 02-A9

## R

Railing Systems .....40-G1 to 41-G1  
 Restroom Partition System .....45-G1

## S

SDR Bottom Rolling Sliding Door System .....28-G1  
 Shower Door Hardware .....44-G1 to 45-G1  
 Sidelite Rails .....08-G1  
 Silicone Sealants.....01-C4  
 Single Hung Windows .....01-D5 to 05-D5  
 Single Hung Windows, Blast Resistant.....02-F4 to 05-F4  
 Single Hung Windows, Hurricane Resistant.....09-E5 to 12-E5  
 Sliding Glass Door Systems .....20-G1 to 31-G1  
 Sliding Shower Door Kits .....45-G1

Sliding Wood Door System.....25-G1  
 Sparkle Cleaner and Stain Remover .....11-D5  
 Special Features

Balanced Doors .....02-A5 to 04-A5  
 Defender Series BR604, BR606 Storefronts.....04-F1  
 Defender Series BR7500 Windows.....04-F2  
 Defender Series BT601 Storefront .....15-F1  
 Defender Series BW7600 Windows .....04-F3  
 Defender Series BW8000 Windows .....04-F4  
 Defender Series BW8100 Windows .....06-F4  
 Defender Series BW8200 Windows .....08-F4  
 Series 400, 400S, 450, 450S, 451, 451S, IT451 Storefronts.....06-B1 to 07-B1  
 Series 800, 850 Durafront Entrance System .....11-A2  
 Series 7200, 7300 Windows.....04-D1  
 Series 7400 Windows.....04-D2  
 Series 7500 Windows.....04-D3  
 Series 7600 Windows.....04-D4  
 Series 8000 Single Hung Windows .....04-D5  
 Series 8100 Fixed Windows .....06-D5  
 Series 8200 Horizontal Sliding Windows .....08-D5  
 Series BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....05-C1  
 Series FF450, FF451, FT451, FF600, FF601, FT601 Storefronts .....05-B2  
 Series IG500, IG600 Storefronts .....04-E3  
 Series IT451 Storefront.....45-B1  
 Series IT600 Storefront .....18-E3  
 Series IW7500 Windows.....04-E5  
 Series IW7600 Windows.....07-E5  
 Series IW8000 Windows .....11-E5  
 Series IW8100 Windows .....15-E5  
 Series IW8200 Windows .....13-E5  
 Series OS175, OS450, OS451, OS600, OS601 Window Walls .....04-C3  
 Series OS175SG, OS450SG, OS451SG, OS600SG, OS601SG Window Walls .....05-C3  
 Series TN451, TT451, TN601, TT601 Window Walls .....04-C2

## Specifications

Balanced Doors .....05-A5  
 Defender Series BR604, BR606 Storefronts .....02-F1 to 03-F1  
 Defender Series BR7500 Windows .....02-F2 to 03-F2  
 Defender Series BT601 Storefront .....13-F1 to 14-F1  
 Defender Series BW7600 Windows .....02-F3 to 03-F3  
 Defender Series BW8000, BW8100, BW8200 Windows .....02-F4 to 03-F4  
 Series 250, 400, 550 Entrance Doors .....02-A1  
 Series 250T, 400T Thermal Doors.....02-A6  
 Series 400, 450, 451 Storefronts .....02-B1  
 Series 400S, 450S, 451S Storefronts .....03-B1  
 Series 800, 850 Durafront Entrance System .....02-A2  
 Series 900 Terrace Doors .....02-A7  
 Series 2000 Sliding Doors .....02-A8  
 Series 7200, 7300 Windows .....02-D1 to 03-D1  
 Series 7400 Windows .....02-D2 to 03-D2  
 Series 7500 Windows .....02-D3 to 03-D3  
 Series 7600 Windows .....02-D4 to 03-D4  
 Series 8000, 8100, 8200 Windows .....02-D5 to 03-D5  
 Series BAL-350 Balcony/Terrace Doors .....02-E4  
 Series BG450, BG520, BG525, BG600 Window Walls .....02-C1  
 Series BT525, BT600 Window Walls .....03-C1  
 Series DH-350 Entrance Doors.....02-E1  
 Series DHS-500 Storefront .....02-E2  
 Series FF450, FF451, FF600, FF601 Storefronts .....02-B2  
 Series FFM1, FFN1, FFW1 Entrance Doors .....02-A4  
 Series FT451, FT601 Storefronts .....03-B2  
 Series IG500, IG600 Storefronts .....02-E3 to 03-E3  
 Series IT451, IT451S Storefronts.....41-B1 to 42-B1  
 Series IT600 Storefront .....16-E3 to 17-E3  
 Series IW7500, IW7600 Windows .....02-E5 to 03-E5  
 Series IW8000, IW8100, IW8200 Windows .....09-E5 to 10-E5  
 Series OS175, OS450, OS451, OS600, OS601 Window Walls .....02-C3  
 Series OS175SG, OS450SG, OS451SG, OS600SG, OS601SG Window Walls .....03-C3

# INDEX



Series TN451, TT451, TN601, TT601 Window Walls .....	02-C2
SPS Stacking Partition System .....	32-G1 to 34-G1
SSR Bottom Rolling Sliding Door System .....	29-G1
Stacking Door Systems .....	32-G1 to 35-G1
Stain Removers .....	11-D5
Stainless Steel Thresholds .....	15-A9
Steel Stiffeners .....	04-B3
Stock Entrance Doors .....	08-A1 to 11-A1
Storefront Door Hinges .....	07-A9 to 09-A9
Storefront Entrance Doors From Stock .....	08-A1 to 11-A1
Storefront Estimating Software .....	IX
Storefront Glazing Gaskets .....	01-B3
Storm Front Balcony/Terrace Doors .....	01-E4 to 05-E4
Storm Front Entrance Doors .....	01-E1 to 07-E1
Storm Front Storefronts .....	01-E2 to 25-E3
Storm Front Windows .....	01-E5 to 15-E5
Structural Silicone Charts	
BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....	23-C1
OS175SG, OS450SG, OS451SG, OS600SG, OS601SG Window Walls .....	50-C3
TN451, TT451, TN601, TT601 Window Walls .....	12-C2
Subframes and Gear Hinges Series 800, 850 Durafront Entrance System ..	10-A2
Surface Mounted Door Closers .....	03-A9 to 04-A9

## T

Technical Data	
Balanced Doors .....	06-A5 to 07-A5
Series 250, 400, 550 Entrance Doors .....	03-A1
Series 250T, 400T Thermal Doors .....	03-A6
Series 400, 400S, 450, 450S, 451, 451S, IT451 Storefronts .....	04-B1 to 05-B1
Series 800, 850 Durafront Entrance System .....	03-A2
Series 900 Terrace Doors .....	03-A7
Series 2000 Sliding Doors .....	03-A8
Series BAL-350 Balcony/Terrace Doors .....	03-E4
Series BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....	04-C1
Series DH-350 Entrance Doors .....	03-E1
Series DHS-500 Storefront .....	03-E2
Series FF450, FF451, FT451, FF600, FF601, FT601 Storefronts .....	04-B2
Series FFM1, FFN1, FFW1 Entrance Doors .....	03-A4
Series IT451 Storefront .....	43-B1
Series OS175, OS450, OS451, OS600, OS601 Window Walls .....	06-C3
Series OS175SG, OS450SG, OS451SG, OS600SG, OS601SG Window Walls .....	07-C3
Series TN451, TT451, TN601, TT601 Window Walls .....	03-C2
Telephone Numbers for Service Centers .....	V, VII
Thermal Break Technology .....	44-B1
Thermal Center Glazed Storefronts .....	41-B1 to 56-B1
Thresholds for Entrance Doors .....	12-A1 to 13-A1, 13-A9 to 17-A9
Top Hung Sliding Door Systems .....	20-G1 to 26-G1
Tube Extrusions .....	03-B3
Typical Details	
Balanced Doors .....	08-A5 to 09-A5
Defender Series BR604, BR606 Storefronts .....	05-F1 to 10-F1
Defender Series BR7500 Windows .....	05-F2
Defender Series BT601 Storefront .....	16-F1 to 19-F1
Defender Series BW7600 Windows .....	05-F3
Defender Series BW8000 Windows .....	05-F4
Defender Series BW8100 Windows .....	07-F4
Defender Series BW8200 Windows .....	09-F4
Series 250, 400, 550 Entrance Doors .....	05-A1 to 07-A1
Series 250T, 400T Thermal Doors .....	03-A6
Series 400, 400S Storefronts .....	08-B1 to 15-B1
Series 400T Thermal Doors .....	04-A6
Series 450, 450S Storefronts .....	18-B1 to 25-B1
Series 451, 451S Storefronts .....	30-B1 to 37-B1
Series 800, 850 Durafront Entrance System .....	04-A2 to 09-A2
Series 900 Terrace Doors .....	04-A7 to 06-A7
Series 2000 Sliding Doors .....	04-A8 to 07-A8
Series 7200, 7300 Windows .....	05-D1 to 13-D1
Series 7400 Windows .....	07-D2 to 09-D2
Series 7500 Windows .....	05-D3 to 11-D3

Series 7600 Windows .....	05-D4 to 08-D4
Series 8000 Single Hung Windows .....	05-D5
Series 8100 Fixed Windows .....	07-D5
Series 8200 Horizontal Sliding Windows .....	09-D5
Series BAL-350 Balcony/Terrace Doors .....	04-E4 to 05-E4
Series BG450 Window Wall .....	06-C1 to 09-C1
Series BG520 Window Wall .....	10-C1 to 13-C1
Series BG525, BT525 Window Walls .....	14-C1 to 16-C1
Series BG600, BT600 Window Walls .....	17-C1 to 20-C1
Series DH-350 Entrance Doors .....	04-E1 to 05-E1
Series DHS-500 Storefront .....	04-E2
Series FF450 Storefront .....	06-B2 to 11-B2
Series FF451, FT451 Storefronts .....	15-B2 to 21-B2
Series FF600 Storefront .....	25-B2 to 29-B2
Series FF601, FT601 Storefronts .....	33-B2 to 39-B2
Series FFM1, FFN1, FFW1 Entrance Doors .....	04-A4 to 06-A4
Series IG500 Storefront .....	05-E3 to 07-E3
Series IG600 Storefront .....	10-E3 to 12-E3
Series IT451, IT451S Storefronts .....	46-B1 to 52-B1
Series IT600 Storefront .....	19-E3 to 22-E3
Series IW7500 Windows .....	05-E5 to 06-E5
Series IW7600 Windows .....	08-E5
Series IW8000 Windows .....	12-E5
Series IW8200 Windows .....	14-E5
Series OS175, OS175SG Window Walls .....	08-C3
Series OS450, OS450SG Window Walls .....	10-C3 to 15-C3
Series OS451, OS451SG Window Walls .....	19-C3 to 26-C3
Series OS600, OS600SG Window Walls .....	30-C3 to 35-C3
Series OS601, OS601SG Window Walls .....	39-C3 to 46-C3
Series TN451, TT451, TN601, TT601 Window Walls .....	05-C2 to 06-C2

## U

U.S. Aluminum Service Centers .....	IV to V
U.S. Aluminum Web Site .....	X to XVI
U-Channels .....	08-G1
Universal Glazing Gasket for Storefronts .....	01-B3

## V

Vanguard Security Astragal .....	16-A1
Von Duprin Panic Exit Devices .....	02-A3

## W

Wall Mounted Glass Door Systems .....	21-G1 to 22-G1, 24-G1 to 26-G1
Water Spot Remover .....	11-D5
Weatherstripping for Windows .....	10-D5
Web Site for Architects .....	01-G1
Web Site Information for U.S. Aluminum .....	X to XVI
Windload Charts	
Defender Series BT601 Storefront .....	20-F1
Series 400, 400S Storefronts .....	16-B1
Series 450, 450S Storefronts .....	26-B1
Series 451, 451S Storefronts .....	38-B1 to 39-B1
Series BG450, BG520, BG525, BT525, BG600, BT600 Window Walls .....	21-C1
Series FF450 Storefront .....	12-B2 to 13-B2
Series FF451, FT451 Storefronts .....	22-B2 to 23-B2
Series FF600 Storefront .....	30-B2 to 31-B2
Series FF601, FT601 Storefronts .....	40-B2 to 41-B2
Series IG500 Storefront .....	08-E3
Series IG600 Storefront .....	13-E3
Series IT451 Storefront .....	53-B1 to 54-B1
Series IT600 Storefront .....	23-E3
Series OS175, OS175SG Window Walls .....	09-C3
Series OS450, OS450SG Window Walls .....	16-C3 to 17-C3
Series OS451, OS451SG Window Walls .....	27-C3 to 28-C3
Series OS600, OS600SG Window Walls .....	36-C3 to 37-C3
Series OS601, OS601SG Window Walls .....	47-C3 to 48-C3
Series TN451, TT451 Window Walls .....	08-C2
Series TN601, TT601 Window Walls .....	10-C2
Windo-Pile Weatherstrip .....	10-D5
Window System Hardware .....	15-D1, 05-D2 to 06-D2, 04-D3, 04-D4
Window Washing Tools and Supplies .....	12-D5

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