

Design Manual Registration

Thank you for your interest in Coral Architectural Products.
To ensure that you have the most updated information on
our complete line of architectural aluminum products, please
complete and return the attached registration card. We will
directly send you updates as they become available.



Design Manual Registration Card

Date: _____

Sales Person: _____

Company Name: _____

Mailing Address: _____

Street *line2*: _____

City: _____

State: _____

Zip: _____

Region: _____

Company Phone: _____

Company Fax: _____

Web Address: _____

Contact: _____

Title: _____

Cell Phone: _____

Email: _____

Architectural Firm ☐

Glazing Contractor ☐

Coral Employee ☐

Other: _____

CATALOG INDEX

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Coral Industries, Inc.



L.L. "Mac" McAllister, Jr.
Chief Executive Officer

Albert E. Askew
President

Lewis L. McAllister, III
Executive Vice President

D. Grant McAllister
Executive Vice President and
Chief Financial Officer

The Company

Coral Industries, Inc. was established in 1976 as a manufacturer of quality bath enclosures. Today Coral Industries is the largest independent manufacturer in an industry including nearly 150 national and regional competitors. Our past growth can be contributed to the result of customer's success utilizing the many advantages Coral Industries offer: quality, service, innovative design and dependability. At Coral's 325,000 square feet manufacturing facility located in Tuscaloosa, Alabama, in-house capabilities include injection molding of plastic parts, soft and rigid vinyl extrusions, powder coat painted finishing, and complete fabrication of aluminum profiles and glass products, thus giving Coral Industries greater flexibility and control of the entire production process.

Over the years, Coral Industries has expanded by organizing additional divisions and products. **Central Alabama Transport (CAT)** was founded in 1977 and has proven to be a valuable addition to Coral Industries. CAT is a dedicated fleet of trucks which allows for our products to be delivered on a timely basis to distribution centers and businesses across the United States. **Coral Glass Division**, established in 1989, offers a full range of custom fabricated glass, ranging from 1/8" to 1", in addition to laminated and custom insulated glass. Coral Glass Division has an assortment of computer operated cutting, fabrication, and tempering machinery that allows for the fabrication of glass to exacting tolerances.

Coral Architectural Products

In keeping with Coral Industries tradition of growth, **Coral Architectural Products (CAP)** was established in January 2005. CAP offers a full line of architectural aluminum entrance doors, storefronts, curtain walls, window walls and protective glazing products. To ensure structural integrity and performance requirements for today's demanding projects; all of our architectural products are tested to current AAMA and / or ASTM performance standards for structural, air and water infiltration at certified independent test laboratories. We have also designed and tested products that meet the stringent requirements of both High Velocity Hurricane Impact Zones and Blast Mitigation. Comprehensive architectural details, installation instructions and test reports are available for each system.

The Product Line

CAP has combined the experience of its management team with over 35 years of designing, testing and marketing in the industry in order to develop **its industry leading** aluminum systems. Each system is designed and tested for simplicity, versatility, maximum performance and ease of installation.

Mission Statement

Coral Industries, Inc. is dedicated to the continuous improvement of the quality of our products, processes and services in order to exceed our customer's expectations.

Coral Architectural Products offers a variety of architectural finishes satisfying the increased demands of the commercial construction industry in terms of finish types and performance, while protecting the environment. Standard finishes include, but are not limited to the following types: anodized finishes, factory applied powder coat and special baked-on liquid painted finishes. Consult with your local Coral sales representative or Coral's national architectural representative at 1-800-772-7737 for additional surface treatments and options.

Anodized Finishes

Anodic, or anodized, finishes for architectural aluminum profiles are artificially enhanced by a natural process in which aluminum combines with oxygen to form a thin layer of aluminum oxide. The result is an extremely durable finish offering excellent resistance to weathering and corrosion.

ANODIZING FINISH CLASSIFICATION / CODE IDENTIFICATION				
Coral Number	Color	Aluminum Association Specification	Classification	Stock
CLEAR ANODIZED FINISHES				
#10	Clear	AA-M12-C22-A31	Architectural Class II (.4 mils minimum)	Yes
#11	Clear	AA-M12-C22-A41	Architectural Class I (.7 mils minimum)	Yes
COLOR ANODIZED FINISHES				
#20	Dark Bronze	AA-M12-C22-A34	Architectural Class II (.4 mils minimum)	Yes
#21	Dark Bronze	AA-M12-C22-A44	Architectural Class I (.7 mils minimum)	* No
#22	Medium Bronze	AA-M12-C22-A34	Architectural Class II (.4 mils minimum)	* No
#23	Medium Bronze	AA-M12-C22-A44	Architectural Class I (.7 mils minimum)	* No
#26	Champagne	AA-M12-C22-A34	Architectural Class II (.4 mils minimum)	* No
#27	Champagne	AA-M12-C22-A44	Architectural Class I (.7 mils minimum)	* No
#30	Black	AA-M12-C22-A44	Architectural Class I (.7 mils minimum)	* No
MILL FINISHES				
#00	Mill	N/A	N/A	*

* Contact the Coral factory for availability and lead times on non-stock finishes.

Powder Coat Painted Finishes

Powder Coat Finishes are high-performance durable architectural finishes offering improved gloss retention and enhanced resistance to chalking and fading. Environmentally friendly, powder coat finishes are solvent-free and provide outstanding mechanical properties and abrasion resistance over solvent based paints. Coral Architectural Products powder coat finishes are available in two levels of performance listed below.

NOTE: Contact the Coral factory for information on custom colors and non-stock finishes.

AAMA 2604

POWDER COAT CLASSIFICATION/CODE IDENTIFICATION				
Coral Number	Color	American Architectural Manufacturers Association (AAMA) Specification	Classification	Stock
FINISHES				
#81	Bone White	AAMA 2604	Polyester	Yes
#92	Light Blue	AAMA 2604	Polyester	Yes
#93	Hartford Green	AAMA 2604	Polyester	Yes
#94	Tan	AAMA 2604	Polyester	Yes
#95	Coal Black	AAMA 2604	Polyester	Yes
#96	Sandstone	AAMA 2604	Polyester	Yes
#97	Seawolf	AAMA 2604	Polyester	Yes
#98	Colonial Red	AAMA 2604	Polyester	Yes

AAMA 2605

POWDER COAT CLASSIFICATION/CODE IDENTIFICATION				
Coral Number	Color	American Architectural Manufacturers Association (AAMA) Specification	Classification	Stock
FINISHES				
#91	Bone White	AAMA 2605	70% Fluoropolymer	Yes
#82	Light Blue	AAMA 2605	70% Fluoropolymer	Yes
#83	Hartford Green	AAMA 2605	70% Fluoropolymer	Yes
#84	Tan	AAMA 2605	70% Fluoropolymer	Yes
#85	Coal Black	AAMA 2605	70% Fluoropolymer	Yes
#86	Sandstone	AAMA 2605	70% Fluoropolymer	Yes
#87	Seawolf	AAMA 2605	70% Fluoropolymer	Yes
#88	Colonial Red	AAMA 2605	70% Fluoropolymer	Yes

PAINTED FINISHES - SPECIFICATIONS

AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusion and Panels. This specification will assist the architect, owner and contractor to specify and obtain factory-applied organic coatings that meet a five-year level of performance in terms of film integrity, weatherability and general appearance.

AAMA 2605 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusion and Panels. This specification will assist the architect, owner and contractor to specify and obtain factory-applied organic coatings that meet a ten-year level of performance in terms of film integrity, weatherability and general appearance.

Coral Number	AAMA 2604	AAMA 2605
Coating Thickness	1.2 mils	1.2 mils
Pre-treatment	Multi-stage Cleaning with Chemical Conversion Coating	Multi-stage Cleaning with Chrome Phosphate Conversion Coating 40 mg./ft ² min.
Abrasion Resistance	Falling Stand Test - 20L/mil	Falling Stand Test - 50L/mil
Chemical Resistance	Muriatic Acid/Mortar Resistance/Nitric Acid Flumes Test	Muriatic Acid/Mortar Resistnace/Nitric Acid Flumes Test
Color Retention	5 Year South Florida (Max. Δ E)	10 Year South Florida (Max. Δ E)
Gloss Retention	Minimum of 30% after 5 Years South Florida	Minimum of 50% after 5 Years South Florida
Corrosion Resistance	3000 Hour Salt Spray Test	4000 Hour Salt Spray Test
Chalking Resistance	No more than #8	No More than #8 (#6 for White Colors)
Film Adhesion	Dry Adhesion/Wet Adhesion Boiling Water Adhesion	Dry Adhesion/Wet Adhesion Boiling Water Adhesion

* Contact the Coral factory for availability and lead times on non-stock finishes.

Limited Product Warranty and Remedy

Customer: _____

Project: _____

Effective Date: _____

Architectural Firm: _____

The Seller warrants, for a period of two (2) years from the date of substantial completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of initial shipment, that the products manufactured by the Seller shall be free from defects in workmanship and materials, provided that such products have been installed and maintained in strict accordance with all applicable safety and building codes, any and all other applicable standards, and Seller's installation instructions. This warranty is limited to defects discovered or which should be discovered within two years from the date of initial shipment provided that the Seller receives written notification specifying any and all defects within that two-year period. Seller's obligations under this warranty are limited to the repair or replacement of any defective materials and/or the refund by the Seller of the original purchase price paid for the product. The Seller reserves the exclusive right to select one of these remedies. In no event will the Seller be liable for direct, indirect, special or consequential damages including but not limited to loss of profits or use.

SELLER MAKES NO WARRANTY OTHER THAN THAT SET FORTH HERE. ALL OTHER EXPRESS AND IMPLIED WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED, DENIED AND EXCLUDED. SELLER MAKES NO WARRANTY OF MERCHANTABILITY OR THAT THE GOODS ARE FIT FOR ANY PARTICULAR PURPOSE. SELLER MAKES NO REPRESENTATION AS TO THE PRODUCT'S FITNESS FOR ANY PARTICULAR PURPOSE.

Warranty of Outside Suppliers – Seller makes no warranty, and hereby disclaims any and all express warranties, including but not limited to any warranty of merchantability or fitness for a particular purpose, for any products supplied by Seller, which are manufactured by others. Any warranty of such products is limited to that provided by the manufacturer of those products. The Seller will not assume charges for freight or labor for items manufactured by others and supplied by Seller.

Coral Architectural Products

Representative

Customer Service Manager
Title

To Be Advised
Date

Door Corner Construction

Limited Lifetime Warranty

Customer: _____

Project: _____

Effective Date: _____

Architectural Firm: _____

This Warranty is in addition to Coral Architectural Products (Seller) standard two (2) years limited warranty and is wholly and exclusively applicable to Seller's factory fabricated and assembled aluminum entrance door's dual moment corner construction.

The Seller warrants to its dealers, customers, and all subsequent purchasers and users that its dual moment corner construction assembly shall be free from defects in workmanship and materials for the normal and useful lifetime of the door.

This warranty is effective from the date of substantial completion of the project provided however that the Limited Warranty shall begin in no event later than 6 months from date of initial shipment from Seller's factory and applies only if Seller's doors have been installed and maintained in strict accordance with Seller's published recommended practices and installation instructions and only if Seller is notified in writing within sixty (60) days after such defects appear.

Seller's obligations under this warranty are limited to the repair or replacement of any defective door and/or the refund by the Seller of the original purchase price paid for the door and does not include the replacement of glazing in-fills, gaskets, hardware, doorframe or adjacent framing temporary enclosures, nor any installation charges, labor charges, delivery or freight charges. The Seller reserves the exclusive right to select one of these remedies.

Seller hereby disclaims all Liability for any door that has been subjected to abuse, alterations, modifications, neglect, misuse, abnormal use, accident, fire, war, flood, earthquakes, Acts of God or damage caused by parts not furnished by Seller.

In no event will the Seller be liable for Direct, Indirect, Special or Consequential Damages including, but not limited to, Loss of Profits or Good Will, Loss of Use or Other Commercial Loss or Injury. Seller further hereby disclaims all liability for the installation of Seller's doors. Seller makes no other Representations or Warranties, Express or Implied, including but not limited to any Implied Warranty of Merchantability or Fitness for a Particular Purpose.

Warranty claim may be filed by notifying Seller in writing within sixty (60) days of defect discovery at:

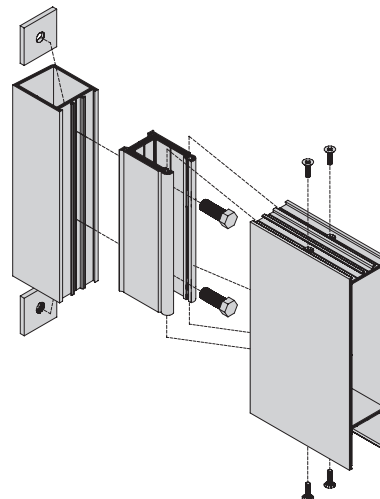
Warranty Claim Office
Coral Architectural Products
P.O. Box 40228
Tuscaloosa, AL 35404-0228

Coral Architectural Products

Representative

Customer Service Manager
Title

To Be Advised
Date



Anodized Finish Limited Warranty

Customer: _____

Project: _____

Architectural Firm: _____

This warranty is in addition to the Coral Architectural Product's standard product warranty.

Coral Architectural Products ("CAP") warrants for a period of two (2) years, from the from the date of substantial completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of initial shipment, materials from CAP's plant, that all exposed aluminum on the above project furnished by CAP shall conform to the following:

The said aluminum will not develop excessive fading or excessive non-uniformity of color, and will not crack, peel, pit or corrode, all within the limits defined as follows:

"Excessive fading" means that all change in color during the period of this warranty shall not exceed 10% or a value of 4, whichever is greater, above or below the original limits of acceptable color range for the color specified, as color is expressed in units of color measures (DELTA E) derived by photoelectric trisulphide colorimetry as described by circular B-429 of the National Bureau of Standards.

"Excessive non-uniformity" means non-uniform fading during the period of the warranty to the extent that adjacent panels have a color difference greater than the original limits of acceptable color expressed in the same system of color measurement described above.

"Will not pit or corrode" means that there shall be no pitting or other type of corrosion discernible by the naked eye from a distance of 10 feet resulting from the natural elements in the atmosphere at the project site.

This Warranty applies only if such anodized material is installed in strict accordance with CAP's recommended practices and maintained in accordance with American Architectural Manufacturers Association (AAMA) Publication Number 609.1 "Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum". AAMA Publication No. 609.1 will be furnished upon request. This Warranty does not cover, and CAP hereby expressly disclaims, all liability for and with respect to any material which has been subject to abuse, alteration, modification, neglect, misuse, abnormal use, accident, fire, war, flood, earthquake or acts of God.

The sole and exclusive remedy with respect to this Warranty shall be repair or replacement of the defective material or repayment by CAP of the purchase price paid therefore. CAP reserves the right to select the remedy.

The foregoing is extended solely to the Customer and is granted IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT THE GENERALITY OF THE FOREGOING, ANY GUARANTEE OR WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE.

Coral Architectural Products

Representative

Customer Service Manager
Title
March 2016

To Be Advised
Date
www.coralap.com

Painted Finish Limited Warranty

D2000 Powder Coat Finish

Customer: _____

Project: _____

Date of Substantial Completion: _____

This conditional limited warranty is in addition to the Coral Architectural Product's conditional limited standard product warranty. Coral Architectural Products (CAP) warrants that during the warranty period there will be:

Clause 1

- No visible checking* or cracking* of the **Interpon D2000™** powder coating.
- No chalking* of the **Interpon D2000™** powder coating in excess of that represented by Number 8 rating based on ASTM D4214.
- No color change of the **Interpon D2000™** powder coating greater than 5 (five) CIE Lab AE units calculated in accordance with ASTM 2244 Section 6.3. Color change shall be measured on the exposed surface which has been cleaned of oil, grease, chalk and oxidized film or other contaminants. Corresponding values shall be measured on the original retained batch panel. (Panel stored in the dark at temperatures below 30° C).

Clause 2

- Gloss Retention of the **Interpon D2000™** powder coating when applied to test panels will be greater than or equal to 30% after 5 years exposure in Florida (facing 45° South) in accordance with the requirements of AAMA 2604-02 Clause 7.9.1.4.2.
- Adhesion of the **Interpon D2000™** powder coating when initially applied to test panels and measured by reference to AAMA 2604-02 Clause 7.4.2 will show no removal of the film.

Warranty Terms and Conditions

- The "Warranty Period" for the warranties in Clause 1 shall mean the period of fifteen (15) years, and for the warranty in Clause 2 shall mean five (5) years, commencing on the date of substantial completion of the project or six months from the date of the initial shipment, whichever is sooner?
- Color measurements (delta E) are measured at 10 degrees and on exposed coated surfaces that have been cleaned of all external deposits including chalk and compared to the original unexposed coated surface. For comparison purposes, CAP will maintain a standard paint panel and/or documentation indicating color, gloss and other properties. It is understood that fading may not be uniform if the coated surfaces are not equally exposed to the sun and weathering elements. Prior to the determination of a gloss value using an angle of incidence of 60 degrees following ASTM D523, the surface must be cleaned using a 1% aqueous solution of a wetting agent with a soft sponge under light pressure.
- This warranty extends only to parts exposed to normal atmospheric conditions in the United States.
- A systematic maintenance program must be instituted to clean the surface periodically so as to prevent accumulations of salt deposits and harmful pollutants.
- This Warranty applies only if such painted material is installed in strict accordance with CAP's recommended practices and maintained in accordance with American Architectural Manufacturers Association (AAMA) Publication Number 610.1 "Voluntary Guide Specification for Cleaning and Maintenance of Architectural Painted Aluminum". AAMA Publication No. 610.1 will be furnished upon request.
- Maintenance: The cleaning recommendations for **Interpon D2000™** is an integral part of the warranty given for gloss, color retention and chalking. The warranty requires that regular cleaning has to be performed periodically, at least once a year and twice a year for structures directly exposed to areas of high salt concentration, such as near a seashore.

Painted Finish Limited Warranty

D2000 Powder Coat Finish

The conditions are as follows:

- ♦ Clean water with slight amounts of mild alkaline detergents must be used.
- ♦ The cleaning effect maybe increased by rubbing with a soft, non-scratching cloth or cotton with modest pressure.
- ♦ The temperature of the parts to be cleaned must not exceed 80° F.
- ♦ For removal of grease and oily substances isopropyl alcohol may be used.
- ♦ The cleaning solution must not be allowed to react for more than one (1) hour.
- ♦ After cleaning the surfaces must be rinsed with clean, cold water.
- ♦ A proper maintenance record has to be kept and documented. This documentation must contain the following information:
 - ✓ Date
 - ✓ Name and address of performing party
 - ✓ Description of cleaning procedure and detergents used
 - ✓ Signature of person performing the cleaning procedure

This warranty does not extend to:

- a) Damage to the coating caused by moisture or other contamination during storage of the powder or substrate or application;
- b) Damage to the coating during handling, shipping, processing, installation, improper cleaning or maintenance, etc.;
- c) Damage caused by impact, external forces, abrasion, environmental pollution, acid rain, immersion in salt water, hail, abnormal weather conditions, exposure to excessive temperatures (in excess of 150 F), solvents or chemicals, tapes, sealants, acts of God or other abuse; or
- d) Damage due to other circumstances beyond CAP's control.

Claim Procedure

In the event of a claim, claimant shall demonstrate that the failure of the product was due to a breach of this warranty and furnish proof of purchase of the defective CAP product. Claims must be made in writing within thirty days after the customer becomes aware of the failure or potential failure of the coating. CAP must be given an opportunity to inspect the substrate and coating that form the basis for the claim.

The sole and exclusive remedy with respect to this Warranty shall be repair or replacement of the defective material or repayment by CAP of the purchase price paid therefore. CAP reserves the right to select the remedy.

The foregoing is extended solely to the Customer and is granted IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT THE GENERALITY OF THE FOREGOING, ANY GUARANTEE OR WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE.

Coral Architectural Products

Representative

Customer Service Manager
Title

To Be Advised
Date

Painted Finish Limited Warranty

D3000 Powder Coat Finish

Customer: _____

Project: _____

Date of Substantial Completion: _____

This conditional limited warranty is in addition to the Coral Architectural Product's conditional limited standard product warranty. Coral Architectural Products (CAP) warrants that during the warranty period there will be:

Clause 1

- No visible checking* or cracking* of the **Interpon D3000™** powder coating.
- No chalking* of the **Interpon D3000™** powder coating in excess of that represented by Number 8 rating based on ASTM D4214.
- No color change of the **Interpon D3000™** powder coating greater than 5 (five) CIE Lab AE units calculated in accordance with ASTM 2244 Section 6.3. Color change shall be measured on the exposed surface which has been cleaned of oil, grease, chalk, and oxidized film or other contaminants, corresponding values shall be measured on the original retained batch panel. (Panel stored in the dark at temperatures below 30° C).0° C).

Clause 2

- Gloss Retention of the **Interpon D3000™** powder coating when applied to test panels will be greater than or equal to 50% after ten (10) years exposure in Florida (facing 45° South) in accordance with the requirements of AAMA 2605-02 Clause 7.9.1.4.2.
- Adhesion of the **Interpon D3000™** powder coating when initially applied to test panels and measured by reference to AAMA 2605-02 Clause 7.4.2 will show no removal of the film.

Warranty Terms and Conditions

- The "Warranty Period" for the warranties in Clause 1 shall mean the period of twenty (20) years, and for the warranty in Clause 2 shall mean ten (10) years, commencing on the date of substantial completion of the project or six months from the date of the initial shipment, whichever is sooner?
- Color measurements (delta E) are measured at 10 degrees and on exposed coated surfaces that have been cleaned of all external deposits including chalk and compared to the original unexposed coated surface. For comparison purposes, CAP will maintain a standard paint panel and/or documentation indicating color, gloss and other properties. It is understood that fading may not be uniform if the coated surfaces are not equally exposed to the sun and weathering elements. Prior to the determination of a gloss value using an angle of incidence of 60 degrees following ASTM D523, the surface must be cleaned using a 1% aqueous solution of a wetting agent with a soft sponge under light pressure.
- This warranty extends only to parts exposed to normal atmospheric conditions in the United States.
- A systematic maintenance program must be instituted to clean the surface periodically so as to prevent accumulations of salt deposits and harmful pollutants.
- This Warranty applies only if such painted material is installed in strict accordance with CAP's recommended practices and maintained in accordance with American Architectural Manufacturers Association (AAMA) Publication Number 610.1 "Voluntary Guide Specification for Cleaning and Maintenance of Architectural Painted Aluminum". AAMA Publication No. 610.1 will be furnished upon request.
- Maintenance: The cleaning recommendations for **Interpon D3000™** is an integral part of the warranty given for gloss, color retention, and chalking. The warranty requires that regular cleaning has to be performed periodically, at least once a year and twice a year for structures directly exposed to areas of high salt concentration, such as near a seashore.

Painted Finish Limited Warranty

D3000 Powder Coat Finish

The conditions are as follows:

- ♦ Clean water with slight amounts of mild alkaline detergents must be used.
- ♦ The cleaning effect maybe increased by rubbing with a soft, non-scratching cloth or cotton with modest pressure.
- ♦ The temperature of the parts to be cleaned must not exceed 80° F.
- ♦ For removal of grease and oily substances isopropyl alcohol may be used.
- ♦ The cleaning solution must not be allowed to react for more than 1 (one) hour.
- ♦ After cleaning the surfaces must be rinsed with clean, cold water.
- ♦ A proper maintenance record has to be kept and documented. This documentation must contain the following information:
 - ✓ Date
 - ✓ Name and address of performing party
 - ✓ Description of cleaning procedure and detergents used
 - ✓ Signature of person performing the cleaning procedure

This warranty does not extend to:

- a) Damage to the coating caused by moisture or other contamination during storage of the powder or substrate or application;
- b) Damage to the coating during handling, shipping, processing, installation, improper cleaning or maintenance, etc.;
- c) Damage caused by impact, external forces, abrasion, environmental pollution, acid rain, immersion in salt water, hail, abnormal weather conditions, exposure to excessive temperatures (in excess of 150 F), solvents or chemicals, tapes, sealants, acts of God, or other abuse; or
- d) Damage due to other circumstances beyond CAP's control.

Claim Procedure

In the event of a claim, claimant shall demonstrate that the failure of the product was due to a breach of this warranty and furnish proof of purchase of the defective CAP product. Claims must be made in writing within thirty days after the customer becomes aware of the failure or potential failure of the coating. CAP must be given an opportunity to inspect the substrate and coating that form the basis for the claim.

The sole and exclusive remedy with respect to this Warranty shall be repair or replacement of the defective material or repayment by CAP of the purchase price paid therefore. CAP reserves the right to select the remedy.

The foregoing is extended solely to the Customer and is granted IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT THE GENERALITY OF THE FOREGOING, ANY GUARANTEE OR WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE.

Coral Architectural Products

Representative

Customer Service Manager
Title

To Be Advised
Date

Painted Finish Limited Coastal Exposure Warranty

D3000 Powder Coat Finish

Customer: _____

Project: _____

Date of Substantial Completion: _____

This conditional limited warranty is in addition to the Coral Architectural Product's conditional limited standard product warranty. Coral Architectural Products (CAP) warrants that during the warranty period there will be:

Clause 1

- No visible checking* or cracking* of the **Interpon D3000™** powder coating.
- No chalking* of the **Interpon D3000™** powder coating in excess of that represented by Number 8 rating based on ASTM D4214.
- No color change of the **Interpon D3000™** powder coating greater than 5 (five) CIE Lab AE units calculated in accordance with ASTM 2244 Section 6.3. Color change shall be measured on the exposed surface which has been cleaned of oil, grease, chalk, and oxidized film or other contaminants, corresponding values shall be measured on the original retained batch panel. (Panel stored in the dark at temperatures below 30° C).0° C).

Clause 2

- Gloss Retention of the **Interpon D3000™** powder coating when applied to test panels will be greater than or equal to 50% after ten (10) years exposure in Florida (facing 45° South) in accordance with the requirements of AAMA 2605-02 Clause 7.9.1.4.2.
- Adhesion of the **Interpon D3000™** powder coating when initially applied to test panels and measured by reference to AAMA 2605-02 Clause 7.4.2 will show no removal of the film.

Warranty Terms and Conditions

- The "Warranty Period" for the warranties in Clause 1 shall mean the period of twenty (20) years, and for the warranty in Clause 2 shall mean ten (10) years, commencing on the date of substantial completion of the project or six months from the date of the initial shipment, whichever is sooner?
- Color measurements (delta E) are measured at 10 degrees and on exposed coated surfaces that have been cleaned of all external deposits including chalk and compared to the original unexposed coated surface. For comparison purposes, CAP will maintain a standard paint panel and/or documentation indicating color, gloss and other properties. It is understood that fading may not be uniform if the coated surfaces are not equally exposed to the sun and weathering elements. Prior to the determination of a gloss value using an angle of incidence of 60 degrees following ASTM D523, the surface must be cleaned using a 1% aqueous solution of a wetting agent with a soft sponge under light pressure.
- This warranty extends only to parts exposed to normal atmospheric conditions in the United States.
- A systematic maintenance program must be instituted to clean the surface within 90 days of installation and every 90 days thereafter.
- This Warranty applies only if such painted material is installed in strict accordance with CAP's recommended practices and maintained in accordance with American Architectural Manufacturers Association (AAMA) Publication Number 610.1 "Voluntary Guide Specification for Cleaning and Maintenance of Architectural Painted Aluminum". AAMA Publication No. 610.1 will be furnished upon request.
- Maintenance: The cleaning recommendations for **Interpon D3000™** is an integral part of the warranty given for gloss, color retention, and chalking. The warranty requires that regular cleaning has to be performed periodically, at least once a year and four times a year for structures directly exposed to areas of high salt concentration, such as near a seashore.

Painted Finish Limited Coastal Exposure Warranty D3000 Powder Coat Finish

The conditions are as follows:

- ♦ Clean water with slight amounts of mild alkaline detergents must be used.
- ♦ The cleaning effect maybe increased by rubbing with a soft, non-scratching cloth or cotton with modest pressure.
- ♦ The temperature of the parts to be cleaned must not exceed 80° F.
- ♦ For removal of grease and oily substances isopropyl alcohol may be used.
- ♦ The cleaning solution must not be allowed to react for more than 1 (one) hour.
- ♦ After cleaning the surfaces must be rinsed with clean, cold water.
- ♦ A proper maintenance record has to be kept and documented. This documentation must contain the following information:
 - ✓ Date
 - ✓ Name and address of performing party
 - ✓ Description of cleaning procedure and detergents used
 - ✓ Signature of person performing the cleaning procedure

This warranty does not extend to:

- a) Damage to the coating caused by moisture or other contamination during storage of the powder or substrate or application;
- b) Damage to the coating during handling, shipping, processing, installation, improper cleaning or maintenance, etc.;
- c) Damage caused by impact, external forces, abrasion, environmental pollution, acid rain, immersion in salt water, hail, abnormal weather conditions, exposure to excessive temperatures (in excess of 150 F), solvents or chemicals, tapes, sealants, acts of God, or other abuse; or
- d) Damage due to other circumstances beyond CAP's control.

Claim Procedure

In the event of a claim, claimant shall demonstrate that the failure of the product was due to a breach of this warranty and furnish proof of purchase of the defective CAP product. Claims must be made in writing within thirty days after the customer becomes aware of the failure or potential failure of the coating. CAP must be given an opportunity to inspect the substrate and coating that form the basis for the claim.

The sole and exclusive remedy with respect to this Warranty shall be repair or replacement of the defective material or repayment by CAP of the purchase price paid therefore. CAP reserves the right to select the remedy.

The foregoing is extended solely to the Customer and is granted IN LIEU OF ALL OTHER GUARANTEES AND WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT THE GENERALITY OF THE FOREGOING, ANY GUARANTEE OR WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE.

Coral Architectural Products

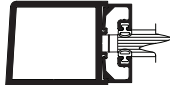
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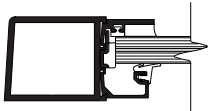
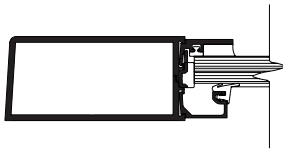
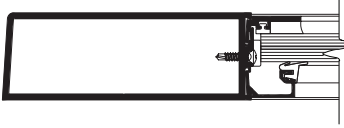
Customer Service Manager
Title

To Be Advised
Date

Product Selection Guide

Standard Entrances

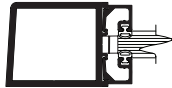
STANDARD ENTRANCE DOORS									
Product	Series 213			Series 380			Series 500		
Manual Section	A1			A1			A1		
Stile Type	Narrow Stile			Medium Stile			Wide Stile		
Details									
Applications	Light to Moderate Traffic			Moderate to Heavy Traffic			Heavy Traffic		
Dimensions	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail
	2½"	2¼"	4"	3¾"	4"	7½"	5"	4"	7½"
Glass Infill Size	¼" or 1"			¼" or 1"			¼" or 1"		
FBC Application	Offset Pivots		Butt Hinges	Offset Pivots		Butt Hinges	Offset Pivots		Butt Hinges
	FL15784		FL15798	FL15784		FL15798	FL15784		FL15798
	(For use outside HVH2)			(For use outside HVH2)			(For use outside HVH2)		
ADA Compliant 9½" Bottom Rail									
Product Features	Coral's entrance doors are constructed of extruded aluminum profiles incorporating 6063-T6 alloy and 0.125" nominal wall thickness for increased strength and durability. This reliability is backed by a limited lifetime warranty on the corner construction of the door. Any door which fails due to corner construction will be replaced free of charge. Coral's entrance doors can accommodate a variety of custom hardware applications for functionality and increased security.								

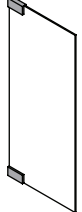
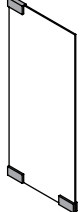
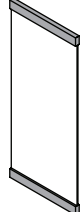
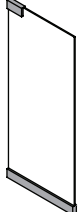
IMPACT-RESISTANT ENTRANCE DOORS									
Product	Series 281			Series 381			Series 581		
Manual Section	D1			D1			D1		
Stile Type	Narrow Stile			Medium Stile			Wide Stile		
Details									
Applications	Light to Moderate Traffic			Medium to Heavy Traffic			Heavy Traffic		
Dimensions	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail
	2½"	2¼"	4"	3¾"	4"	7½"	5"	4"	7½"
Glass Infill Size	⅝"			⅝"			1⅝"		
FBC Applications	HVHZ Approved		HVHZ Approved	HVHZ Approved		HVHZ Approved	Pending		HVHZ Approved
	FL10432.2* (Wet-Glazed Application)		N/A	FL10432.1* (Wet-Glazed Application)		FL16358.1* (Dry-Glazed Application)	Pending		FL16720.1* (Dry-Glazed Application)
Blast Mitigation	UFC 4-010-01		GSA-TS01-03	UFC-4-010-01		GSA-TS01-03	UFC-4-010-01		GSA-TS01-03
	No		No	Medium Level		Condition 2	No		No
Product Features	Series 281 narrow stile impact-resistant entrance doors combines Coral's standard door components and corner construction with specially designed glazing moldings to create a door capable of withstanding extreme environmental conditions. Series 281 impact-resistant entrance system is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions.			Series 381 medium stile impact-resistant entrance doors combines Coral's standard door components and corner construction with specially designed glazing moldings to create a door capable of withstanding extreme environmental conditions. Series 381 impact-resistant entrance system is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions. In addition the Series 381 entrance system with FL550 framing meets the Federal Government's standards on anti-terrorism forced protection.			Series 581 wide stile impact-resistant entrance doors combines Coral's standard door components and corner construction with specially designed glazing moldings to create a door capable of withstanding extreme environmental conditions. Series 581 impact-resistant entrance system is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions. In addition the Series 581 entrance system with FL550 framing meets the Federal Government's standards on anti-terrorism forced protection.		

*Note: Florida product approval numbers (FL) are subject to change. It is advisable to verify all product FPA numbers on the Florida Building Code website at www.floridabuilding.org.

Product Selection Guide

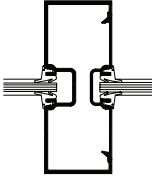
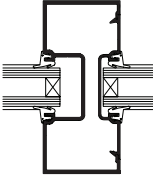
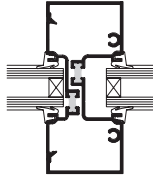
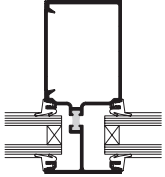
Showroom Entrances

SHOWROOM ENTRANCE DOORS									
Product	Series 213			Series 380			Series 500		
Manual Section	A1			A1			A1		
Stile Type	Narrow Stile			Medium Stile			Wide Stile		
Details									
Applications	Automotive Dealerships and Display Areas			Automotive Dealerships and Display Areas			Automotive Dealerships and Display Areas		
Dimensions	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail	Vertical Stiles	Top Rail	Bottom Rail
	2½"	2¼"	4"	3¾"	4"	7½"	5"	4"	7½"
Glass Infill Size	¼" or 1"			¼" or 1"			¼" or 1"		
ADA Compliant 9½" Bottom Rail									
Product Features	Coral's entrance doors are constructed of extruded aluminum profiles incorporating 6063-T6 alloy and 0.125" nominal wall thickness for increased strength and durability. This reliability is backed by a limited lifetime warranty on the corner construction of the door. Any door which fails due to corner construction will be replaced free of charge. Coral's entrance doors can accommodate a variety of custom hardware applications for functionality and increased security.								

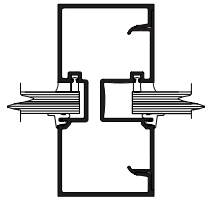
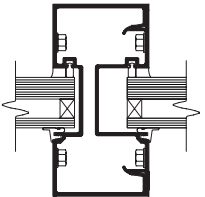
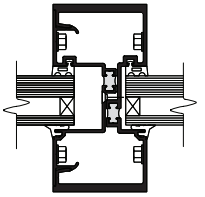
ALL GLASS ENTRANCES				
Product	Type "A"	Type "F"	Type "P"	Type "BP"
Manual Section	A3	A3	A3	A3
Details				
Applications	Recommended for Interior Applications	Recommended for Interior Applications	Recommended for Interior Applications	Recommended for Interior Applications
Glass Size	$\frac{3}{8}$ ", $\frac{1}{2}$ " or $\frac{3}{4}$ "	$\frac{3}{8}$ ", $\frac{1}{2}$ " or $\frac{3}{4}$ "	$\frac{3}{8}$ ", $\frac{1}{2}$ " or $\frac{3}{4}$ "	$\frac{3}{8}$ ", $\frac{1}{2}$ " or $\frac{3}{4}$ "
Hardware Type	Corner Patch Fittings	Patch Fittings with Bottom Lock	Continuous Top and Bottom Rails	Top Patch Fitting and Continuous Bottom Rail
Product Features	Type "A" fully tempered heavy glass doors are available with partial rails or patch fittings for top and bottom pivot corners (locks are not available in this style). Glass thicknesses range from $\frac{3}{8}$ ", $\frac{1}{2}$ " to $\frac{3}{4}$ " in clear or tinted complying with standards defined in ASTM C 1036 and ASTM C 1048.	Type "F" fully tempered heavy glass doors are available with partial rails or patch fittings for top and bottom pivot corners. Glass thicknesses range from $\frac{3}{8}$ ", $\frac{1}{2}$ " to $\frac{3}{4}$ " in clear or tinted complying with standards defined in ASTM C 1036 and ASTM C 1048.	Type "P" fully tempered heavy glass doors are available with full width top and bottom rails. Glass thicknesses range from $\frac{3}{8}$ ", $\frac{1}{2}$ " to $\frac{3}{4}$ " in clear or tinted complying with standards defined in ASTM C 1036 and ASTM C 1048.	Type "BP" fully tempered heavy glass doors are available with full width bottom rails and a partial rail or patch fitting at top pivot corner. Glass thicknesses range from $\frac{3}{8}$ ", $\frac{1}{2}$ " to $\frac{3}{4}$ " in clear or tinted complying with standards defined in ASTM C 1036 and ASTM C 1048.

Product Selection Guide

Standard Storefront Framing

STANDARD STOREFRONT FRAMING								
Product	FL200		FL300		FL300T		FS400T	
Manual Section	B1		B2		B3		B4	
Details								
Applications	Storefront Ribbon Window Punched Openings		Storefront Ribbon Window Punched Openings		Storefront Ribbon Window Punched Openings		Storefront Ribbon Window Punched Openings	
Dimensions	Face	Depth	Face	Depth	Face	Depth	Face	Depth
	1 3/4"	4 1/2"	2"	4 1/2"	2"	4 1/2"	2"	4 1/2"
Glass Infill Size	1/4" or 3/8"		1"		1"		1"	
Glass Plane	Center-Set		Center-Set		Center-Set		Front-Set	
Glazing Options	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermal Break	No		No		Yes		Yes	
NFRC Simulations	No		Yes		Yes		No	
FBC Applications	FL8832.1* (approved for use outside of HVHZ)		FL8832.2* (approved for use outside of HVHZ)		FL15659.1* (approved for use outside of HVHZ)		FL10643.1* (approved for use outside of HVHZ)	
Product Features	Series FL200 non-thermal 1 3/4" x 4 1/2" center set storefront framing system for monolithic glass designed for low-rise applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. Perimeter profiles with full-depth pockets eliminate the need for filler plates and provide direct anchoring to the substrate with excellent water control.		Series FL300 non-thermal 2" x 4 1/2" center set storefront framing system for 1" insulated glass designed for low-rise applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. Perimeter profiles with full-depth pockets eliminate the need for filler plates and provide direct anchoring to the substrate with excellent water control.		Series FL300T thermally broken 2" x 4 1/2" center set storefront framing system for 1" insulated glass designed for low-rise applications. Enhanced thermal performance is achieved by a process that abrades the thermal cavity and mechanically locks the polyurethane polymer with the finished surface of each aluminum profile. Resulting in a lower "U" factor and energy savings.		Series FS400T thermally broken 2" x 4 1/2" storefront framing system where the 1" insulated glass sets to the front of the system. FS400T can be glazed from the interior or exterior of the building; this versatility allows the system to handle a variety of configurations including punched openings and ribbon window in low-rise applications.	

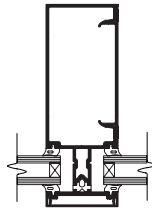
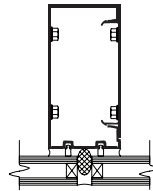
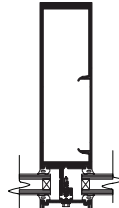
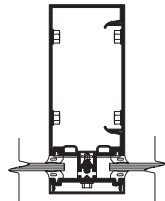
*Note: Florida product approval numbers (FL) are subject to change. It is advisable to verify all product FPA numbers on the Florida Building Code website at www.floridabuilding.org.

IMPACT-RESISTANT STOREFRONT FRAMING						
Product	FL500		FL550		FL550T	
Manual Section	D2		D3		D4	
Details						
Applications	Storefront Ribbon Windows Punched Openings		Storefront Ribbon Windows Punched Openings		Storefront Ribbon Windows Punched Openings	
Dimensions	Face	Depth	Face	Depth	Face	Depth
	2½"	5"	2½"	5"	2½"	5"
Glass Infill Size	⅝"		1⅜"		1⅜"	
Glass Plane	Center-Set		Center-Set		Center-Set	
Glazing Options	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed
	Yes	Yes	Yes	Yes	Yes	Yes
Thermal Break	No		No		Yes	
NFRC Simulations	No		Yes		Yes	
FBC Applications	HVHZ Approved	HVHZ Approved	HVHZ Approved	HVHZ Approved	HVHZ Approved	HVHZ Approved
	FL10467.1** (Wet-Glazed Application)	FL15793.1* (Dry-Glazed Application)	FL10467* (Wet-Glazed Application)	FL15794.1* (Dry-Glazed Application)	FL16719.1* (Wet-Glazed Application)	FL16179.2* (Wet-Glazed Application)
Blast Mitigation	UFC 4-010-01	GSA-TS01-03	UFC-4-010-01	GSA-TS01-03	UFC-4-010-01	GSA-TS01-03
	No	No	Medium Level	Condition 2	No	No
Product Features	Series FL500 is a non-thermal 2½" x 5" impact-resistant center set storefront that accepts ⅝" monolithic laminated safety glass and is designed for wind-borne debris applications. FL500 impact-resistant storefront is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions.		Series FL550 is a non-thermal 2½" x 5" impact-resistant center set storefront that accepts 1⅜" insulated laminated safety glass and is designed for wind-borne debris applications. FL550 impact-resistant storefront is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions. In addition the FL550 system with integral Series 381 entrances meets the Federal Government's standards on anti-terrorism forced protection.		Series FL550T is a thermally broken 2½" x 5" impact-resistant center set storefront that accepts 1⅜" monolithic laminated safety glass and is designed for wind-borne debris applications. FL550T impact-resistant storefront is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions.	

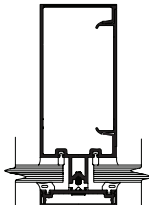
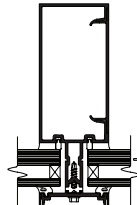
*Note: Florida product approval numbers (FL) are subject to change. It is advisable to verify all product FPA numbers on the Florida Building Code website at www.floridabuilding.org.

Product Selection Guide

Curtain Wall Framing

CURTAIN WALL FRAMING								
Product	PW251		PW251 SSG		PW251-10		PW250	
Manual Section	C1		C1		C1		C2	
Details								
Applications	Single Span Multi Span Monumental		Single Span Multi Span Monumental		Single Span Multi Span Monumental		Single Span Multi Span	
Dimensions	Face	Depth	Face	Depth	Face	Depth	Face	Depth
	2½"	7"	2½"	7"	2½"	10"	2½"	6¼"
Glass Infill Size	1"		1"		1"		¼" or ⅜"	
Glass Plane	Front-Set		Front-Set		Front-Set		Front-Set	
Glazing Options	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed
	Yes	No	Yes	No	Yes	Yes	Yes	No
Thermal Break	No		Yes		Yes		No	
NFRC Simulations	Yes		No		No		No	
FBC Applications	FL83789.1* (approved for use outside of HVHZ)		FL8379.1* (approved for use outside of HVHZ)		N/A		FL15799.1* (approved for use outside of HVHZ)	
Product Features	Series PW251 is a 2½" x 7" is a screw-spline assembled pressure wall curtain wall system can accommodate 1" insulated glass for low-rise, multi-story and monumental applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. PW251 options include fully captured and two-sided silicone structural glazed and 10" deep profiles are available.						Series PW250 is a 2½" x 6¼" is a screw-spline assembled pressure wall curtain wall system can accommodate 1" insulated glass for low-rise, multi-story applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control.	

*Note: Florida product approval numbers (FL) are subject to change. It is advisable to verify all product FPA numbers on the Florida Building Code website at www.floridabuilding.org.

IMPACT-RESISTANT CURTAIN WALL FRAMING				
Product	PW256		PW257	
Manual Section	D5		D6	
Details				
Applications	Single Span Multi Span Monumental		Single Span Multi Span Monumental	
Dimensions	Face	Depth	Face	Depth
	2½"	6¾"	2½"	7¾"
Glass Infill Size	⅞"		1⅜"	
Glass Plane	Front-Set		Front-Set	
Glazing Options	Outside Glazed	Inside Glazed	Outside Glazed	Inside Glazed
	Yes	No	Yes	No
Thermal Break	Yes		Yes	
NFRC Simulations	No		No	
FBC Applications	FL12880.1* (approved for use outside of HVHZ)		FL14495.1* (approved for use outside of HVHZ)	
Product Features	Series PW256 is a 2½" x 6¾" impact-resistant screw-spline assembled curtain wall system can accommodate ⅞" laminated glass designed for wind-borne debris applications. PW256 impact-resistant curtain wall is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions. PW256 options include fully captured and two-sided silicone structural glazed applications.		Series PW257 is a 2½" x 7¾" impact-resistant screw-spline assembled curtain wall system can accommodate 1⅜" insulated laminated glass designed for wind-borne debris applications. PW257 impact-resistant curtain wall is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions. PW257 options include fully captured and two-sided silicone structural glazed applications.	

*Note: Florida product approval numbers (FL) are subject to change. It is advisable to verify all product FPA numbers on the Florida Building Code website at www.floridabuilding.org.

Products At A Glance

Entrance Door Products

ENTRANCE DOOR PRODUCTS							
Product Type	Product Approval Number (FPA)	Florida Building Code Applications	ASTM E 330 Structural Test	ASTM E 283 Air Infiltration Test	ASTM E 331 Water Resistance Test	AAMA 1503 Thermal Test	NFRC 102 Thermal Simulations
Standard Entrance Doors							
Series 213 Narrow Stile Offset Pivot Doors	FL15784.1	Non-Impact for use outside HVHZ	+25 / -25 PSF	N/A	N/A		
Series 380 Medium Stile Offset Pivot Doors	FL15784.1	Non-Impact for use outside HVHZ	+25 / -25 PSF	6.24 PSF	N/A		
Series 500 Wide Stile Offset Pivot Doors	FL15784.1	Non-Impact for use outside HVHZ	+25 / -25 PSF	N/A	N/A		
Series 213 Narrow Stile Butt Hung Doors	FL15798.1	Non-Impact for use outside HVHZ	+60 / -60 PSF	6.24 PSF	N/A		
Series 380 Medium Stile Butt Hung Doors	FL15798.1	Non-Impact for use outside HVHZ	+60 / -60 PSF	N/A	N/A		
Series 500 Wide Stile Butt Hung Doors	FL15798.1	Non-Impact for use outside HVHZ	+60 / -60 PSF	N/A	N/A		
Series 213 Narrow Stile Butt Hung Doors w/3-Point Lock	FL17124.1	Non-Impact for use outside HVHZ	+60 / -60 PSF	N/A	N/A		
Hurricane Impact-Resistant Entrance Doors							
Series 281 Narrow Stile Impact-Resistant Doors (Wet-glazed Application)	FL10432.2	Large Missile for use in HVHZ	+65 / -65 PSF	6.24 PSF	N/A		
Series 381 Medium Stile Impact-Resistant Doors (Wet-glazed Application)	FL10432.1	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	N/A		
Series 381 Medium Stile Impact-Resistant Doors (Dry-glazed Application)	FL16358.1	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	N/A		
Series 381 Medium Stile Impact-Resistant Doors w/Mid-panel Panics (Wet-glazed Application)	FL16358.1	Large Missile for use in HVHZ	+70 / -70 PSF	6.24 PSF	N/A		
Series 381 Medium Stile Impact-Resistant Doors w/Mid-panel Panics (Dry-glazed Application)	FL16358.1	Large Missile for use in HVHZ	+70 / -70 PSF	6.24 PSF	N/A		
Series 581 Wide Stile Impact-Resistant Doors (Wet-glazed Application)	Pending	Large Missile for use in HVHZ	Pending	6.24 PSF	N/A		
Series 581 Wide Stile Impact-Resistant Doors (Dry-glazed Application)	FL16720.1	Large Missile for use in HVHZ	+80 / -90 PSF	N/A	N/A		
Blast-Resistant Entrance Doors							
Product Type	UFC 4-010-01 Protection Level	GSA-TS01-03 Protection Level	ASTM F 1642 Test	ASTM E 283 Air Infiltration Test	ASTM E 331 Water Resistance Test	AAMA 1503 Thermal Test	NFRC 102 Thermal Simulations
Series 381 Medium Stile Blast-Resistant Doors (Wet-glazed Application)	Medium	Condition 2	Minimal Hazard	6.24 PSF	N/A		

STOREFRONT PRODUCTS							
Product Type	Product Approval Number (FPA)	Florida Building Code Applications	ASTM E 330 Structural Test	ASTM E 283 Air Infiltration Test	ASTM E 331 Water Resistance Test	AAMA 1503 Thermal Test	NFRC 102 Thermal Simulations
Standard Storefront Products							
FL200 Non-Thermal Center Set Storefront for ¾" or ⅝" Glass	FL15784.1	Non-Impact for use outside HVHZ	+60 / -50 PSF		15 PSF		
FL300 Non-Thermal Center Set Storefront for 1" Insulated Glass	FL15784.2	Non-Impact for use outside HVHZ	+60 / -53 PSF	6.24 PSF	15 PSF		
FL300T Thermal Center Set Storefront for 1" Insulated Glass	FL15784.3	Non-Impact for use outside HVHZ	+60 / -60 PSF		15 PSF	0.40 U Factor 57 CRF	0.39 U Factor
FS400T Thermal Front Set Storefront for 1" Insulated Glass (Interior Glazed)	FL15798.1	Non-Impact for use outside HVHZ	+35 / -35 PSF	6.24 PSF	15 PSF	0.46 U Factor 61 CRF	0.48 U Factor
FS400T Thermal Front Set Storefront for 1" Insulated Glass (Exterior Glazed)	FL15798.2	Non-Impact for use outside HVHZ	+55 / -55 PSF		15 PSF		
Hurricane Impact-Resistant Storefront Products							
FL500 Non-Thermal Center Set Impact-Resistant Storefront for ⅝" Glass (Wet-glazed Application)	FL10467.1	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	15 PSF		
FL500 Non-Thermal Center Set Impact-Resistant Storefront for ⅝" Glass (Dry-glazed Application)	FL15793.1	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	15 PSF		
FL550 Non-Thermal Center Set Impact-Resistant Storefront for 1⅝" Insulated Glass (Wet-glazed Application)	FL10467.2	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	15 PSF		
FL550 Non-Thermal Center Set Impact-Resistant Storefront for 1⅝" Insulated Glass (Dry-glazed Application)	FL15794.1	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	15 PSF		
FL550T Thermal Center Set Impact-Resistant Storefront for 1⅝" Insulated Glass (Dry-glazed Application)	FL16719.1	Large Missile for use in HVHZ	+55 / -55 PSF	6.24 PSF	15 PSF		
FL550T Thermal Center Set Impact-Resistant Storefront for 1⅝" Insulated Glass (Dry-glazed Application) Small Missile Impact Only	FL16719.2	Small Missile for use in HVHZ	+60 / -60 PSF	6.24 PSF	15 PSF		
Blast-Resistant Storefront Products							
Product Type	UFC 4-010-01 Protection Level	GSA-TS01-03 Protection Level	ASTM F 1642 Test	ASTM E 283 Air Infiltration Test	ASTM E 331 Water Resistance Test	AAMA 1503 Thermal Test	NFRC 102 Thermal Simulations
FL550 Non-Thermal Center Set Blast-Resistant Storefront for 1⅝" Insulated Glass (Wet-glazed Application)	Medium	Condition 2	Minimal Hazard	6.24 PSF			

Products At A Glance

Curtain Wall Products

CURTAIN WALL PRODUCTS							
Product Type	Product Approval Number (FPA)	Florida Building Code Applications	ASTM E 330 Structural Test	ASTM E 283 Air Infiltration Test	ASTM E 331 Water Resistance Test	AAMA 1503 Thermal Test	NFRC 102 Thermal Simulations
Standard Curtain Wall Products							
PW250 Curtain Wall (Screw-Spline Assembly) for ½" Glass	FL15799.1	Non-Impact for use outside HVHZ	+65 / -65 PSF	.001@ 6.24 PSF	13 PSF		
PW251 Curtain Wall (Screw-Spline Assembly) for 1" Insulated Glass	FL8379.1	Non-Impact for use outside HVHZ	+60 / -60 PSF	6.24 PSF	20 PSF	0.43 U Factor	66 CRF
PW251 Curtain Wall (Shear-Block Assembly) for 1" Insulated Glass	Pending	Non-Impact for use outside HVHZ	N/A	6.24 PSF			
Hurricane Impact-Resistant Curtain Wall Products							
PW256 Impact-Resistant Curtain Wall for ¾" Glass (Wet-glazed Application)	FL12880.1	Large Missile for use in HVHZ	+80 / -80 PSF	6.24 PSF	20 PSF		
PW256 Impact-Resistant Curtain Wall for ¾" Glass (Dry-glazed Application)	Pending	Large Missile for use in HVHZ	N/A	N/A	N/A		
PW257 Impact-Resistant Curtain Wall for 1 ¼" Insulated Glass (Wet-glazed Application)	FL14495.1	Large Missile for use in HVHZ	+80 / -80 PSF	6.24 PSF	16 PSF		
PW257 Impact-Resistant Curtain Wall for 1 ¼" Insulated Glass (Dry-glazed Application)	FL14495.2	Large Missile for use in HVHZ	+70 / -80 PSF	6.24 PSF	16 PSF		



Coral Architectural Products is dedicated to supporting efforts to utilize recycled aluminum, finishes that are environmentally friendly and energy efficient products that reduce greenhouse emissions and contributing to the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system. Contact your local Coral sales representative or Coral's national architectural representative at 1-800-772-7737 for additional information.

LEED - NC v2009, LEED - CS v2009, LEED - SCHOOLS v2009

Category	Credit	Description	Potential Credit Points	Products
Coral Products and/or Services				
Energy and Atmosphere	EA Credit 1	Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impact associated with excessive energy use.	19	Coral manufactures a number of storefront and curtain wall products specifically designed to increase thermal performance thereby contributing to increased energy conservation.
Materials and Resources	MR Credit 4	Increase demand for building products that incorporate recycled content materials thereby reducing impacts resulting from extraction and processing of virgin materials.	2	Coral's architectural extruded profiles are manufactured from aluminum billet logs which contain 40% pre-consumer and 22% post-consumer recycled 6063 aluminum alloy.
Indoor Environmental Quality	EQ Credit 8	Provide for the building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.	2	Coral manufactures a wide variety of storefront, window wall and curtain wall products that are capable of providing a good source of natural daylighting and views into occupied areas of the building.
Innovation and Design Process	Credit 1.1	To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the Green Building Rating System.	1	Coral's solvent-free powder coat finishes provide durable high-performance architectural coatings with outstanding mechanical properties and abrasion resistant that are environmentally friendly producing no harmful volatile organic compounds.

Notes: *The U.S. Green Building Council does not certify, promote or endorse any manufacturer's products or individuals, only the building itself can receive LEED certification. Products can only contribute in the LEED certification process by attaining points in accordance with the LEED rating system.

LEED is a registered trade mark of the U.S. Green Building Council.

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Section A1 Table of Contents

STANDARD ENTRANCES

Series 213 Narrow Stile

Series 380 Medium Stile

Series 500 Wide Stile

Specifications - Series 213, 380 & 500	S1-S6
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Standard Entrances

Series 213 • 380 • 500



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GUIDE SPECIFICATION

Manufacturer:

Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MASTERSPEC Program was recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Entrances by Coral Architectural Products, including glass and glazing, door hardware and components.
1. Types of Coral Architectural Products Entrances:
- a. [213] Swing Door; Narrow stile, 2-1/8" vertical face dimension, 1-3/4" depth.
 - b. [380] Swing Door; Medium stile, 3-3/4" vertical face dimension, 1-3/4" depth.
 - c. [500] Swing Door; Wide stile 5" vertical face dimension, 1-3/4" depth.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE. HOWEVER, CORAL ARCHITECTURAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07: SOURCE QUALITY CONTROL.

- B. Related Sections:
- 1. Section 08450 – All Glass Entrances
 - 2. Section 08491 – Sliding Doors
 - 3. Section 08491 – Aluminum Mall Sliding Doors
 - 4. Section 08520 – Aluminum Framed Window Wall
 - 5. Section 08700 – Finish Hardware
 - 6. Section 08900 – Curtain Wall Systems

1.02 References (Industry Standards)

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.03 System Description

- A. Entrance Performance Requirements:
- 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of (____) P.S.F. inward (____) P.S.F. outward. The design pressures are based on the (____) Building Code; (____) Edition.
 - 2. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 PSF for single doors and 1.567 PSF for pairs of doors. A single 3'0" x 7'0" entrance door and frame shall not exceed 0.50 CFM per linear foot of perimeter crack. A pair of 6'0" x 7'0" entrance doors and frame shall not exceed 1.0 CFM per linear foot of perimeter crack.
 - 3. Door Corner Construction: Manufacturer shall provide a limited lifetime warranty for the life of the door under normal use.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."

GUIDE SPECIFICATION

Series NS213, MS380 & WS500 Standard Entrances

- B. Quality Assurance/Control Submittals
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to “Conditions of the Contract” for project warranty provisions.
- B. Manufacturer’s Product Warranty: Submit, for Owner’s acceptance, manufacturer’s warranty for entrance system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products. **In addition, door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.**

1.06 Quality Assurance

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions, and manufacturer’s warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle entrance doors and components to avoid damage. Protect entrance doors against damage from elements, construction activities and other hazards before, during and after entrance installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE “OR EQUAL” / “OR APPROVED EQUAL,” OR SIMILAR PHRASES. USE OF SUCH PHRASES MAY CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO OF DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY, AND RESPONSIBILITY) FOR DETERMINING “OR EQUAL.”

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 - 1. Address: Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406

Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web Address: www.coralap.com
 - 2. Proprietary Product(s)/System(s) Coral Architectural Products
 - a. Series: [(213) (380), or (500)] Swing Doors (Select) Finish/Color: (See 2.06 Finishes)
 - b. Finish/Color: (See 2.06 Finishes)

GUIDE SPECIFICATION

Series NS213, MS380 & WS500 Standard Entrances

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL MUST SUBMIT THEIR REQUEST IN WRITING (10) DAYS PRIOR TO CLOSE.

- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Aluminum Entrances
 - b. Series: [(213) (380), or (500)] Swing Doors (Select)
 - c. Product Attributes:
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid entrance installation and construction delays.
 - 2. Substitution Documentation:
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for entrance system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
 - d. Product Sample and Finish: Submit product sample, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Entrances and Components):
 - 1. Material Standard: ASTM B 221; 6063-T6 alloy and temper
 - 2. The door stile and rail face dimensions of the [] (choose one: [(213) (380) (500)] entrance door will be as follows)

Door Series	Vertical Stile	Top Rail	Bottom Rail	ADA Bottom Rail	Traffic Application
213	2 1/8"	2 1/4"	4"	9 1/2"(optional)	Normal
380	3 3/4"	4"	7 1/2"	9 1/2"(optional)	Moderate
500	5"	4"	7 1/2"	9 1/2"(optional)	Heavy

- 3. Major portions of the door members to be 0.125" nominal in thickness and glazing molding to be 0.05" thick.
- 4. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data, published by The Aluminum Association.
- B. Glazing gaskets shall be EPDM elastomeric extrusions
- C. Provide adjustable glass jack to help center the glass in the door opening.

2.03 Accessories

- A. Fasteners: Where exposed, shall be aluminum, stainless steel or plated steel.
- B. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

GUIDE SPECIFICATION

EDITOR NOTE: REVISE BELOW FOR SPECIFIC HARDWARE FOR EACH SPECIFIC ENTRANCE TYPE. TO INSURE SINGLE SOURCE RESPONSIBILITY AND TIMELY COORDINATION, CORAL ARCHITECTURAL PRODUCTS RECOMMENDS THAT YOUR FINISH HARDWARE REQUIREMENTS BE INCLUDED IN THIS SECTION. IF THESE REQUIREMENTS MUST BE FURNISHED UNDER THE "FINISH HARDWARE" SECTION OF THE SPECIFICATIONS, THE FOLLOWING STATEMENT SHOULD BE INCLUDED. "THE FINISH HARDWARE SUPPLIER SHALL BE RESPONSIBLE FOR FURNISHING PHYSICAL HARDWARE TO THE ENTRANCE MANUFACTURER PRIOR TO FABRICATION, AND FOR COORDINATING HARDWARE DELIVERY REQUIREMENTS WITH THE HARDWARE MANUFACTURER, THE GENERAL CONTRACTOR AND THE ENTRANCE MANUFACTURER TO INSURE THE BUILDING PROJECT IS NOT DELAYED." IF LOCK CYLINDERS FOR ALUMINUM DOORS ARE TO BE MASTER-KEYED, IT IS SUGGESTED THAT CYLINDERS BE INCLUDED UNDER THE "FINISH HARDWARE" SECTION OF THE SPECIFICATIONS.

C. Standard Entrance Hardware

1. Weather-stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with a spring-loaded adjustable astragal with a double row of wool pile weather-stripping. Gaps in weathering at lock location of meeting stile on door pair shall not be allowed.
 - b. The door weathering on a single acting offset pivot or butt hung frame (single or pairs) shall have wool pile or EPDM bulb gasket (Necessary to meet specified performance tests.)
2. Bottom Door Sweep: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners. (Note: Bottom Door Sweeps are required to meet specified performance for air infiltration)
3. Threshold: Extruded aluminum, one piece per door opening, with ribbed surface.
4. Center Pivots: [].
5. Offset Pivots: [].
6. Butt Hinge: [].
7. Continuous Gear Hinge: [].
8. Push/Pull: [] style.
9. Panic Device: [].
10. Closer: [].
11. Security Lock/Dead Lock: Active Leaf []; Inactive Leaf [].
12. Latch Handle: [].
13. Cylinder(s)/Thumb-turn: [].
14. Electric Strike/Strike Keeper: [].

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. Entrance System Fabrication:
 1. Door corner construction shall consist of an interlocking slide-in stabilizer corner block, mechanically fastened to door stile with 3/8" diameter bolts threaded into steel square nut back-up plates. Top and bottom rails are mechanically attached to corner blocks at all four corners with #10 x 3/4" steel fasteners. Glazing stops shall be compression fit type with EPDM glazing gaskets.
 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 3. Prepare components with internal reinforcement for door hardware.
 4. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

GUIDE SPECIFICATION

A. Shop Finishing

1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum entrances specified herein from a single source.

1. Building Enclosure System: When aluminum entrances are part of a building enclosure system, including storefront framing, window wall systems, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

B. Fabrication Tolerances: Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.

PART 3 – EXECUTION

3.01 Examination

- #### A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive entrance system and sill is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

A. General: Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.

1. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
2. Provide alignment attachments and shims to permanently fasten system to building structure.
3. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
4. Set thresholds in bed of mastic and secure.
5. Adjusting: Adjust operating hardware for smooth operation.

B. Related Products Installation Requirements:

1. Sealants (Perimeter): Refer to Section 7 Joint Treatment (Sealants).
2. Glass: Refer to Section 8 Glass and Glazing.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Cleaning and Protection

- #### A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Installed products must be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- #### B. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum entrances from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants. Remove and replace damaged aluminum entrances at no extra cost.

Standard Entrances

Series 213 • 380 • 500



GUIDE SPECIFICATION

DISCLAIMER STATEMENT

This guide specification is to only be used by qualified construction specifiers. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

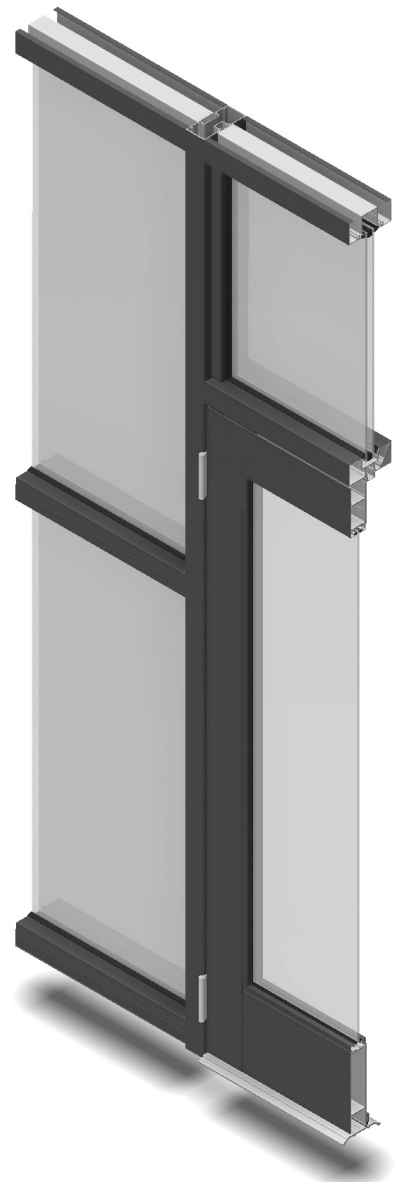
Coral Architectural Products entrance doors are not only architecturally pleasing, with the appropriate styling for commercial and institutional applications, but are also incomparably strong. Coral offers a limited lifetime warranty for the door corner construction of its entrance door. Any door which fails due to the corner construction will be replaced free of charge. Series 213 Narrow Stile, 380 Medium Stile and 500 Wide Stile entrance doors are available with various standard hardware options and can easily be adapted to accept a number of custom hardware requirements.

Features

- Accepts ¼" or 1" Glazing Infills
- Interlocking Corner Block Construction
- Offset Pivots, Butt Hinges or Continuous Geared Hinge
- Surface Mounted or Concealed Overhead Closer Configuration
- Standard and Custom Hardware Options
- Fully Tested
- Limited Lifetime Warranty on Door Corner Construction

Performance Test Standards

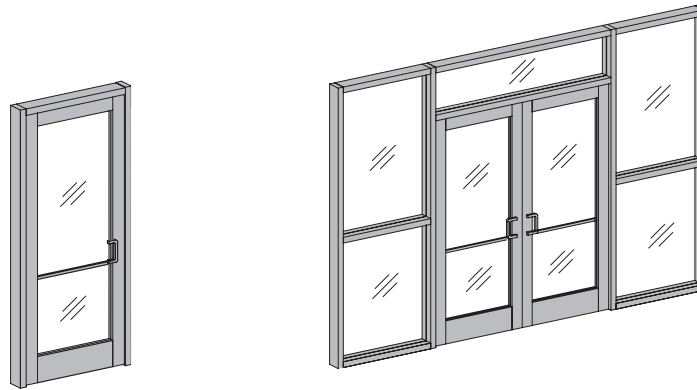
- ASTM E 283 - Air Infiltration Test
- AAMA 1304 - Forced Entry Resistance Test
- ASTM E 330 - Uniform Load Deflection and Structural Test
- Florida Product Approval Numbers –
FL15874 (Offset Pivot) FL15798 (Butt Hung)



Standard Entrances

Series 213 • 380 • 500

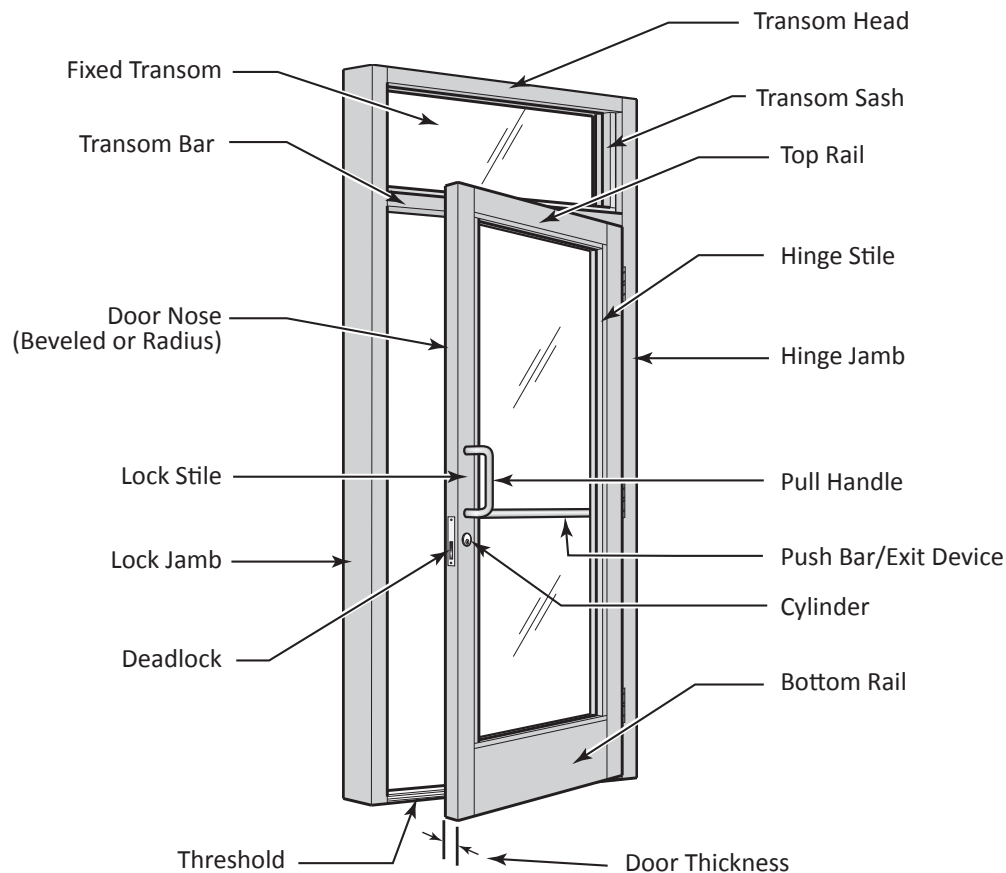
Selection Guide

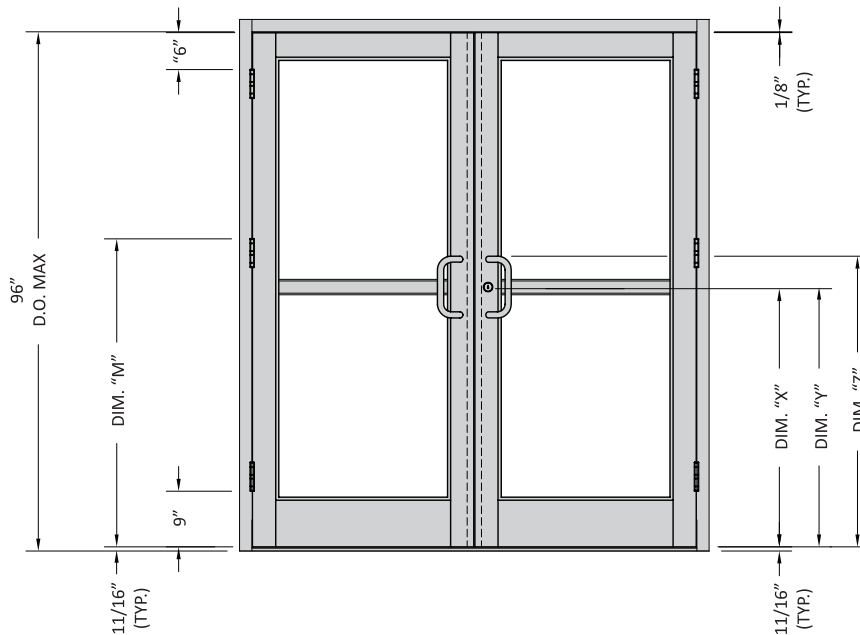


Aluminum Entrance Doors	VERTICAL STILE	TOP RAIL	BOTTOM RAIL	RECOMMENDED LIMITATIONS	TRAFFIC APPLICATION
Series 213 Narrow Stile	2 1/8"	2 1/4"	4"	3'-3" x 8'-0"	Normal
Series 380 Medium Stile	3 3/4"	4"	7 1/2"	3'-6" x 9'-0"	Moderate
Series 500 Wide Stile	5"	4"	7 1/2"	3'-6" x 9'-0"	Heavy

Note: Entrances exceeding 3'-6" x 7'-6" in height require an intermediate butt hinge or pivot.

COMMON ENTRANCE AND FRAME DESCRIPTIONS

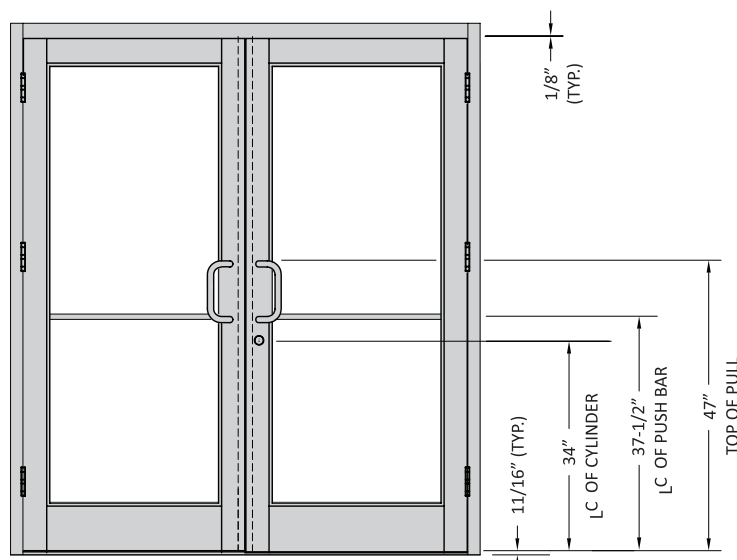




INTERMEDIATE HINGE	
D.O. HEIGHT	DIM. "M"
	BUTT HUNG
84"	45 ¹¹ / ₃₂ "
96"	51 ¹¹ / ₃₂ "

Note: D.O.H. exceeding 90" or D.O.W. exceeding 42" require an intermediate hinge.

HARDWARE LOCATIONS FOR PANIC DOORS				
MANUFACTURER	PANIC DEVICE	CL DIM "X" OF CYLINDER	CL DIM "Y" OF PANIC	DIM "Z" TOP OF PULL
FIRST CHOICE	3192 C.V.R.	39 ⁵ / ₃₂ "	41 ³ / ₃₂ "	44 ⁵ / ₃₂ "
FIRST CHOICE	3692 C.V.R.	41 ⁹ / ₁₆ "	40 ⁵ / ₈ "	46 ⁹ / ₁₆ "
FIRST CHOICE	3792 RIM	41 ⁹ / ₁₆ "	41 ⁹ / ₁₆ "	46 ⁹ / ₁₆ "
JACKSON	2086 C.V.R.	37 ⁷ / ₈ "	38 ⁵ / ₃₂ "	42 ⁷ / ₈ "
JACKSON	2095 RIM	38 ¹³ / ₃₂ "	38 ⁵ / ₃₂ "	43 ¹³ / ₃₂ "

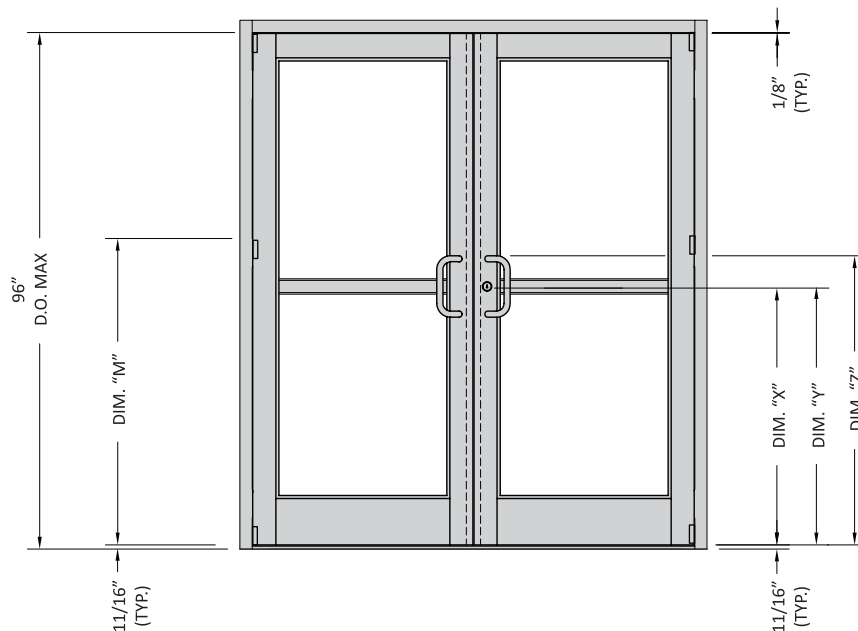


Note: Medium Stile Doors used for Illustration Purposes. Hardware locations are similar for Narrow and Wide Stile Doors

Standard Entrances

Series 213 • 380 • 500

Hardware Locations



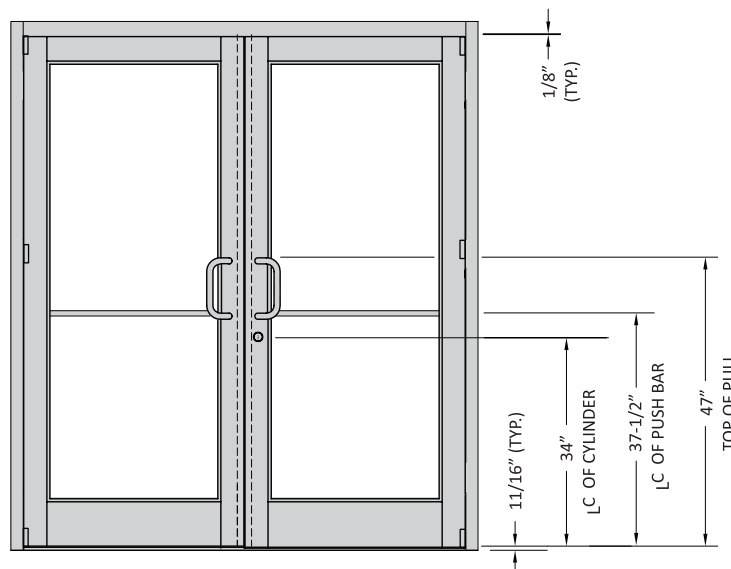
OFFSET INTERMEDIATE PIVOT LOCATION

D.O. HEIGHT	DIM. "M"
	Offset Pivot
84"	
96"	

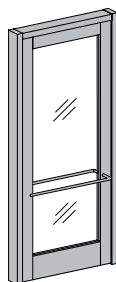
Note: D.O.H. exceeding 90" or D.O.W. exceeding 42" require an intermediate offset pivot.

HARDWARE LOCATIONS FOR PANIC DOORS

MANUFACTURER	PANIC DEVICE	DIM "X" OF CYLINDER	DIM "Y" OF PANIC	DIM "Z" TOP OF PULL
FIRST CHOICE	3192 C.V.R.	39 ⁵ / ₃₂ "	41 ³ / ₃₂ "	44 ⁵ / ₃₂ "
FIRST CHOICE	3692 C.V.R.	41 ⁹ / ₁₆ "	40 ⁵ / ₈ "	46 ⁹ / ₁₆ "
FIRST CHOICE	3792 RIM	41 ⁹ / ₁₆ "	41 ⁹ / ₁₆ "	46 ⁹ / ₁₆ "
JACKSON	2086 C.V.R.	37 ⁷ / ₈ "	38 ⁵ / ₃₂ "	42 ⁷ / ₈ "
JACKSON	2095 RIM	38 ¹³ / ₃₂ "	38 ⁵ / ₃₂ "	43 ¹³ / ₃₂ "



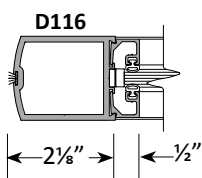
Note: Medium Stile Doors used for Illustration Purposes. Hardware locations are similar for Narrow and Wide Stile Doors



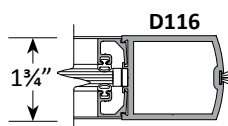
Double Acting



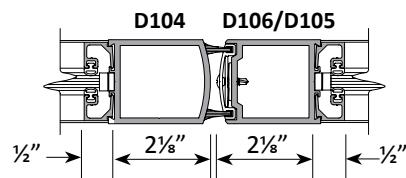
Single Acting



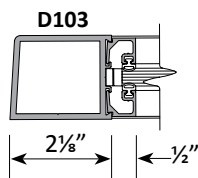
Single door



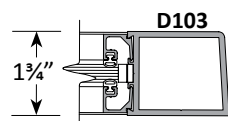
Double Acting



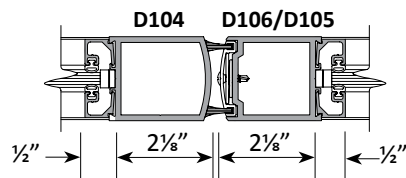
Meeting stiles for pair of doors



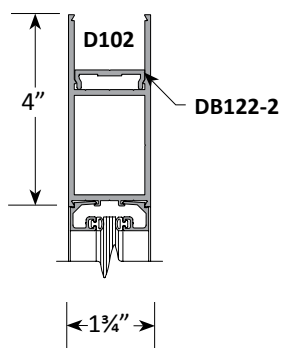
Single door



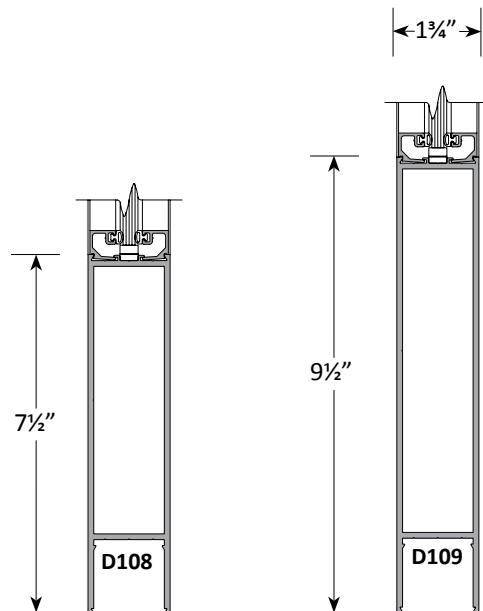
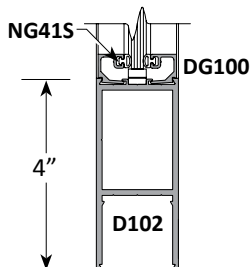
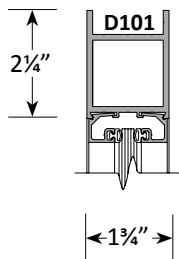
Single Acting



Meeting stiles for pair of doors



D102 top rail used
w/**DB122-2** for offset arm.
Note: Requires special
glass size.

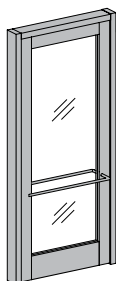


Standard Entrances

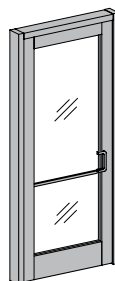
Series 380 Medium Stile

Standard Details

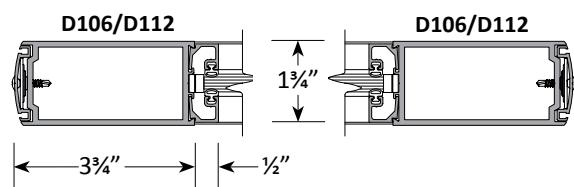
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Double Acting

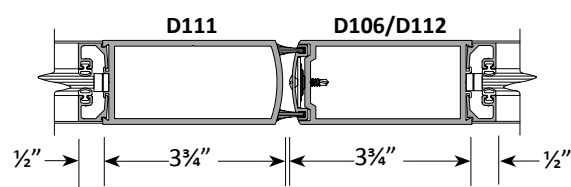


Single Acting

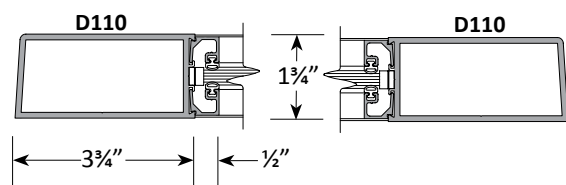


Single door

Double Acting

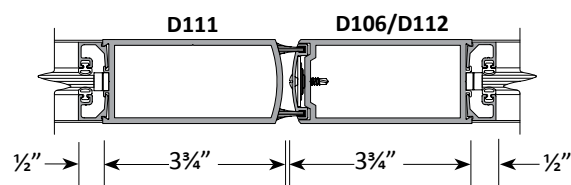


Meeting stiles for pair of doors

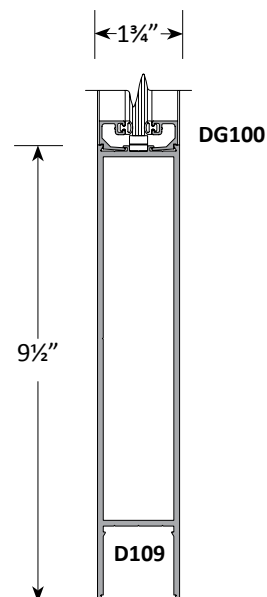
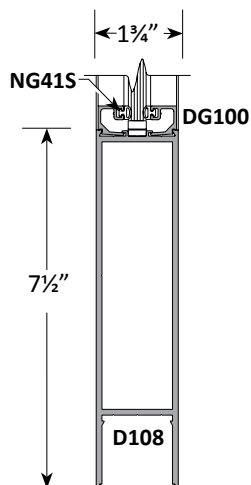
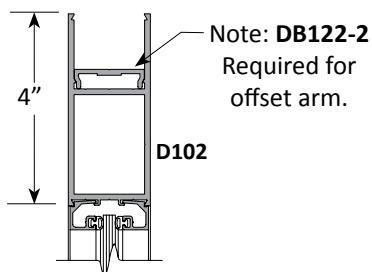
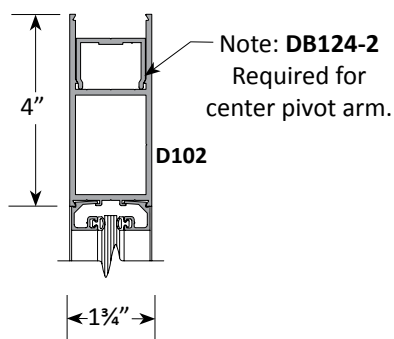


Single door

Single Acting

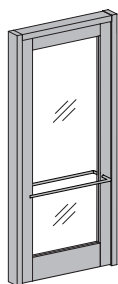


Meeting stiles for pair of doors

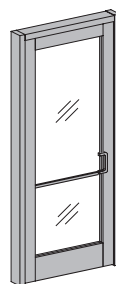


Standard Details

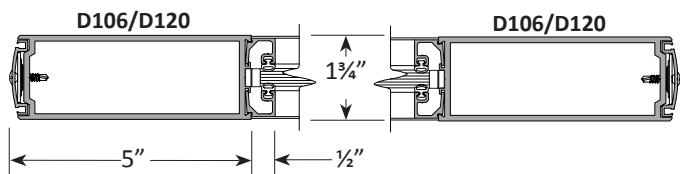
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Double Acting

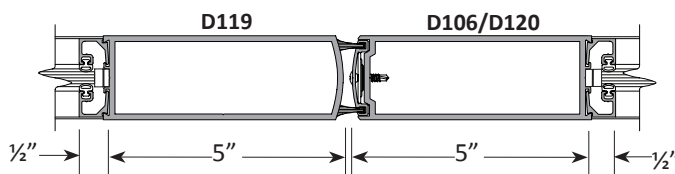


Single Acting

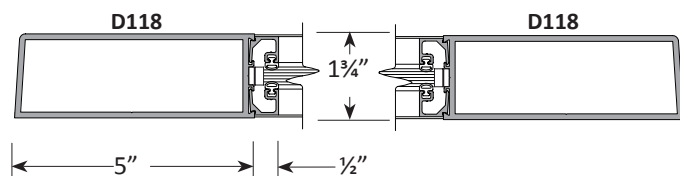


Single door

Double Acting

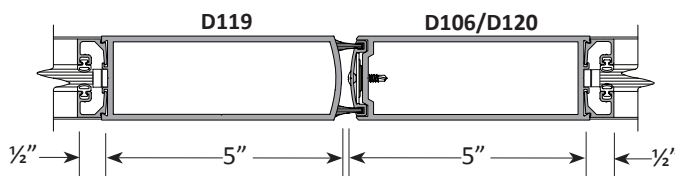


Meeting stiles for pair of doors

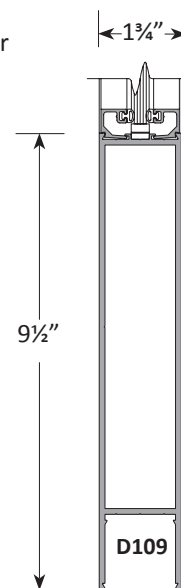
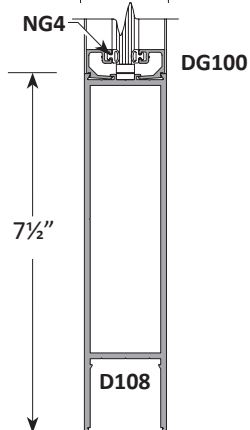
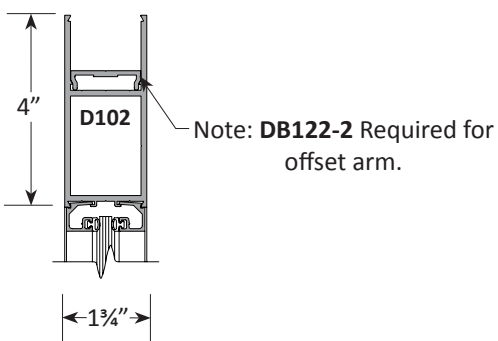
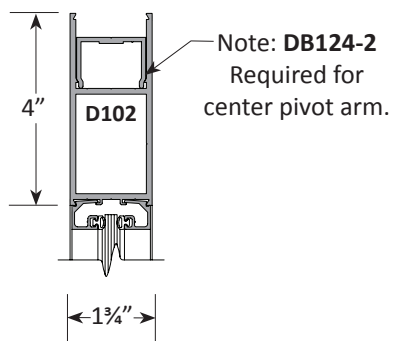


Single door

Single Acting



Meeting stiles for pair of doors



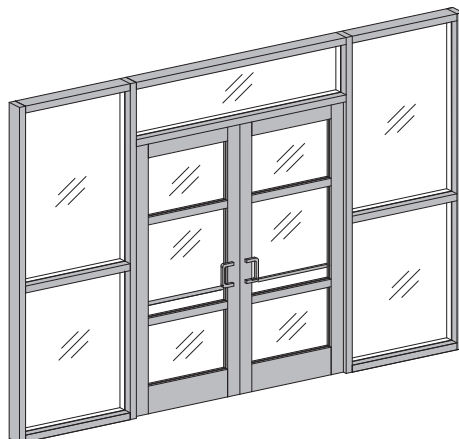
Standard Entrances

Series 213 • 380 • 500

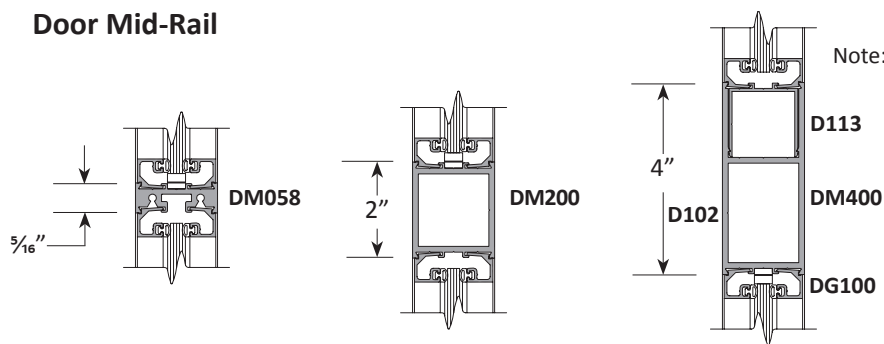
Coral
ARCHITECTURAL PRODUCTS
A Division of Coral Industries, Inc.

Accessories and Options

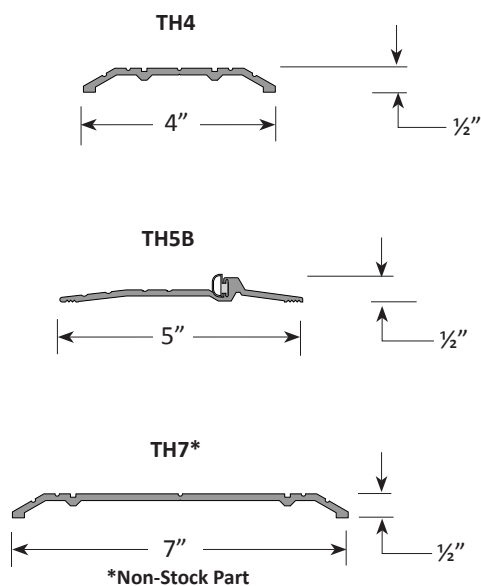
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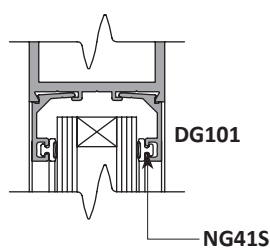
Door Mid-Rail



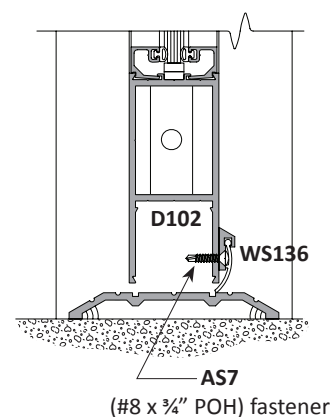
Thresholds



Glazing Options



Bottom Rail with Weather Sweep



Section A2 Table of Contents

ALL GLASS ENTRANCES

Specifications	S1-S5
Swing Type A	1-2
Swing Type F.....	3-4
Swing Type P.....	5-6
Swing Type BP	7-8

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GUIDE SPECIFICATION

All Glass Entrances

Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08450 ALUMINUM ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MASTERSPEC Program was recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: All Glass Vestibule Doors matching entrance doors and sidelites by Coral Architectural Products.
 - 1. Types of Coral Architectural Products All Glass Doors;
 - a. [Type "A"] Swing Door; Fully Tempered Heavy Glass Door, Partial Rails or Patch Fittings at top and bottom pivot corners (locks are not available in Type "A" door) glass thickness range from 3/8", 1/2" and 3/4".
 - b. [Type "F"] Swing Door; Fully Tempered Heavy Glass Door, Partial Rails or Patch Fittings at top and bottom pivot corners and bottom lock, glass thickness range from 3/8", 1/2" and 3/4".
 - c. [Type "P"] Swing Door; Fully Tempered Heavy Glass Door, Full Width Top and Bottom Rails, glass thickness range from 3/8", 1/2" and 3/4".
 - d. [Type "AP"] Swing Door; Fully Tempered Heavy Glass Door, Top Patch Fitting and Full Width Bottom Rail, glass thickness range from 3/8", 1/2" and 3/4".
- B. Related Sections:
 - 1. Section 08450 – All Glass Entrances
 - 2. Section 08491 – Sliding Doors
 - 3. Section 08700 – Finish Hardware - Lock cylinders for tempered glass entrance doors are specified in Division 8 Section "Finish Hardware"

1.02 Submittals

- A. Product Data: Submit Manufacturer's product data for all glass entrance systems including:
 - 1. Standard details and fabrication method.
 - 2. Data on product finish, hardware and accessories.
 - 3. Recommendations for maintenance and cleaning of exterior finish surfaces.
 - 4. Test data on fabricated entrance system.
- B. Shop Drawings for each type of all glass entrance system are required, including:
 - 1. Layout and installation details.
 - 2. Elevations.
 - 3. Detail sections of fittings.
 - 4. Hardware mounting heights.
 - 5. Anchorage and reinforcement.
 - 6. Glazing details.
- C. Samples for approval:
 - 1. Submit pairs of samples of each specified metal color and finish on 9-inch long sections of extrusions or formed Shapes.
 - 2. Submit samples of glass approximately 6 inches square indicating the edge conditions.

GUIDE SPECIFICATION

All Glass Entrances

1.03 Warranty

- A. Project Warranty: Refer to “Conditions of the Contract” for project warranty provisions.
- B. Manufacturer’s Product Warranty: Submit, for Owner’s acceptance, manufacturer’s warranty for entrance system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from the initial date of shipment by Coral Architectural Products.

1.04 Quality Assurance

- A. Qualifications:
 - 1. Installer Qualifications: Engage an experienced installer who has completed installations of all glass entrances that are similar in design and extent to those required for the project and whose work has resulted in construction with a record of successful service performance.
 - 2. Manufacturer Qualifications: Provide all glass entrances furnished by a firm experienced in manufacturing all glass entrance systems that are similar to those indicated for this project and that have a record of successful service performance (All door rail systems must be tested).
 - 3. Single Source Responsibility: Obtain all glass entrance systems from a single manufacturer, to ensure full compatibility and warranty of parts.
 - 4. Design criteria: The drawings indicate the size, profile and dimensional requirements of the all glass entrance system required and are based on the specific types and models indicated. All glass entrances by other manufacturers may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the architect. The burden of proof of equality is on the proposer.
 - 5. Safety glass standard: Provide tempered glass components that comply with ANSI Z97.1 and testing requirements of CPSC 16 CFR 1201 Category II.
 - 6. Testing criteria for Door Rail: The door rail must be tested to perform 1,000,000 cycles without any failures. The door rail should also be subject to a temperature pull-off test at temperatures from -10°F to 150°F (-23°C to 65.5°C). The rail shall remain stationary throughout this test while a 500 pound (227 kg) pressure is applied.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions and manufacturer’s warranty requirements.

1.05 Delivery, Storage, and Handling

- A. Deliver all glass entrances and related components in the manufacturer’s original protective packaging. Do not deliver entrance units until the work is ready for their installation.
 - 1. Inspect components for damage upon delivery. Unless minor defects in metal components can be made to meet the Architect’s specifications and satisfaction, damaged parts should be removed and replaced.

1.06 Project Conditions

- A. Field Measurements: Check opening by accurate field measurement before fabrication. Show recorder measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of the work and possible damage to the finished product.
 - 1. Where necessary, proceed with fabrication without measurement and coordinate fabrication tolerances to ensure proper fit.

GUIDE SPECIFICATION

All Glass Entrances

PART 2 – PRODUCTS

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Basis of design: Design is based on an “All-Glass” Entrance Door System featuring heavy tempered glass secured to a CRL Wedge-Lock® Door Rail System, manufactured by:
C.R. Laurence Co., Inc. (CRL)
Tel: (800) 421-6144 Fax: (800) 587-7501
Email: architectural@crlaurence.com
www.crlaurence.com
fabricated by:
Coral Architectural Products, A Division of Coral Industries
Tel: (800) 772-7737 Fax: (800) 443-6261
Website: www.coralap.com
- B. Subject to compliance with requirements, “all glass” entrances from other manufacturers meeting the specified requirements may be acceptable.

2.02 Materials

- A. Glass: Provide flat, fully tempered glass in thickness indicated for doors and sidelites. Comply with requirements of ASTM C 1048 for FT (fully tempered), Condition A (uncoated surfaces), Type 1 (transparent) Class 1 (clear) glass. Provide products of thickness indicated that have been tested for surface and edge compression according to ASTM C 1048 and for impact strength according to 16 CFR Part 1201 for Category II materials.
1. Thickness: ⅝ inch (10 mm)
 2. Thickness: ½ inch (12 mm)
 3. Thickness: ⅜ inch (16 mm)
 4. Thickness: ¾ inch (19 mm)
 5. Edge treatment: Provide machine ground and polished edges for exposed glass edges of doors and sidelites and flat ground edges for butting glass edges.
 6. Glass Manufacturers: _____.
- B. Fittings, General: Provide CRL Wedge-Lock® Door Rails in required profile, size and glass thickness as selected by the Architect. Comply with requirements indicated for kind and form of metal finish.
1. Aluminum: Provide fittings fabricated from aluminum extrusions of alloy and temper recommended by manufacturer for use intended and required for application of finish indicated, but not less than strength and durability properties specified in ASTM B 221 for 6063-T5.
- C. Door Rail Systems: Provide door rail systems matching metal and finish of door fittings. The system shall include, but not limited to, door rails, patches, vertical stiles, center locks, and strike housings. Comply with GANA guidelines, and hardware manufacturer requirements for size restrictions. Door rails shall allow for jamb adjustment in or out with standard hardware. System shall include, but not limited to, end caps, blocking and preparation.
1. Profile: Square
 2. Profile: Beveled (Only available in 4 inch [102 mm] high profile)
 3. Height: 2-⅝ inch (59 mm)
 4. Height: 4 inch (102 mm)
 5. Height: 6 inch (152 mm)
 6. Height: 10 inch (254 mm)
 7. Height: Custom as indicated on drawings
- D. Accessory Fittings: Provide manufacturer’s standard accessory fittings of the type indicated. Comply with requirements indicated for kind and form of metal and finish of door fittings.
- E. Anchors and Fasteners: Manufacturer’s standard concealed anchors and fastenings. Do not use exposed fasteners.
- F. Weatherstripping: Can be applied to edges of glass and top/bottom door rails to help reduce air and water infiltration. The weatherstripping shall be pile and replaceable without removing doors from opening.

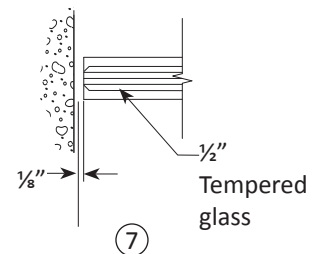
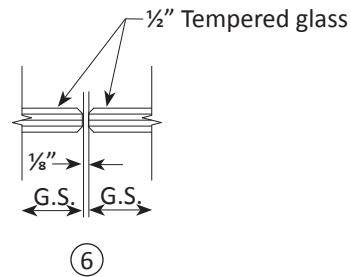
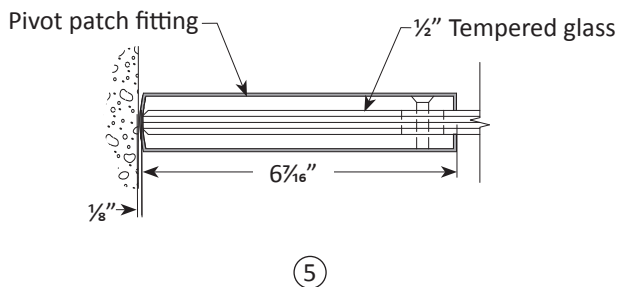
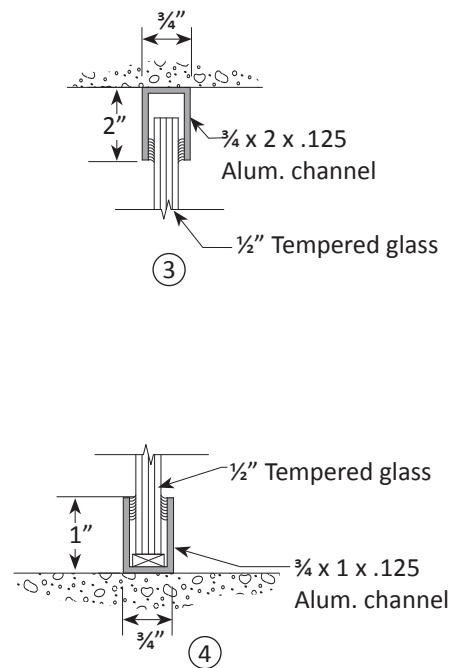
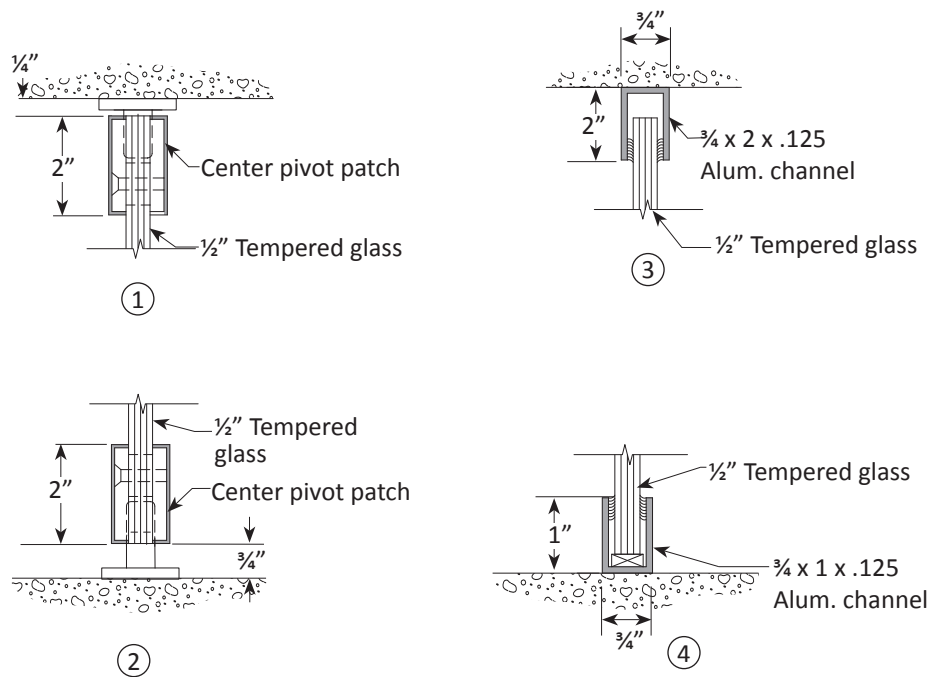
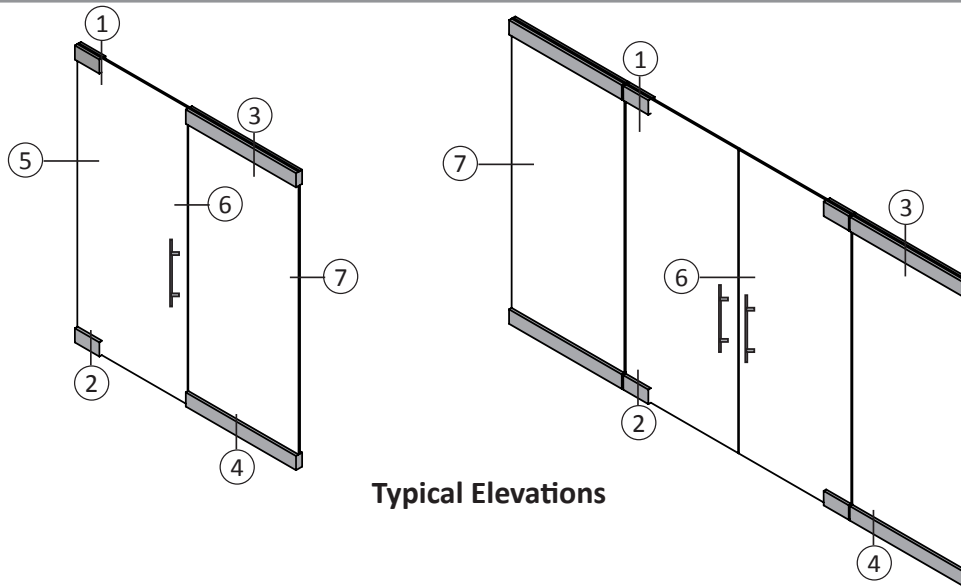
GUIDE SPECIFICATION

All Glass Entrances

2.03 Hardware

- A. General: Provide heavy-duty hardware units as indicated, scheduled or required for operation of each type of door, including the following items of sizes, numbers and type recommended by the manufacturer for the type of service required. Provide metal and finish for exposed parts to match the finish of the door rails.
- B. CRL by C.R. Laurence Co., 9100 Series Medium Duty extended spindle Overhead Concealed Door Closers and 9200 Series Heavy-Duty extended spindle Overhead Concealed Door Closers are double acting and fit into CRL 4-½" x 1-¾" Single or Double Closer Headers. Closers secure to the center hung arm in the top door rail. Provide top adjustable arm, bottom adjustable pivot and finished cover plate if required. Comply with manufacturer's recommendations for closer size, depending upon door size, exposure to weather and anticipated frequency of use.
- C. C.R. Laurence Co., J990 Series Heavy Weight Floor Mounted Closers are double acting and supplied with cement box and Brushed S/S cover plate. Cover plates in other finishes are available. Provide bottom adjustable arm, top adjustable pivot and finished cover plate if required. Comply with manufacturer's recommendations for closer size, depending upon door size, exposure to weather and anticipated frequency of use.
Include the following:
1. Non-hold-open closers must comply with ADA Handicap requirements.
 2. Consult manufacturer for closer recommendations on doors over 264 lbs.
- D. Push-Pull Set: Provide handles selected by the Architect and supplied by C.R. Laurence.
- E. Concealed PA100 and PA110 Panic Handles: Panic device shall be 1-¼" diameter C.R. Laurence's PA100 or PA110 with interior operating panic handle in combination with exterior fixed pull handles designated by letters. Panic mechanism shall be concealed within the brass or stainless steel tubing. Entrance from exterior by a keyed cylinder is optional.
- F. Deadbolt Lock Handles: Shall be C.R. Laurence's DB100, DB110, DB130, DB140, DB150, DB160, DB170 with interior fixed handle and any of the fixed exterior pull handles designated by letters. Operating mechanism shall be concealed within the 1-¼" brass or stainless steel tubing. There shall be a keyed cylinder on both sides or a thumbturn on the interior side where indicated. The locking mechanism shall be on the interior side of the door.
- G. Electronic Egress Control Handles: Shall be C.R. Laurence's EG100 or EG110 with interior operating egress handle in combination with exterior fixed pull handles designated by letters. Panic mechanism shall be concealed within the brass or stainless steel tubing. Entrance from exterior by a keyed cylinder is optional.
- H. Electric Strikes: Shall be Folger Adams 310-1 with ¾" straight latch bolt keeper without signal switches using PA 100 Panic Handles. Electric strikes are mounted in the header or transom bar.
- I. Locks: Equip exterior doors with manufacturer's locksets that accept a standard cylinder with related components. Comply with the following:
1. Location and function: Provide round throw deadbolt in continuous bottom fitting. Lock to be operated by key outside and thumbturn inside with end load capability.
- J. Cylinders or Magnetic Locks: Supplied as described under Division 8 section, for keying into building system.
- K. Threshold: Provide manufacturer's standard extruded aluminum threshold in mill finish. Coordinate cutouts with operating hardware. Include anchors and jamb clips.

Standard Details
Scale: 3" = 1'-0"

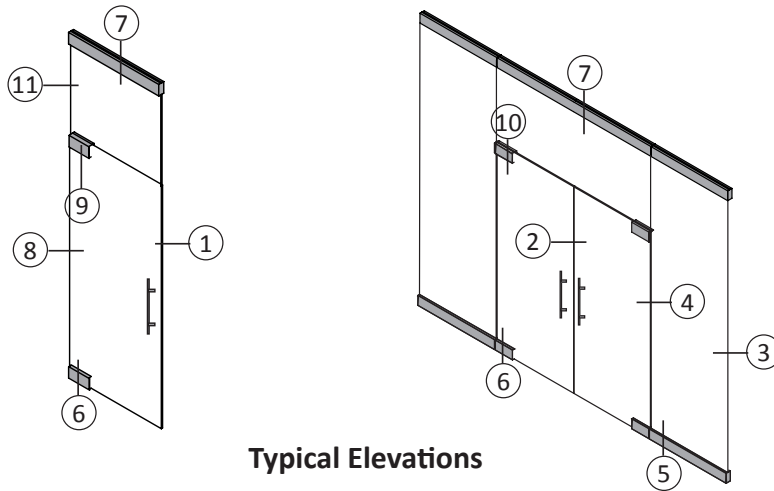


All Glass Entrances

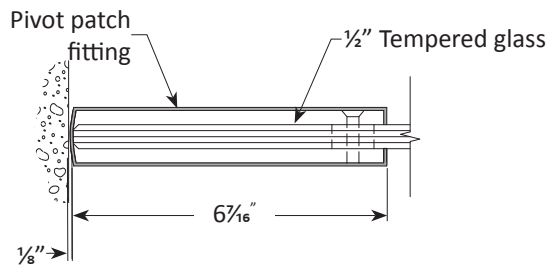
Swing Type A

Standard Details

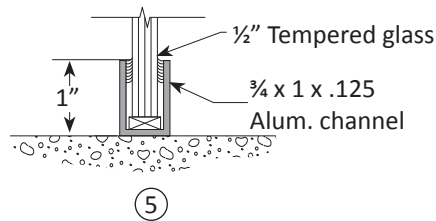
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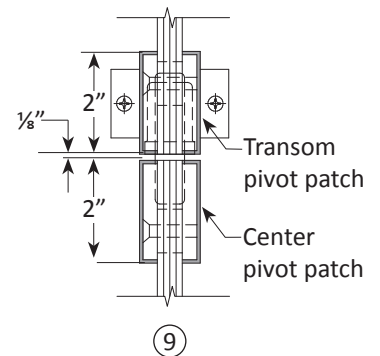
Typical Elevations



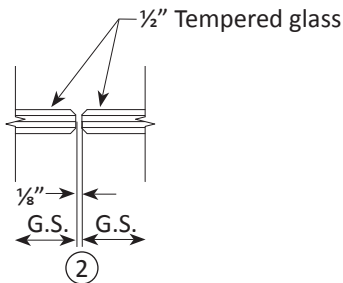
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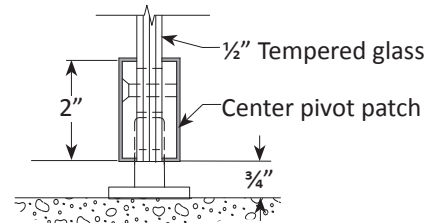
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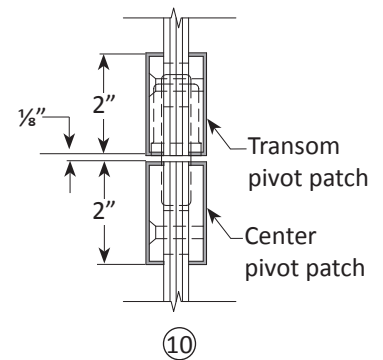
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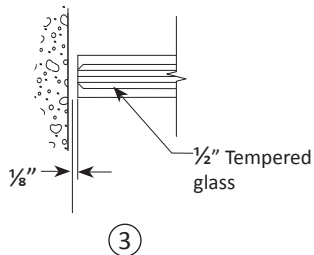
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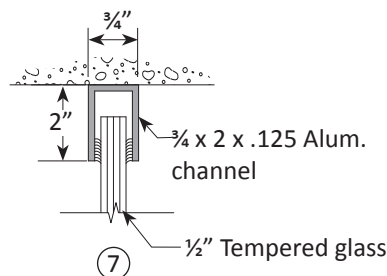
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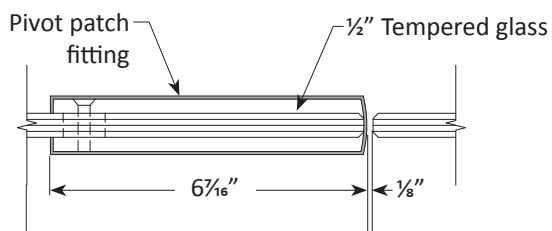
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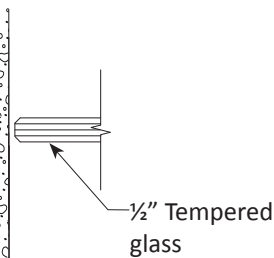
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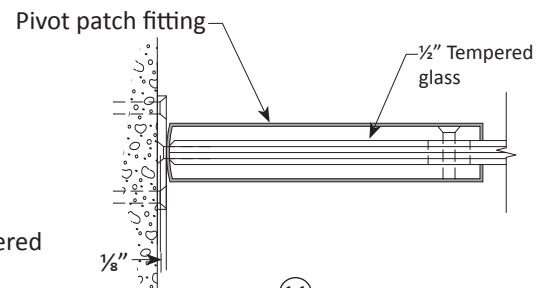
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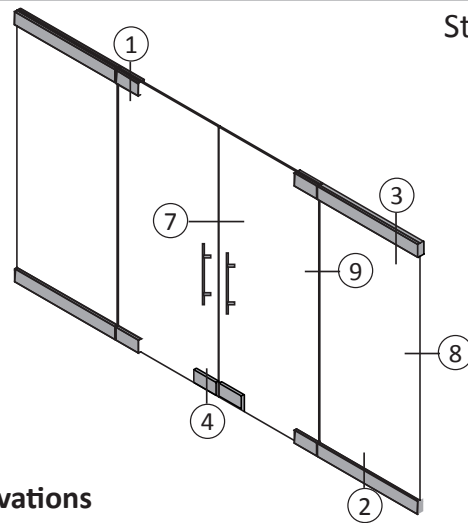
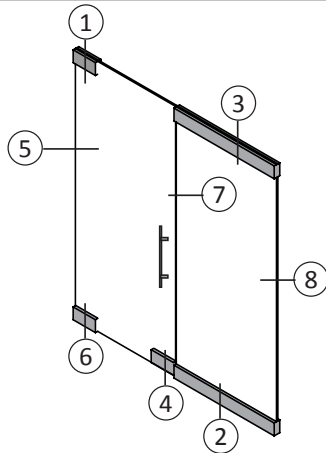


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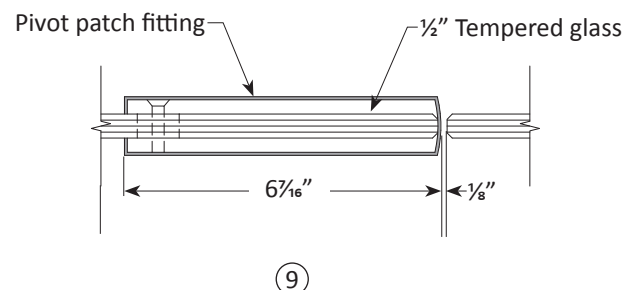
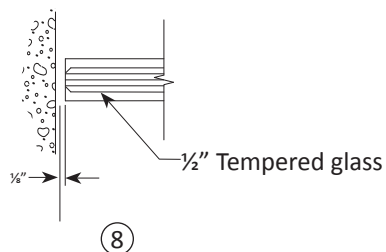
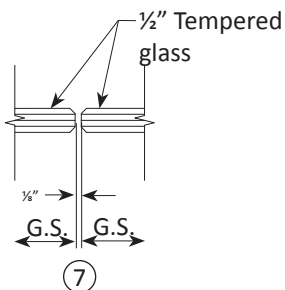
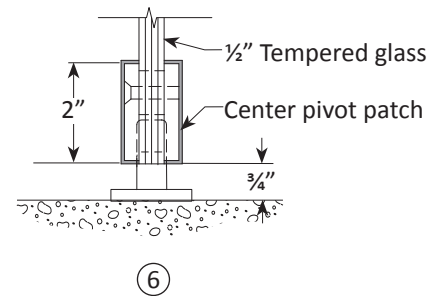
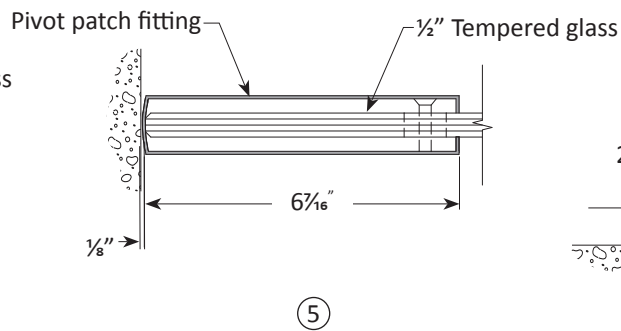
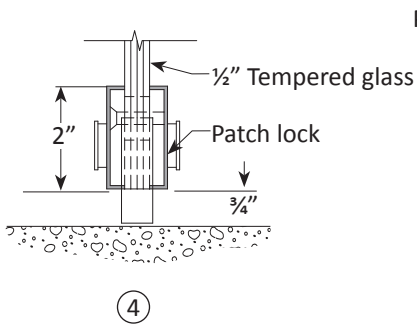
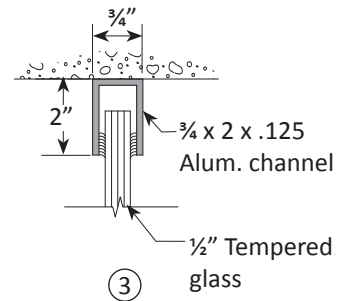
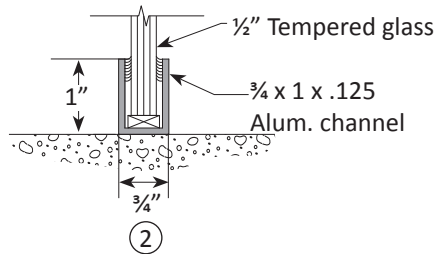
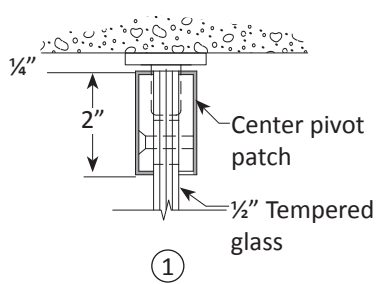


⑪

Standard Details
Scale: 3" = 1'-0"



Typical Elevations

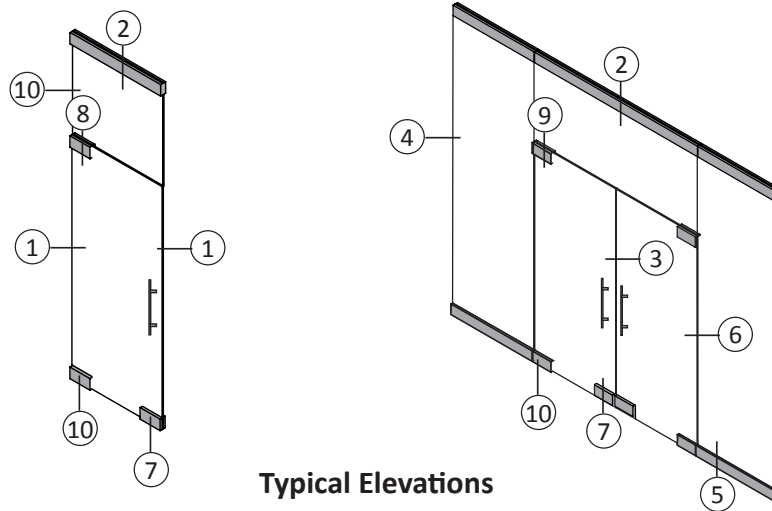


All Glass Entrances

Swing Type F

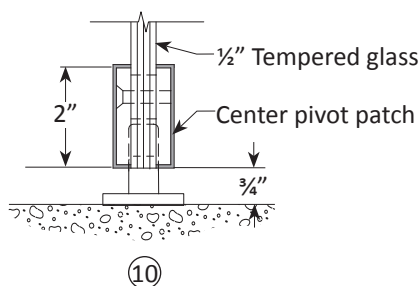
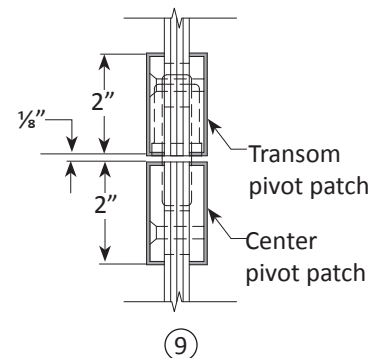
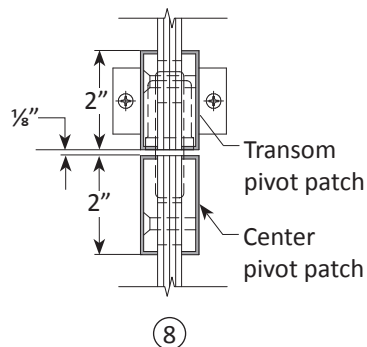
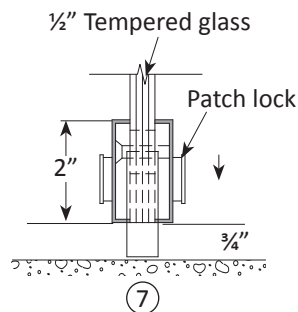
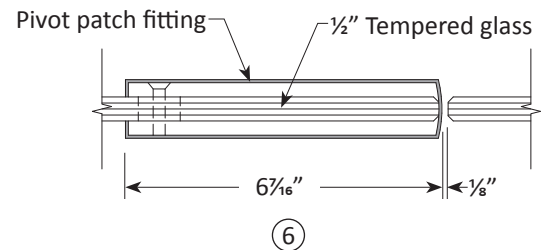
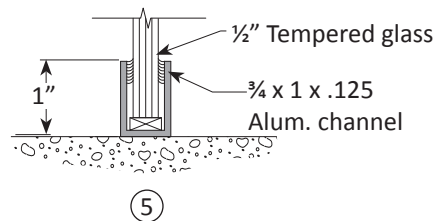
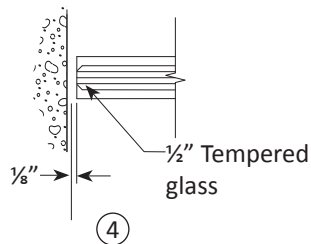
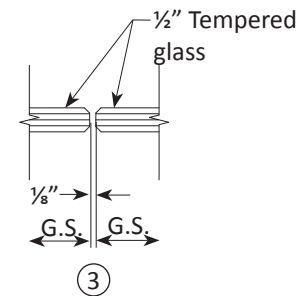
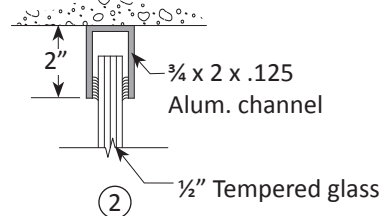
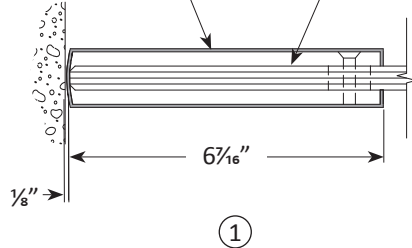
Standard Details

Scale: 3" = 1'-0"

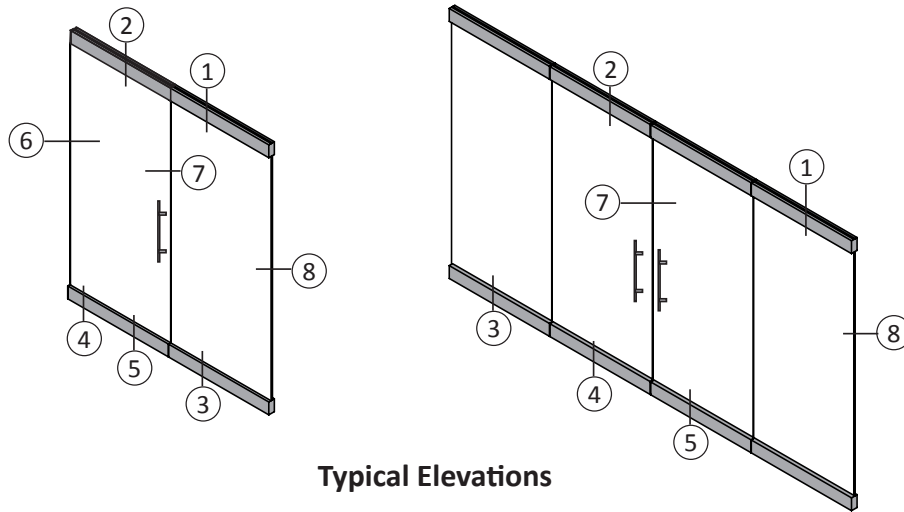


Typical Elevations

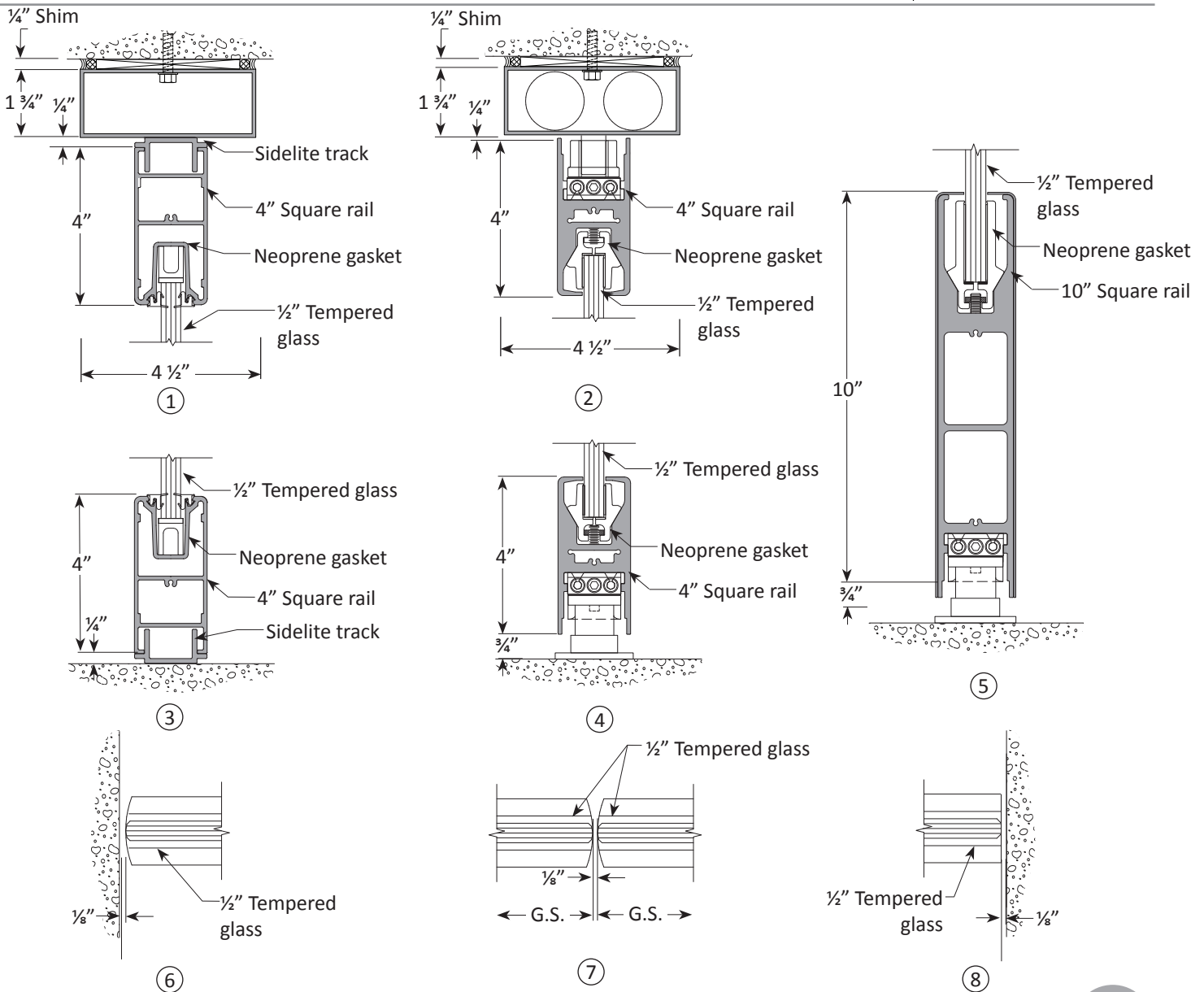
Pivot patch fitting 1/2" Tempered glass



Standard Details
Scale: 3" = 1'-0"



Typical Elevations

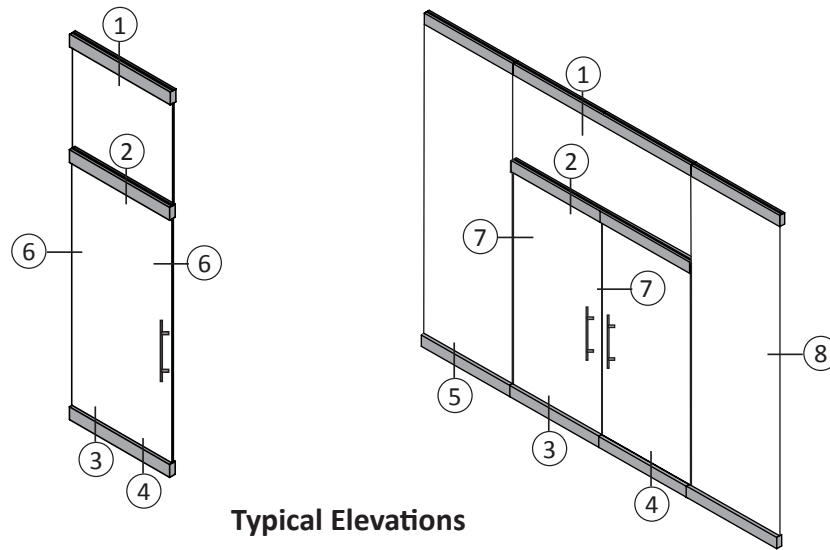


All Glass Entrances

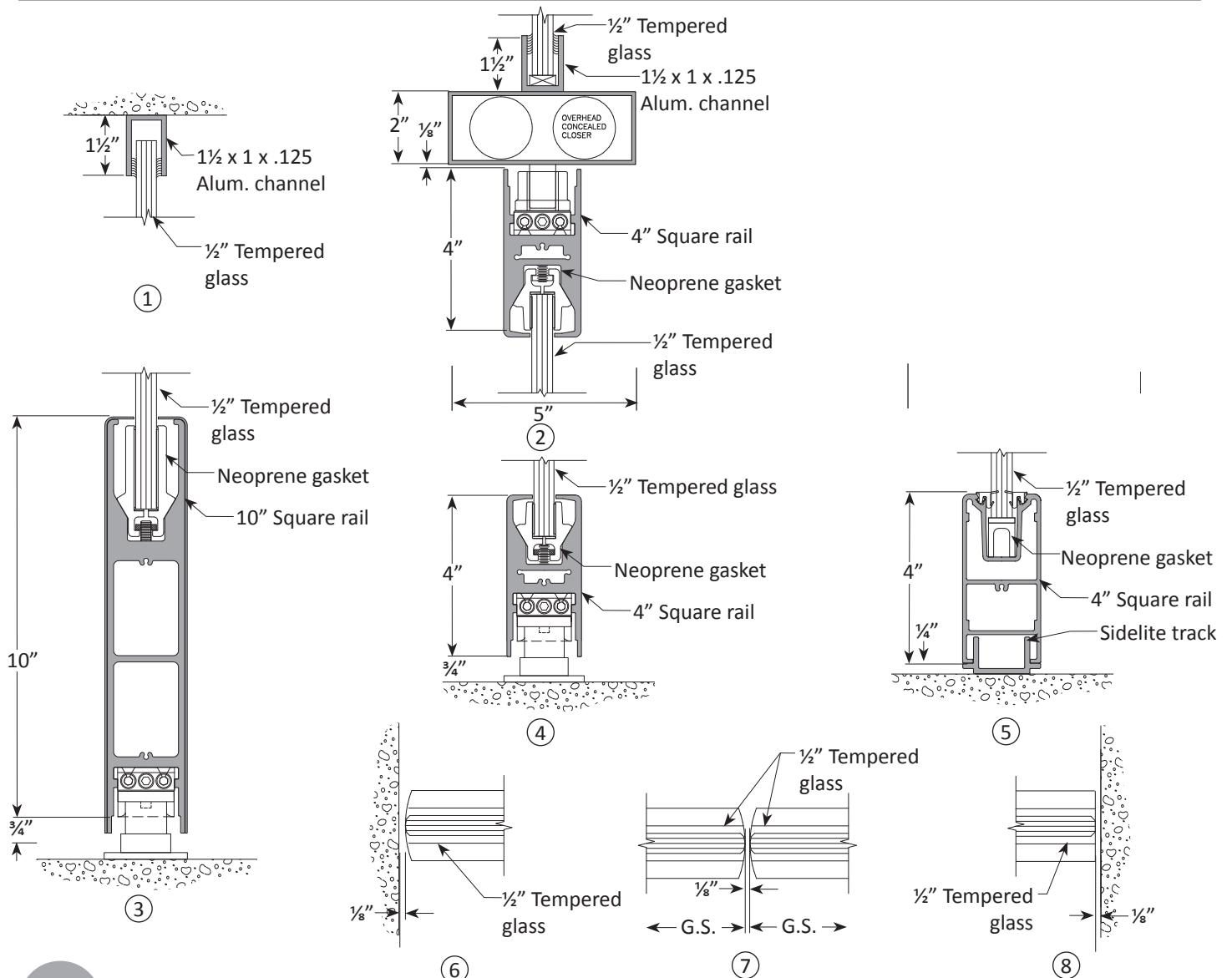
Swing Type P

Standard Details

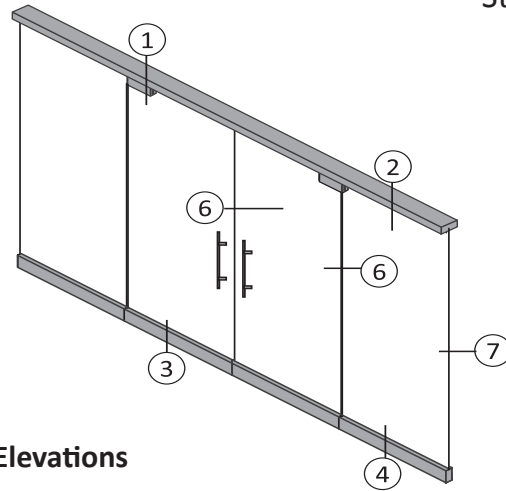
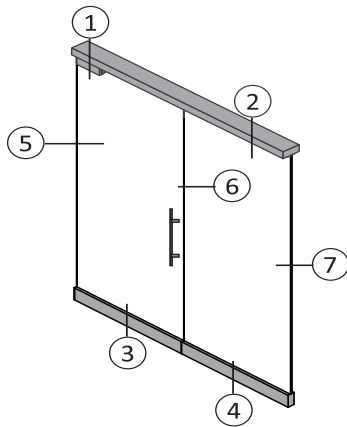
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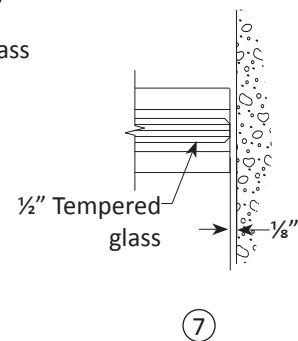
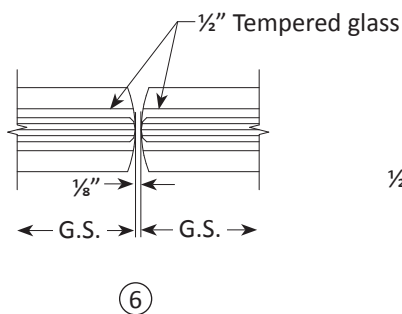
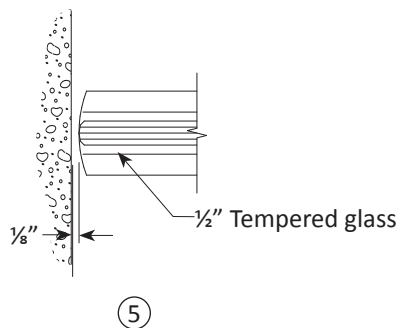
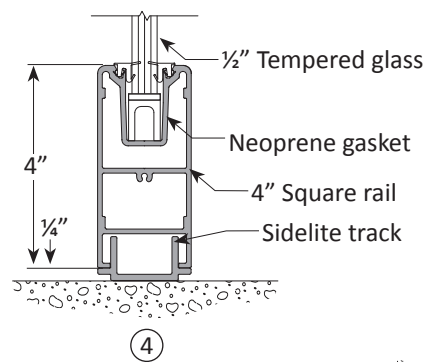
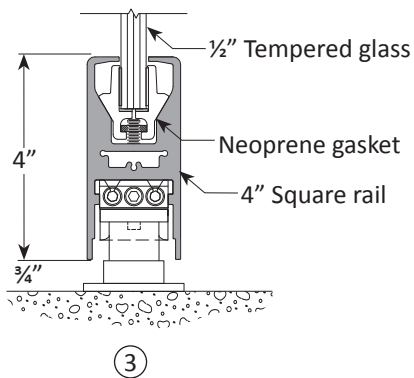
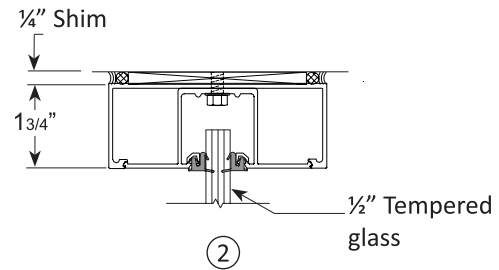
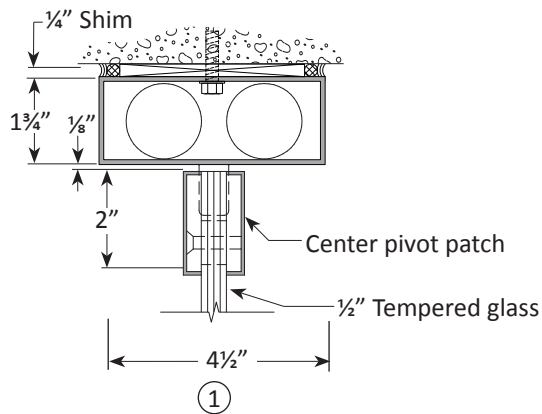
Typical Elevations



Standard Details
Scale: 3" = 1'-0"



Typical Elevations

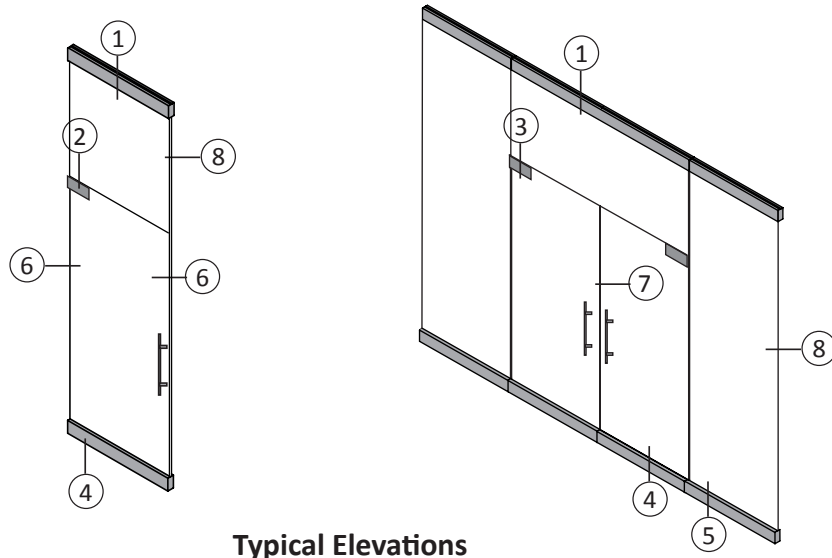


All Glass Entrances

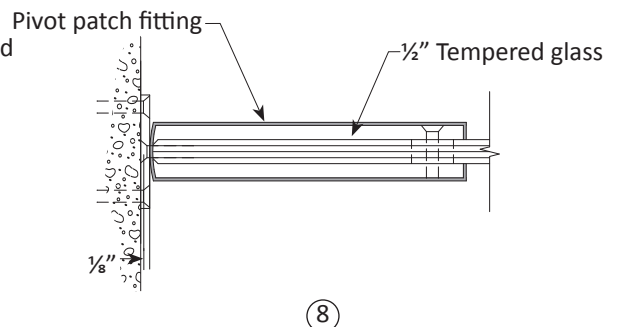
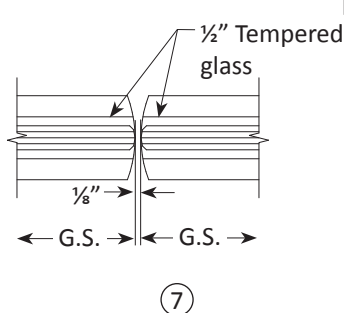
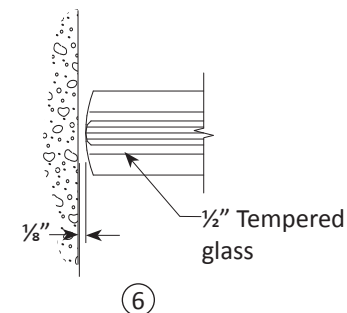
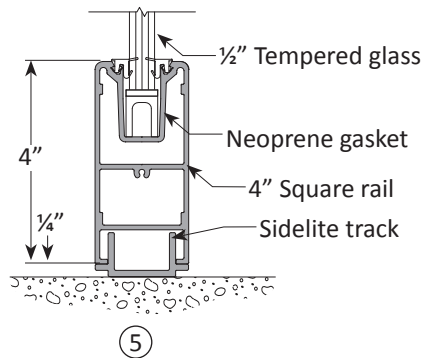
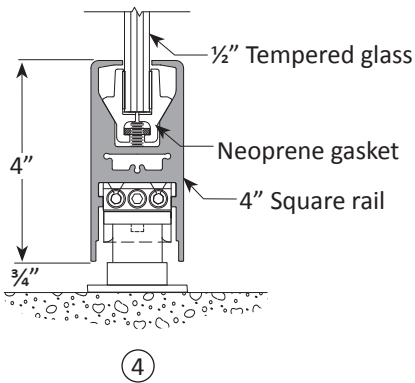
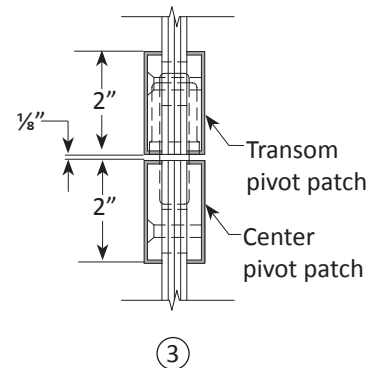
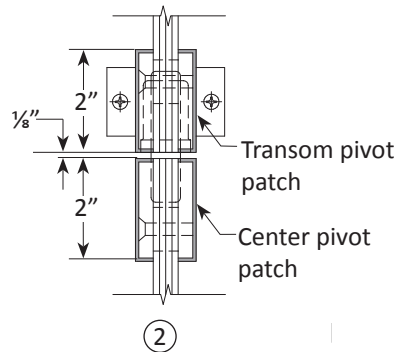
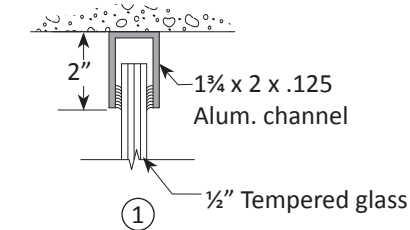
Swing Type BP

Standard Details

Scale: 3" = 1'-0"



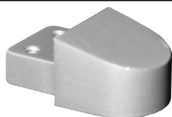
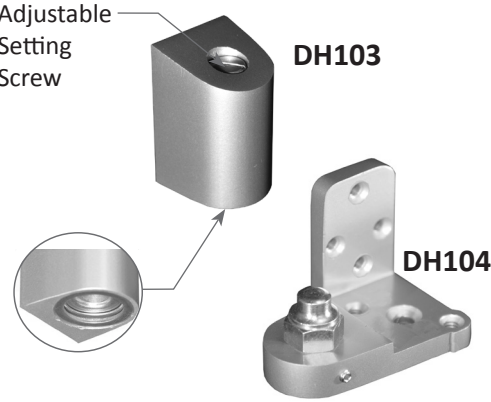
Typical Elevations



HARDWARE

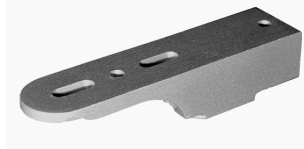
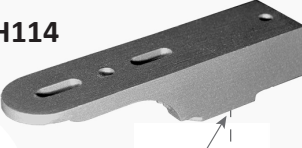
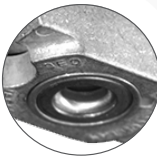
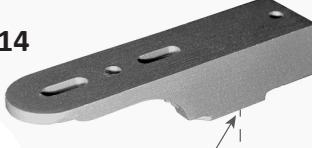
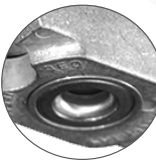
Offset Pivots	1
Bottom Center Pivots	2
Hinges	3
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Locks and Strikes	6-7
2-Point/3-Point Locks	8
Locks and Flush Bolt	9
Cylinders	10
Handles & Lock Accessories	11
Surface Closers	12
Concealed Closer	13
Exit Devices	14-17
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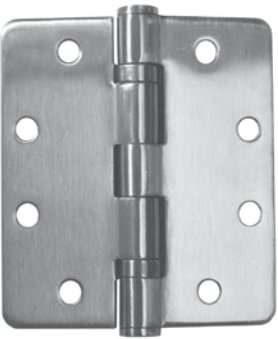
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HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Top Offset Pivots The cast aluminum DH102 Top Door Portion Offset Pivot secures door in place with a spring loaded steel plunger pin which projects into a bushing in the DH101 Top Frame Portion Offset Pivot. Finishes: Clear or Bronze Anodized Plating	DH101 Top Frame Portion	 DH101
	DH102 Top Door Portion	 DH102
Bottom Offset Pivots The cast aluminum DH103 Bottom Door Portion Offset Pivot uses a steel bearing with a bronze bushing and rotates on the steel stud located in the DH104 or DH105 Bottom Frame Portion Offset Pivot. An adjustable setting screw at the top of the pivot allows for adjustment in the height of the door after installation. Finishes: Clear or Bronze Anodized Plating	DH103 Bottom Door Portion	Adjustable Setting Screw  DH103 DH104
	DH104 Right Hand Bottom Floor Portion	
	DH105 Left Hand Bottom Floor Portion	
Intermediate Pivots Mortise Assembly The cast aluminum DH107 or DH108 intermediate offset pivot is recommended for use in door sizes exceeding standard widths and heights. The intermediate offset pivot is offset by 3/4" to match Coral's standard top and bottom offset pivot sets. Finishes: Clear or Bronze Anodized Plating	DH107 Left Hand Intermediate Pivot	BP451  DH107 BP461 
	DH108 Right Hand Intermediate Pivot	
	BP451 Frame Back Up plate	 DH100
	BP461 Door Back Up Plate	
	DH100 Non-Handed Intermediate Pivot	

Hardware

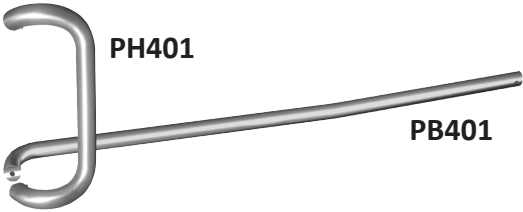
Bottom Center Pivots

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Bottom Center Pivot Bottom Center Pivot is designed for use with center hung doors allowing for double acting function. The DH114 bottom center pivot attaches to bottom of door rail for easy mounting to floor mount or threshold mount applications.	DH114 Bottom Center Pivot (Door Portion)	DH114 
Bottom Center Pivot Floor Mount Bottom Center Pivot Floor Mount is designed for doors without threshold and is installed directly to the floor.	DH115 Floor Mount	DH115 
Bottom Center Pivot Threshold Mount Bottom Center Pivot Threshold Mount is required when using center hung doors with a threshold.	DH116 Threshold Mount	DH116 
Bottom Pivot Assembly Floor Mounted DH145 Bottom Center Pivot Assembly is designed for doors without a threshold. Consists of one DH114 and one DH115 for complete assembly. Floor mounted.	DH145 Bottom Center Pivot Assembly Floor Mounted	DH114  DH115  
Bottom Center Pivot Assembly Threshold Mounted The DH146 bottom center pivot assembly is designed for doors with thresholds. Consists of one DH114 and one DH116 for complete assembly.	DH146 Bottom Center Pivot Assembly Threshold Mounted	DH114  DH116  

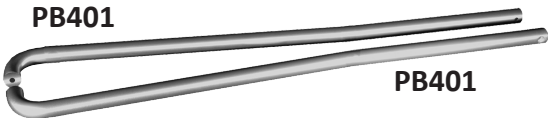
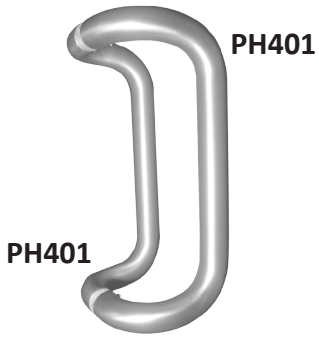
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Butt Hinge The 4½" x 4" Butt Hinge is a five knuckle, commercial quality steel hinge with two ball bearings. A removable pin is standard on the DH109 Butt Hinge. The DH110SS Butt Hinge includes a non-removable pin security feature preventing removal of the pin when the door is in a closed position. Finishes: Satin Chrome or Dark Bronze Plated (DH109) or Satin Stainless Steel or Dark Bronze Stainless Steel Plated (DH110SS)	DH109 Butt Hinge with Removable Pin	 DH109/ DH110SS
	DH110SS Butt Hinge with Non-Removable Pin	
Back Up Plates The standard DH459 (Frame) and DH450 (Door) back up plates are designed for store-front applications. Finish: Zinc Plated	BP459 Frame Back Up Plate	 BP450
	BP450 Door Back Up Plate	
Concealed Leaf Continuous Geared Hinge Continuous Geared Hinges are made of high strength aluminum with a full length rolling gear to align doors perfectly from top to bottom. Heavy duty construction for durability. Finishes: Clear or Bronze or *Painted *Painted on request per special order. Extended lead times may apply.	DH111HD-83 Continuous Geared Hinge for 84" Door Height	 DH111HD
	DH111HD-95 Continuous Geared Hinge for 96" Door Height	

Hardware

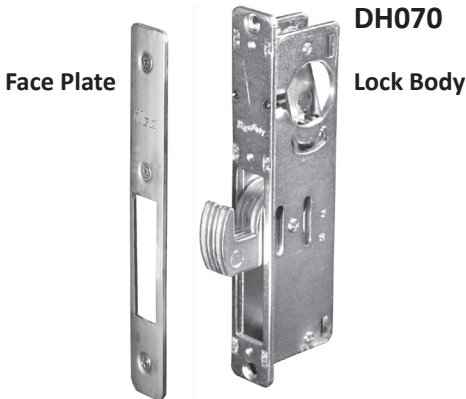
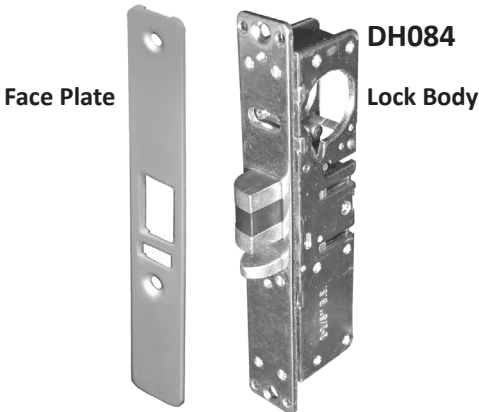
Push/Pull Handles

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Traditional Wire Push Bar The Traditional Wire Push Bar is made of smooth aluminum, 1" in diameter with a 2¼" projection on one end. Finishes: <i>Clear, Champagne, Bronze Anodized*</i>	PB401-33 Push Bar for Doors up to 36"	PB401 
	PB401-39 Push Bar for Doors up to 42"	
	PB401-60 Push Bar for Doors up to 60"	
Traditional Wire Pull Handle The Traditional Wire Pull Handle is made of smooth aluminum, 1" in diameter with a 2¼" projection and 10" overall length with 9" center to center hole pattern. Finishes: <i>Clear, Champagne, Bronze Anodized*</i>	PH401 Wire Pull Handle	PH401 
Traditional Wire Push Bar/ Pull Handle Combination The Push / Pull Combination is standard on all non-panic doors. Utilizes one PB401 Traditional Wire Bar and one PH401 Traditional Wire Pull Handle. Finishes: <i>Clear, Champagne, Bronze Anodized*</i>	DH40 Push Bar/ Pull Handle Combination	PH401 PB401 

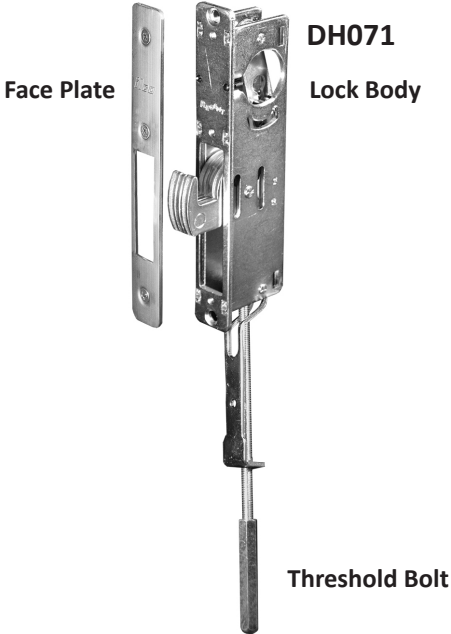
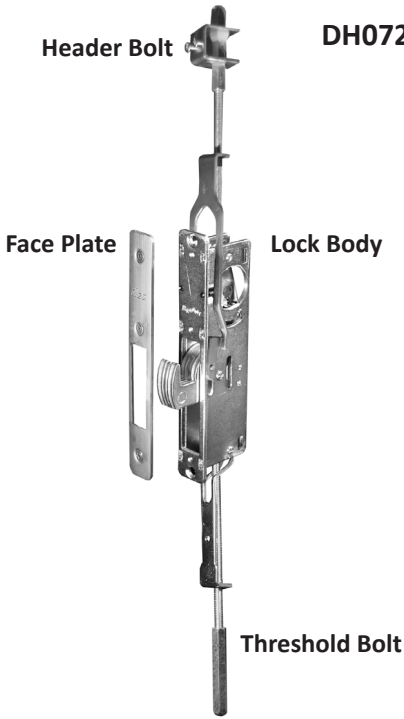
* Additional finishes for push/pull hardware are available. Contact Coral Architectural Products for information. Extended lead times may apply.

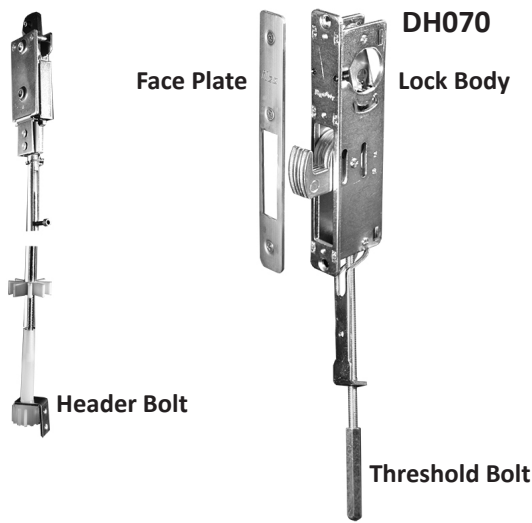
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Traditional Wire Push Bar Combination The Push Bar Combination is used for double acting doors. Combination utilizes two PB401 Traditional Wire Push Bars. Finishes: Clear, Champagne, Bronze Anodized*	DH41 Push Bar Combination	 PB401 PB401
Traditional Wire Pull Handle Combination The 10" overall length with 9" center to center hole pattern back to back is used for offset aluminum doors. This combination utilizes two PH401 Traditional Wire Pull Handles. Finishes: Clear, Champagne, Bronze Anodized*	DH42 Pull Handle Combination	 PH401 PH401

* Additional finishes for push/pull hardware are available. Contact Coral Architectural Products for information. Extended lead times may apply.

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Hook Bolt Lock The Standard Hook Bolt Lock features a five-ply bolt with hardened steel pin. Standard backset on Series 213, 380 and 500 doors is 1½". This lock accepts any standard 1½" mortised cylinder or thumb turn with MS cam. Finishes: Clear or Bronze (Face Plate) * Lock body is non-handed	DH070 Hook Bolt Lock	 DH070 Lock Body
	DH060 Left Handed Beveled Face Plate	
	DH061 Right Handed Beveled Face Plate	
	DH062 Radiused Face Plate	
Deadlatch Lock The Deadlatch Lock is field reversible for opposite hand. Designed to offer the flexibility of traffic control during and after business hours, this lock allows the bolt to be permanently retracted for two-way traffic during business hours and exit only at other times. The Deadlatch Lock is not considered maximum security. Standard backset is ¾" and accepts any standard 1½" mortised cylinder. Finishes: Clear or Bronze (Face Plate)	DH084 Deadlatch Lock	 DH084 Lock Body
	DH065 Left Handed Beveled Face Plate	
	DH064 Right Handed Beveled Face Plate	
	DH063 Radiused Face Plate	
Strike The standard strike set for offset door jamb includes dust box, back-up plate and installation screws. Finish: US-26D	DH090 Strike	 DH090
Electric Strike The Electric Strike offers a variety of options including A.C. Interment buzz during operation and D.C. continuous duty are silent. Finishes: Clear or Bronze (Face Plate)	DH098 Electric Strike (Door or Door Frame)	 DH098
	DH099 Electric Strike for Rim Panics	 DH099

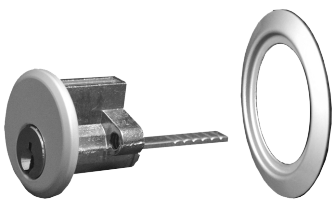
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
MS Deadbolt Lock MS Deadbolt Lock provides maximum security utilizing a long throw five-ply bolt with hardened steel pin activated by pivot mechanism. This lock accepts any standard 1$\frac{3}{4}$" mortised cylinder or thumb turn with MS cam. Finishes: Clear or Bronze (Face Plate) * Lock body is non-handed	DH067 MS Deadbolt Lock (includes Radiused Face Plate)	 DH067 Lock Body with Face Plate
	DH067L Left Hand (Beveled Face Plate)	
	DH067R Right Hand (Beveled Face Plate)	
Hookbolt/Latch Lock The Hookbolt/Latch Lock combines the features of a deadbolt for maximum security for after business hours with the latch lock function to allow the convenience of traffic control management during daytime hours. Finishes: Clear or Bronze (Face Plate)	DH066 Deadlatch Lock	 DH066 Lock Body with Face Plate Armored Strike
	DH066L Left Hand (Beveled Face Plate)	
	DH066R Right Hand (Beveled Face Plate)	
Lock Indicator Lock Indicator Set designed for use with DH070 to indicate the lock position (open or locked). May be used to comply with some local building safety codes. (includes decal) Finishes: Clear or Bronze	DH074 Lock Indicator	 DH074

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
2-Point Lock The complete 2-Point Lock includes the standard DH070 Hook Bolt Lock, DH060 Face Plate and DH068R threshold bolt designed to add a bottom lock point for pairs of doors (active leaf) or single doors. Finishes: Clear or Bronze (face plate) Note: Single door applications includes LH or RH beveled face plate.	DH071 2-Point Lock for Pair of Doors (includes radiused face plate)	 Face Plate DH071 Lock Body Threshold Bolt
Impact-Resistant 3-Point Lock The IR 3-Point Lock system is intended for hurricane impact resistant applications and includes the standard DH070 Hook Bolt Lock, DH060 Face Plate and DH068R threshold and DH069R header bolt designed to add a bottom and top lock points for single doors and pairs of doors (active leaf). In-active leaf uses the standard DH176 steel tip flush bolts. Finishes: Clear or Bronze (face plate) Note: Single door applications includes LH or RH beveled face plate.	DH072 Impact-Resistant 3-Point Lock (includes radiused face plate)	 Header Bolt DH072 Face Plate Lock Body Threshold Bolt

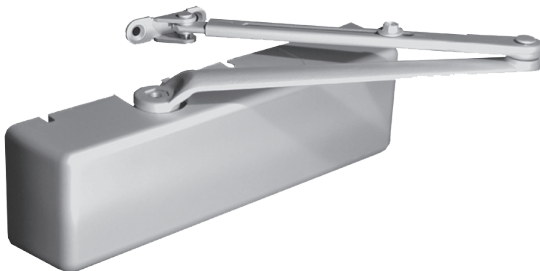
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Optional 3-Point Lock * for Non-Impact-Resistant Applications The Optional 3-Point Lock systems is for standard non-impact resistant applications and includes the standard DH070 Hook Bolt Lock, DH060 Face Plate, 4015 threshold bolt for pairs of doors (active leaf) and 4085 header bolt in the (in-active leaf). Finishes: Clear or Bronze (face plate)	DH070 Optional 3-Point Lock for Pair of Doors (includes radiused face plate)	 Face Plate Lock Body Header Bolt Threshold Bolt
Flush Bolt Lock The Standard Flush Bolt Lock without guides is intended to securely lock an inactive door. 1/8" Offset without guides x 7/8" back set. Finishes: Clear or Bronze (face plate)	DH076 Standard Flush Bolt with Nylon Tips DH07696 Standard Flush Bolt with Nylon Tips and Extended Rod for 96" Door Heights DH176 Flush Bolts with Steel Tips (Standard on Impact-Resistant Doors) DH17696 Flush Bolt with Steel Tips and Extended Rod for 96" Door Heights (Standard on Impact-Resistant Doors)	 DH176

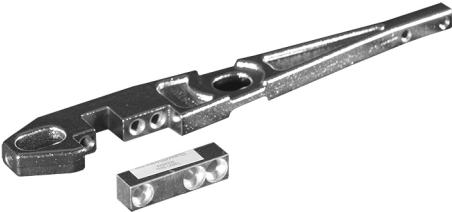
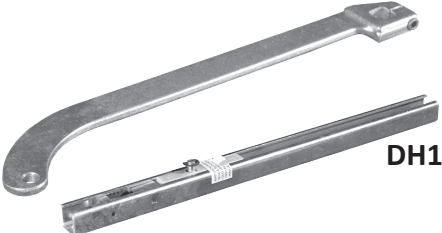
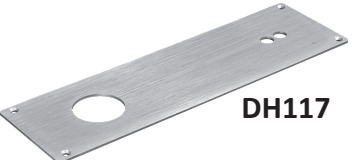
Hardware

Cylinders

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Cylinder 1½" Diameter Cylinder Finishes: <i>Clear or Bronze</i>	DH078 Cylinder	DH078 
Thumb Turn 1½" Diameter Thumb Turn Finishes: <i>Clear or Bronze</i>	DH079 Thumb Turn	DH079 
Dummy Cylinder 1½" Diameter Dummy Cylinder Finishes: <i>Clear or Bronze</i>	DH080 Dummy Cylinder	DH080 
Rim Cylinder 1½" Rim Cylinder for Panic Doors Finishes: <i>Clear or Bronze</i>	DH081 Rim Cylinder	DH081 
Cylinder Guard Cylinder Guard installed on exterior of door. Includes hardened steel collar designed to protect cylinder from prying. Finishes: <i>Clear or Bronze</i> * Cylinder not included	DH082 Cylinder Guard	DH082 
Cylinder Mounting Pad Mortise Cylinder Mounting Pad for standard 1½" cylinder. Used for Jackson 2086 panic. Finishes: <i>Clear or Bronze</i>	DH073 Mounting Pad	DH073 

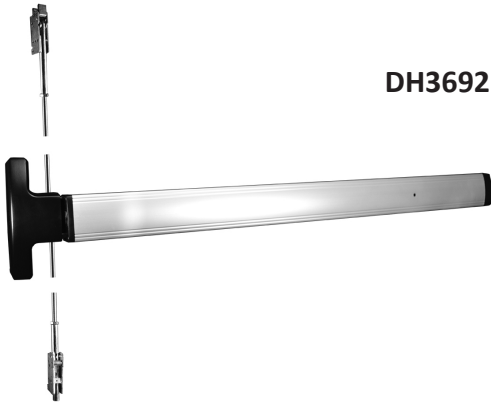
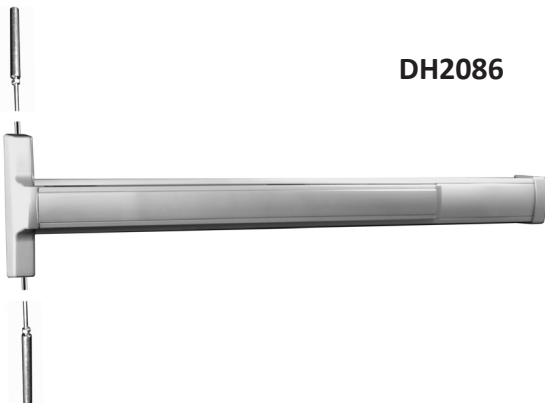
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Paddle Handle for Latch Locks The Paddle Handle is an alternative to lever and knob handles for operation with a dead-latch lock - just push or pull in the direction the door swings to activate. Handles are available in Push to Left, Push to Right, Pull to Left and Pull to Right and include cam plug. Finishes: Satin Aluminum or Dark Bronze	DH091 Left Hand Paddle Handle	 DH091
	DH092 Right Hand Paddle Handle	
Lever Handle for Latch Locks The Lever Handle operates with a deadlatch lock which incorporates a lever handle shaped to fit the hand with a concave shape that keeps knuckles and thumb safely away from the door jamb, even on narrow stile doors. Levers are available in Left or Right Hand and include cam plug. Finishes: Satin Aluminum or Dark Bronze	DH093 Lever Handle (Reversible)	 DH093
MS Deadbolt Lever Handle with Lock Indicator The MS Deadbolt Lever Handle is spring loaded to horizontal position and relocks with upward motion and can be installed in place of existing key cylinder or cylinder type thumbturn on inside of door. Finishes: Clear or Bronze	DH094 Deadbolt Lever with Lock Indicator	 DH094

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Tri-Style Surface Closer The industry's most popular hole pattern, the CLO26 Tri-Style Surface Closer is the most diverse 9-1/16" commercial door closer on the market today. It provides adjustments for sweep, back check, latch speed and also an adjustment spring tension of 1 to 5. • Grade 1 ANSI A156.4 • Exceeds ADA Requirements ANSI 117.1 • Adjustable back check sweep and latching speeds • Power adjustable 1 to 5 • Tri-packed • Cover Included • 9 1/16" x 3/4" hole pattern • Self-drilling Screws • Includes parallel arm bracket Finishes: Clear or Bronze	CL026 Tri-Style Surface Closer	 CL026
	CL030 Top Jamb Bracket	 CL030
	CL031 Drop Plate for CLO26 Surface Closer	 CL031
Barrier Free Adjustable Surface Closers The CLO28 is one of the most reliable cast iron surface closers on the market today. Coral Architectural Products recommends this closer be used in medium to heavy traffic applications. The CLO28 is fully adjustable and will service the heaviest doors, down to ADA compliant. • Grade 1 ANSI A156.4 • Exceeds ADA Requirements ANSI 117.1 • Adjustable back check sweep and latching speeds • Power adjustable 1 to 6 • Tri-packed • Cover Included • Self-drilling Screws • Includes parallel arm bracket Finishes: Clear or Bronze	CL028 Barrier Free Closer Adjustable	 CL028
	CL033 Drop Plate for CLO28 Surface Closer	 CL033

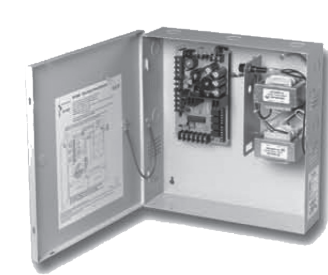
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Concealed Overhead Closer The Overhead Concealed Door Closer features dual valves to control closing and latching speeds. 90° and 105° hold pen and no hold open models are available. Door Closers fit into standard 1¾" x 4½" or 2 x 4½" headers and 2½" x 5" headers for impact resistant door frames.	CL190 90° Concealed Closer Hold Open	CL105 
	CL105 105° Concealed Closer Hold Open	
	CL290 90° Concealed Closer No Hold Open	
	CL205 105° Concealed Closer No Hold Open	
Side Load Arm The adjustable Side Load Top Arm Assembly is for use on center pivot doors. Adjusting screws at the end of the arm allow the door to be adjusted in or out to match jambs. Side Load Arm is used with overhead concealed closers.	DH147 Side Load Arm	DH147 
Offset Arm Assembly The Offset Arm Assembly includes Offset Arm, Slide Channel and Mounting Hardware is standard on Coral's offset hung doors with concealed overhead closers. Series 213 Narrow Stile doors require D102 top rail with deep web and DB122-2 assembly for concealed overhead closer with offset arm assembly.	DH152 Offset Arm	DH152  DH153
	DH153 Slide Channel	
Cover Plates Pre-fabricated Cover Plates for Center Pivot or Offset Arm applications. Finishes: Clear or Bronze	CS112-1 Cover Plates for Center Pivot	CS112-1  DH117 
	DH117 Cover Plate for Offset Arm	

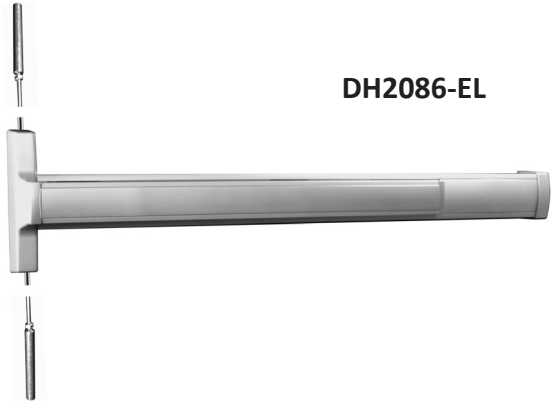
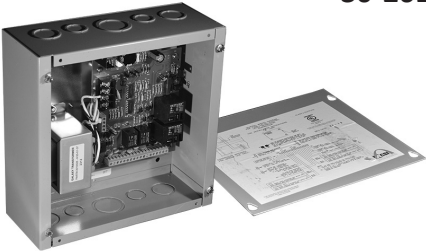
Hardware

Exit Devices

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Concealed Vertical Rod Touch Bar Exit Device The Concealed Vertical Rod Touch Bar Exit Device utilizes a low profile touch bar projecting less than three inches (3") from the face of the door. The slim compact design enables mounting on narrow, medium and wide stile entrance doors and includes Coral's PH401 pull handle and cylinder (active leaf). Finishes: Clear or Bronze Anodized	DH3692 CVR Touch Bar Exit Device	 DH3692
Concealed Vertical Rod Touch Bar Exit Device The Concealed Vertical Rod Touch Bar Exit Device is handed non-reversible with adjustable bolt guides for narrow, medium and wide stile entrance doors. The DH2086 exit device is fully tested for impact resistance required in coastal construction and includes Coral's PH401 pull handle and cylinder (active leaf). Finishes: Clear or Bronze Anodized	DH2086R Right Hand CVR Touch Bar Exit Device	 DH2086
	DH2086L Left Hand CVR Touch Bar Exit Device	
Mid-Panel Concealed Vertical Rod Touch Bar Exit Device Mid-Panel Touch Bar Exit Device is handed and features a Pullman latch at top and bolt at bottom. Available for doors widths of 30" - 48". Includes PH401 Pull Handle and cylinder for active door. Finishes: Clear or Bronze Anodized	DH3192R Right Hand CVR Touch Bar Exit Device	 DH3192
	DH3192L Left Hand CVR Touch Bar Exit Device	

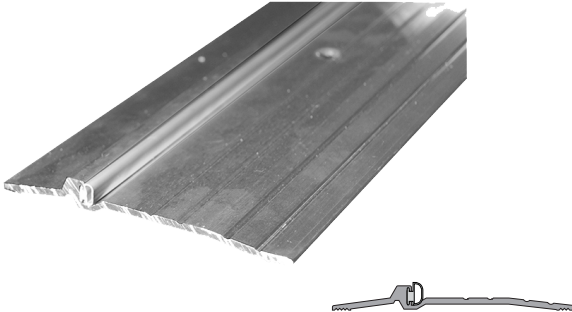
HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Rim Mounted Touch Bar Exit Device The Rim Mounted Touch Bar Exit Device utilizes a low profile touch bar projecting less than three inches (3") from the face of the door. The Rim Panic Device uses a 1" hardened steel latch bolt engaging a frame or removable mullion and includes Coral's PH401 pull handle and cylinder. Finishes: Clear or Bronze Anodized	DH3792 Rim Touch Bar Exit Device	DH3792 
Removable Mullion for Rim Panic Door Pair Removable Mullion for Rim Panics includes two security clips, as well as, top and bottom mounting brackets. Two door mortise strike set. Finishes: Clear or Bronze Anodized	DHRM370-7 Removable Mullion 84" Length	DHRM370-7 
	DHRM370-8 Removable Mullion 96" Length	
	DHRM370-9 Removable Mullion 108" Length	

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Concealed Vertical Rod Touch Bar Exit Device (with Electronic Latch Retraction) The Concealed Vertical Rod Touch Bar Exit Device utilizes a low profile touch bar projecting less than three inches (3") from the face of the door. The slim compact design enables mounting on narrow, medium and wide stile entrance doors and includes Coral's PH401 pull handle and cylinder (active leaf). Finishes: Clear or Bronze Anodized	DH3692-EL CVR Touch Bar Exit Device with Electric Latch Retraction	 DH3692-EL
Rim Mounted Touch Bar Exit Device (with Electronic Latch Retraction) The Rim Mounted Touch Bar Exit Device utilizes a low profile touch bar projecting less than three inches (3") from the face of the door. The Rim Panic Device uses a 1" hardened steel latch bolt engaging a frame or removable mullion and includes Coral's PH401 pull handle and cylinder. Finishes: Clear or Bronze Anodized	DH3792-EL Rim Touch Bar Exit Device with Electric Latch Retraction	 DH3792-EL
Power Supply Units The DH3692-EL and DH3792-EL Exit Devices are integrated with the PSEL1500 and PSEL3000 power supply units. The power supply units are available with 115vAC and come equipped with terminal blocks for easy connection input devices and capable of supplying power to key pads, card readers and automatic door activation switches.	PSEL1500 First Choice 1500 (Single)	 PSEL1500
	PSEL3000 First Choice 3000 (Pair)	 PSEL3000

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Concealed Vertical Rod Touch Bar Exit Device (with Electronic Latch Retraction) The Concealed Vertical Rod Touch Bar Exit Device is handed non-reversible with adjustable bolt guides for narrow, medium and wide stile entrance doors. The DH2086 exit device is fully tested for impact resistance required in coastal construction and includes Coral's PH401 pull handle and cylinder (active leaf). Finishes: Clear or Bronze Anodized	DH2086R-EL Right Hand CVR Touch Bar Exit Device with Electric Latch Retraction	 DH2086-EL
	DH2086L-EL Left Hand CVR Touch Bar Exit Device with Electric Latch Retraction	
Power Supply Units The DH2086-EL Exit Device is integrated with the 30-2616 power supply units. The power supply units will provide the required 10 amp inrush and 5 amp hold capable of supplying power to key pads, card readers and automatic door activation switches.	30-2616 Jackson	 30-2616

Hardware

Thresholds

HARDWARE DESCRIPTION	PART NUMBER	HARDWARE ITEM
Standard Threshold The TH4 is Coral's standard threshold with an overall dimension of ½" (height) x 4" (width) and is available on all transom and non-transom door frames. The TH4 is constructed of tempered aluminum 6063-T6 available in mill finish and is ADA compliant. <i>Mill Finish</i> 	TH4 ½" x 4" Saddle Threshold	TH4 
Bumper Threshold The TH5B is Coral's optional threshold with integral bumper and neoprene weathering gasket insert. TH5B has an overall dimension of 1/2" (height) x 5" (width) and is constructed of tempered aluminum 6063-T6 available in mill finish and is ADA compliant. <i>Mill Finish</i> 	TH5B ½" x 5" Bumper Threshold	DHC-2005AV 
Door Bottom Sweep Coral's Bottom Door Sweep is surface applied with concealed fasteners and integral weathering lip designed to reduce air infiltration and sweep the top surface of the threshold. The WS1 Bottom Door Sweep is available in various width dimensions. Finishes: <i>Clear and Bronze Anodized</i>	WS136 Door Sweep with Weathering 36" Length WS142 Door Sweep with Weathering 42" Length WS148 Door Sweep with Weathering 48" Length WS160 Door Sweep with Weathering 60" Length	WS136 

Section B1
Table of Contents

FL200
STOREFRONT SYSTEM
1³/₄"x 4¹/₂"

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
1. Types of Coral Architectural Products include:
- a. Series FL200 1-3/4" x 4-1/2" non-thermal (outside) or (inside) center glazed storefront system for 1/4" or 3/8" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 2. Division 7 Section "Fire Stopping"
 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 5. Division 8 Section "Aluminum Windows Walls"
 6. Division 8 Section "Aluminum Entrances and Storefronts"
 7. Division 8 Section "Aluminum Mall Sliding Doors"
 8. Division 8 Section "Finish Hardware"
 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of (____) P.S.F. inward (____) P.S.F. outward. The design pressures are based on the (____) Building Code; (____) Edition.
 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 10 PSF as defined in AAMA 501.

GUIDE SPECIFICATION

4. Uniform Load: A static air design load of +60/-50 PSF (exterior glazed) and +40/-40 PSF (interior glazed) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by **Coral Architectural Products** without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406

GUIDE SPECIFICATION

Contact Numbers:

- a. Telephone: (800) 772-7737
- b. Fax: (800) 443-6261
- c. Email: info@coralap.com
- d. Web address: www.coralap.com
2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL200 Non-Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS. FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS, CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 1-3/4" x 4-1/2" nominal dimension; Center Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Architectural Aluminum
 - b. Series FL200 Storefront System: 1-3/4" x 4-1/2" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

GUIDE SPECIFICATION

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 - 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

GUIDE SPECIFICATION

2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

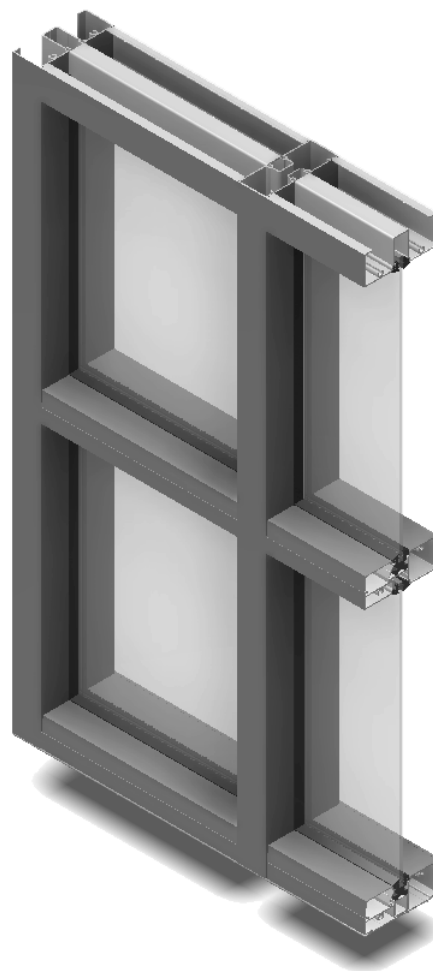
Series FL200 non-thermal 1 ¾" x 4 ½" center set storefront framing system for ¼" or ⅜" glass is designed for low-rise applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. Perimeter profiles with full-depth pockets eliminate the need for filler plates and provide direct anchoring to the substrate with excellent water control.

Features

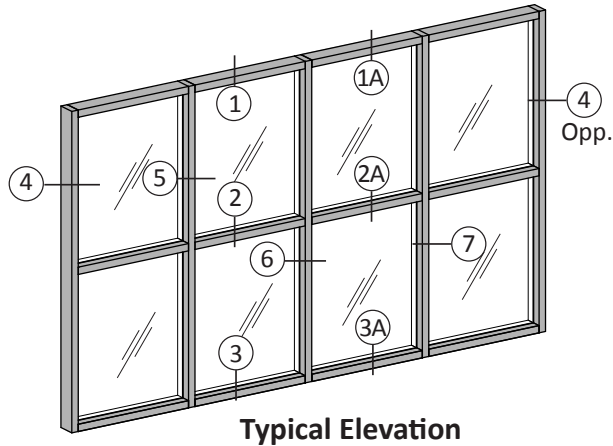
- Outside or Inside Glazed
- Screws-spline Assembly
- Accepts ¼" or ⅜" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill and installation of filler plates at head and wall jambs
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

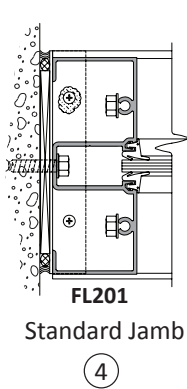
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- Florida Product Approval Number – FL8832 (non-impact for use outside HVHZ)



Standard Framing
Scale: 3" = 1'-0"

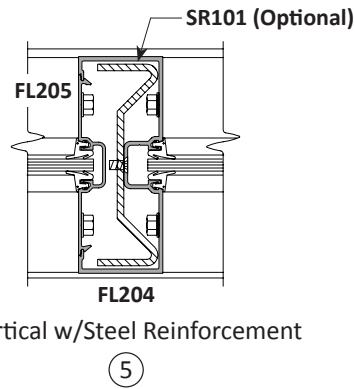


Typical Elevation



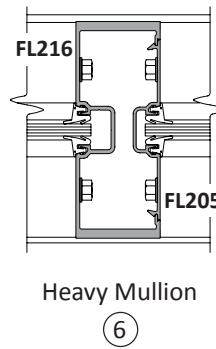
Standard Jamb

④



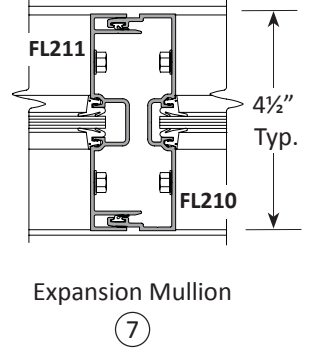
Vertical w/Steel Reinforcement

⑤



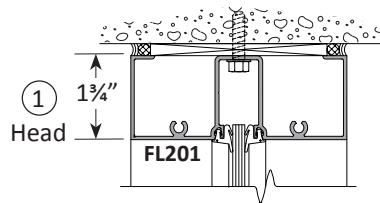
Heavy Mullion

⑥



Expansion Mullion

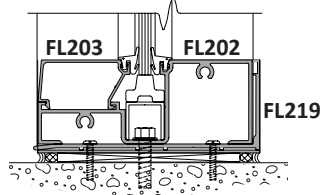
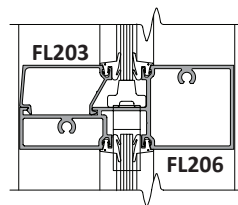
⑦



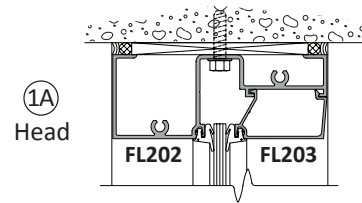
①
Head

②
Horizontal

③
Sill



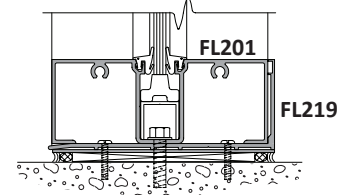
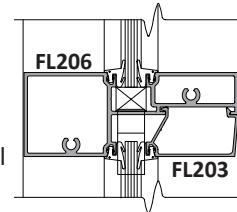
Exterior Glazing



①A
Head

②A
Horizontal

③A
Sill



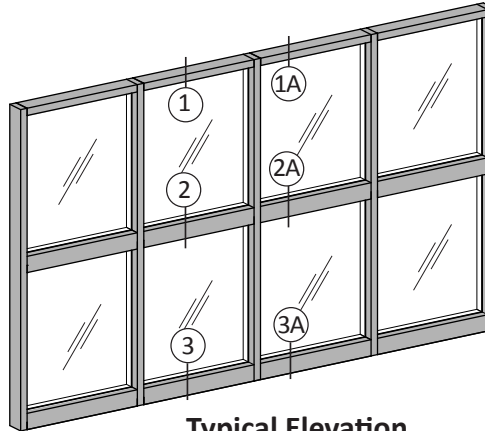
Interior Glazing

FL200·1³/₄"x4¹/₂"

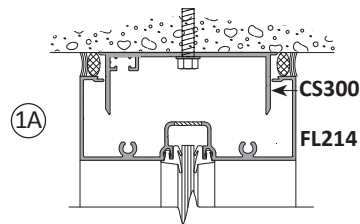
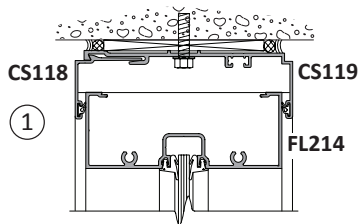
Non-Thermal Storefront

Optional Framing

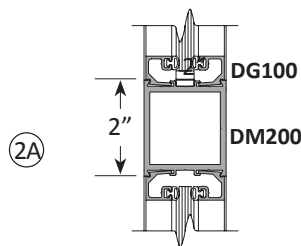
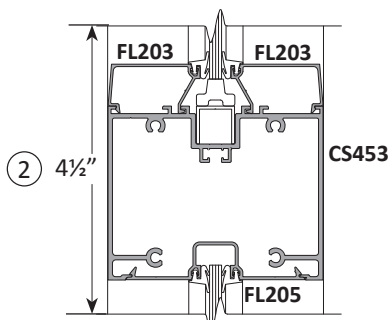
Scale: 3" = 1'-0"



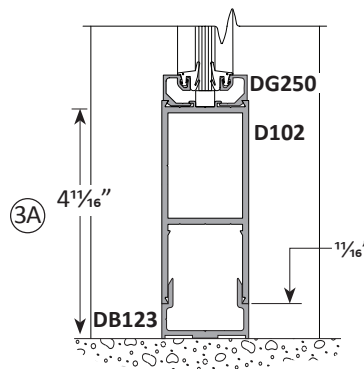
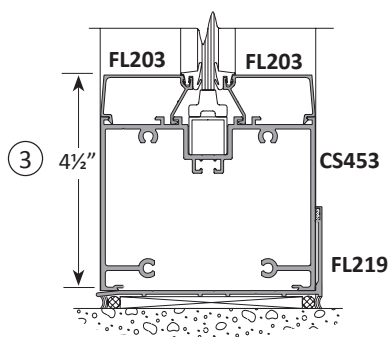
Typical Elevation



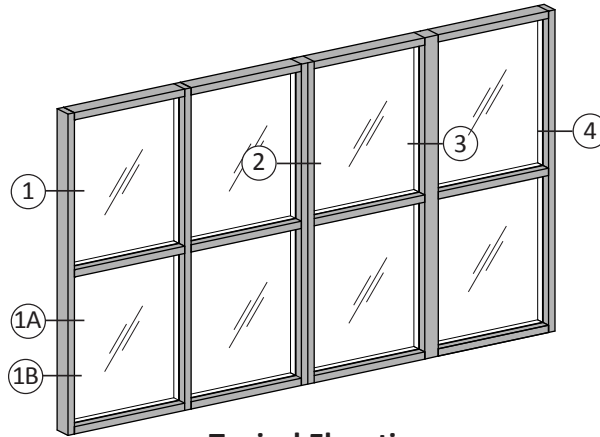
Optional Head Members



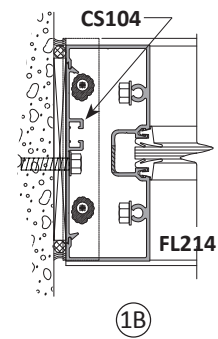
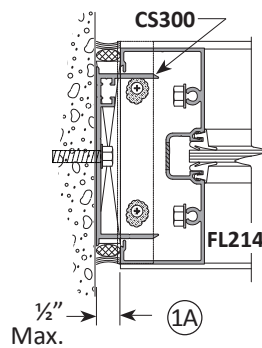
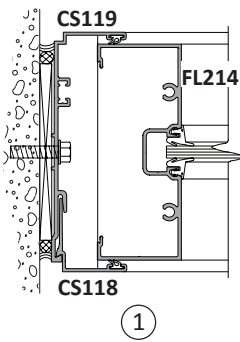
Optional Horizontal Members



Optional Sill Members

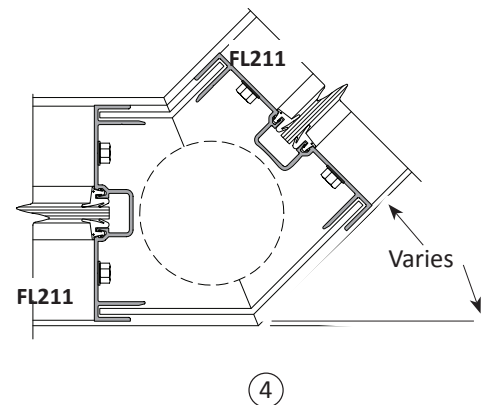
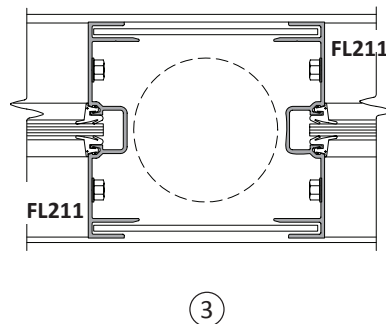
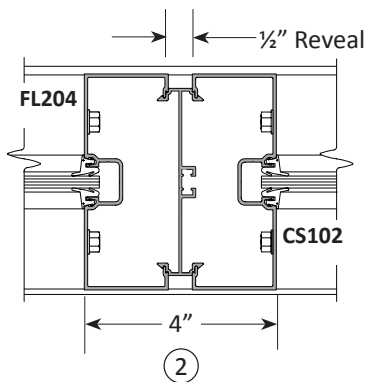


Typical Elevation



Optional Jamb Members

Note: 0.125" Aluminum Brake Metal by others (typical)



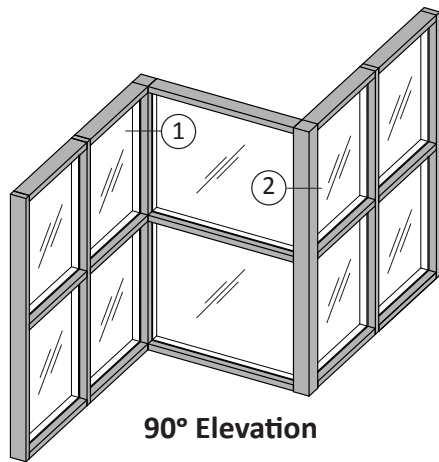
Optional 4" Vertical and Post Corners

FL200·1³/₄"x4¹/₂"

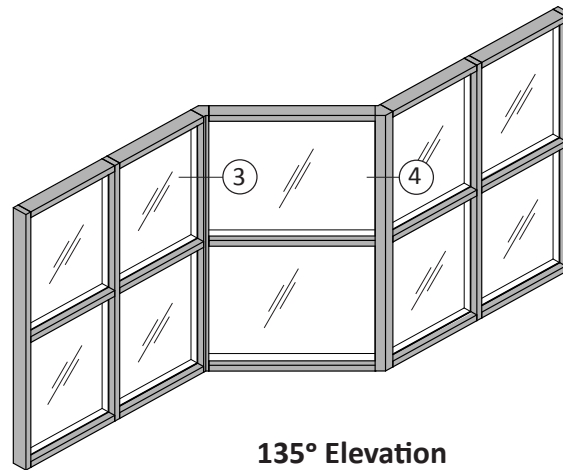
Non-Thermal Storefront

Corner Framing

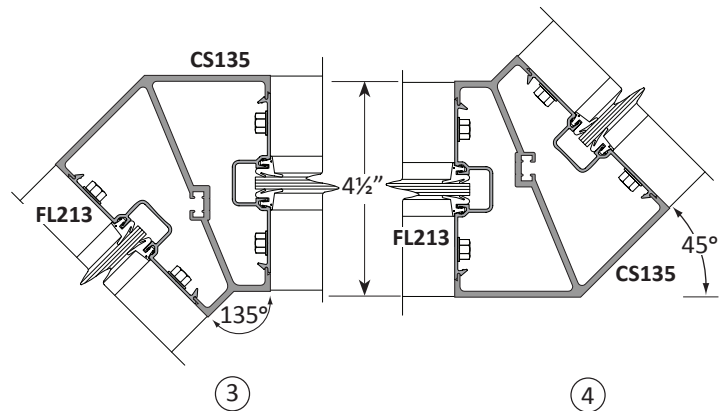
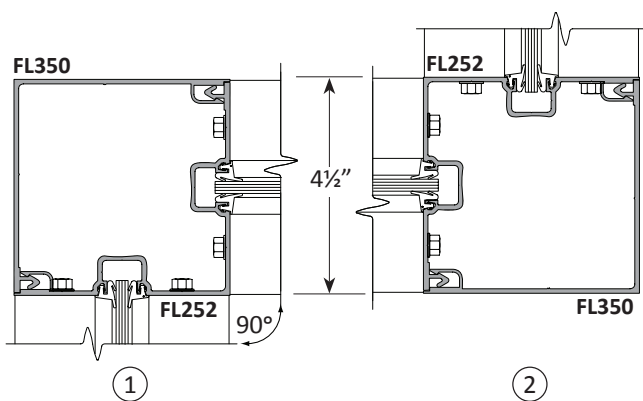
Scale: 3" = 1'-0"



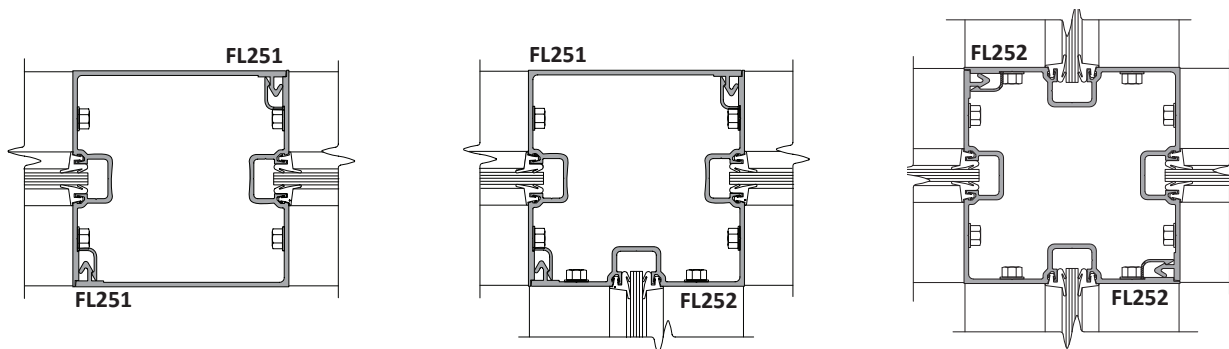
90° Elevation



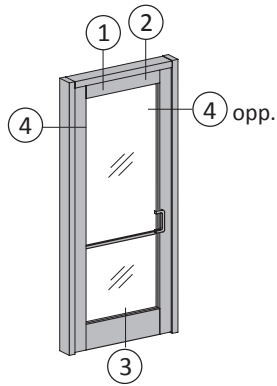
135° Elevation



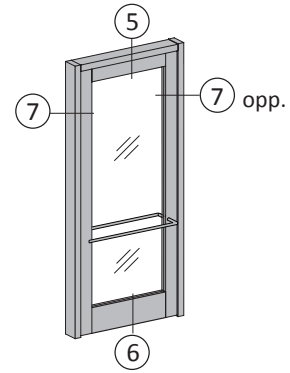
90° and 135° Corner Conditions



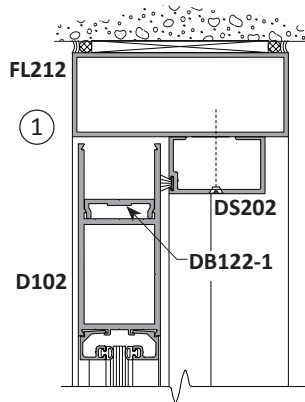
Optional Corner Post Conditions



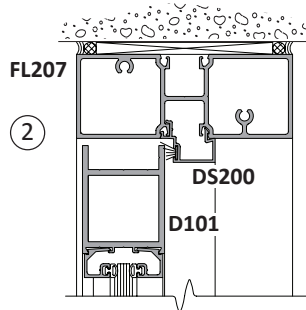
Single Acting Doors
Non-Transom Frame



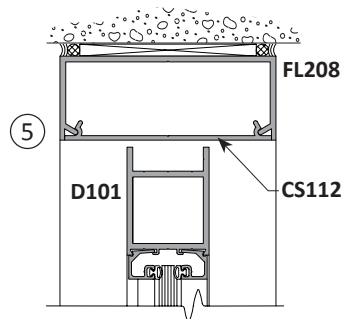
Double Acting Doors
Non-Transom Frame



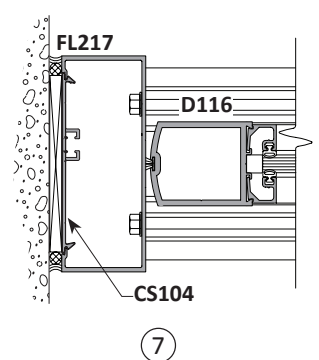
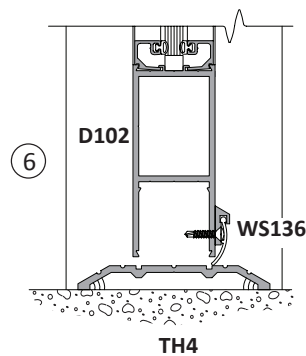
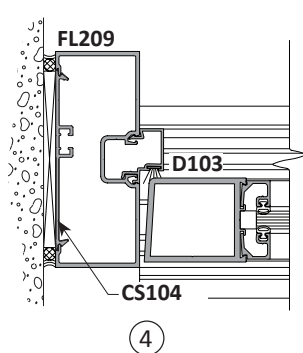
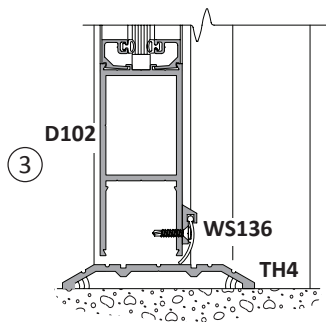
Concealed Overhead Closer



Surface Mounted Closer



Concealed Overhead Closer

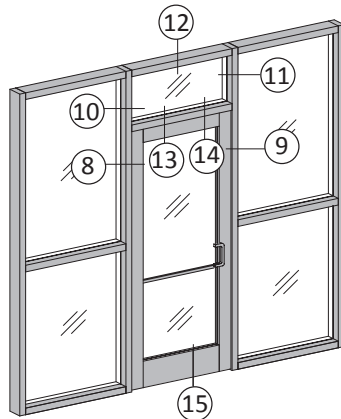


FL200·1¾" x 4½"

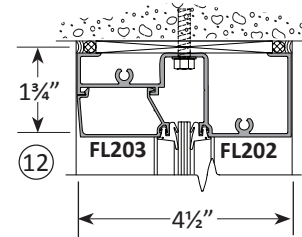
Non-Thermal Storefront

Entrance Framing - Single Acting with Transom

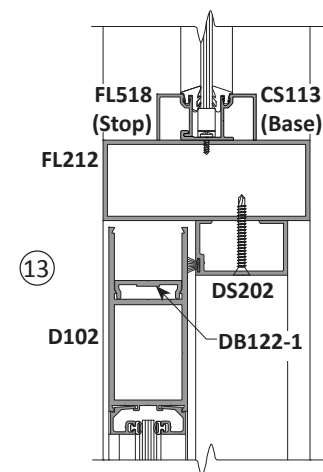
Scale: 3" = 1'-0"



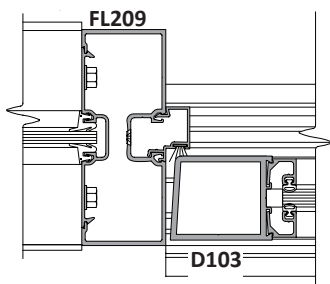
**Single Acting Doors
with Transom Frame**



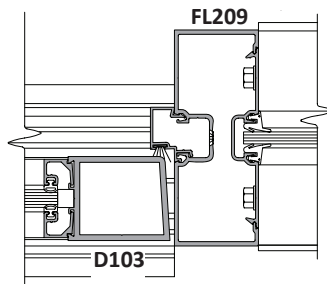
Transom Header



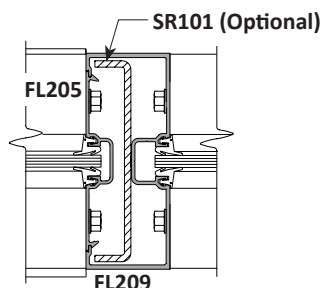
Concealed Overhead Closer



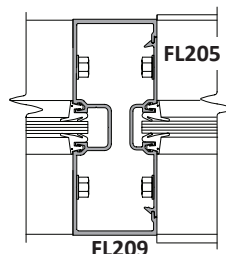
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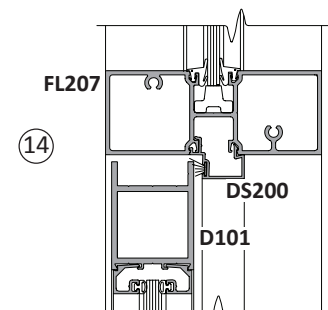
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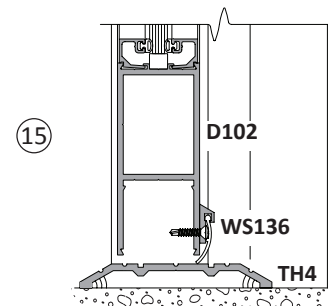
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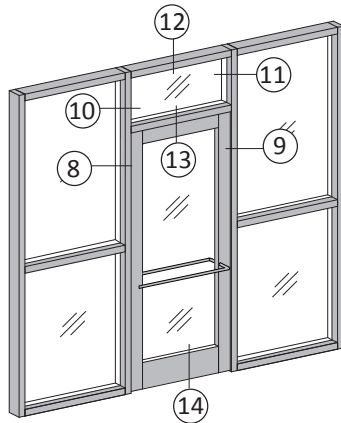
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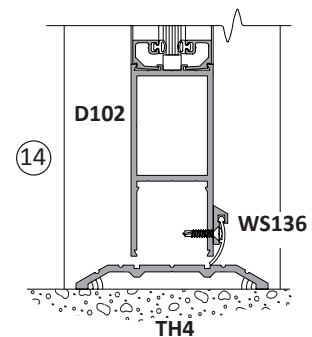
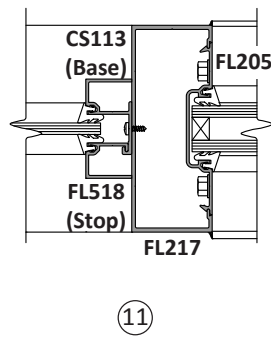
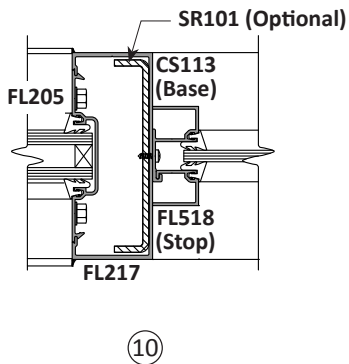
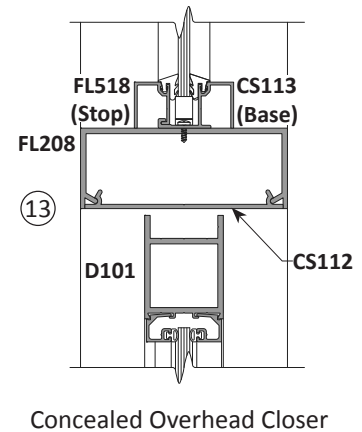
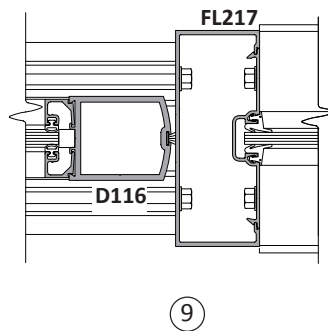
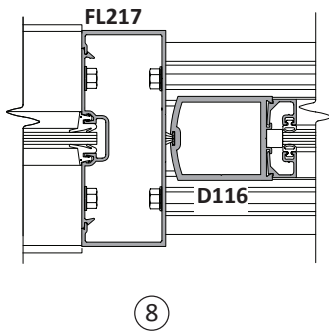
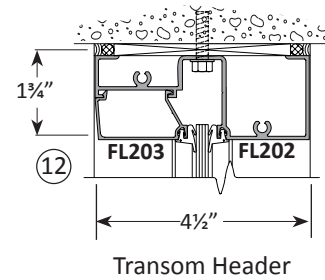
Surface Mounted Closer



15



**Double Acting Doors
with Transom Frame**



FL200·1¾" x 4½"

Non-Thermal Storefront

Wind Load Charts

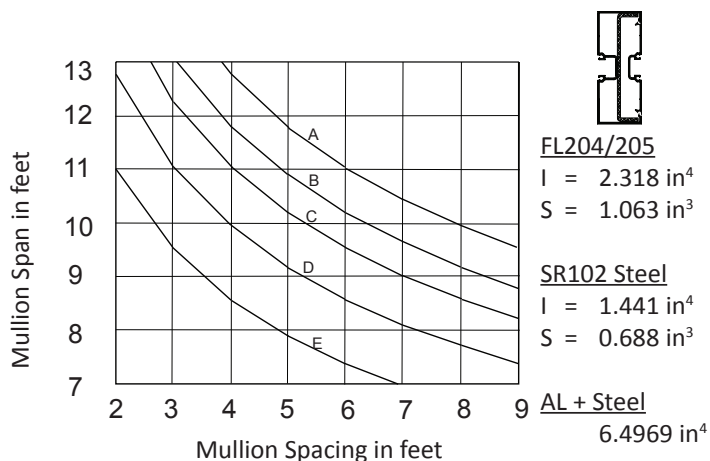
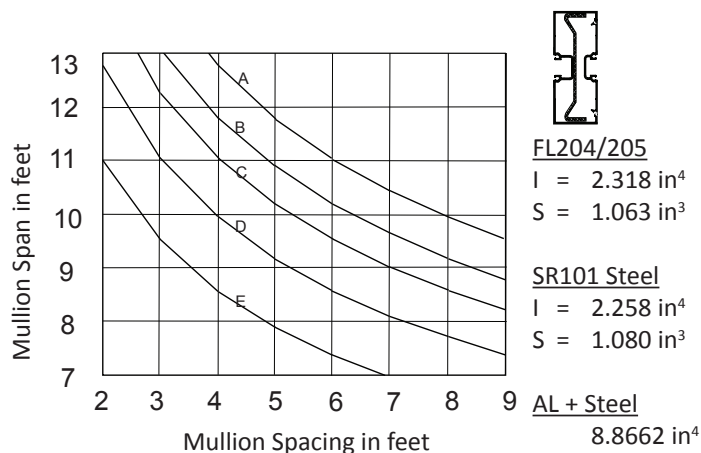
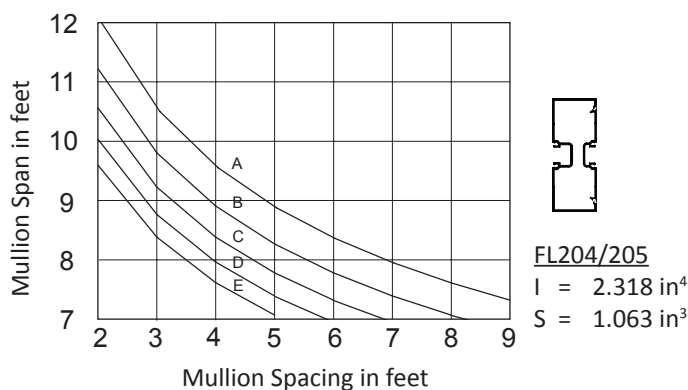
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	E	40 PSF
B	25 PSF	F	45 PSF
C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



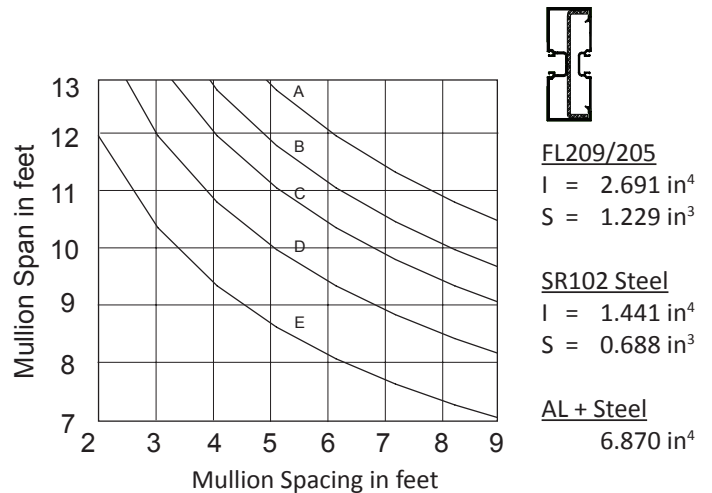
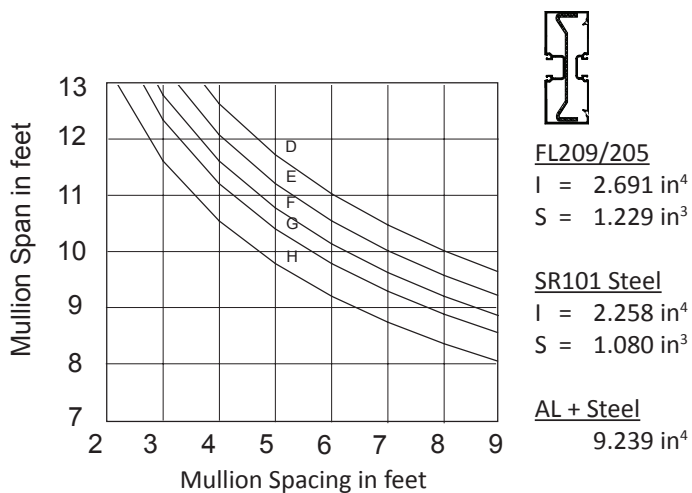
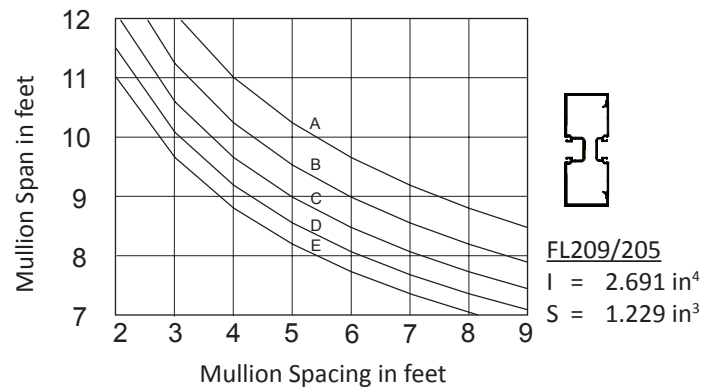
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

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A	20 PSF	E	40 PSF
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C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



FL200·1¾" x 4½"

Non-Thermal Storefront

Wind Load Charts and Dead Load Charts

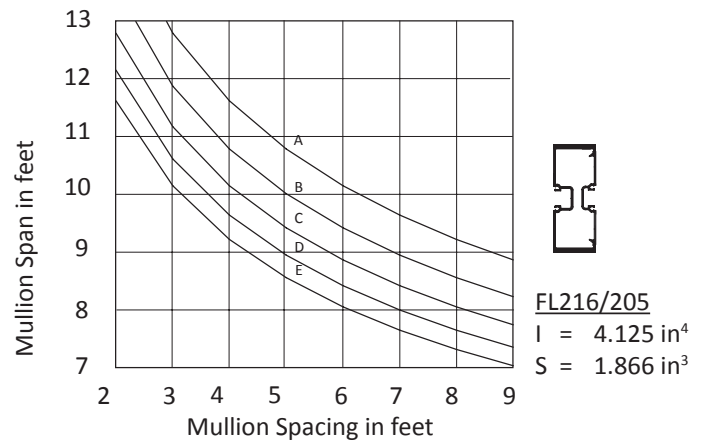
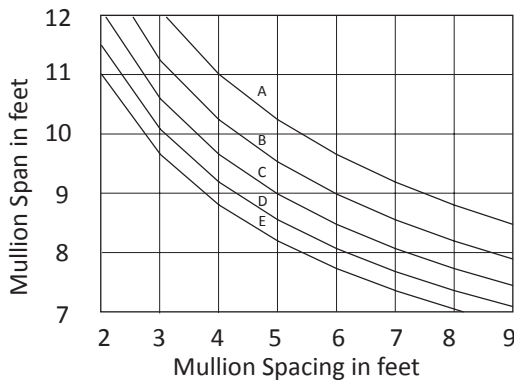
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	E	40 PSF
B	25 PSF	F	45 PSF
C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



DEAD LOAD CHARTS

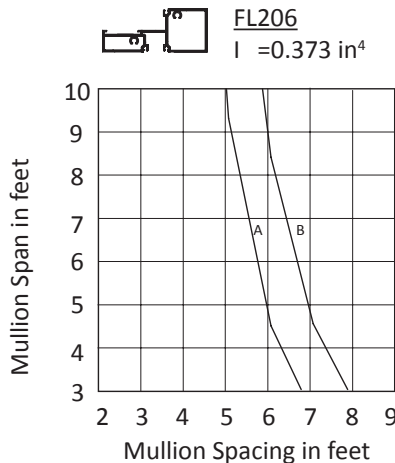
INTERMEDIATE HORIZONTAL

Dead load charts are based on 1/8" maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 3.25 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger

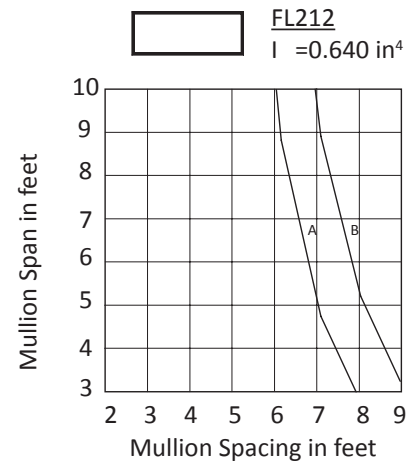
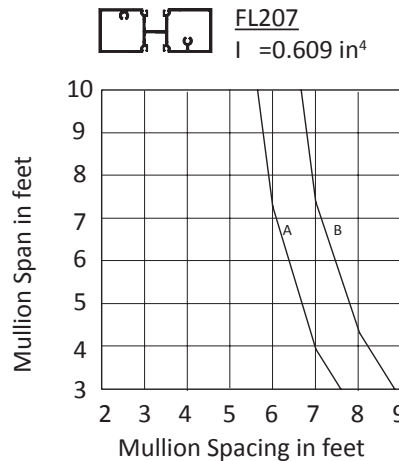


DOOR HEADERS

Dead load charts for door headers are based on 1/16" maximum deflection at the center point of the header and on a theoretical glass weight of 3.25 P.S.F.

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger



Section B2
Table of Contents

FL300
STOREFRONT SYSTEM
2" x 4½"

Specifications - FL300	S1-S5
Features & Benefits	1
Standard Framing	2
Optional Framing.....	3-4
Corner Framing.....	5
Entrance Framing - Single and Double Acting Non-Transom.....	6
Entrance Framing - Single Acting with Transom	7
Entrance Framing - Double Acting with Transom	8
Wind and Dead Load Charts.....	9-11
Thermal Charts	12-15

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: **Coral Architectural Products™**, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
1. Types of **Coral Architectural Products** include:
- a. **Series FL300 2" x 4-1/2"** non-thermal (outside) or (inside) center glazed storefront system for 1" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 2. Division 7 Section "Fire Stopping"
 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 5. Division 8 Section "Aluminum Windows Walls"
 6. Division 8 Section "Aluminum Entrances and Storefronts"
 7. Division 8 Section "Aluminum Mall Sliding Doors"
 8. Division 8 Section "Finish Hardware"
 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 10 PSF as defined in AAMA 501.

GUIDE SPECIFICATION

4. Uniform Load: A static air design load of +60/-53.3 (exterior glazed) and +30/-40 PSF (interior glazed) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by **Coral Architectural Products** without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737

GUIDE SPECIFICATION

- b. Fax: (800) 443-6261
- c. Email: info@coralap.com
- d. Web address: www.coralap.com
- 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL300 Non-Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2" x 4-1/2" nominal dimension; Center Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: **Coral Architectural Products**
 - a. Product: **Architectural Aluminum**
 - b. Series **FL300** Storefront System: 2" x 4-1/2" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 - 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

GUIDE SPECIFICATION

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____.

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 - 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

GUIDE SPECIFICATION

2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

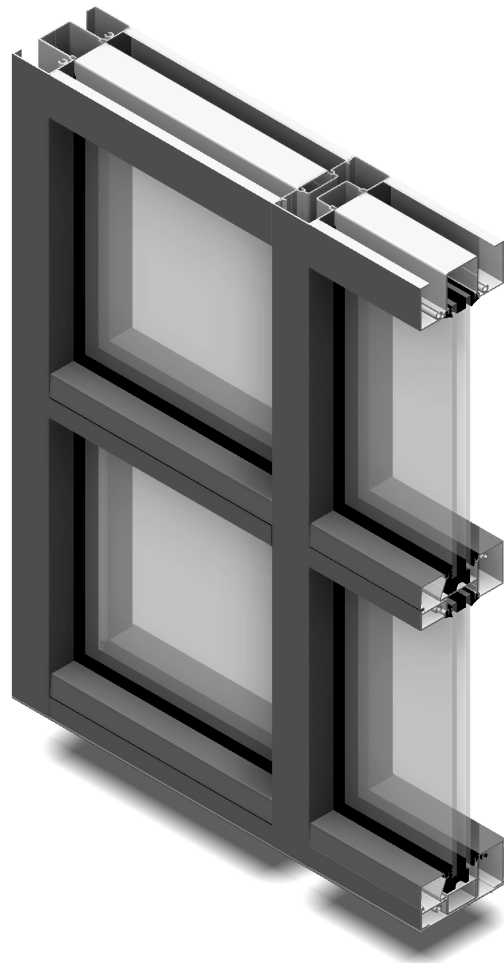
Series FL300 non-thermal 2" x 4½" center set storefront framing system for 1" glass is designed for low-rise applications. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. Perimeter profiles with full-depth pockets eliminate the need for filler plates and provide direct anchoring to the substrate with excellent water control.

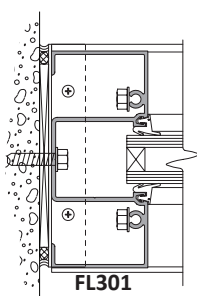
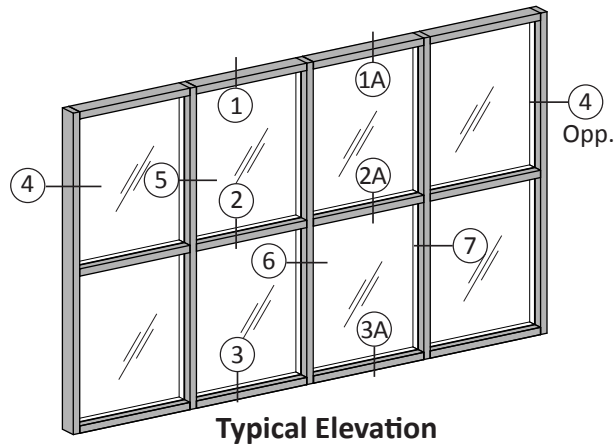
Features

- Outside or Inside Glazed
- Screws-spline Assembly
- Accepts 1" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill and installation of filler plates at head and wall jambs
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

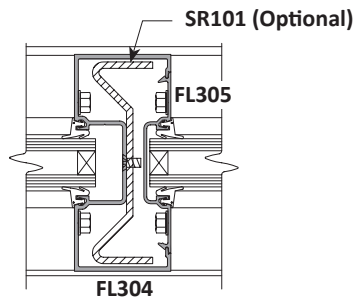
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- Florida Product Approval Number – FL8832 (non-impact for use outside HVHZ)





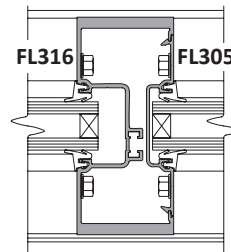
Standard Jamb

④



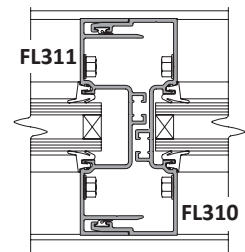
Vertical w/Steel Reinforcement

⑤



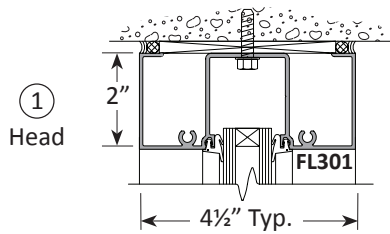
Heavy Mullion

⑥

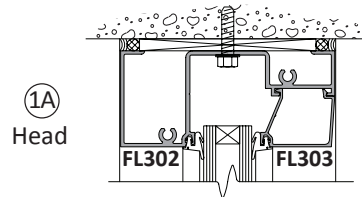


Expansion Mullion

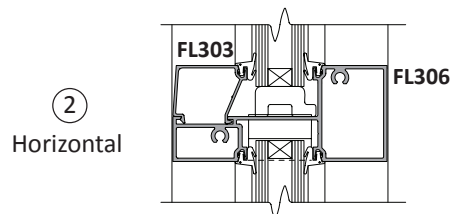
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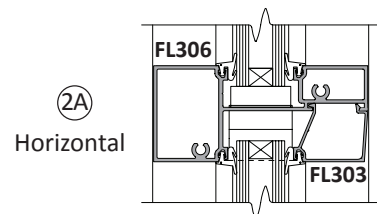
①
Head



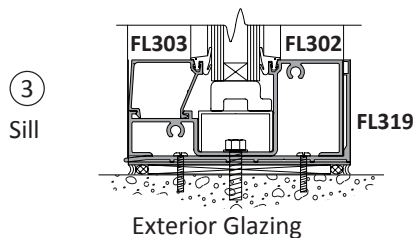
①A
Head



②
Horizontal

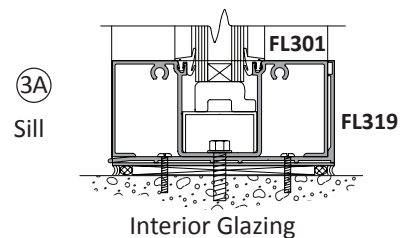


②A
Horizontal



③
Sill

Exterior Glazing



③A
Sill

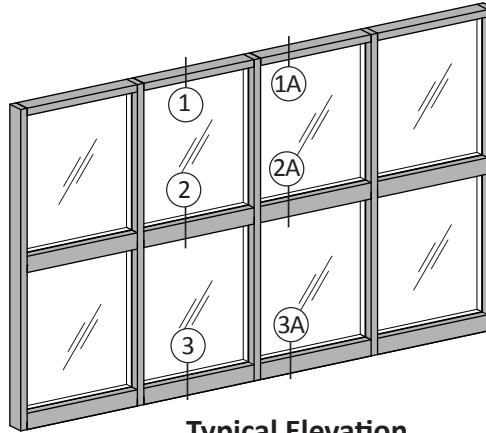
Interior Glazing

FL300·2"x4½"

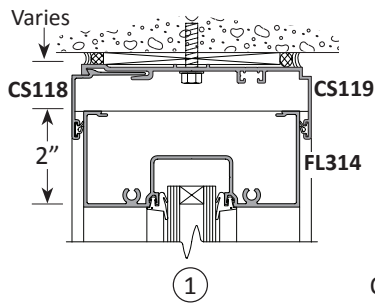
Non-Thermal Storefront

Optional Framing

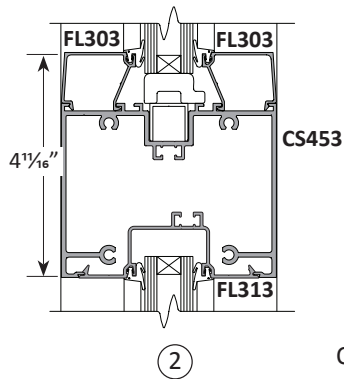
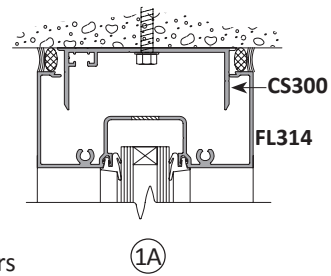
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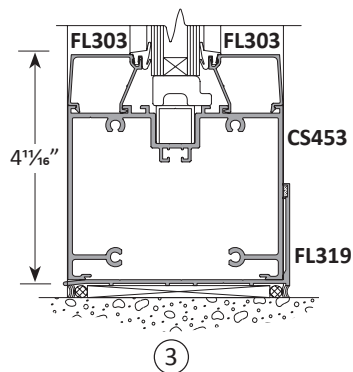
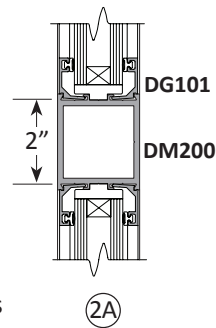
Typical Elevation



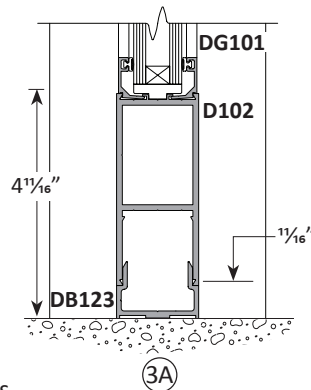
Optional Head Members

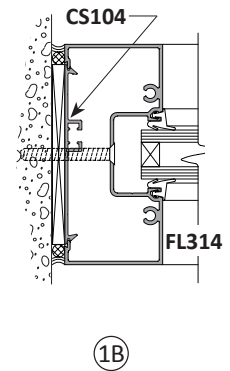
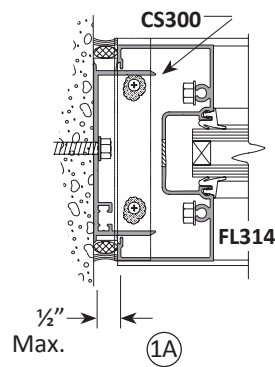
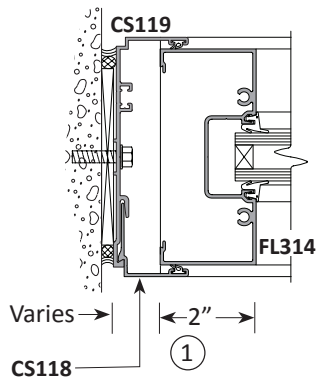
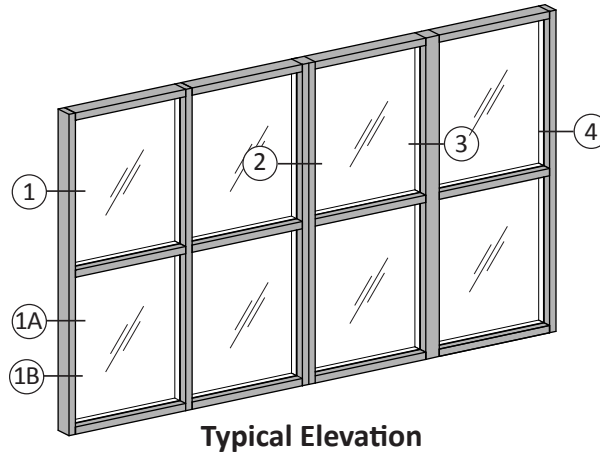


Optional Horizontal Members



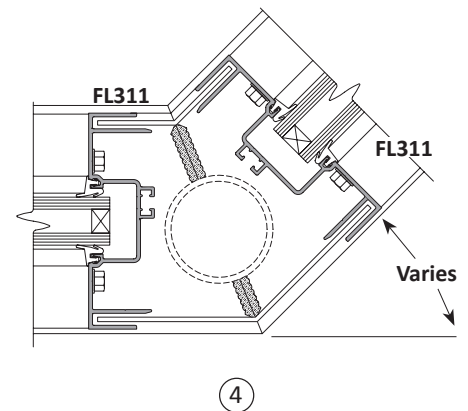
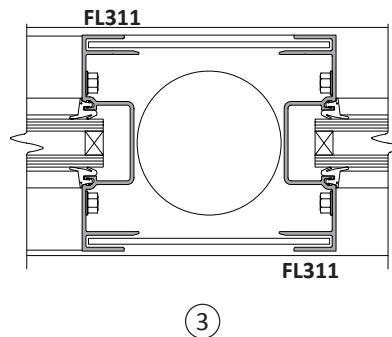
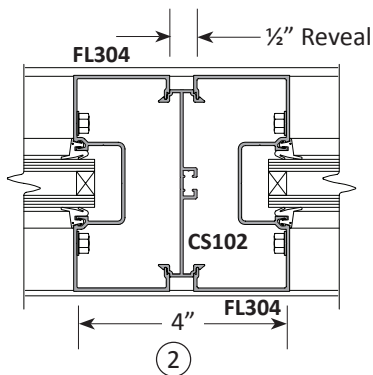
Optional Sill Members





Optional Jamb Members

Note: 0.125" Aluminum Brake Metal by others (typical)



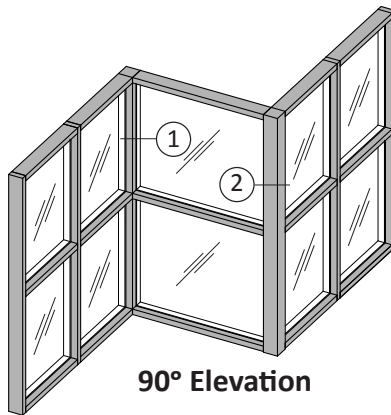
Optional 4" Vertical and Post Corners

FL300·2"x4½"

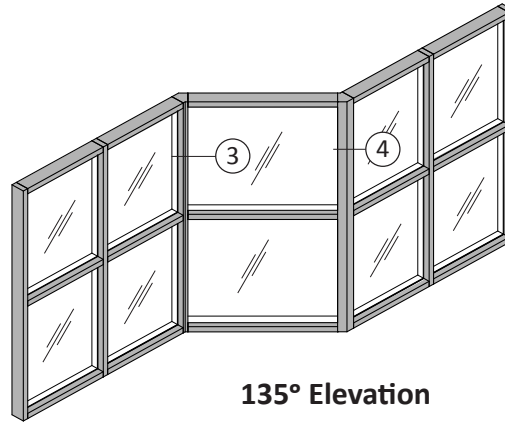
Non-Thermal Storefront

Corner Framing

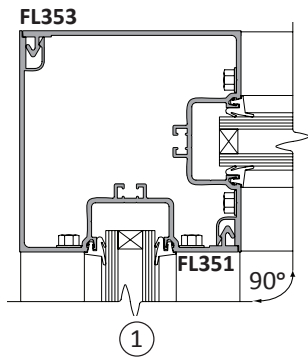
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90° Elevation

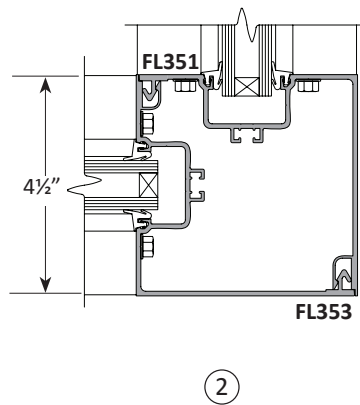


135° Elevation

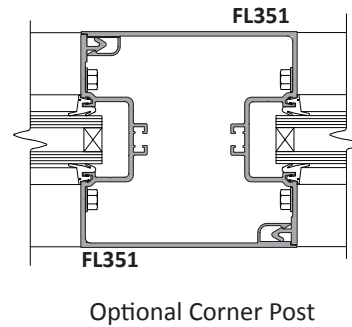


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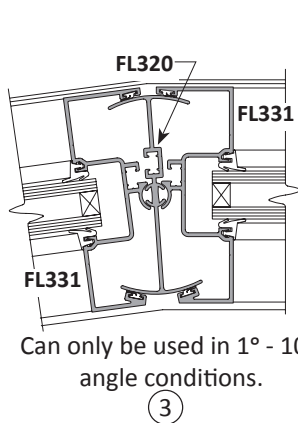
90° Corner Conditions



②

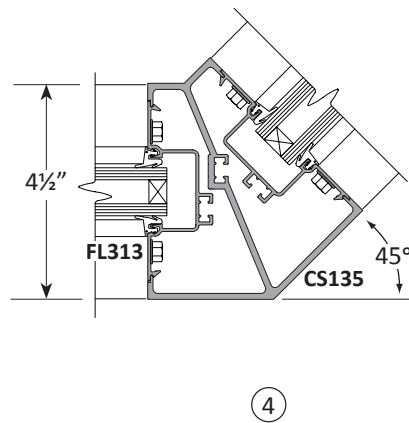


Optional Corner Post



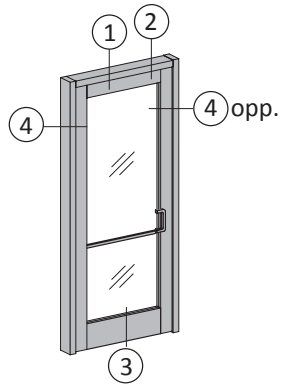
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135° Corner Conditions

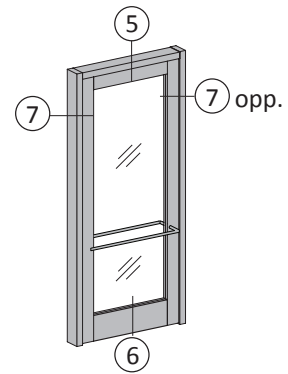


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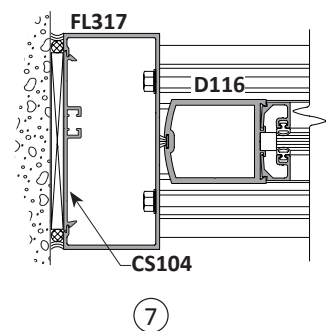
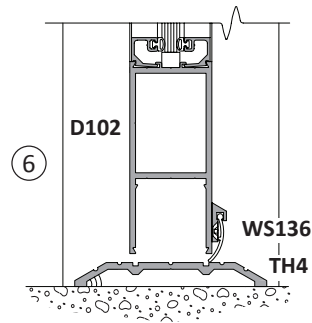
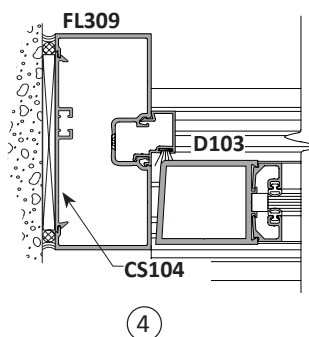
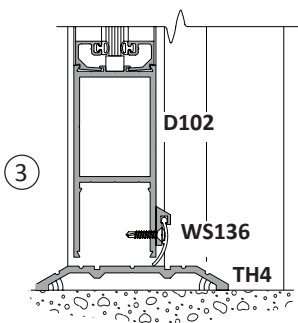
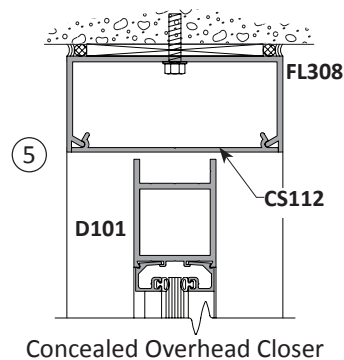
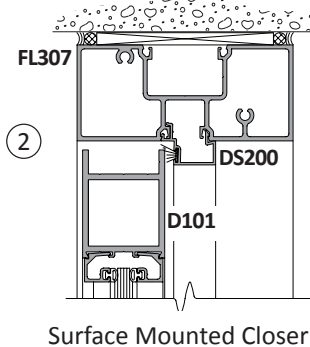
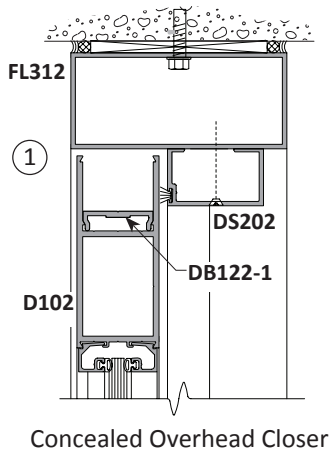
Entrance Framing - Single And Double Acting Non-Transom
Scale: 3" = 1'-0"



**Single Acting Doors
Non-Transom Frame**



**Double Acting Doors
Non-Transom Frame**

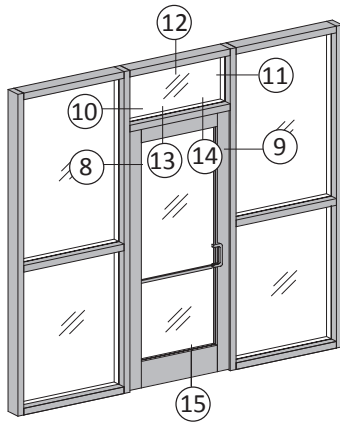


FL300·2"x4½"

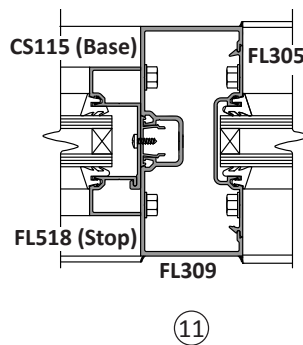
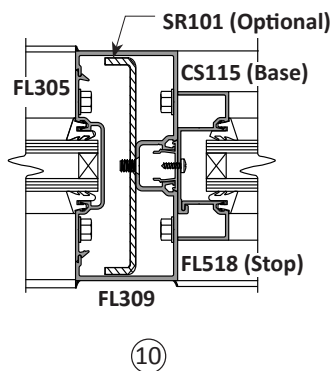
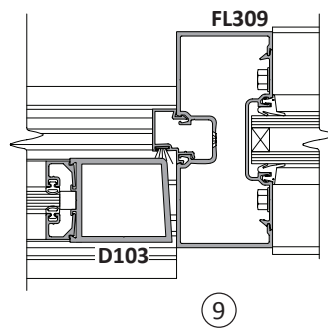
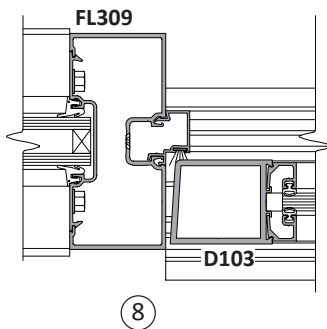
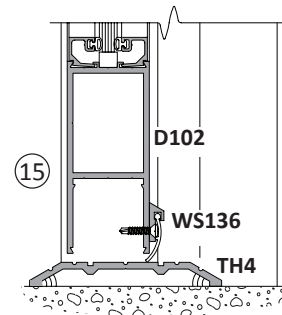
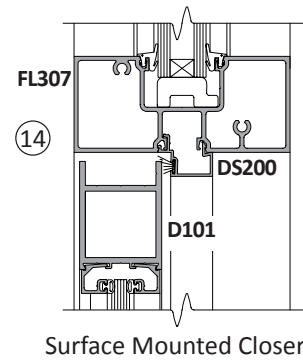
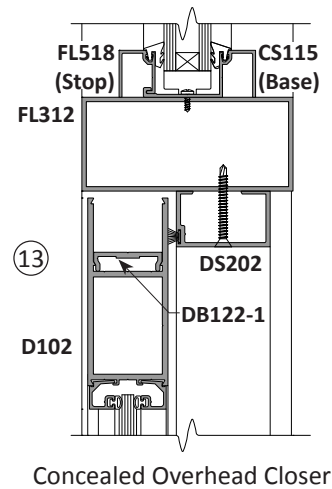
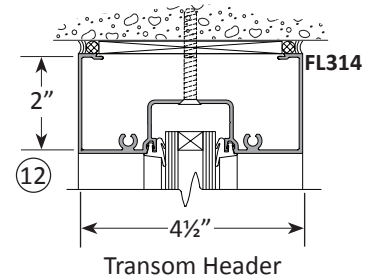
Non-Thermal Storefront

Entrance Framing - Single Acting with Transom

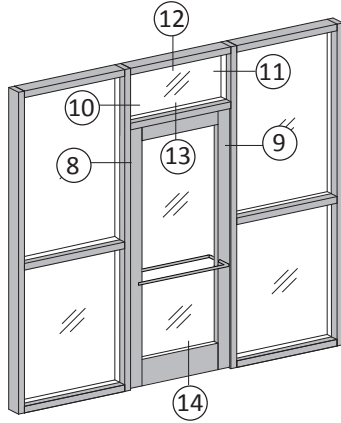
Scale: 3" = 1'-0"



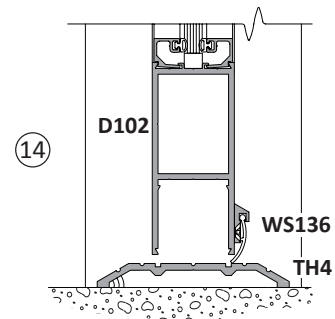
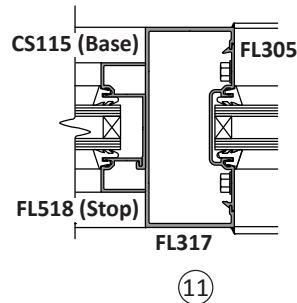
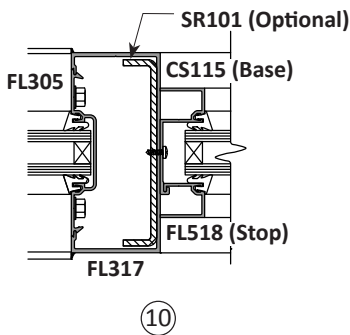
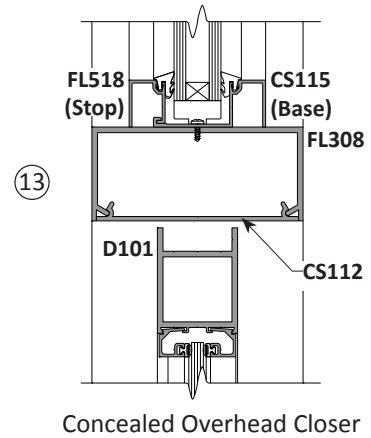
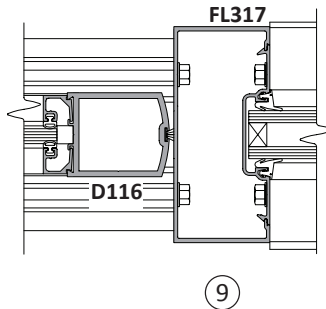
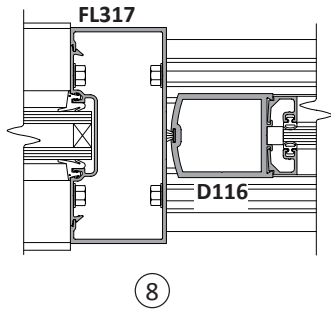
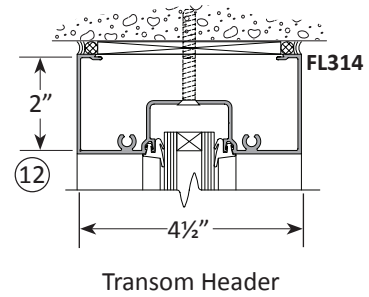
**Single Acting Doors
with Transom Frame**



Entrance Framing - Double Acting with Transom
Scale: 3" = 1'-0"



**Double Acting Doors
with Transom Frame**



FL300·2"x4½"

Non-Thermal Storefront

Wind Load Charts

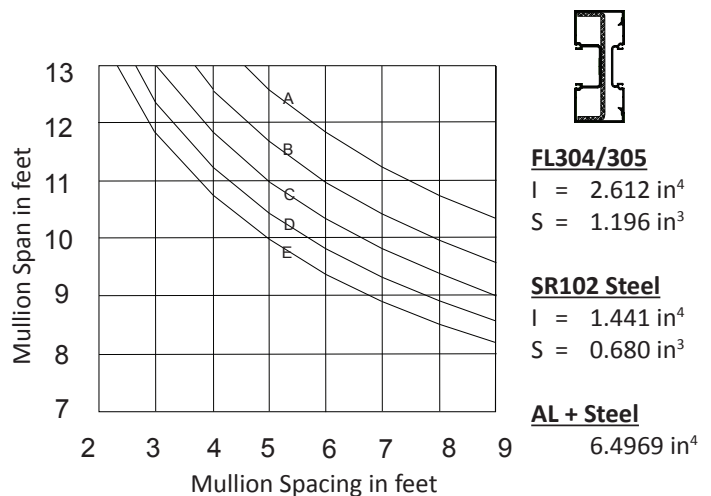
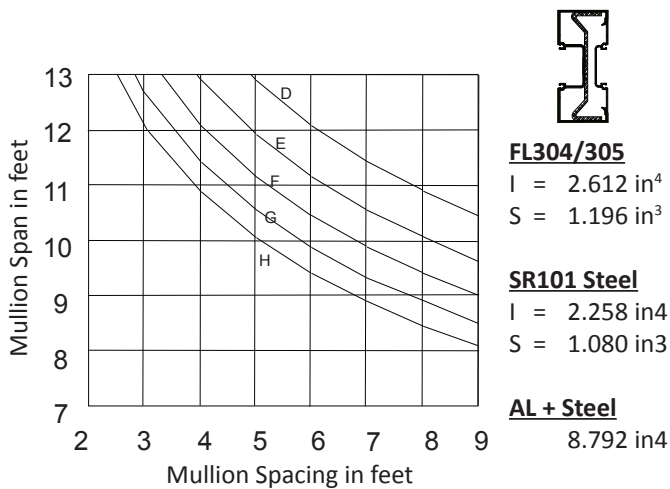
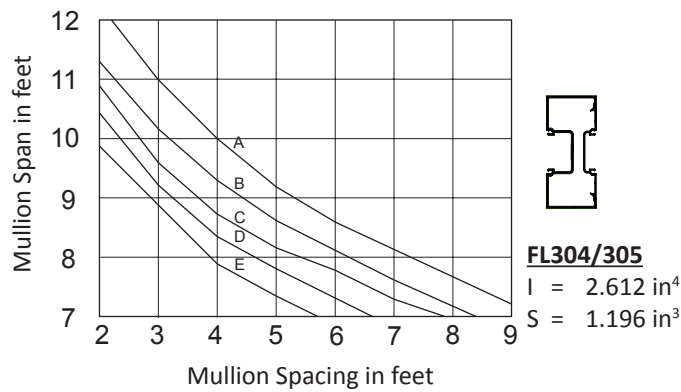
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	E	40 PSF
B	25 PSF	F	45 PSF
C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



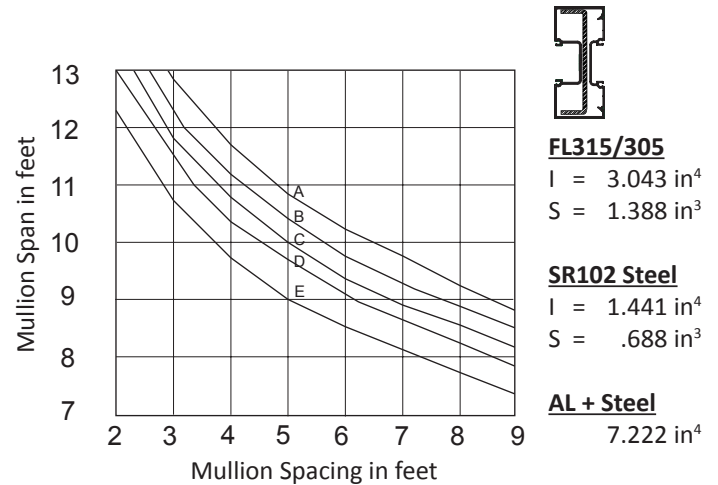
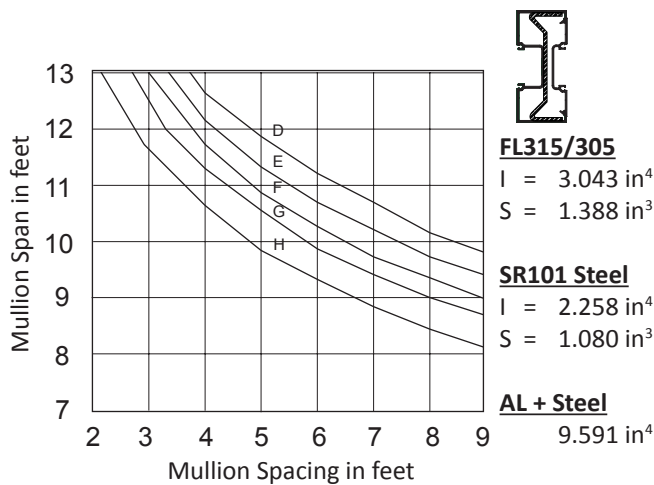
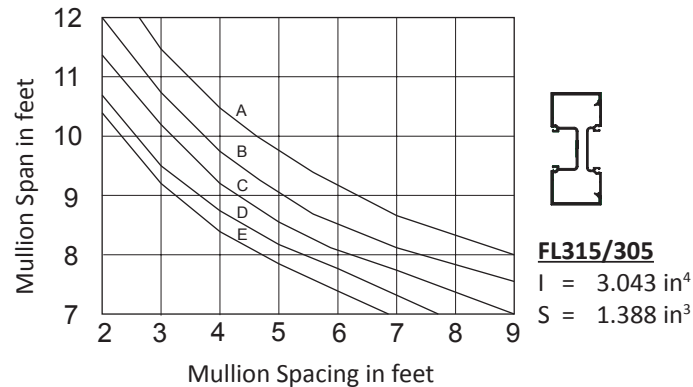
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

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FL300·2"x4½"

Non-Thermal Storefront

Wind Load Charts and Dead Load Charts

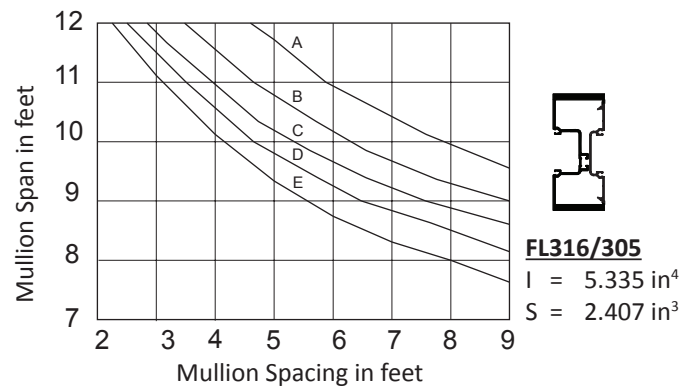
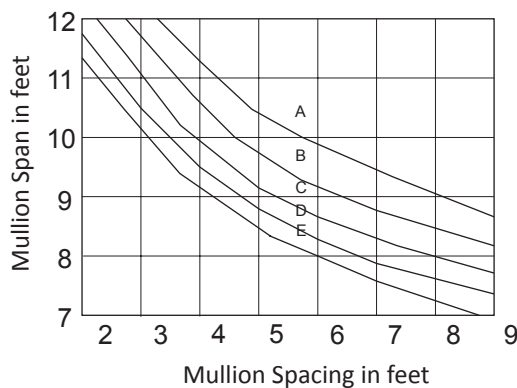
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	E	40 PSF
B	25 PSF	F	45 PSF
C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



DEAD LOAD CHARTS

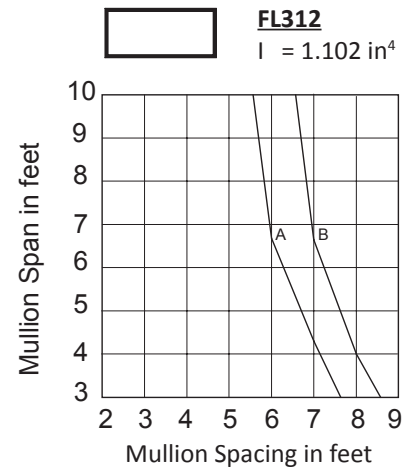
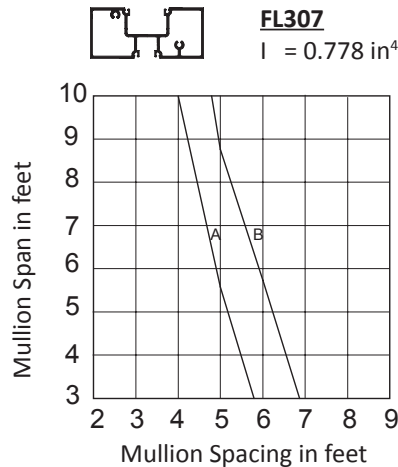
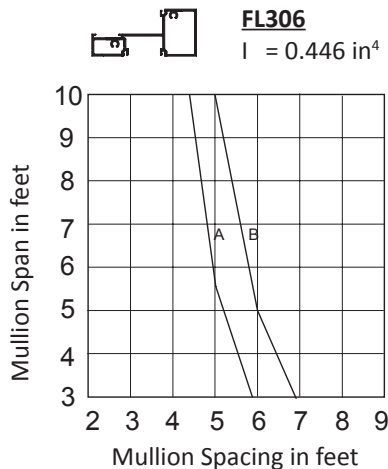
INTERMEDIATE HORIZONTAL

Dead load charts are based on 1/8" maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 6.5 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger



DOOR HEADERS

Dead load charts for door headers are based on 1/16" maximum deflection at the center point of the header and on a theoretical glass weight of 6.5 P.S.F.

CURVE A = 1/4 points

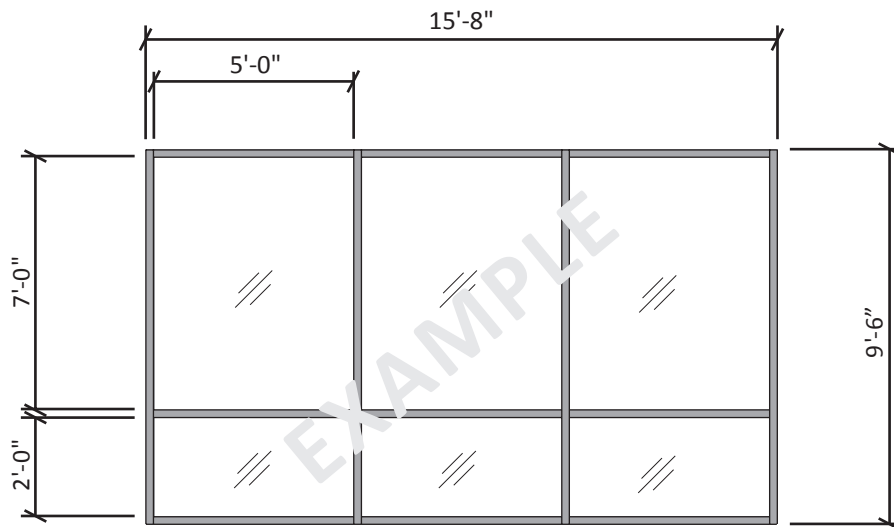
CURVE B = 1/8 points or 8" from corners, whichever is larger

System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507 utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation



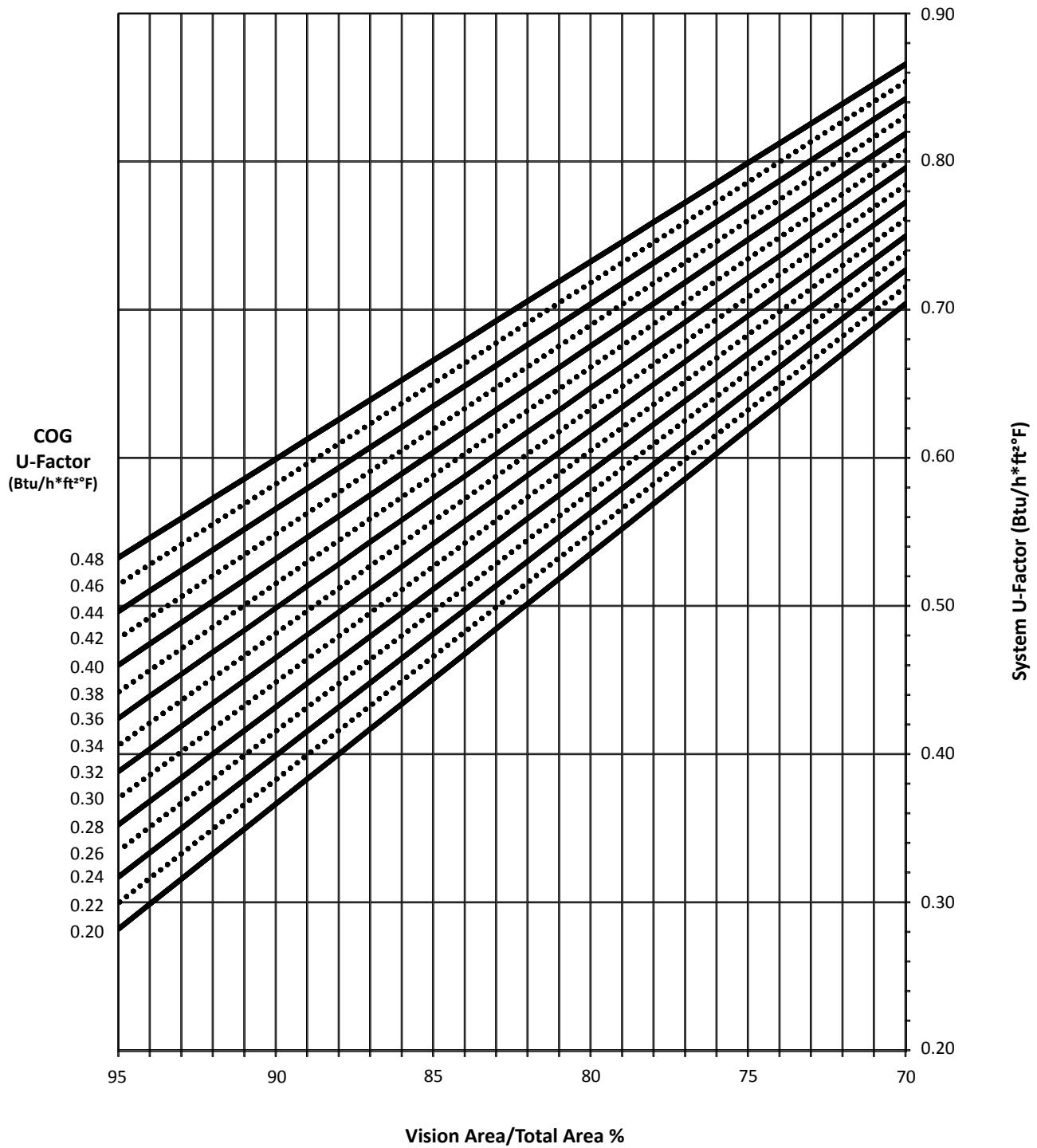
Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System)
	= 15'-8"x9'-6" = 148.83ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area)
	= (135 ÷ 148.83)100 = 91%

FL300·2"x4½"

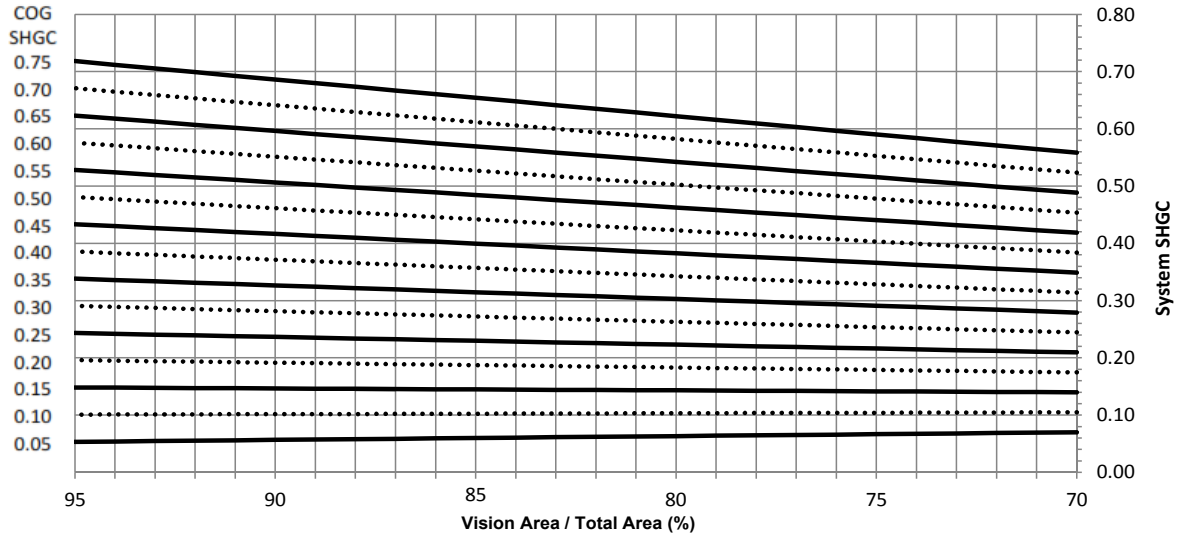
Non-Thermal Storefront

Thermal Charts

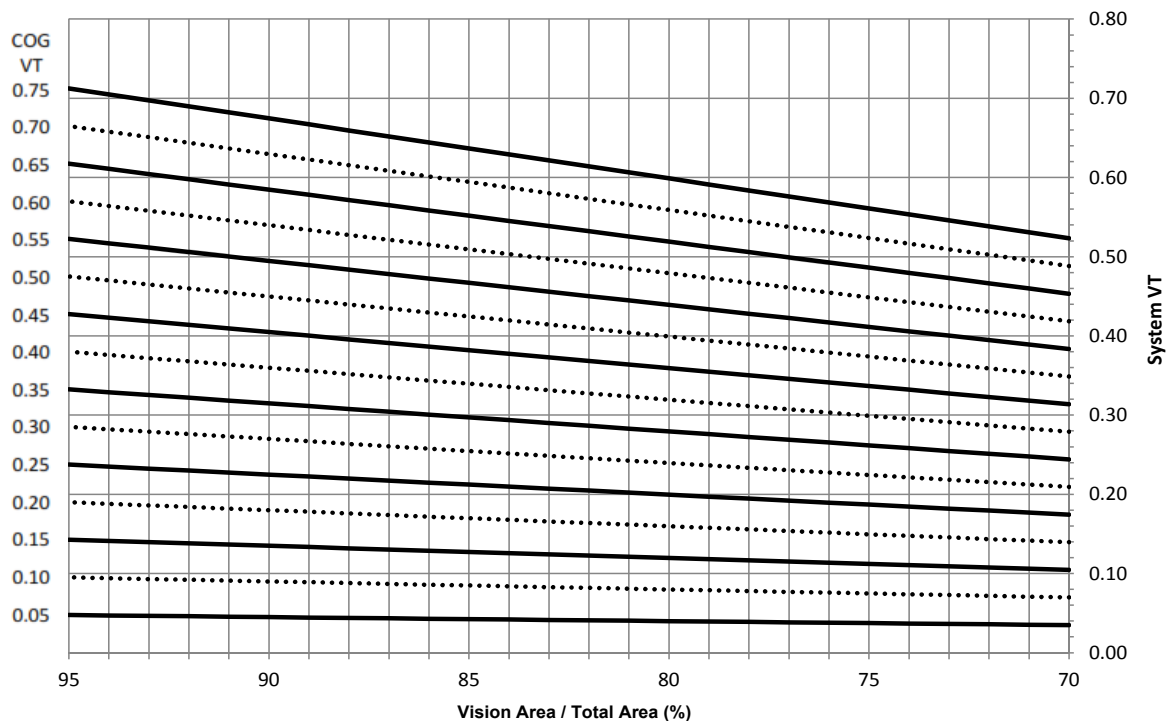
System U-Factor vs. Percentage of Vision Area



System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



FL300·2"x4½"

Non-Thermal Storefront



Thermal Charts

Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.62
2	0.46	0.61
3	0.44	0.59
4	0.42	0.58
5	0.40	0.56
6	0.38	0.55
7	0.36	0.53
8	0.34	0.51
9	0.32	0.50
10	0.30	0.48
11	0.28	0.47
12	0.26	0.45
13	0.24	0.43
14	0.22	0.42
15	0.20	0.40

**Size-Specific SHGC Matrix:
NFRC Standard Size (78.740" x 78.740")**

Center-of-Glass SHGC	Overall SHGC
0.75	0.67
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Size-Specific VT Matrix:
NFRC Standard Size (78.740" x 78.740")**

Center-of-Glass VT	Overall VT
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.48
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

- System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
- SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section B3
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FL300T
THERMAL STOREFRONT SYSTEM
2" x 4½"

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series FL300T 2" x 4-1/2" thermal (outside) or (inside) center glazed storefront system for 1" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft2 at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 10 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of 30 PSF shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

5. Thermal: The test specimen shall be tested in accordance with AAMA 1503-09 Voluntary Test Method for Thermal Transmittance and Condensation resistance of Windows, Doors and Glazed Wall Sections. Thermal transmittance due to conduction (U) shall not exceed 0.42 (expressed in Btu/hr•ft²•F) and the condensation resistance factor (CRF_f) at Frame shall not be less than 57.

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261

GUIDE SPECIFICATION

- c. Email: info@coralap.com
- d. Web address: www.coralap.com
- 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL300T Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2" x 4-1/2" nominal dimension; Center Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: **Coral Architectural Products**
 - a. Product: **Architectural Aluminum**
 - b. Series **FL300T** Storefront System: 2" x 4-1/2" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 - 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:
 - a. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

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2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

GUIDE SPECIFICATION

1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FL300T·2"x4½"

Thermal Storefront

FEATURES AND BENEFITS

System Description

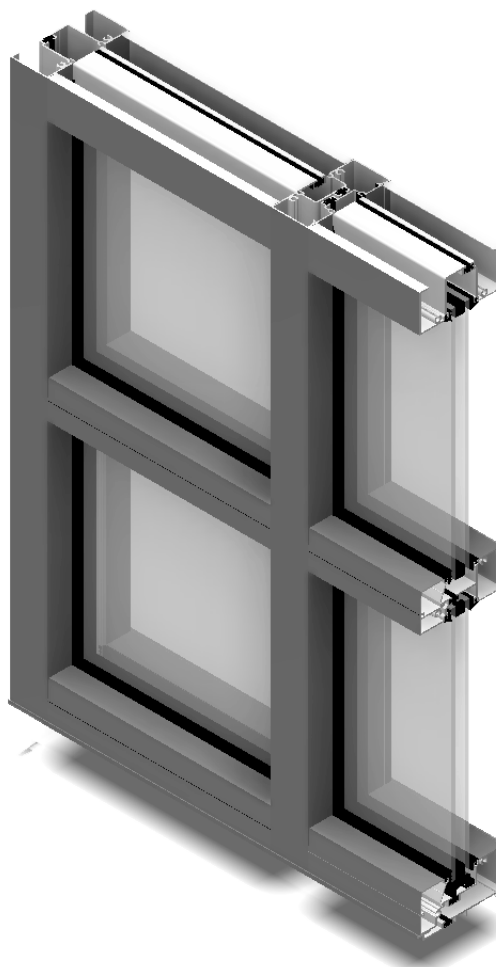
Series FL300T thermal 2" x 4½" center set storefront framing systems for 1" glass is designed for low-rise applications. Enhanced thermal performance is achieved using thermal break construction in response to increased demands for energy efficient commercial buildings. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control. Perimeter profiles with full-depth pockets eliminate the need for filler plates and provide direct anchoring to the substrate with excellent water control.

Features

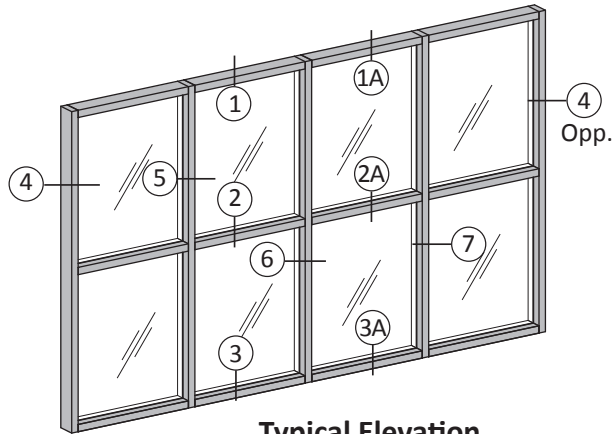
- Outside or Inside Glazed
- Screws-spline Assembly
- Accepts 1" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill and installation of filler plates at head and wall jambs
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

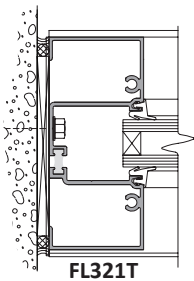
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- AAMA 1503-09 / NFRC 102-2010 Thermal Transmittance Performance
- Florida Product Approval Number - FL15659 (non-impact for use outside HVHZ) [Exterior Glazed]



Standard Framing
Scale: 3" = 1'-0"

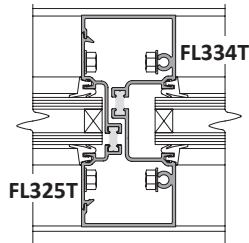


Typical Elevation



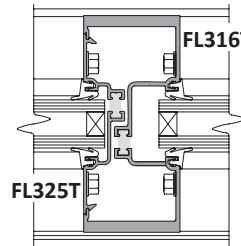
Standard Jamb

④



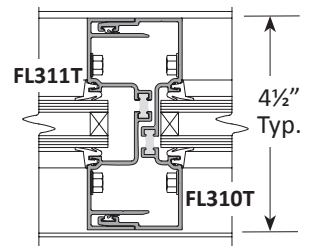
Vertical

⑤



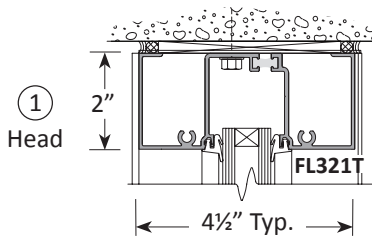
Heavy Mullion

⑥



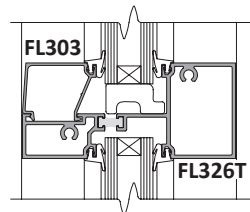
Expansion Mullion

⑦



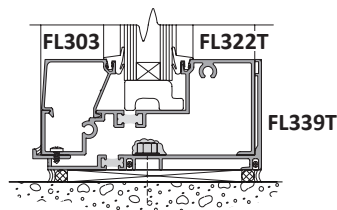
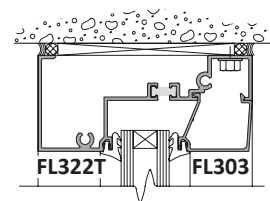
①
Head

②
Horizontal

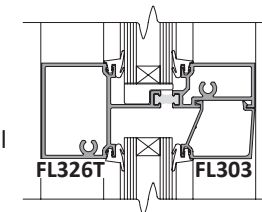


①A
Head

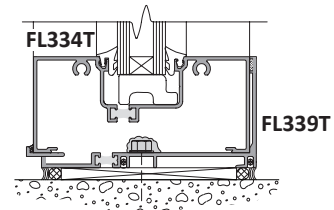
②A
Horizontal



Exterior Glazing



③A
Sill



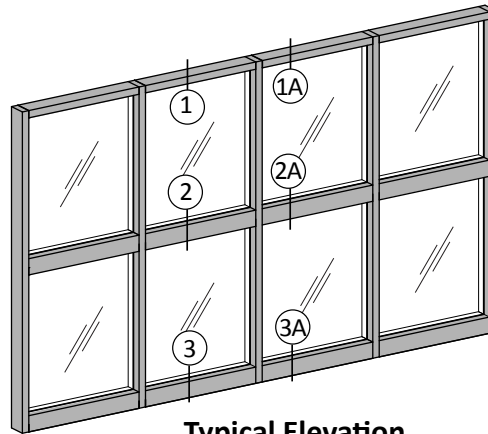
Interior Glazing

FL300T·2"x4½"

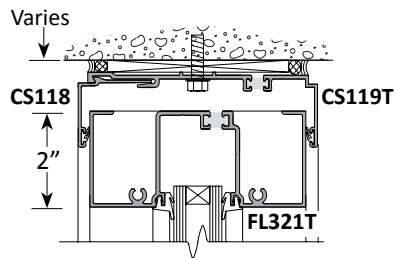
Thermal Storefront

Optional Framing

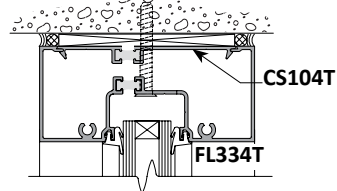
Scale: 3" = 1'-0"



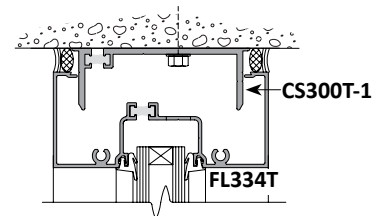
Typical Elevation



①

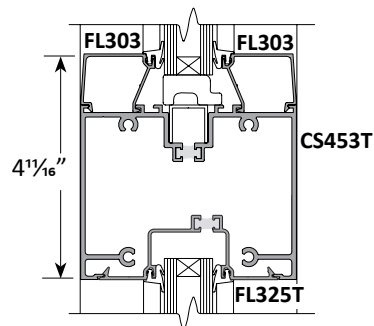


①A



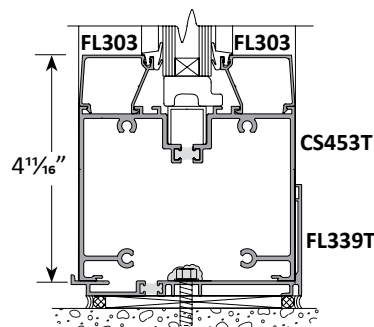
①B

Optional Head Members



②

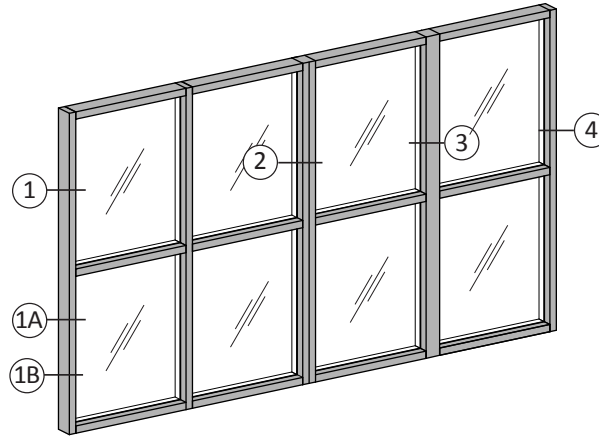
Optional Horizontal Members



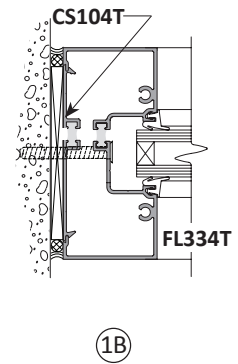
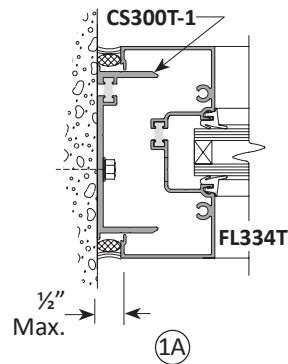
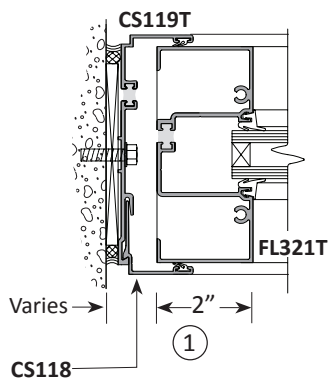
③

Optional Sill Members

Optional Framing
Scale: 3" = 1'-0"

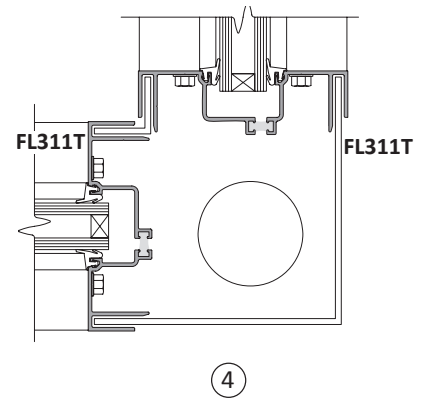
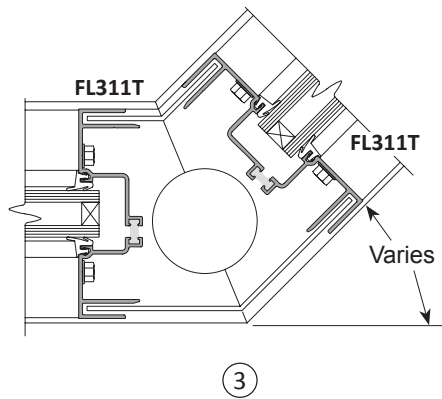
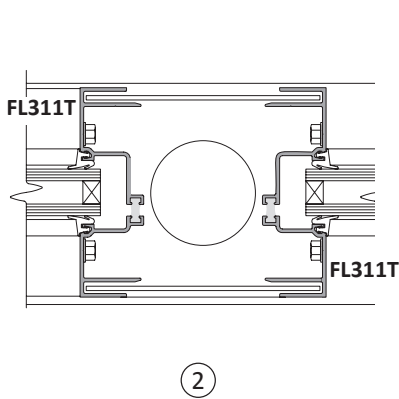


Typical Elevation



Optional Jamb Members

Note: 0.125" Aluminum Brake Metal by others (typical)



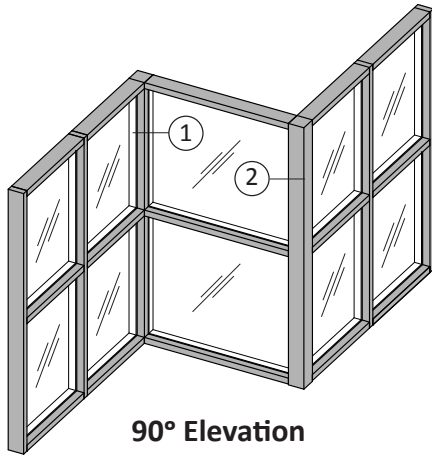
Optional 4" Vertical and Post Corners

FL300T·2"x4½"

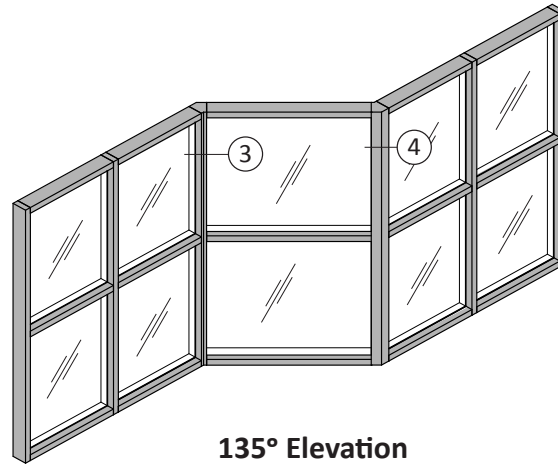
Thermal Storefront

Corner Framing

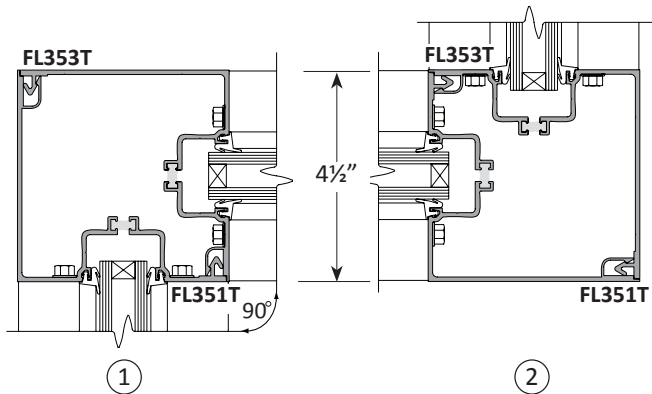
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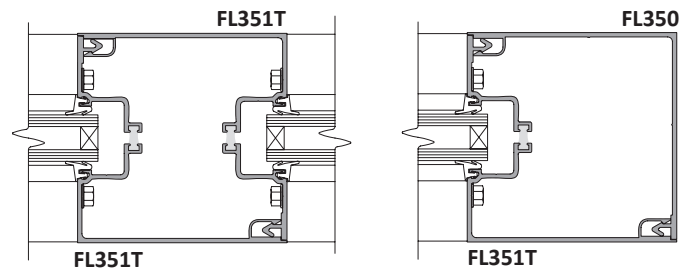
90° Elevation



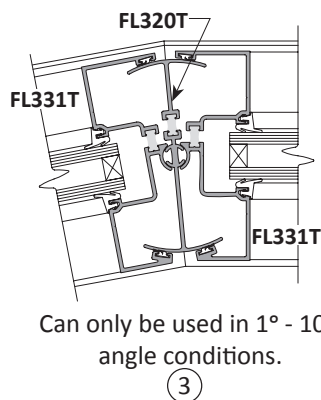
135° Elevation



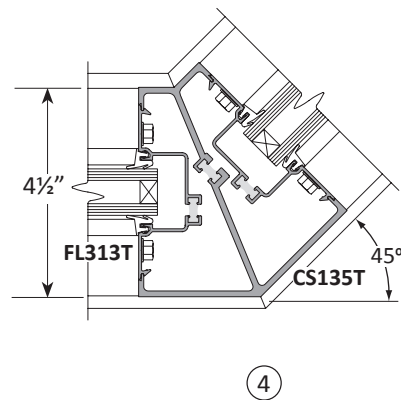
90° Corner Conditions



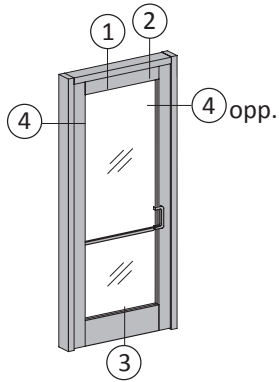
Optional Corner Post Conditions



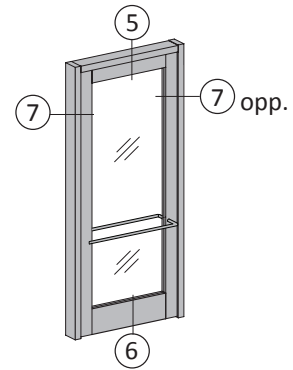
135° Corner Conditions



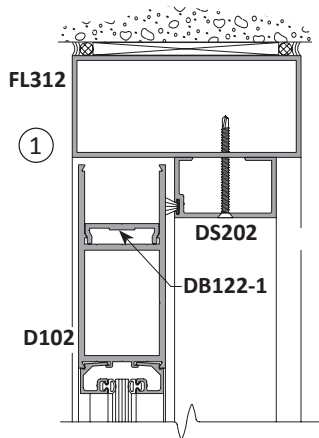
Entrance Framing - Non-Transom
Scale: 3" = 1'-0"



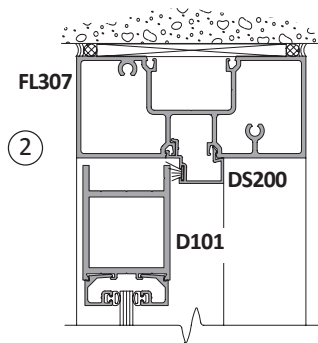
**Single Acting Doors
Non-Transom Frame**



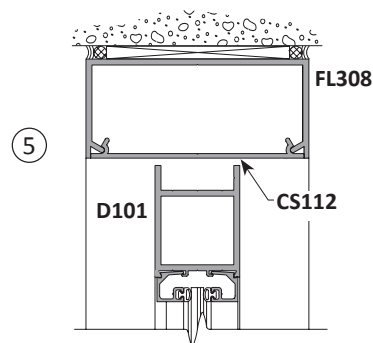
**Double Acting Doors
Non-Transom Frame**



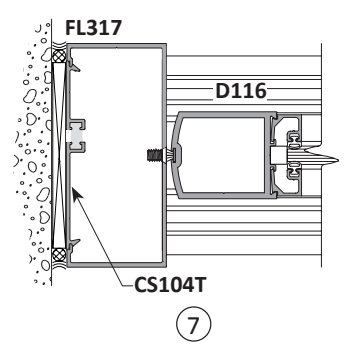
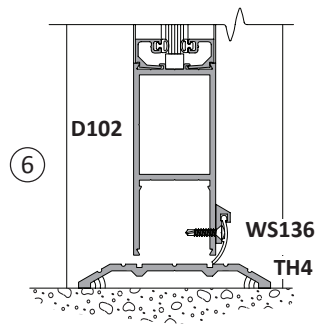
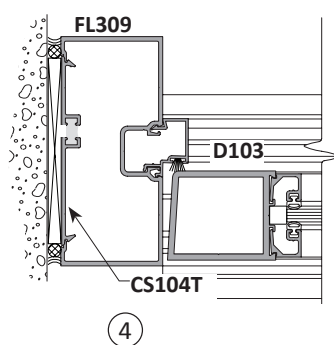
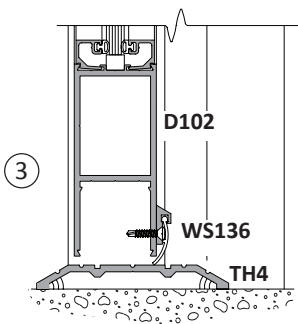
Concealed Overhead Closer



Surface Mounted Closer



Concealed Overhead Closer

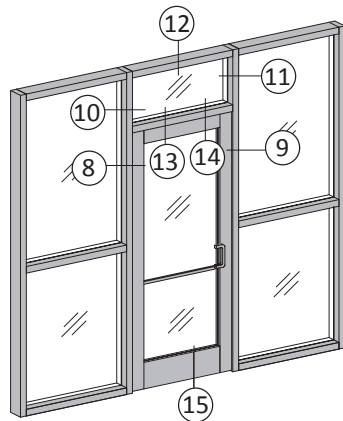


FL300T·2"x4½"

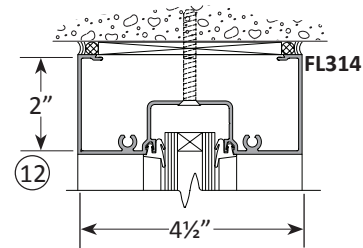
Thermal Storefront

Entrance Framing - Single Acting with Transom

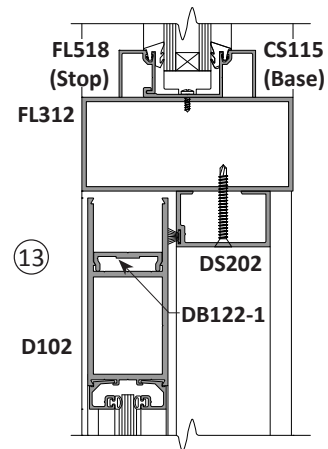
Scale: 3" = 1'-0"



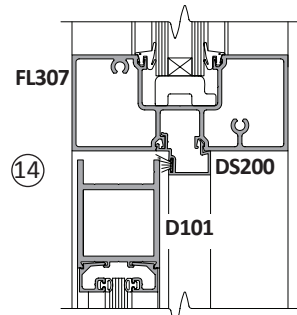
**Single Acting Doors
with Transom Frame**



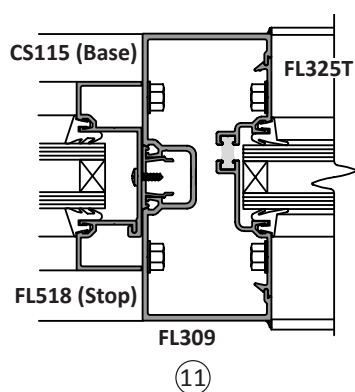
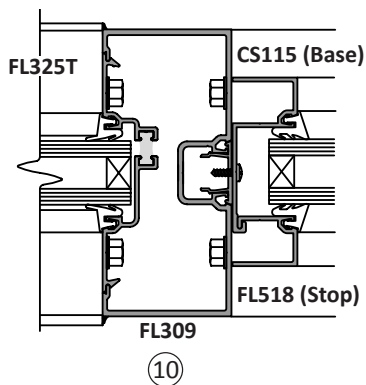
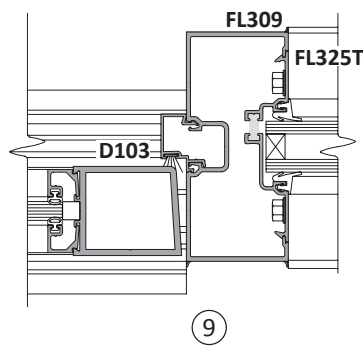
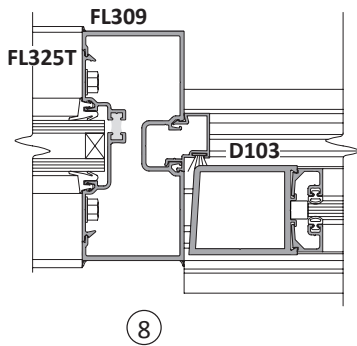
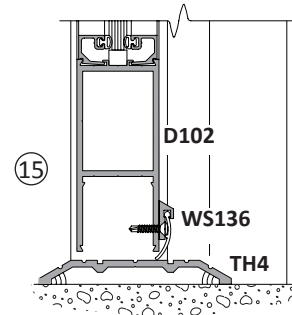
Transom Header



Concealed Overhead Closer

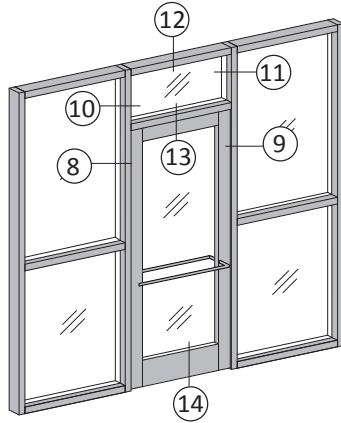


Surface Mounted Closer

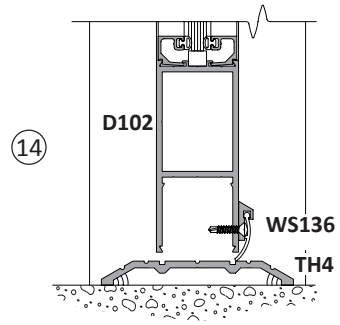
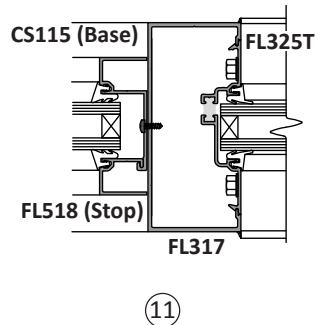
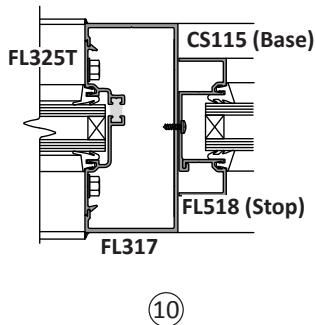
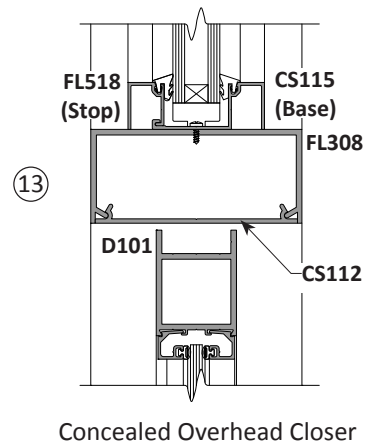
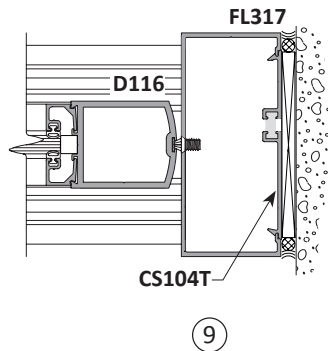
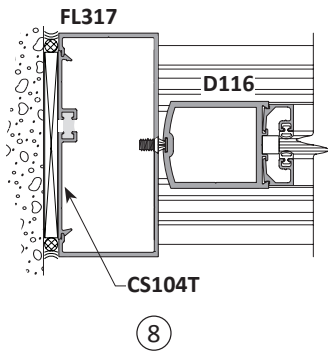
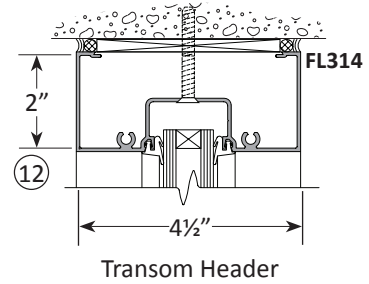


Entrance Framing - Double Acting with Transom

Scale: 3" = 1'-0"



**Double Acting Doors
with Transom Frame**



FL300T·2"x4½"

Thermal Storefront

Wind Load and Dead Load Charts

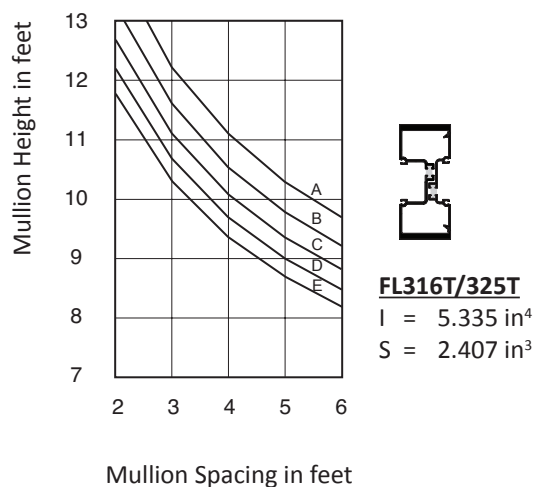
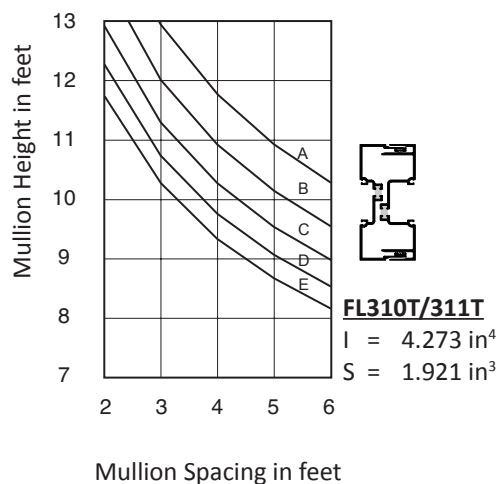
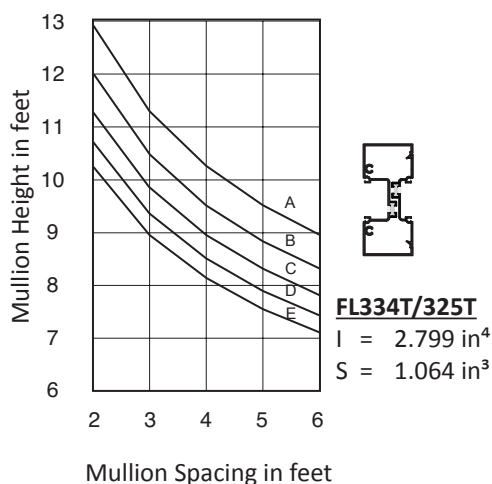
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	D	35 PSF
B	25 PSF	E	40 PSF
C	30 PSF		



DEAD LOAD CHART

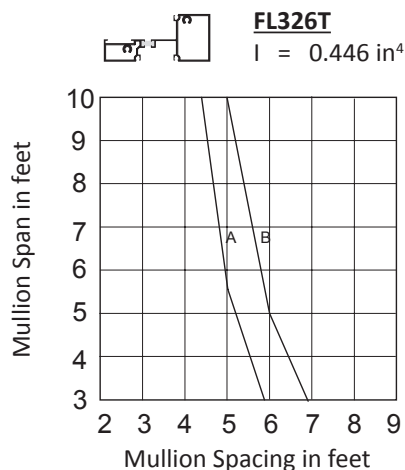
INTERMEDIATE HORIZONTAL

Dead load charts are based on 1/8' maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 6.5 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger

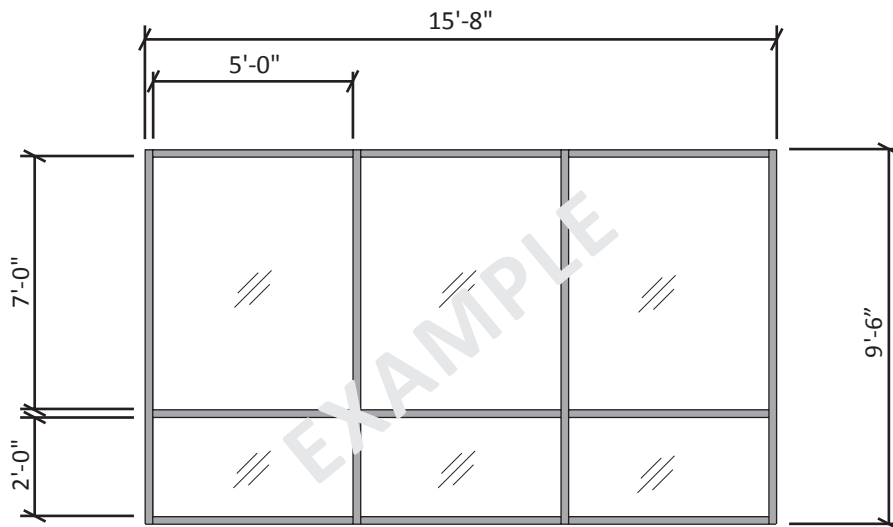


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507, utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts.

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation

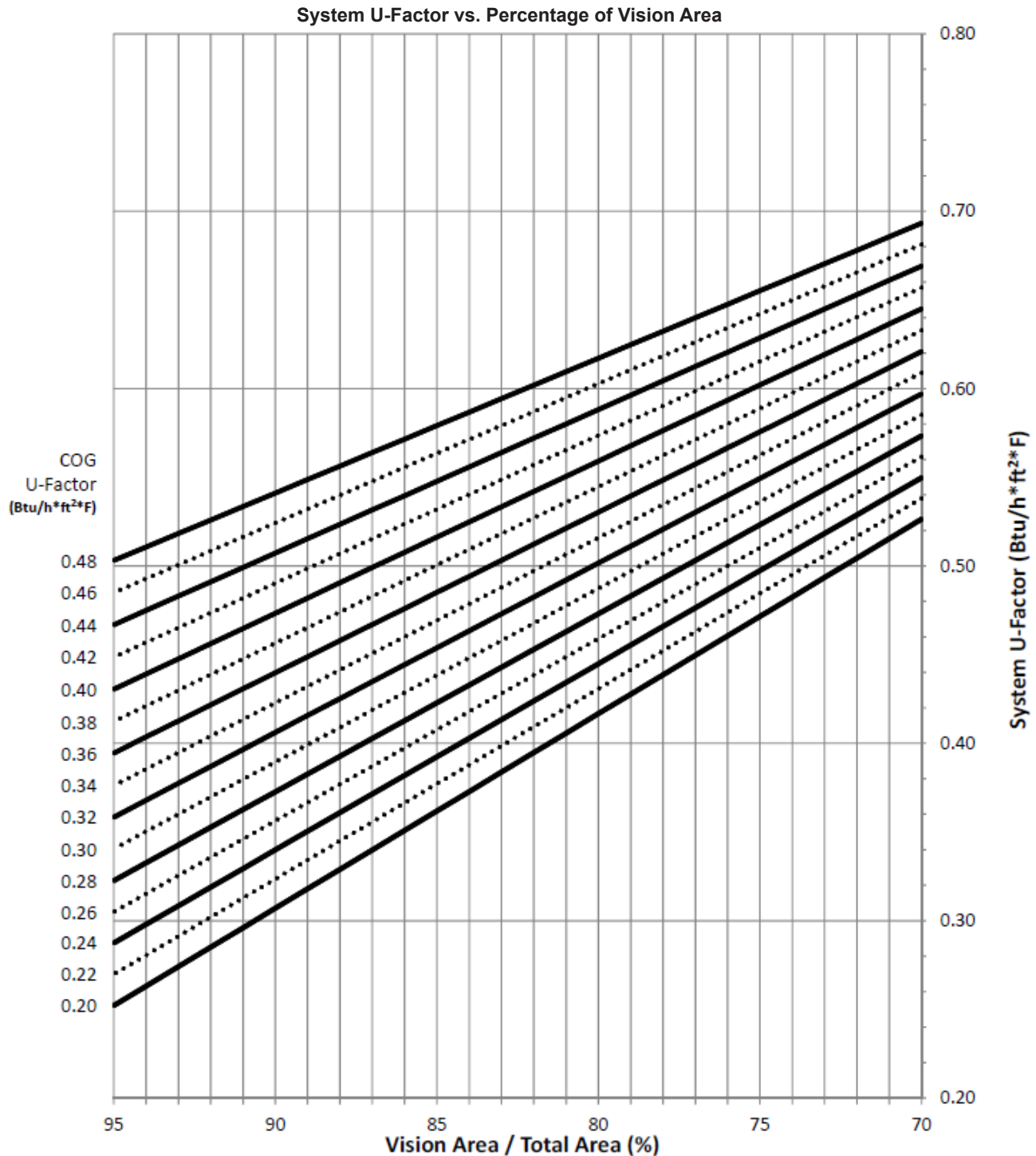


Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System)
	= 15'-8"x9'-6" = 148.83ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area)
	= (135 ÷ 148.83)100 = 91%

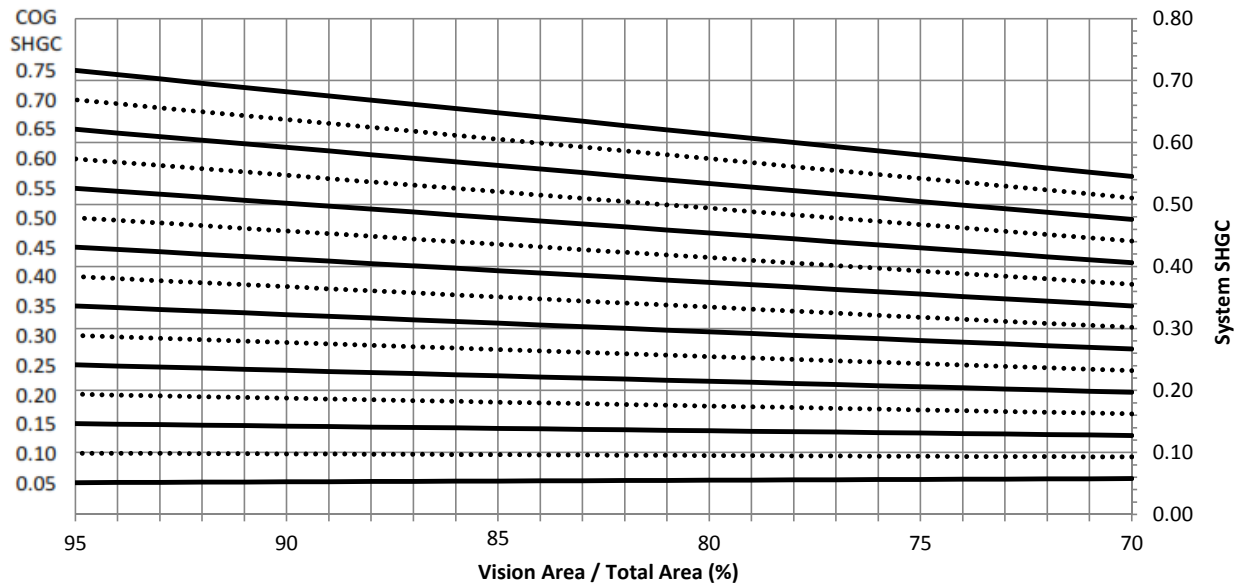
FL300T·2"x4½"

Thermal Storefront

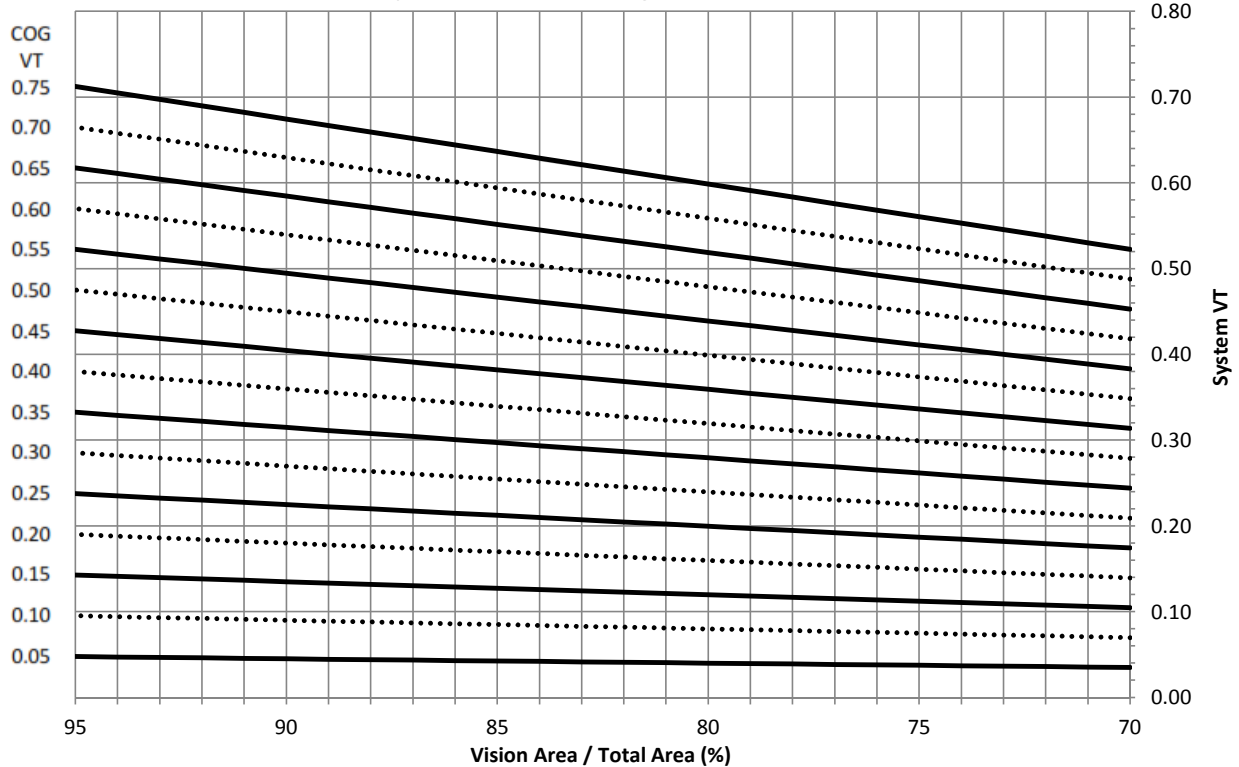
Thermal Charts



System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



FL300T·2"x4½"

Thermal Storefront



Thermal Charts

Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.55
2	0.46	0.54
3	0.44	0.52
4	0.42	0.51
5	0.40	0.49
6	0.38	0.47
7	0.36	0.46
8	0.34	0.44
9	0.32	0.43
10	0.30	0.41
11	0.28	0.39
12	0.26	0.38
13	0.24	0.36
14	0.22	0.35
15	0.20	0.33

Size-Specific SHGC Matrix: NFRC Standard Size (78.740" x 78.740")⁵

Center-of-Glass SHGC	Overall SHGC
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.05

Size-Specific VT Matrix: NFRC Standard Size (78.740" x 78.740")⁵

Center-of-Glass VT	Overall VT
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section B4
 Table of Contents

FS400T
 THERMAL STOREFRONT SYSTEM
 2" x 4½"
 Front Set

Specifications - FS400T S1-S5

Features & Benefits 1

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series FS400T 2" x 4-1/2" thermal (outside) or (inside) front glazed storefront system for 1" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 10 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of +35/-35 PSF (exterior glazed) and +55/-55 PSF (interior glazed) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

5. Thermal: The test specimen shall be tested in accordance with AAMA 1503-09 Voluntary Test Method for Thermal Transmittance and Condensation resistance of Windows, Doors and Glazed Wall Sections. Thermal transmittance due to conduction (U) shall not exceed 0.46 (expressed in Btu/hr•ft²•F) and the condensation resistance factor (CRF_f) at Frame shall not be less than 61.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737

GUIDE SPECIFICATION

- b. Fax: (800) 443-6261
- c. Email: info@coralap.com
- d. Web address: www.coralap.com
- 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FS400T Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2" x 4-1/2" nominal dimension; Front Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Architectural Aluminum
 - b. Series FS400T Storefront System: 2" x 4-1/2" nominal dimension, Front Glazed; Screw-Spline Fabrication
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 - 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

GUIDE SPECIFICATION

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:
 - a. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____.

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

GUIDE SPECIFICATION

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

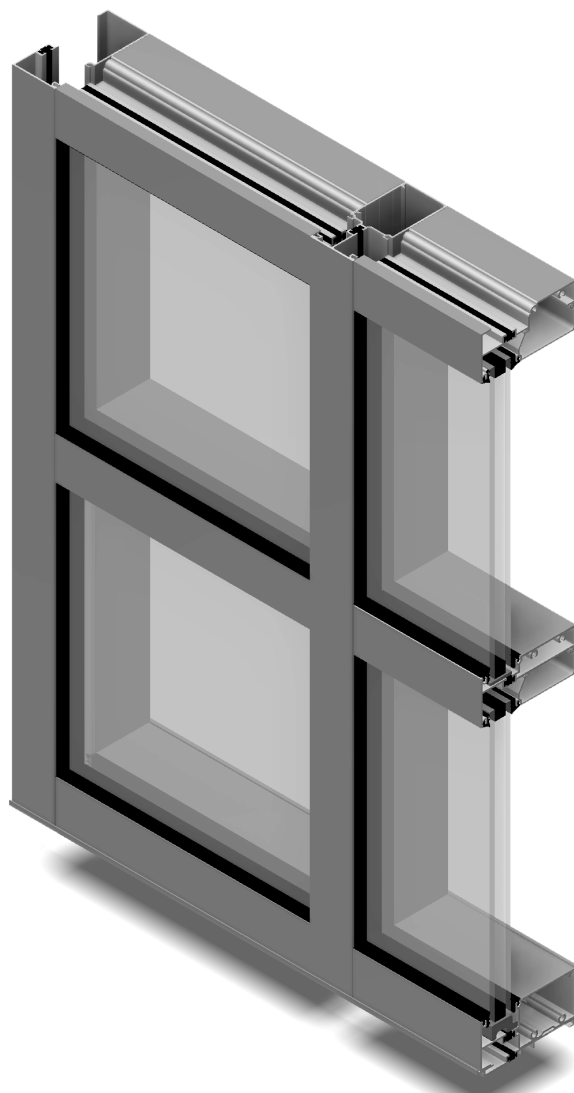
Series FS400T thermal 2" x 4½" front set storefront framing system for 1" glass is designed for low-rise applications. Enhanced thermal performance is achieved using thermal break construction in response to increased demands for energy efficient commercial buildings. Snap-together profiles using integral screw spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control.

Features

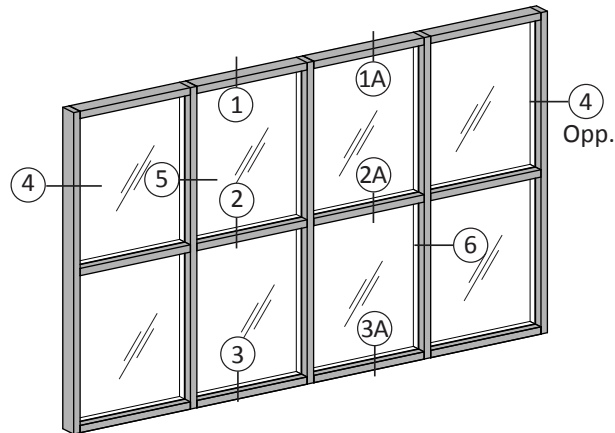
- Outside or Inside Glazed
- Screws-spline Assembly
- Accepts 1" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles Allows Direct Anchorage to Substrate
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

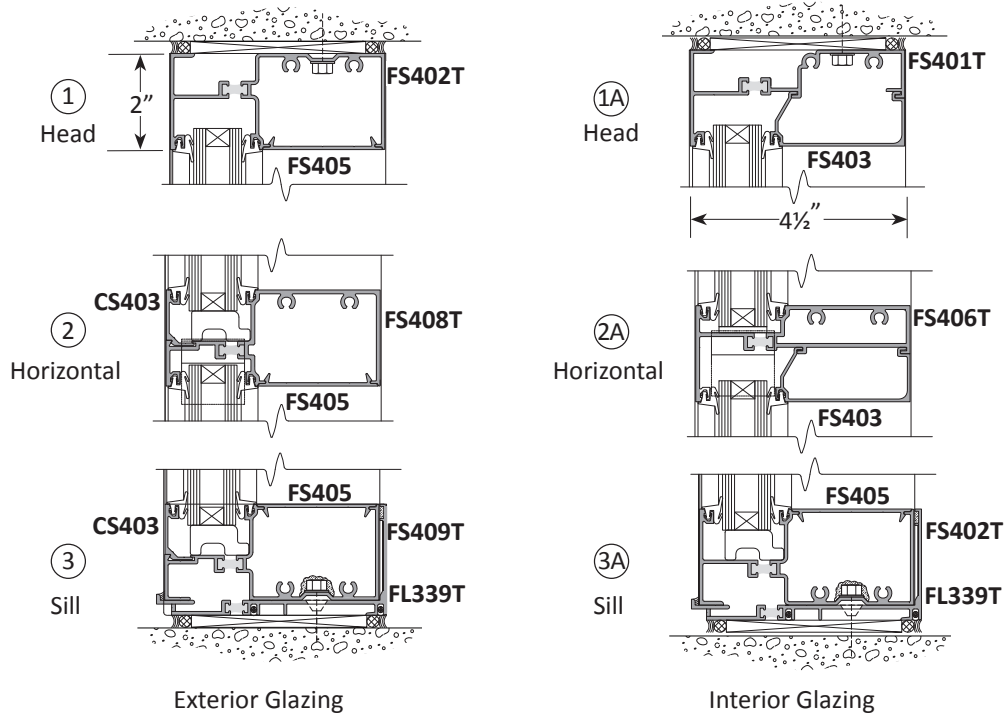
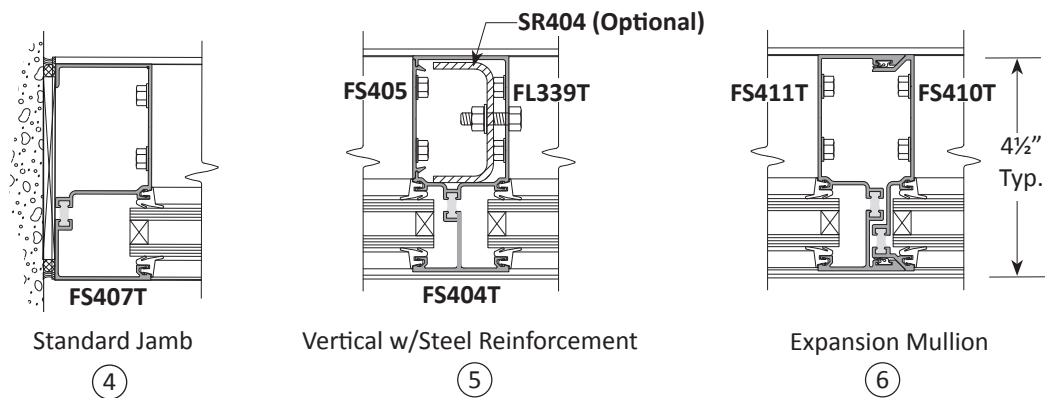
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- AAMA 1503-09 / NFRC 102-2010 Thermal Transmittance Performance
- Florida Product Approval Number – FL10643 (non-impact for use outside HVHZ)



Standard Framing
Scale: 3" = 1'-0"



Typical Elevation

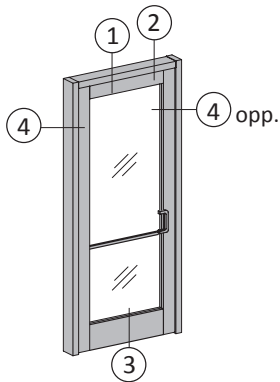


FS400T·2"x4½"

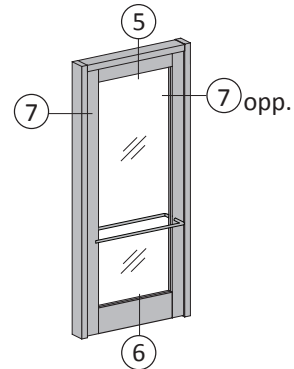
Thermal Storefront

Entrance Framing - Non-Transom

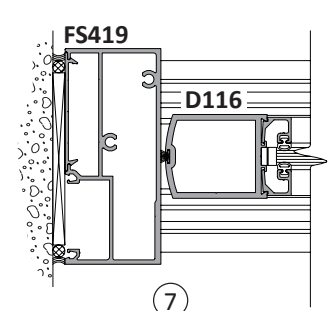
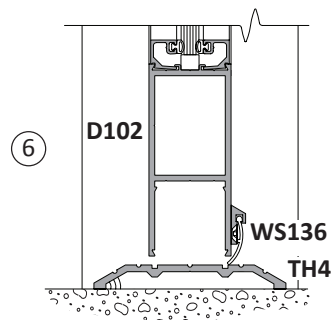
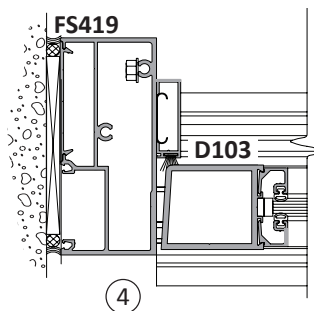
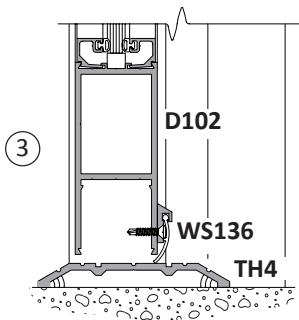
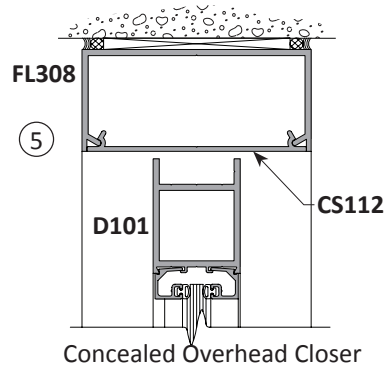
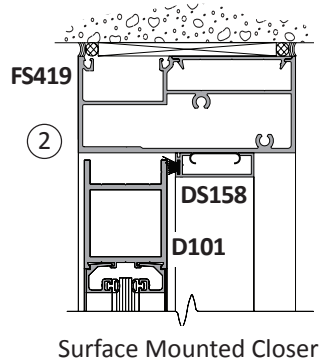
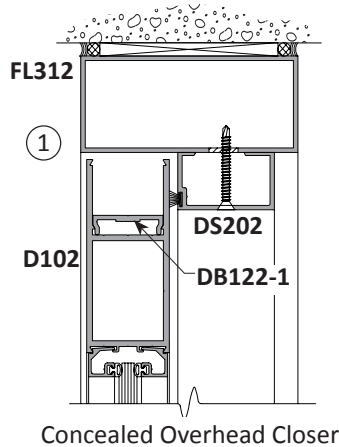
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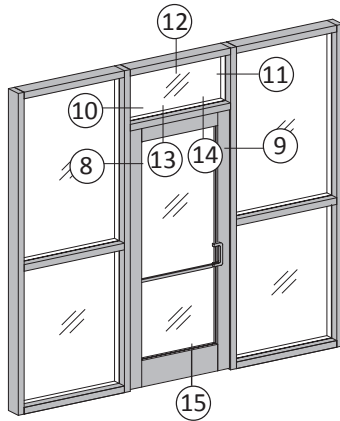


**Single Acting Doors
Non-Transom Frame**

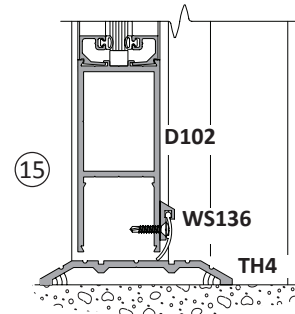
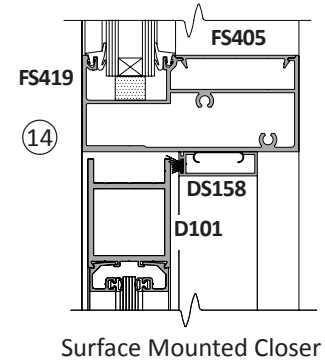
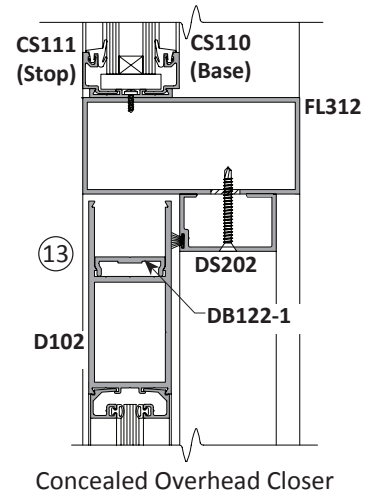
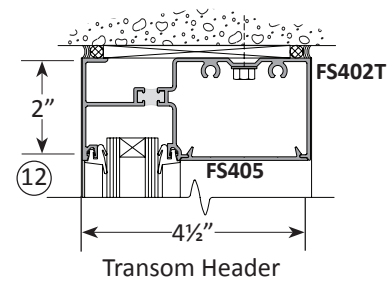
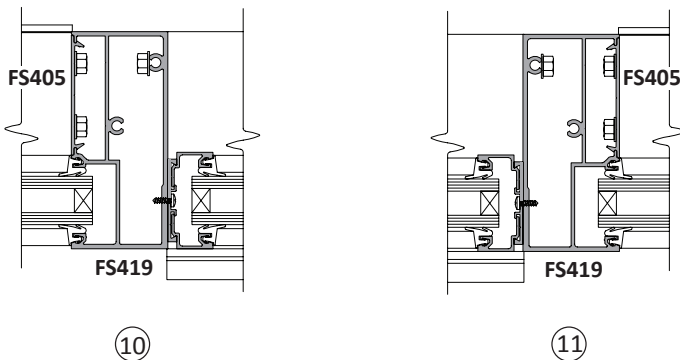
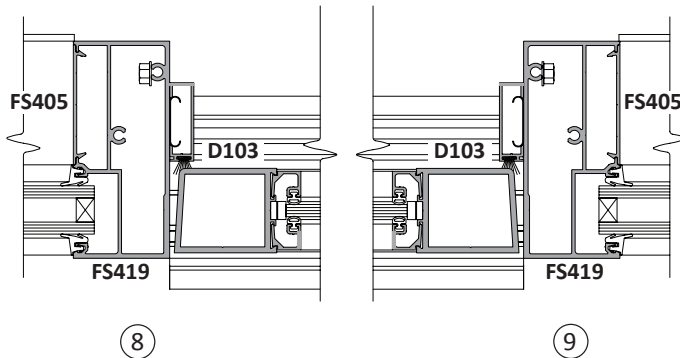


**Double Acting Doors
Non-Transom Frame**





**Single Acting Doors
with Transom Frame**

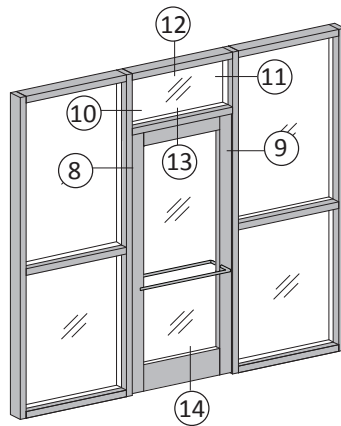


FS400T·2"x4½"

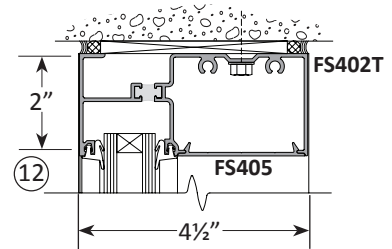
Thermal Storefront

Entrance Framing - Double Acting with Transom

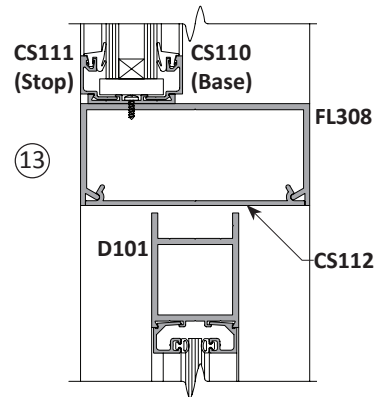
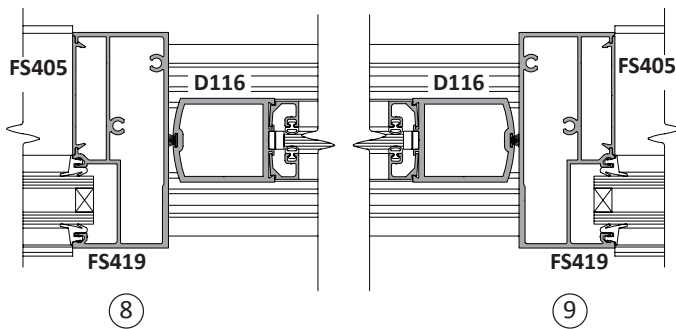
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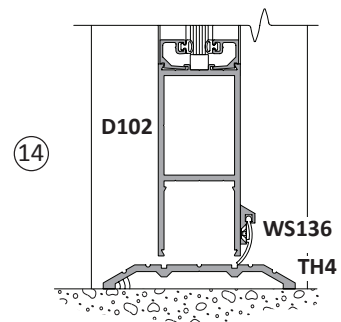
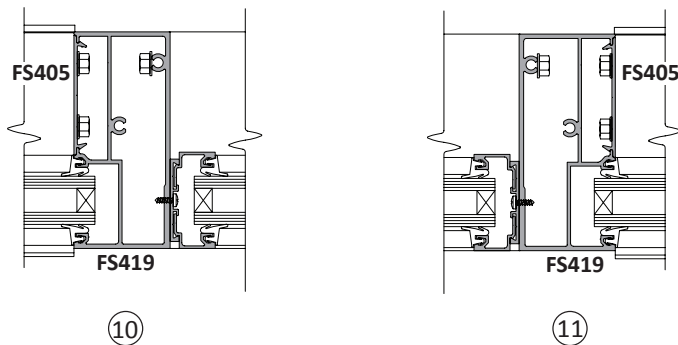
**Double Acting Doors
with Transom Frame**



Transom Header



Concealed Overhead Closer



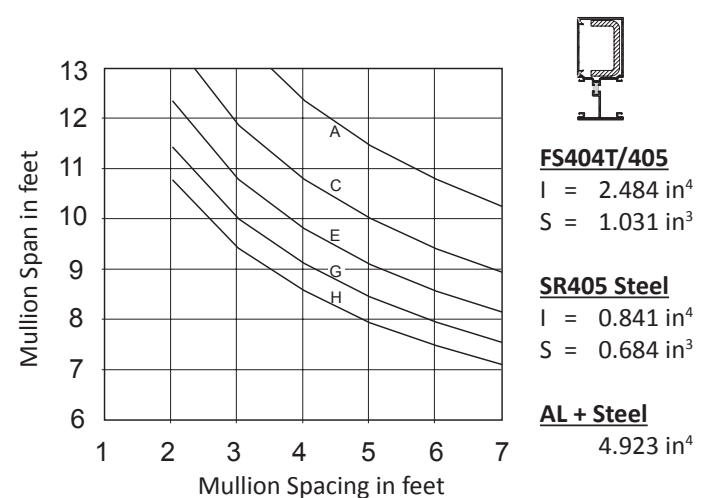
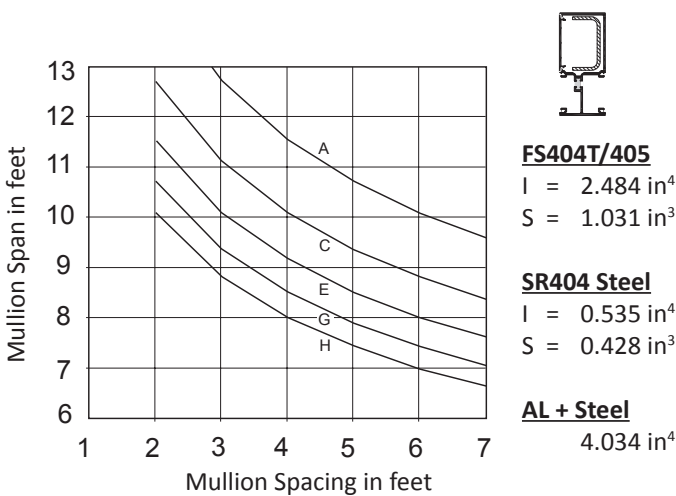
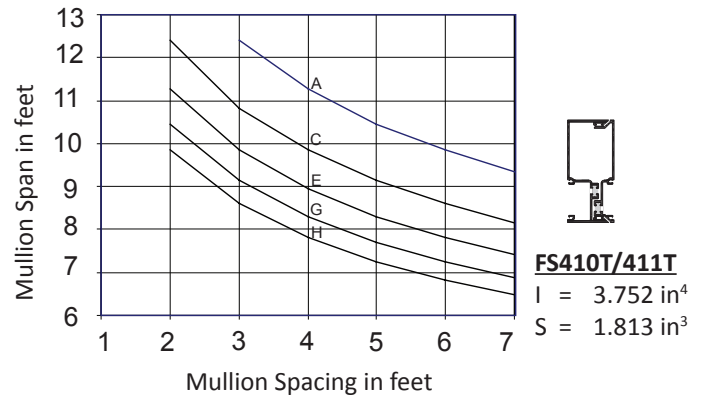
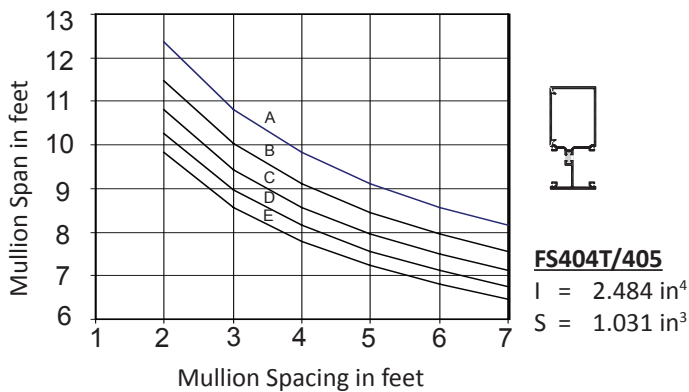
Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	E	40 PSF
B	25 PSF	F	45 PSF
C	30 PSF	G	50 PSF
D	35 PSF	H	60 PSF



FS400T·2"x4½"

Thermal Storefront

Dead Load Charts

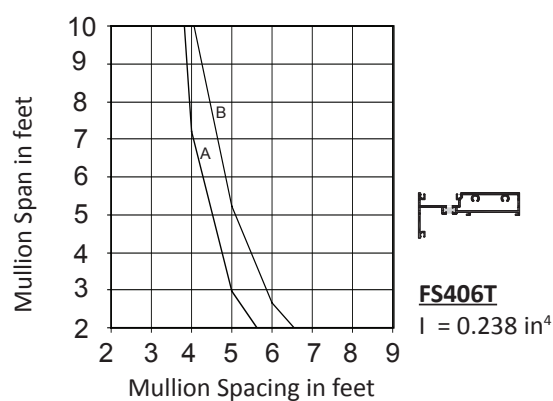
INTERMEDIATE HORIZONTAL

Dead load charts are based on 1/8' maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 6.5 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger

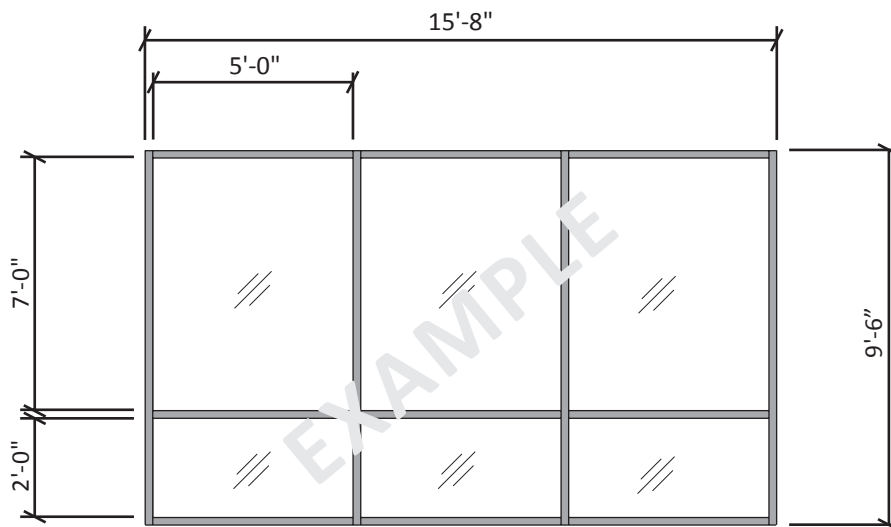


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507 utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation



Example Glass U-Factor

$$= 0.42 \text{ Btu/hr} \cdot \text{ft}^2 \cdot ^\circ\text{F}$$

Total Daylight Opening

$$= 3 (5' \times 7') + 3 (5' \times 2') = 135 \text{ ft}^2$$

Total Projected Area

$$= (\text{Total Daylight Opening} + \text{Total Area of Framing System})$$

$$= 15'-8'' \times 9'-6'' = 148.83 \text{ ft}^2$$

Percent of Glass

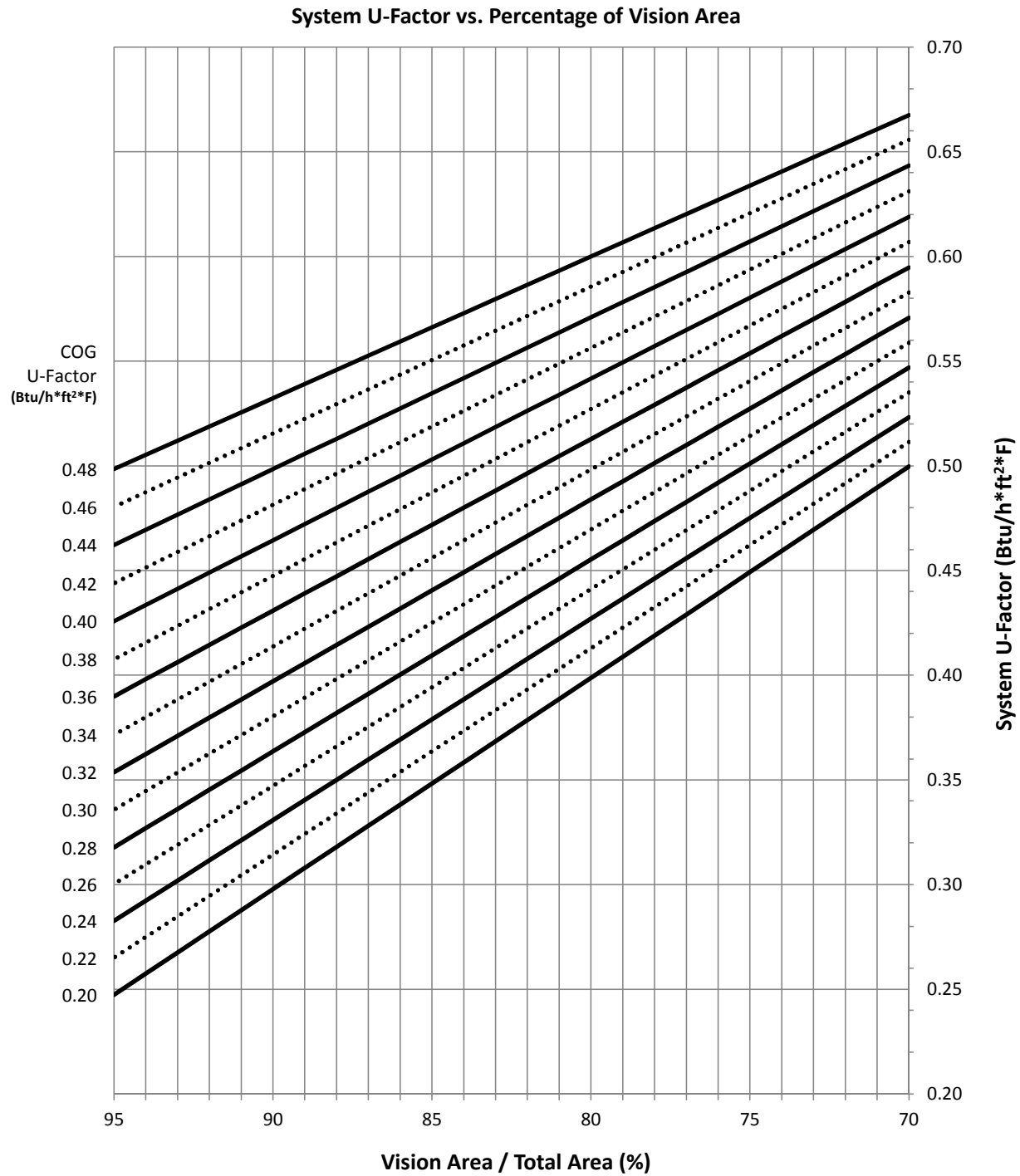
$$= (\text{Total Daylight Opening} \div \text{Total Projected Area})$$

$$= (135 \div 148.83) 100 = 91\%$$

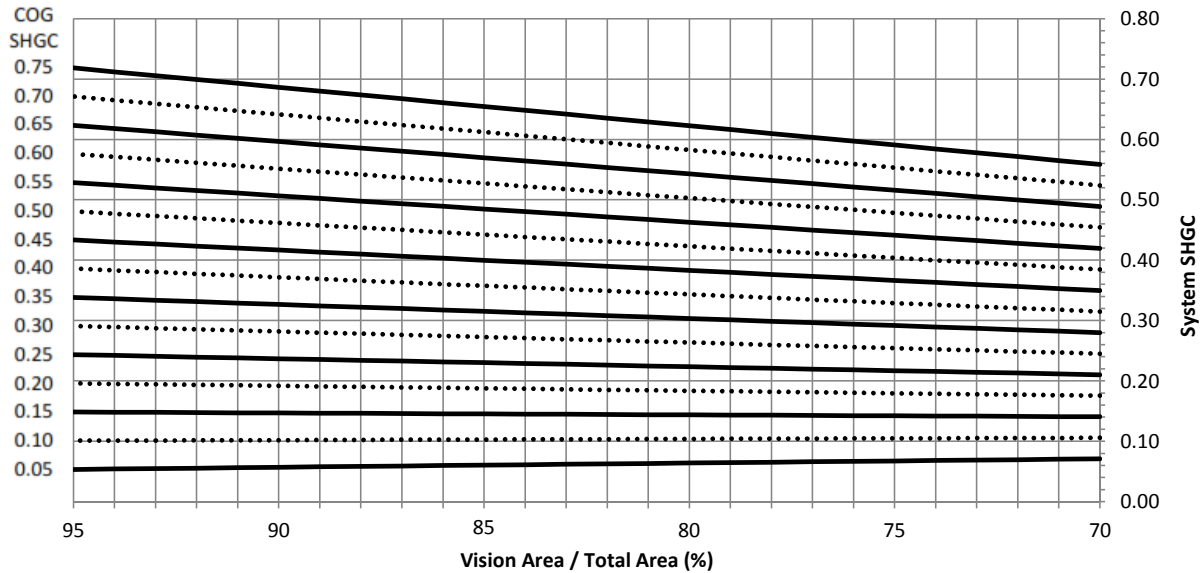
FS400T·2"x4½"

Thermal Storefront

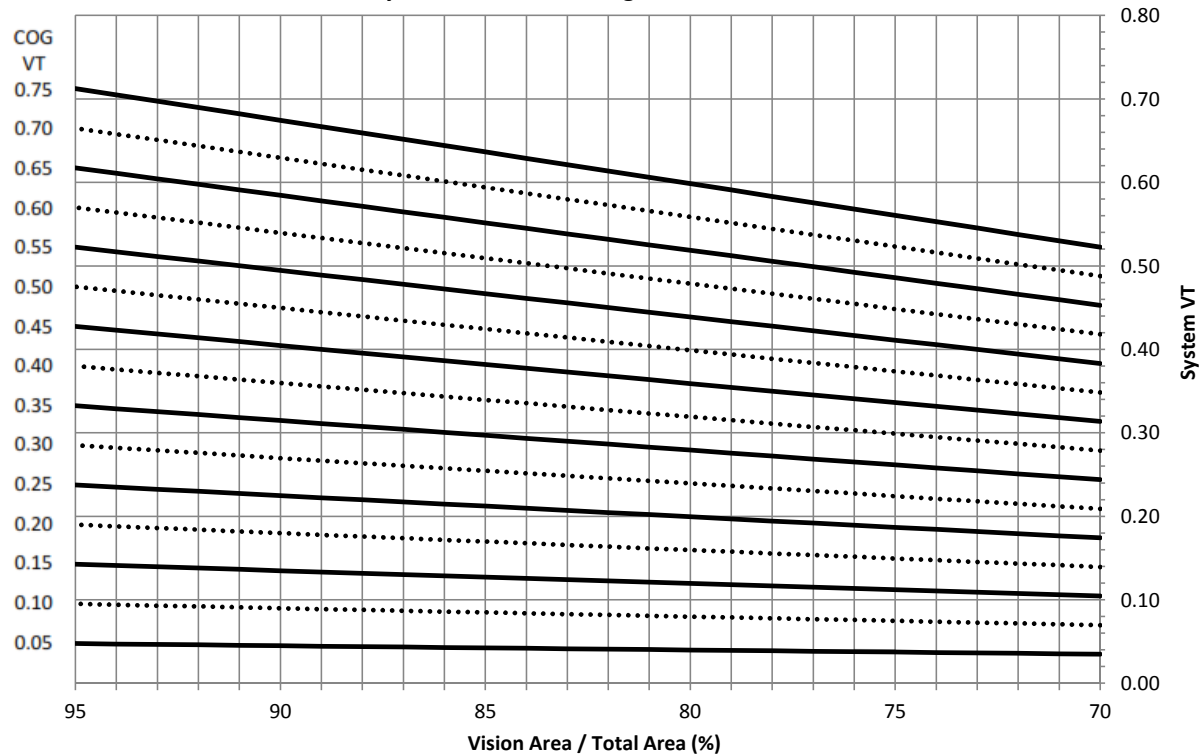
Thermal Charts



System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



FS400T·2"x4½"

Thermal Storefront



Thermal Charts

Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.54
2	0.46	0.53
3	0.44	0.51
4	0.42	0.50
5	0.40	0.48
6	0.38	0.46
7	0.36	0.45
8	0.34	0.43
9	0.32	0.42
10	0.30	0.40
11	0.28	0.38
12	0.26	0.37
13	0.24	0.35
14	0.22	0.33
15	0.20	0.32

Size-Specific SHGC Matrix: NFRC Standard Size (78.740" x 78.740")⁵

Center-of-Glass SHGC	Overall SHGC
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.46
0.45	0.41
0.40	0.37
0.35	0.32
0.30	0.28
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

Size-Specific VT Matrix: NFRC Standard Size (78.740" x 78.740")⁵

Center-of-Glass VT	Overall VT
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.49
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.26
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

- System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
- SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section B5
 Table of Contents

FL600
 STOREFRONT SYSTEM
 2¼" x 6"

Specifications - FL600	S1-S5
Features & Benefits	1
Standard Framing	2
Optional Framing	3
Entrance Framing - Non-Transom	4
Entrance Framing - Single Acting with Transom	5
Entrance Framing - Double Acting with Transom	6
Wind and Dead Load Charts	7

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series FL600 2-1/4" x 6" thermal outside offset glazed storefront system for 1" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 15 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of 45 PSF shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

5. Thermal: The test specimen shall be tested in accordance with AAMA 1503-09 Voluntary Test Method for Thermal Transmittance and Condensation resistance of Windows, Doors and Glazed Wall Sections. Thermal transmittance due to conduction (U) shall not exceed 0.42 (expressed in Btu/hr•ft²•F) and the condensation resistance factor (CRF_f) at Frame shall not be less than 57.

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261

GUIDE SPECIFICATION

- c. Email: info@coralap.com
- d. Web address: www.coralap.com
- 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL600T Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2-1/4" x 6" nominal dimension; Offset Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: **Coral Architectural Products**
 - a. Product: **Architectural Aluminum**
 - b. Series **FL600** Storefront System: 2-1/4" x 6" nominal dimension, Offset Glazed; Screw-Spline Fabrication
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 - 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:
 - a. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

GUIDE SPECIFICATION

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

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1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

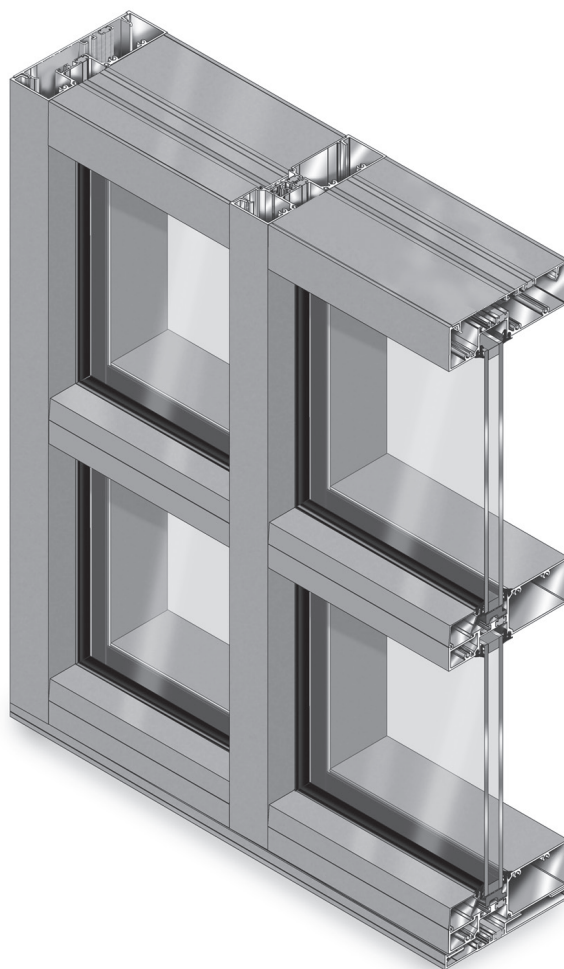
Series FL600 thermal 2-1/4" x 6" offset storefront framing systems for 1" glass is designed for low-rise applications. Enhanced thermal performance is achieved using thermal break construction in response to increased demands for energy efficient commercial buildings. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control.

Features

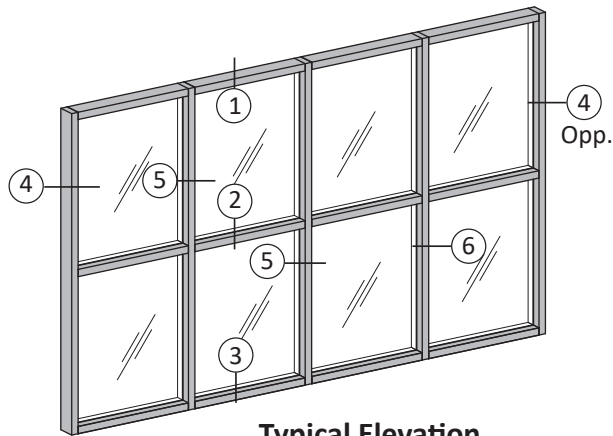
- Outside Glazed
- Screws-spline Assembly
- Accepts 1" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

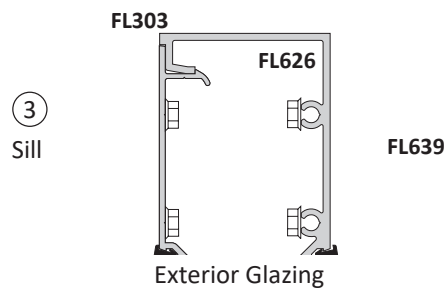
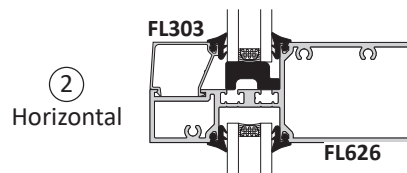
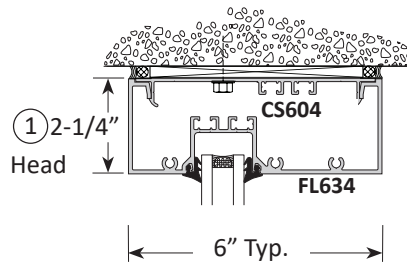
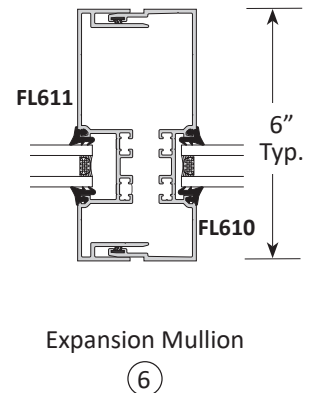
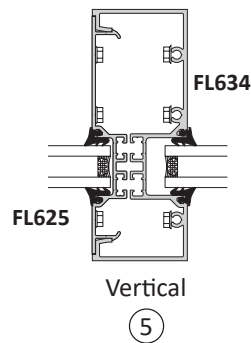
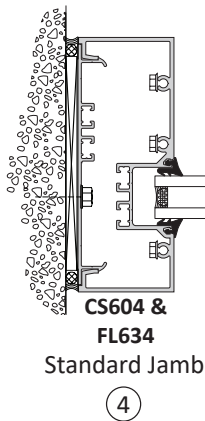
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- AAMA 1503-09 / NFRC 102-2010 Thermal Transmittance Performance
- Florida Product Approval Number - Pending application for 2017 (non-impact for use outside HVHZ) [Exterior Glazed]



Standard Framing
Scale: 3" = 1'-0"



Typical Elevation

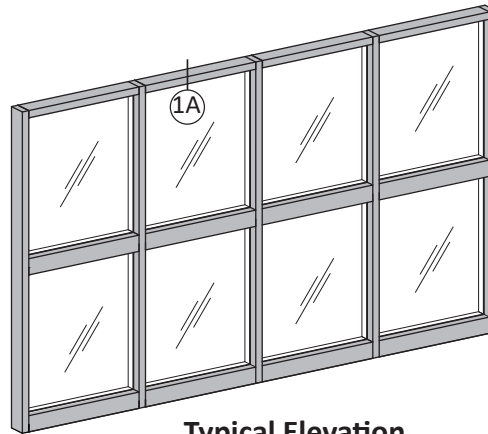


FL600·2¼"x6"

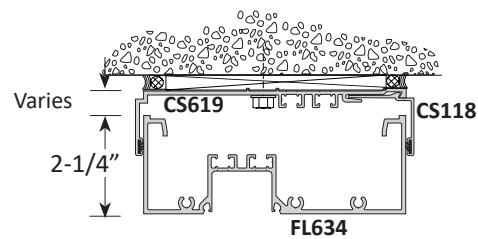
Storefront

Optional Framing

Scale: 3" = 1'-0"

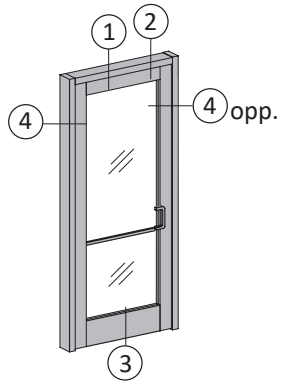


Typical Elevation

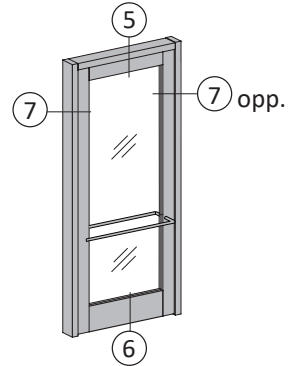


Optional Head Members

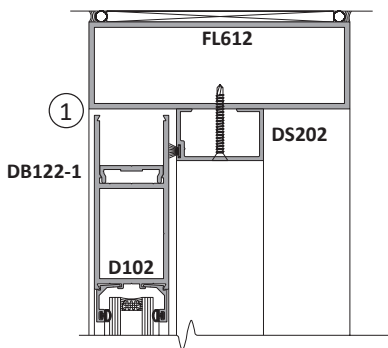
Entrance Framing - Non-Transom
Scale: 3" = 1'-0"



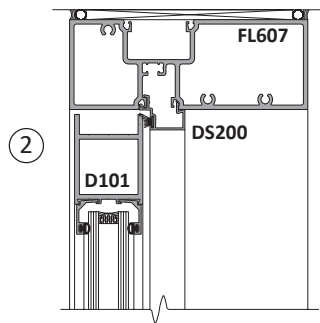
**Single Acting Doors
Non-Transom Frame**



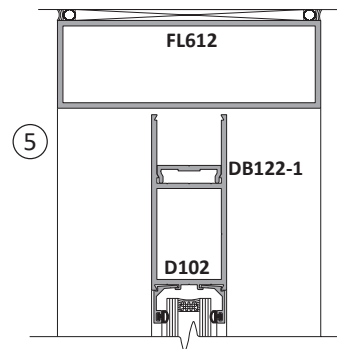
**Double Acting Doors
Non-Transom Frame**



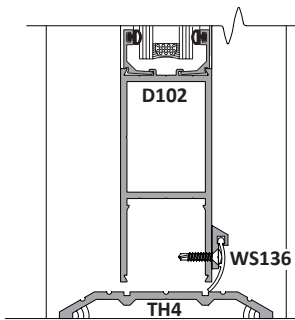
Concealed Overhead Closer



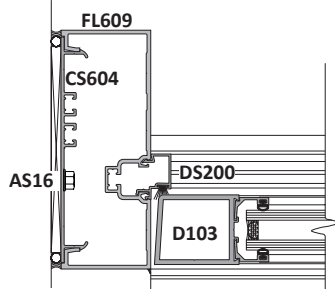
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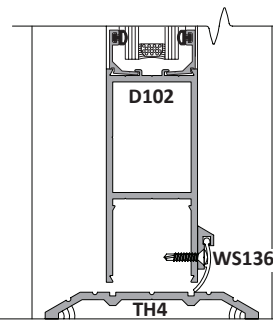
Concealed Overhead Closer



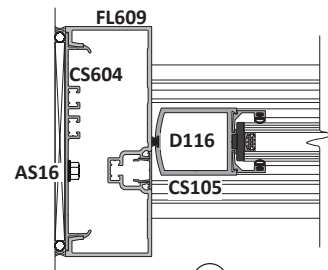
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4



6



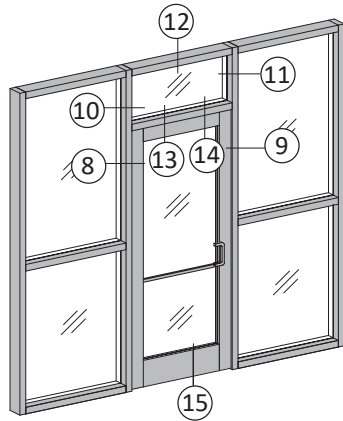
7

FL600·2¼" x 6"

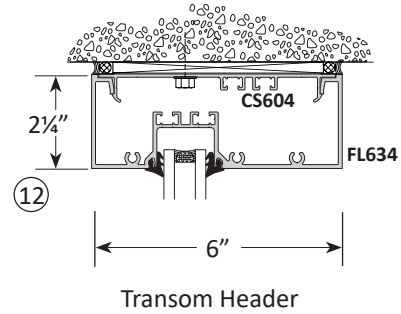
Storefront

Entrance Framing - Single Acting with Transom

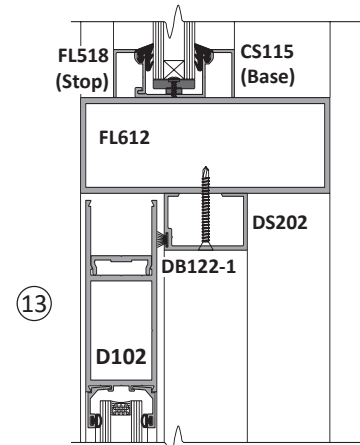
Scale: 3" = 1'-0"



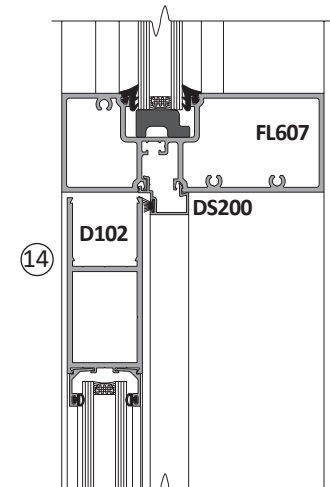
**Single Acting Doors
with Transom Frame**



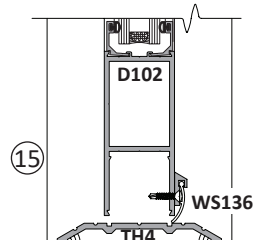
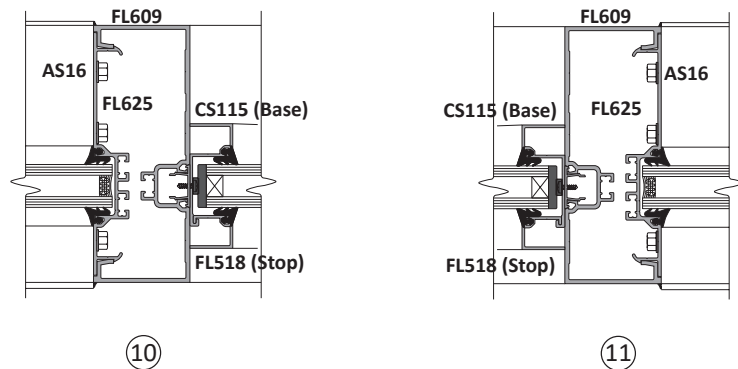
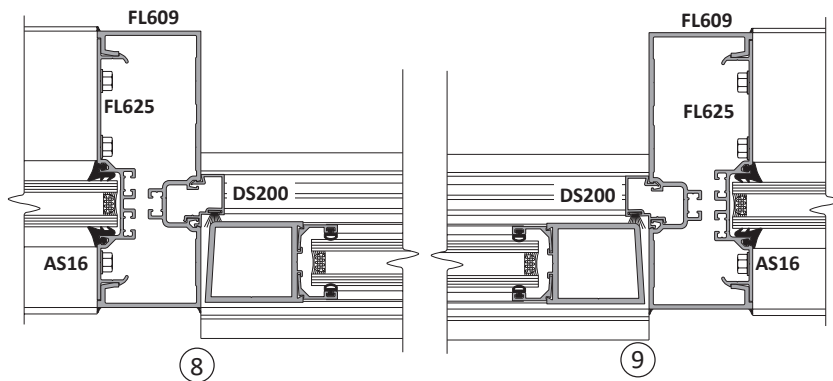
Transom Header



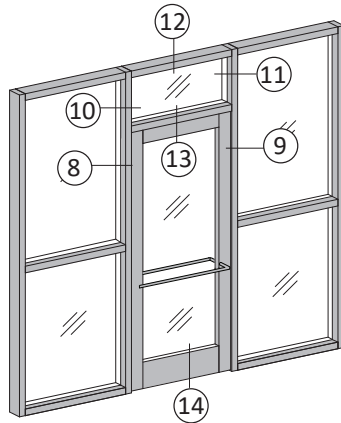
Concealed Overhead Closer



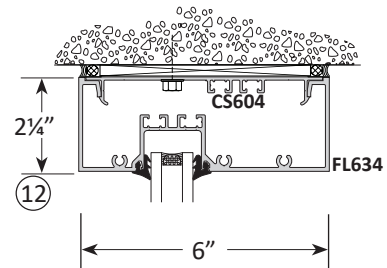
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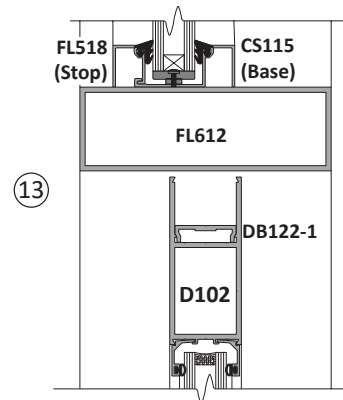
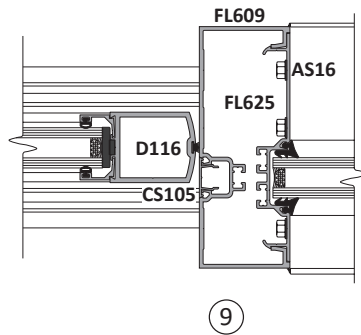
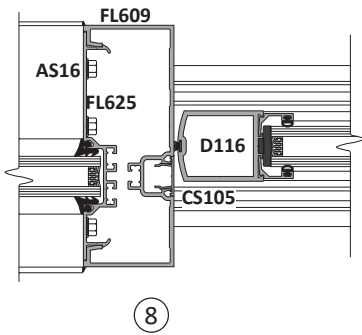
Entrance Framing - Double Acting with Transom
Scale: 3" = 1'-0"



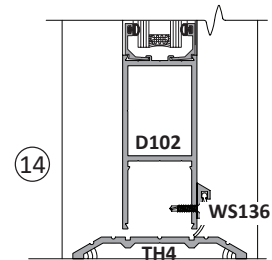
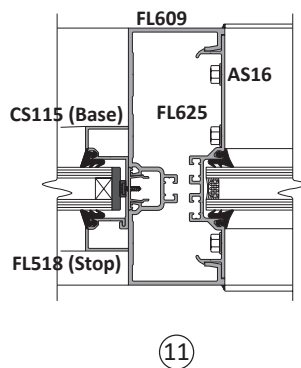
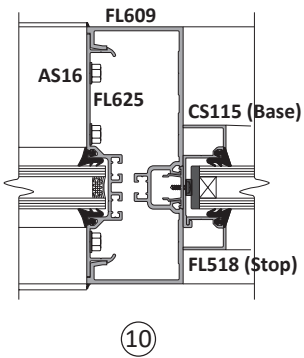
**Double Acting Doors
with Transom Frame**



Transom Header



Concealed Overhead Closer



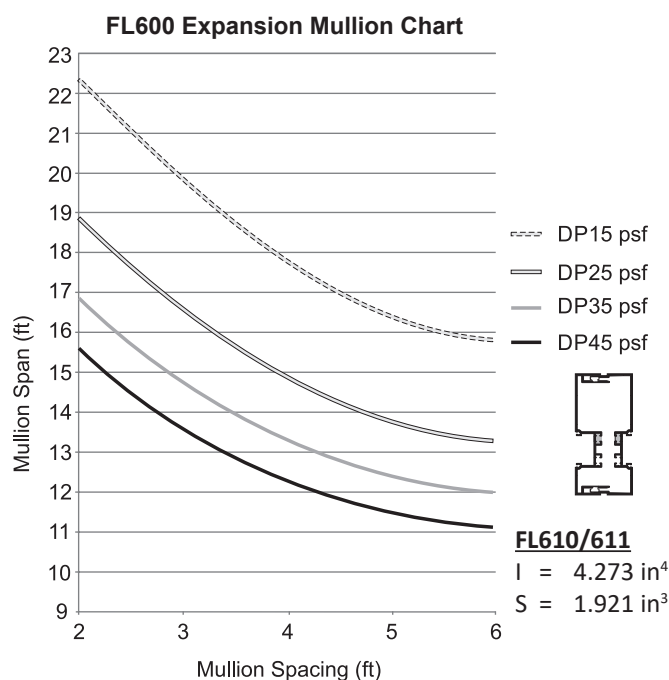
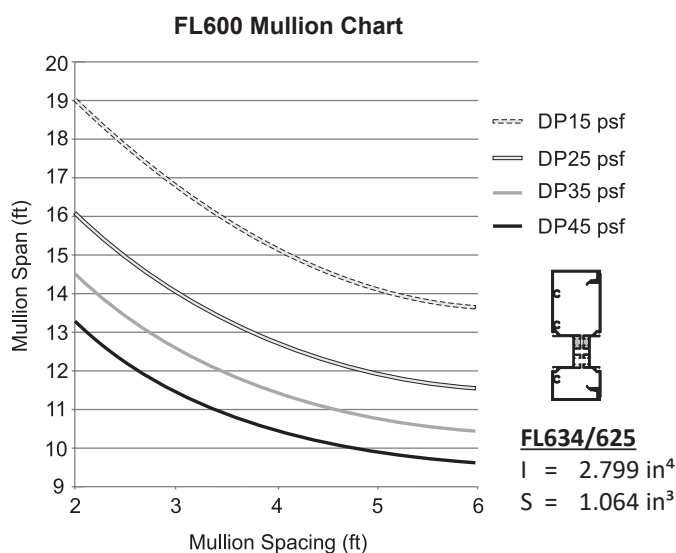
Wind Load and Dead Load Charts

Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi
Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	20 PSF	D	35 PSF
B	25 PSF	E	40 PSF
C	30 PSF		



DEAD LOAD CHART

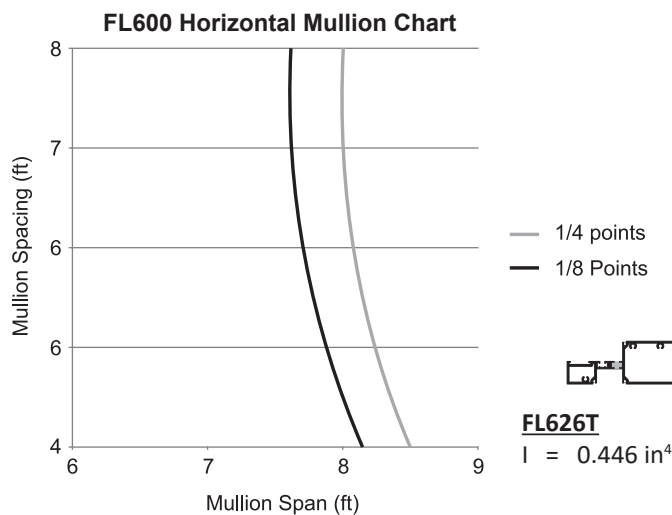
INTERMEDIATE HORIZONTAL

Dead load charts are based on 1/8' maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 6.5 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger



Section B6
Table of Contents

FL600T
THERMAL STOREFRONT SYSTEM
2¼" x 6"

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Standard Framing	2
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Certificate of compliance	11

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series FL600T 2-1/4" x 6" thermal outside offset glazed storefront system for 1" glazing.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft2 at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 15 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of 45 PSF shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

5. Thermal: The test specimen shall be tested in accordance with AAMA 1503-09 Voluntary Test Method for Thermal Transmittance and Condensation resistance of Windows, Doors and Glazed Wall Sections. Thermal transmittance due to conduction (U) shall not exceed 0.42 (expressed in Btu/hr•ft²•F) and the condensation resistance factor (CRF_f) at Frame shall not be less than 57.

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261

GUIDE SPECIFICATION

- c. Email: info@coralap.com
- d. Web address: www.coralap.com
- 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL600T Thermal Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2-1/4" x 6" nominal dimension; Offset Glazed; Screw Spline Fabrication.
Provide combination full height subsill flashing and sill section which eliminate blind seal conditions at fasteners penetrating subsill flashing. Subsill flashing to have full height end dams at each end.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 - 1. Base Bid/Contract Manufacturer/Product: **Coral Architectural Products**
 - a. Product: **Architectural Aluminum**
 - b. Series **FL600T** Storefront System: 2-1/4" x 6" nominal dimension, Offset Glazed; Screw-Spline Fabrication
- C. Substitutions:
 - 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 - 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 - 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:
 - a. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

GUIDE SPECIFICATION

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

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1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass.
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into a full height subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

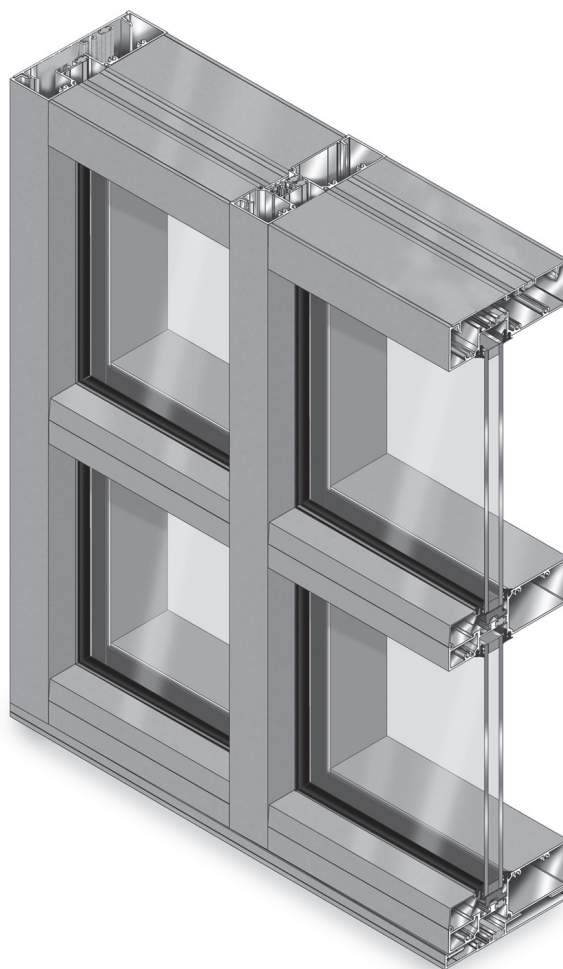
Series FL600T thermal 2-1/4" x 6" offset storefront framing systems for 1" glass is designed for low-rise applications. Enhanced thermal performance is achieved using thermal break construction in response to increased demands for energy efficient commercial buildings. Snap-together profiles using integral screw-spline joinery allows for the frames to be pre-assembled in panels resulting in increased productivity and quality control.

Features

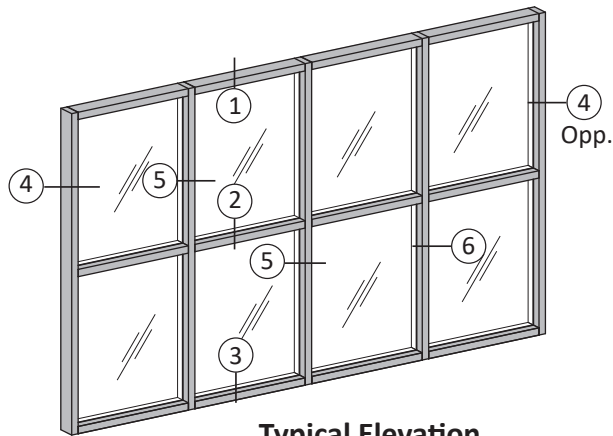
- Outside Glazed
- Screws-spline Assembly
- Accepts 1" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

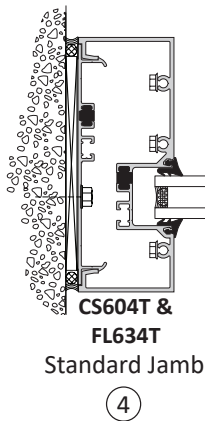
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- AAMA 1503-09 / NFRC 102-2010 Thermal Transmittance Performance
- Florida Product Approval Number - Pending application for 2017 (non-impact for use outside HVHZ) [Exterior Glazed]



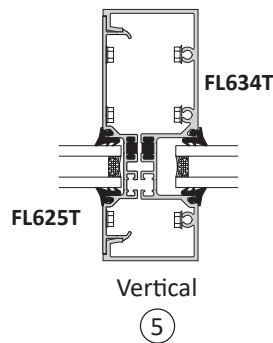
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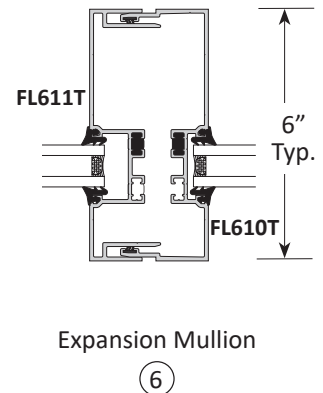
Typical Elevation



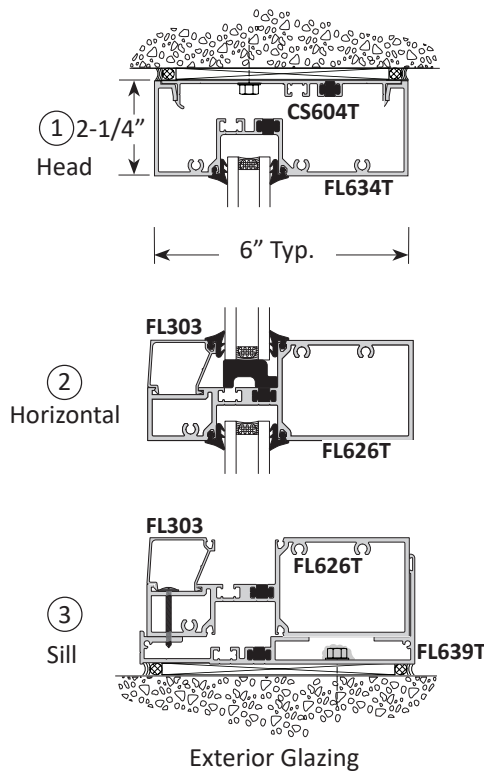
Standard Jamb



Vertical



Expansion Mullion

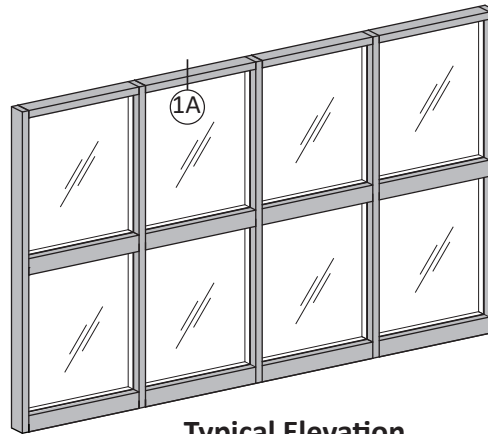


FL600T·2¼" x 6"

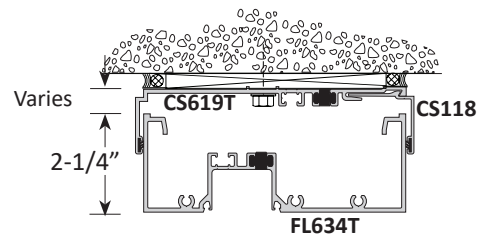
Thermal Storefront

Optional Framing

Scale: 3" = 1'-0"

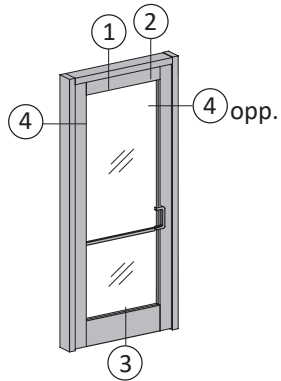


Typical Elevation

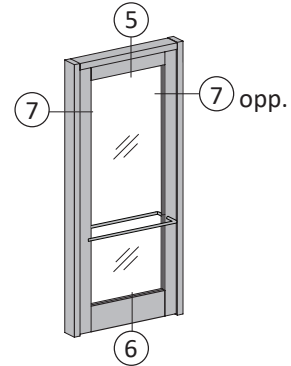


Optional Head Members

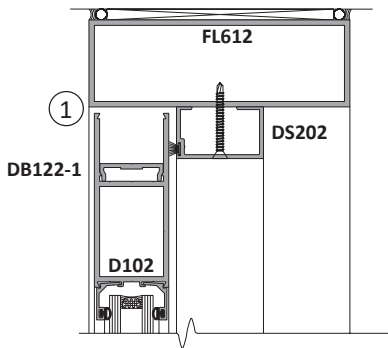
Entrance Framing - Non-Transom
Scale: 3" = 1'-0"



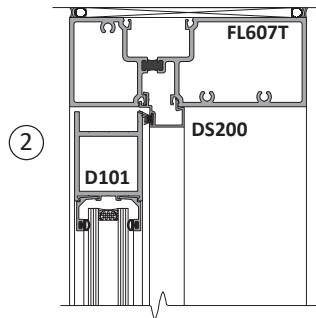
**Single Acting Doors
Non-Transom Frame**



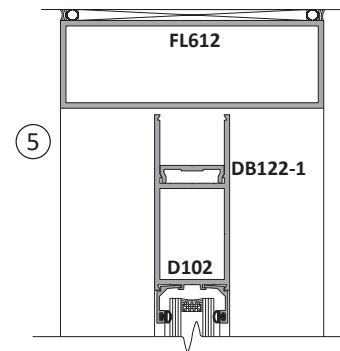
**Double Acting Doors
Non-Transom Frame**



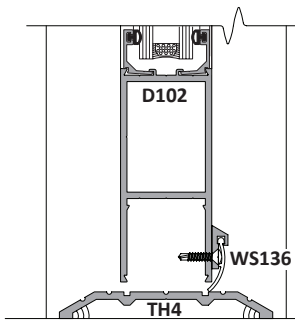
Concealed Overhead Closer



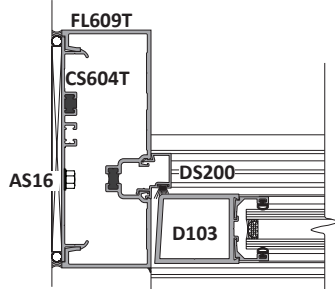
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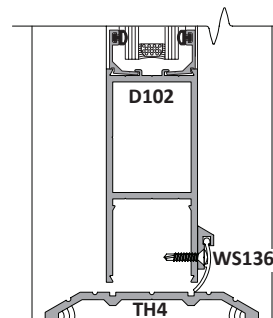
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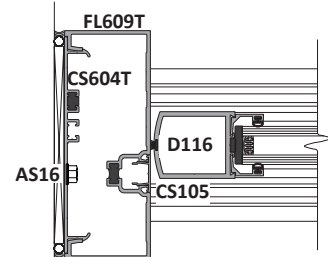
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4



6



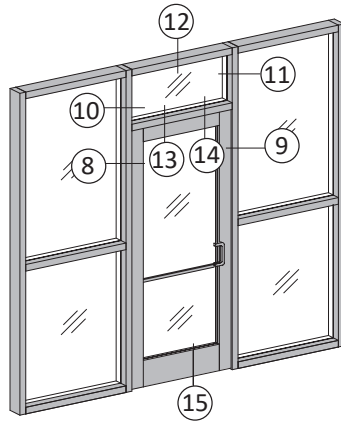
7

FL600T·2¼" x 6"

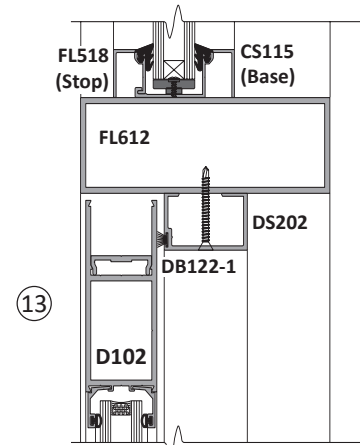
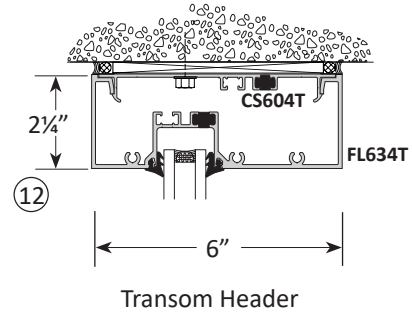
Thermal Storefront

Entrance Framing - Single Acting with Transom

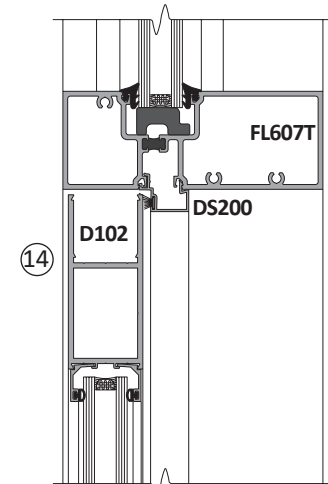
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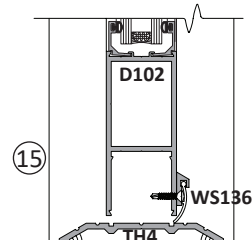
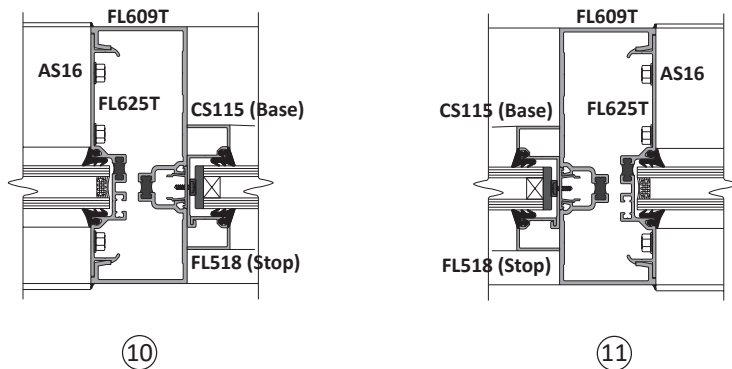
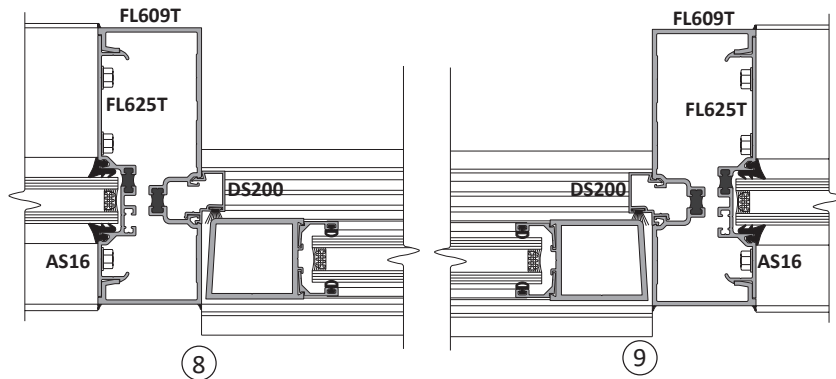
**Single Acting Doors
with Transom Frame**



Concealed Overhead Closer

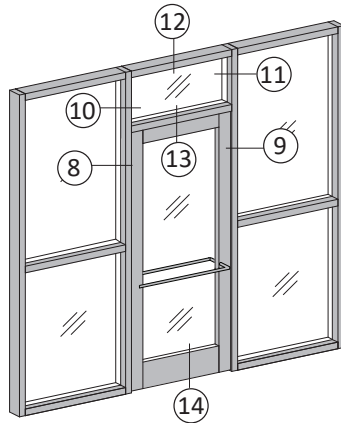


Surface Mounted Closer

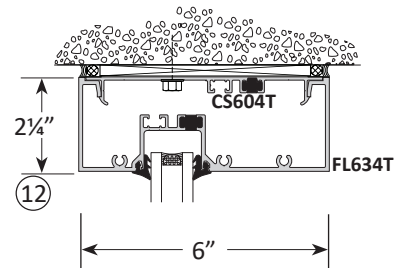


Entrance Framing - Double Acting with Transom

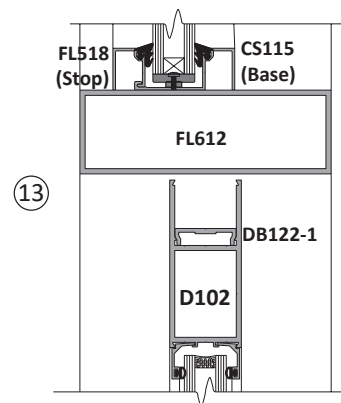
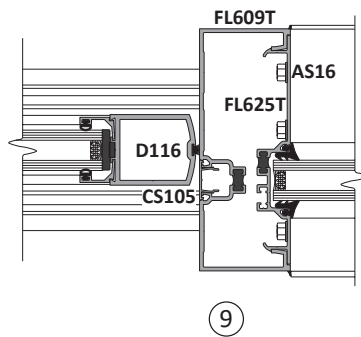
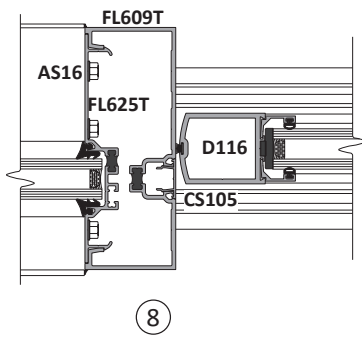
Scale: 3" = 1'-0"



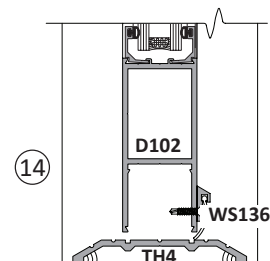
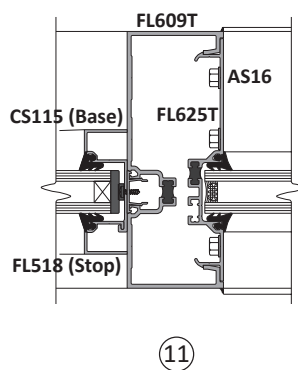
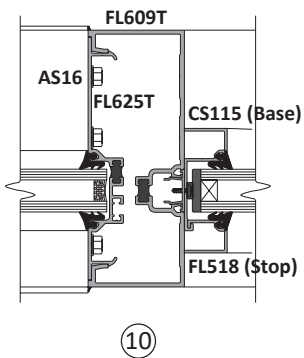
**Double Acting Doors
with Transom Frame**



Transom Header



Concealed Overhead Closer



FL600T·2¼" x 6"

Thermal Storefront

Wind Load and Dead Load Charts

Mullions are designed for L/175 deflection ratio and the allowable working stresses for wind load shown below:

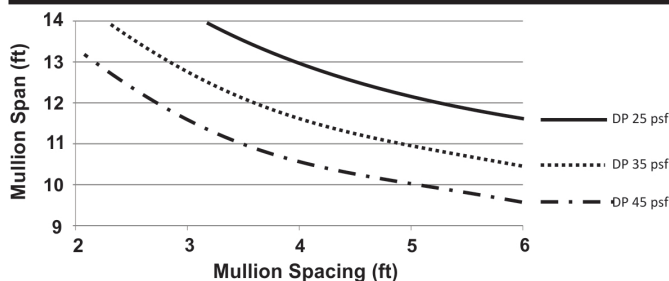
Aluminum Alloy 6063 - T6 = 25 ksi / 1.65 = 15.15 ksi

Steel Reinforcing: 36 ksi x 0.67 = 24 ksi

Limitations of Vertical Mullions for Curves

A	25 PSF	D	
B	35 PSF	E	
C	45 PSF		

FL600T Mullion Chart (One Thermal Break)

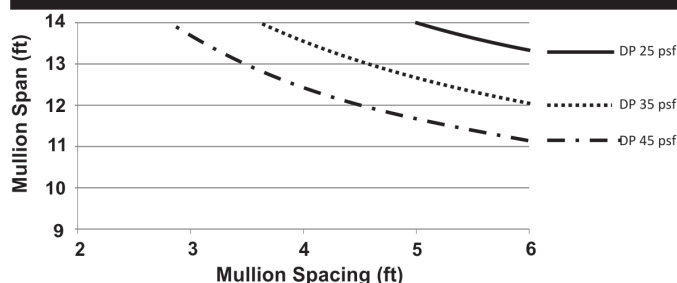


FL634T/625T

$I = 6.736 \text{ in}^4$

$S = 2.117 \text{ in}^3$

FL600T Expansion Mullion Chart (One Thermal Break)



FL610T/611T

$I = 10.886 \text{ in}^4$

$S = 3.470 \text{ in}^3$

DEAD LOAD CHART

INTERMEDIATE HORIZONTAL

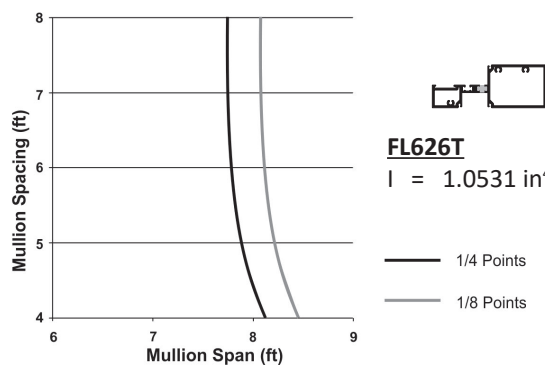
Dead load charts are based on 1/8' maximum allowable deflection at the center point of the horizontal member and on a theoretical glass weight of 6.5 P.S.F.

Glass shall rest on two setting blocks located at:

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners, whichever is larger

FL600T Horizontal Mullion Chart



FL626T

$I = 1.0531 \text{ in}^4$

1/4 Points

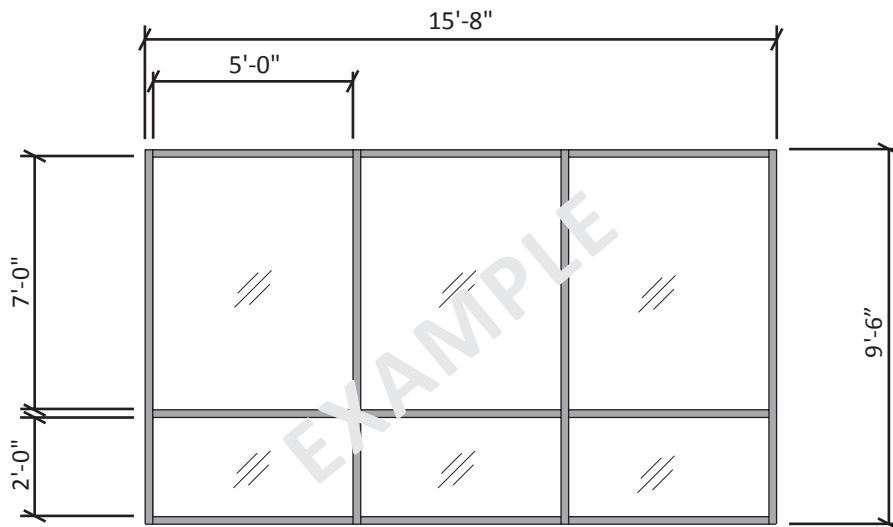
1/8 Points

System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507, utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation



Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System) = 15'-8"x9'-6" = 148.83ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area) = (135 ÷ 148.83)100 = 91%

FL600T·2¼"×6"

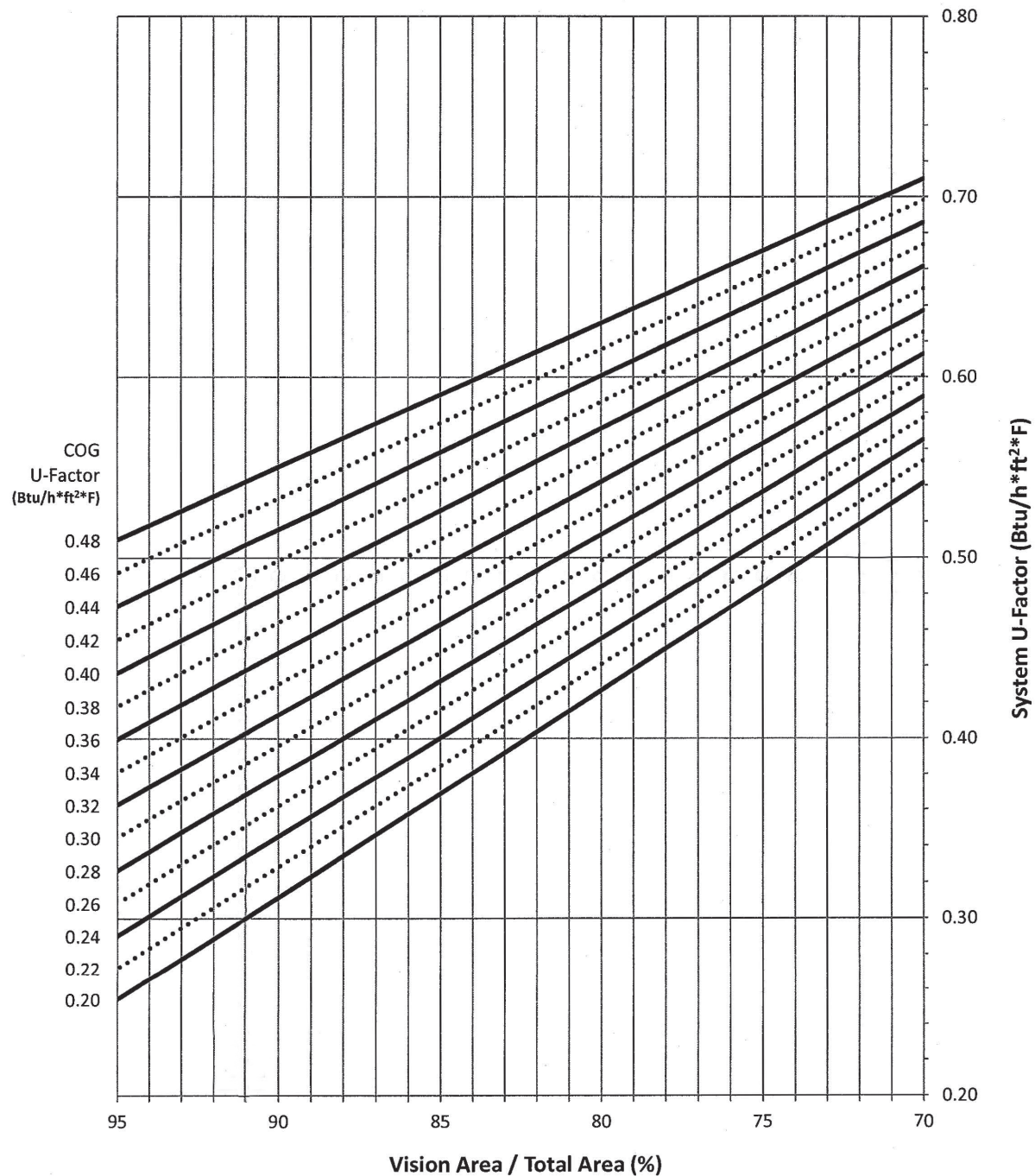
Thermal Storefront



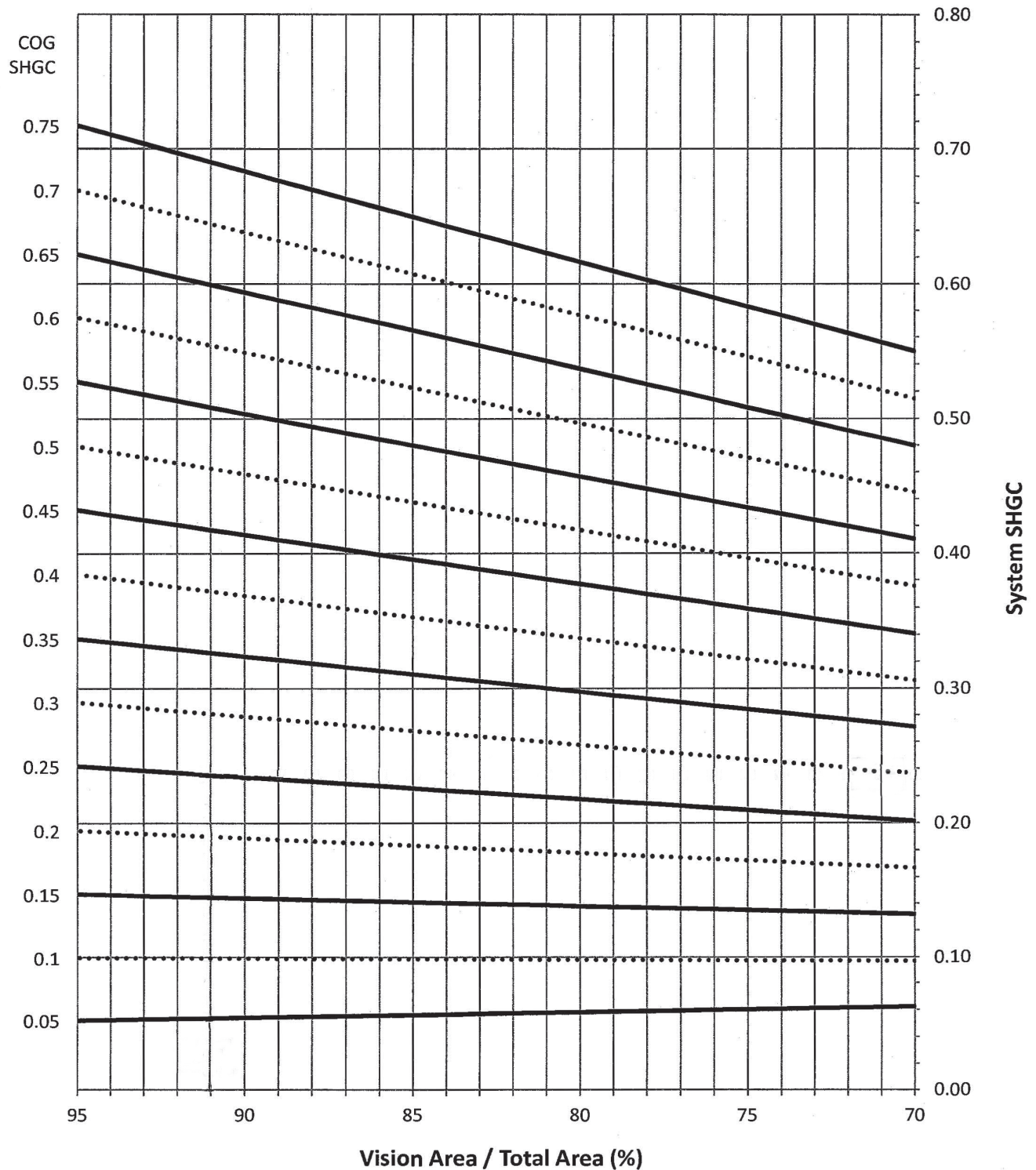
Thermal Charts

System U-Factor vs. Percentage of Vision Area

FL600T Storefront System U-Factor vs. Percentage of Vision Area



FL600T Storefront System SHGC vs. Percentage of Vision Area



CERTIFICATE OF COMPLIANCE



Certificate Authorization

Date: _____

Name: _____

Signature: _____

CERTIFIES THAT THE MATERIALS LISTED ON THIS CERTIFICATE WERE INSTALLED ON THE PROJECT IDENTIFIED

OVERALL RATING	
U-Factor :	
SHGC:	

PROJECT INFORMATION

Name _____

Street Address _____

City _____ State _____ Zip _____

GLAZING CONTRACTOR / INSTALLER

Name _____ Contact _____

Street Address _____ Phone _____

City _____ State _____ Zip _____

GLAZING MATERIAL SUPPLIER

Name _____ Contact _____

Street Address _____ Phone _____

City _____ State _____ Zip _____

Glass and Spacer Type _____

Center of Glass U-Factor _____ Center of Glass SHGC _____

FRAMING MATERIAL SUPPLIER

Name _____ Contact _____

Street Address _____ Phone _____

City _____ State _____ Zip _____

Product Line **FL600T Thermal Storefront System 2 1/4" x 6"**

COG U-factor	Overall U-factor	COG SHGC	Overall SHGC
.48	.57	.75	.66
.46	.56	.70	.62
.44	.54	.65	.58
.42	.53	.60	.53
.40	.51	.55	.49
.38	.49	.50	.45
.36	.48	.45	.40
.34	.46	.40	.36
.32	.45	.35	.32
.30	.43	.30	.27
.28	.42	.25	.23
.26	.40	.20	.19
.24	.38	.15	.14
.22	.37	.10	.10
.20	.35	.05	.06

The overall ratings for U-factor and SHGC are based on the standard NFRC 100 Size of:

2000 mm x 2000 mm (78.75 in x 78.75 in)

as required in NFRC 100.

Overall U-factors and Solar Heat Gain Coefficients (SHGC) listed in the matrix were determined in accordance with NFRC 100 and NFRC 200 respectively by a NFRC accredited laboratory.

Accredited Laboratory

Turner Engineering & Consulting, Inc.

Reference Report#

CAP-040819-01

Section C1
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PW251
PANELIZED CURTAIN WALL

2½" x 7"
for 1" Insulated Glass

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08900 ALUMINUM CURTAIN WALL

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.
- 1. Types of Coral Architectural Products include:
 - a. Series PW251 Panelized Curtain Wall System: 2-1/2" x 7" outside glazed captured pressure wall system for 1" glazing infill. (Select)
 - b. Series PW251 Panelized Curtain Wall System: 2-1/2" x 7" outside glazed (SSG) structural silicone glazed pressure wall system for 1" glazing infill. (Select)
- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance, storefront, and curtain wall systems
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Curtain Wall System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 2.0 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of 60 PSF shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for curtain wall system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle curtain wall material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 - 1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
- Contact Numbers:
- a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web address: www.coralap.com

GUIDE SPECIFICATION

2. Proprietary Product(s)/System(s): **Coral Architectural Products**
 - a. Series: **PW251** outside glazed pressure wall curtain wall system

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
 - c. Framing Member Profile: 2-1/2 x 7" nominal dimension; pressure bar; screw-spline fabrication
 - B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Architectural Aluminum
 - b. Series PW251 Panelized System: 2-1/2" x 7" nominal dimension; pressure bar; screw-spline fabrication
 - C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid curtain wall installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for curtain wall system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for curtain wall required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of curtain wall for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Curtain Wall and Components):
 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall framing members are nominal and in compliance with Architectural Aluminum Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: Aluminum; When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

GUIDE SPECIFICATION

2.05 Fabrication

A. General:

1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
3. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

A. Shop Finishing

1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum curtain wall specified herein from a single source.

1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- #### A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- #### A. General: Install curtain wall systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure bars anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.

GUIDE SPECIFICATION

3. Water Drainage: Each light of glass shall be compartmentalized by using end dams at horizontal/vertical joint intersections and silicone sealant to divert water to the horizontal weeps. Weep holes shall be located in the horizontal pressure bars and covers to divert water to the exterior of the building.
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

Panelized construction using proven screw spline joinery reduces fabrication and installation time. Interior horizontal snap-on trim covers increase quality by allowing inspection and repair of critical horizontal/vertical seals and perimeter anchor attachment to substrate prior to or after glazing.

Framing panels can be shop fabricated, assembled, transported to job site and then coupled together creating a complete panelized curtain wall installation.

Glazing Features:

- Same EPDM dense gasket used on interior and exterior at glass

Screw spline joinery allows:

- Coral Punch die shop fabrication
- Die set punches spline and pressure bar weep holes
- Panelized frame assembly for easy transporting and installation
- Eliminates "T" anchors

Pressure Bars:

- Factory installed EPDM thermal isolator with attachment holes pre-punched 9" O.C.

Interior Snap-on Covers:

- Inspection and/or repair of critical joint seal areas prior to and after glazing.
- Perimeter anchor attachment and inspection

Injection molded plastic end dams and bridges at horizontals provide:

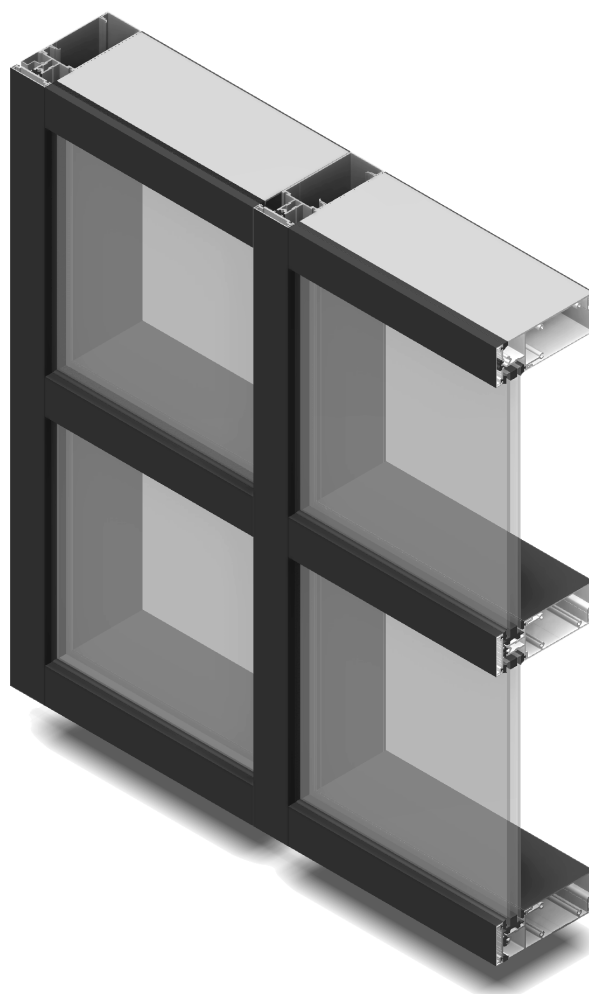
- Tight seals at intersection of vertical/horizontal joints for zone glazing.

Injection molded plastic top and bottom vertical mullion caps:

- Accurate compression fit
- Provides continuous perimeter seal

Injection molded plastic temporary glazing retainer:

- Reduces labor
- Distributes uniform pressure on glass reducing risk of breaking glass
- Reusable for next project



Performance Test Standards

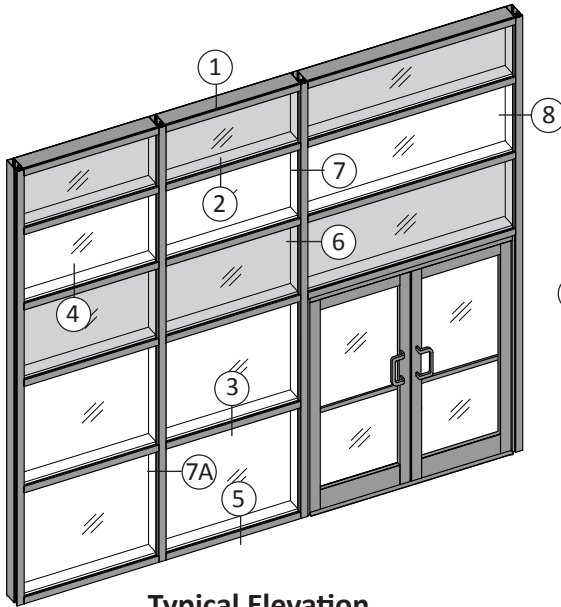
- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- Florida Product Approval Number - FL8379 (Non-impact for use outside HVHZ)

PW251·2½" x 7"

Curtain Wall

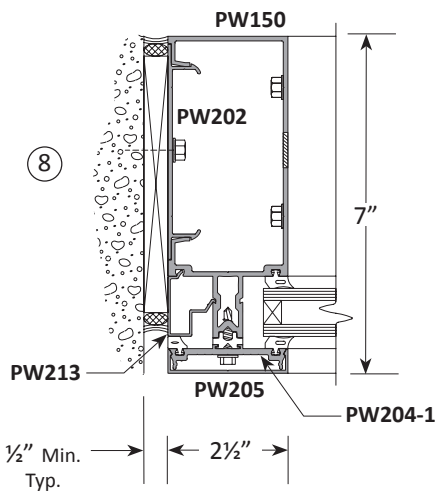
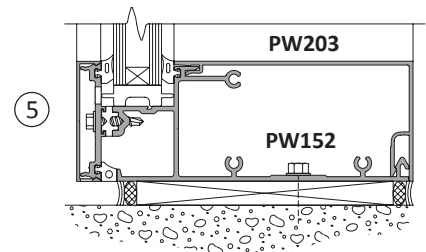
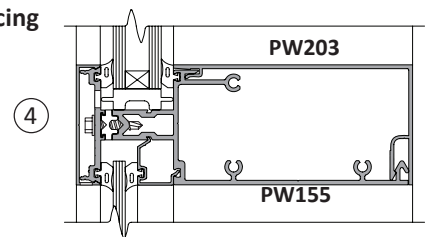
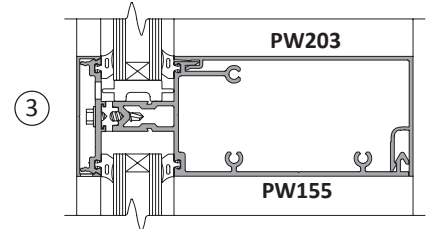
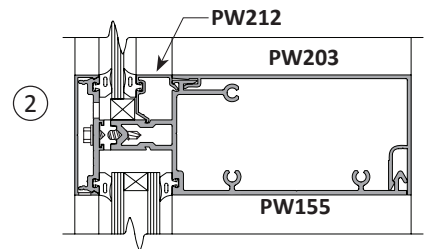
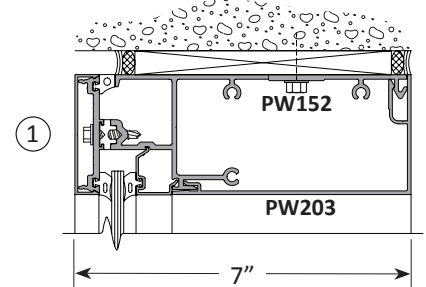
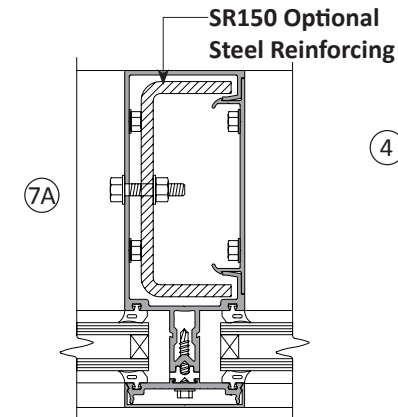
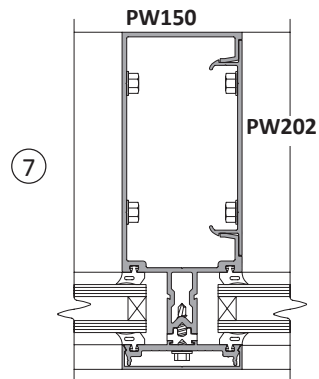
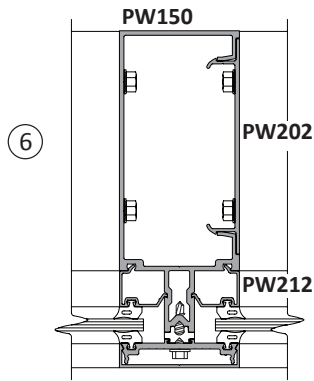
Standard Framing - Captured System

Scale: 3" = 1'-0"



Typical Elevation

- = Vision Glass
- = Spandrel Panel

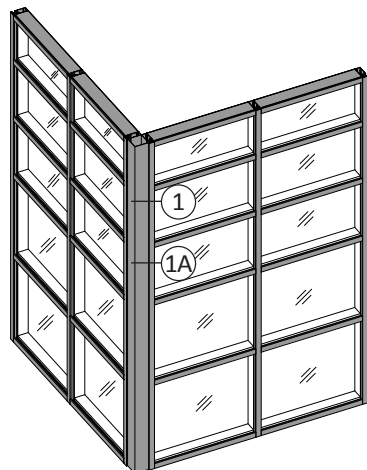


PW251·2½" x 7"

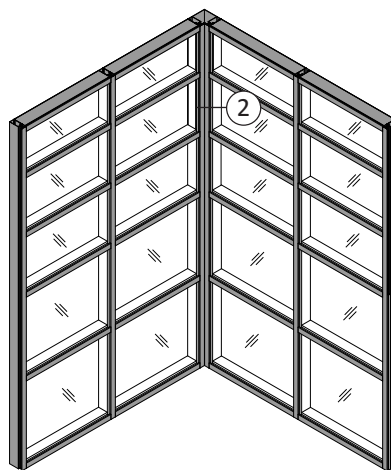
Curtain Wall

90° Corner Framing - Captured System

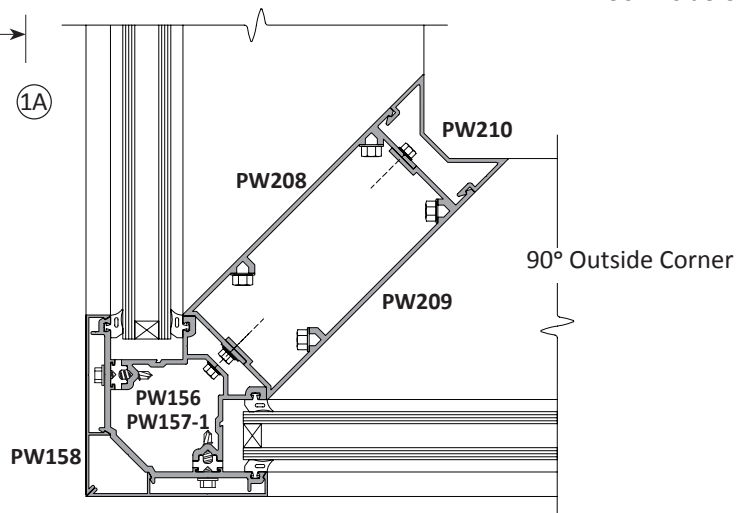
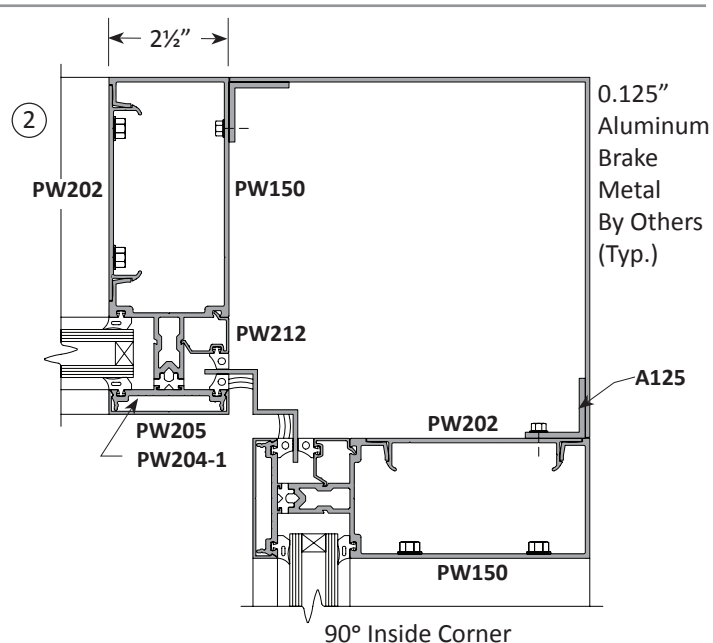
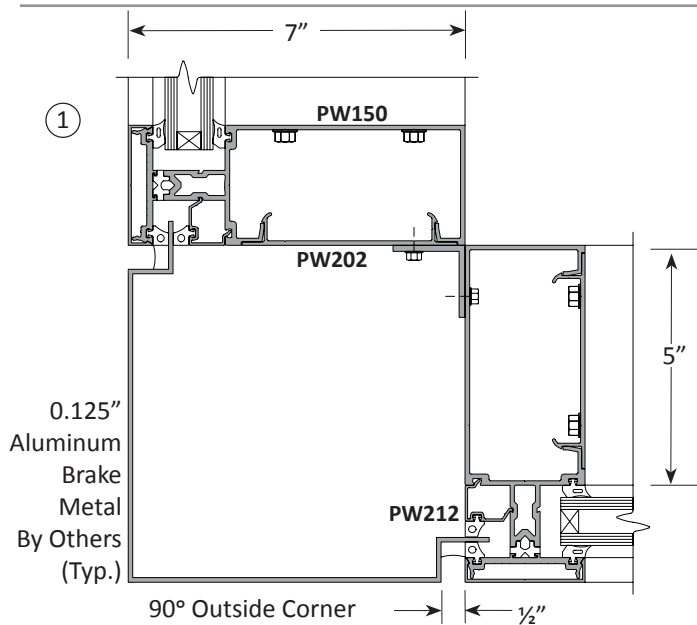
Scale: 3" = 1'-0"

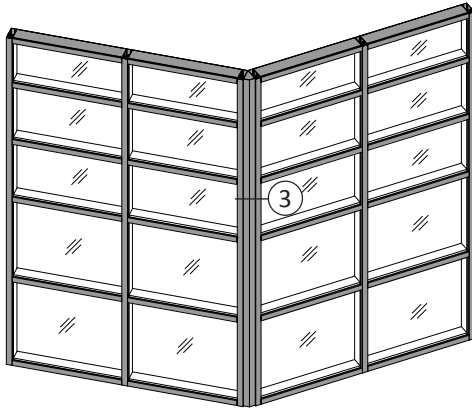


90° Outside Corner Elevation

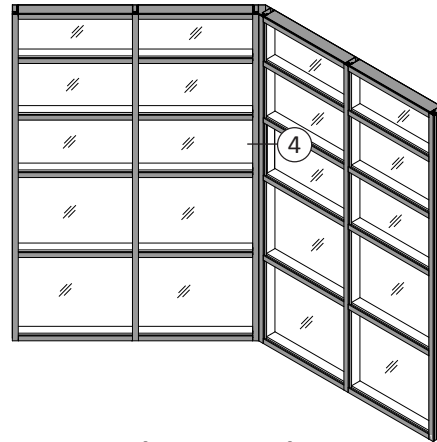


90° Inside Corner Elevation

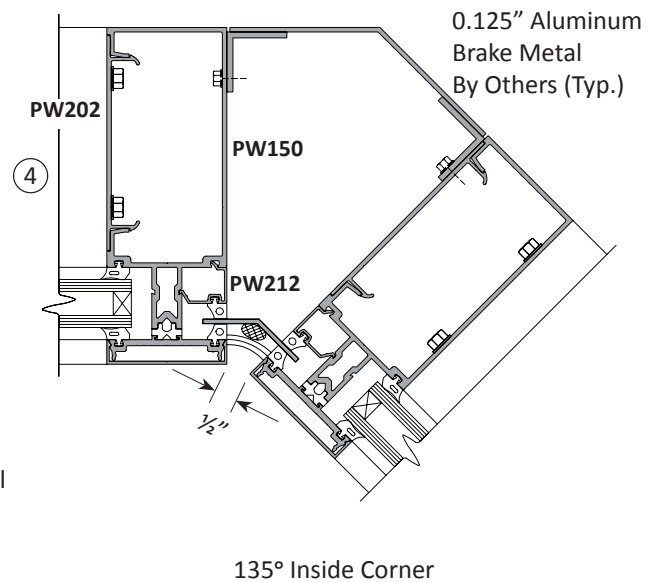
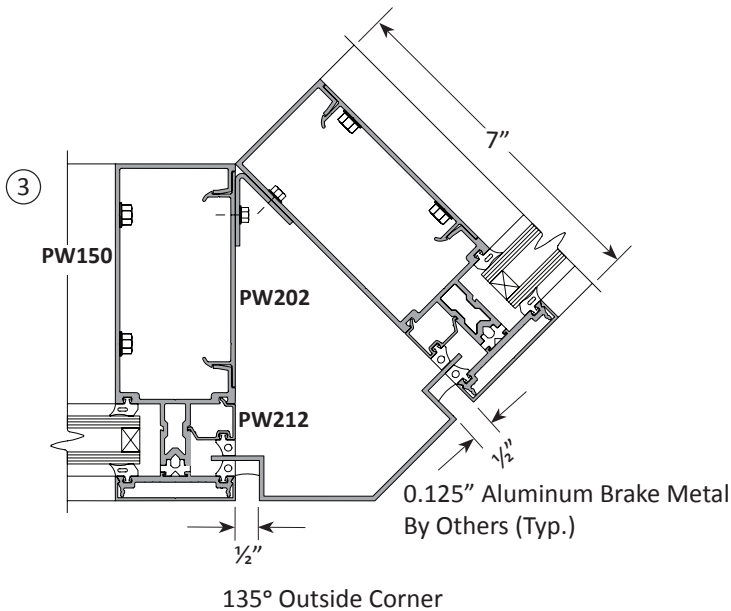




135° Outside Corner Elevation



135° Inside Corner Elevation

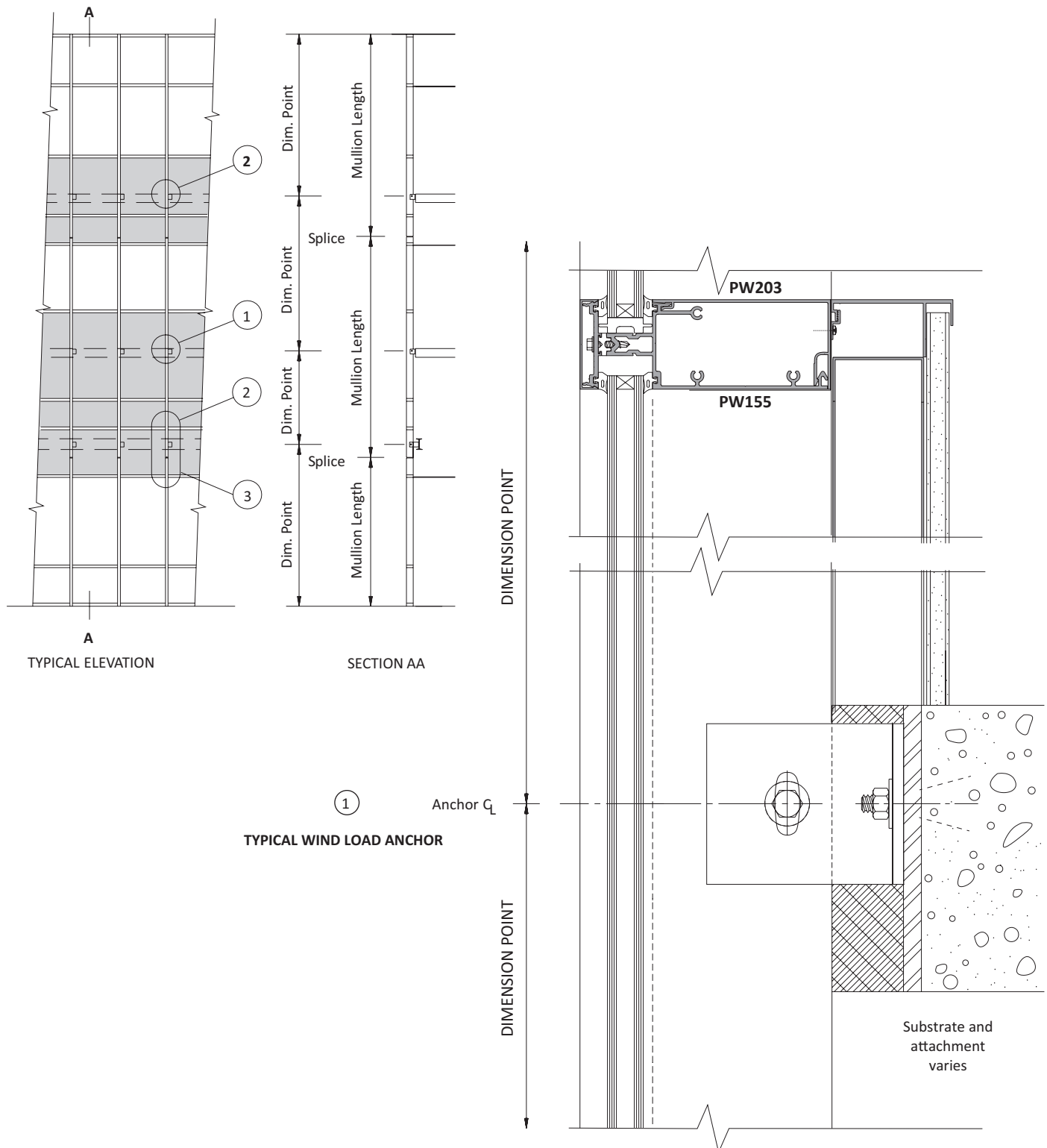


PW251·2½"x7"

Curtain Wall

Typical Wind Load Anchor - Captured System

Scale: 3" = 1'-0"



Typical Dead Load Anchor - Captured System

Scale: 3" = 1'-0"

**EXPANSION ANCHOR
(DEAD LOAD ANCHOR)**

②

Dimension Point

Mullion Length

SPLICE JOINT

③

Note: Joint width should be based on mullion length and temperature differential. A ½" gap allows for ¼" movement

Dimension Point

Mullion Length

½" min. face cap splice

1" ½" min. pressure bar splice

½" minimum mullion splice joint

Anchor C_L

Steel clip angle with clear hole

Substrate and attachment varies

6" sleeve

Splice joint with splice sleeve

PW203

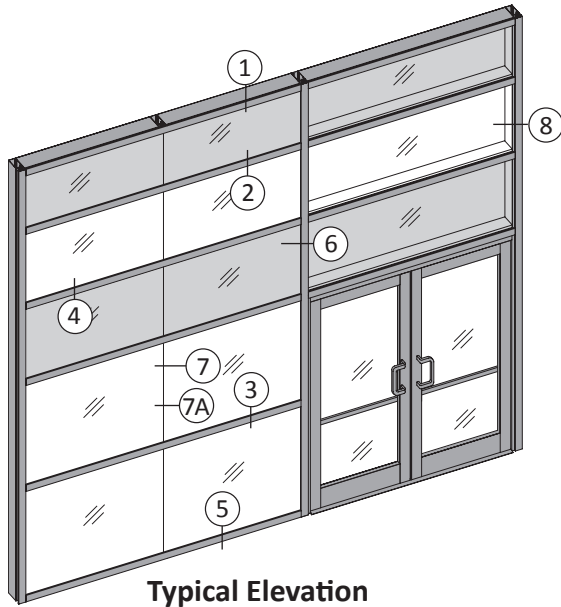
PW155

PW251·2½" x 7"

Curtain Wall

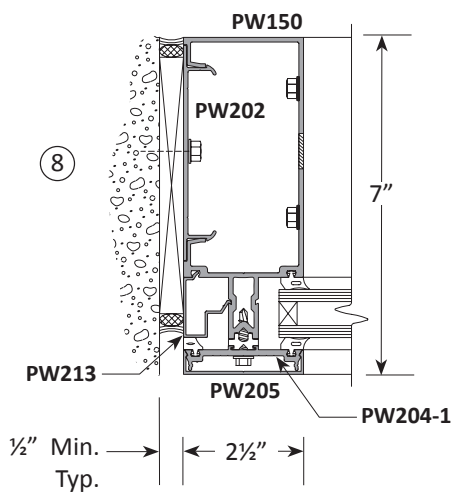
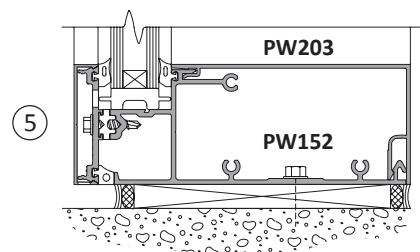
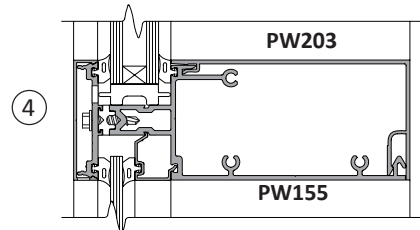
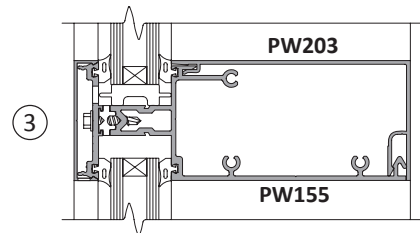
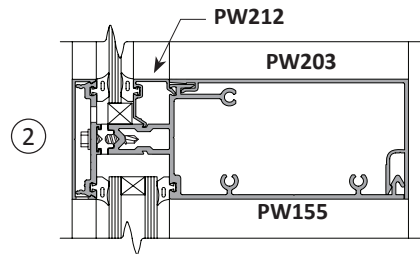
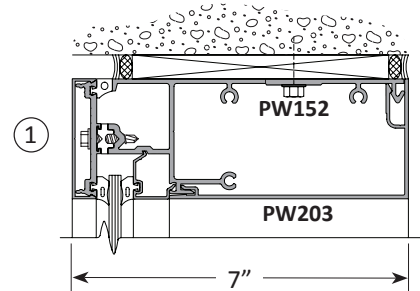
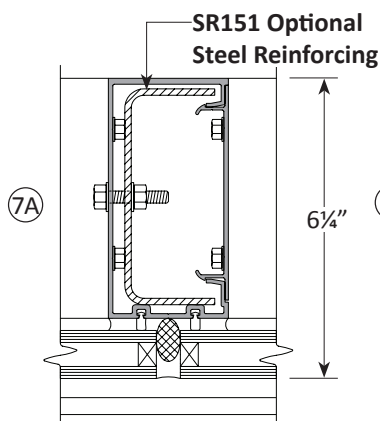
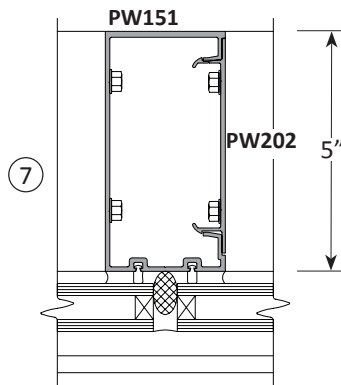
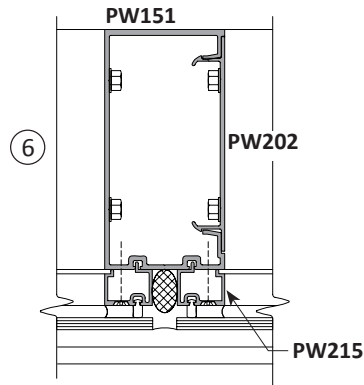
Standard Framing - Structural Silicone Glazed (SSG) System

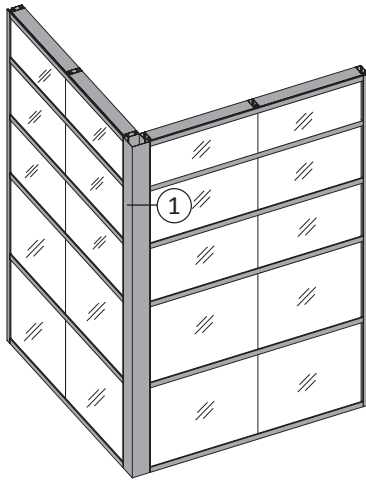
Scale: 3" = 1'-0"



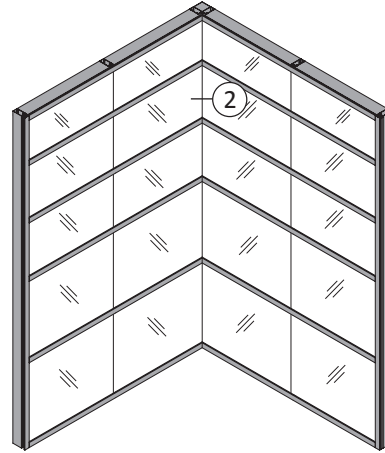
Typical Elevation

= Vision Glass
 = Spandrel Panel

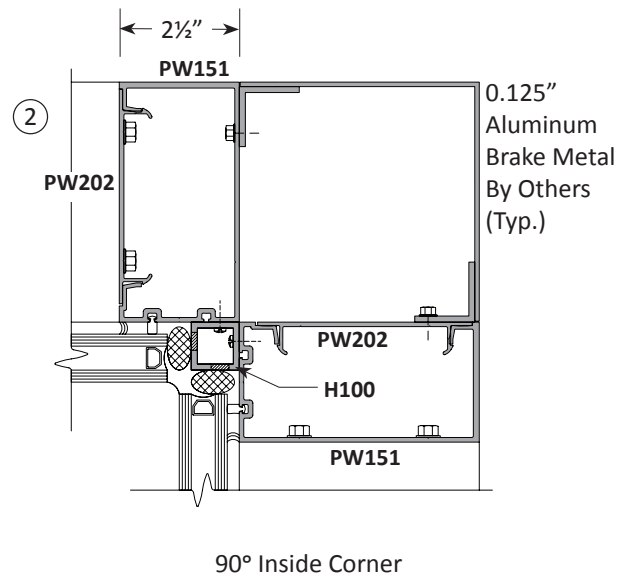
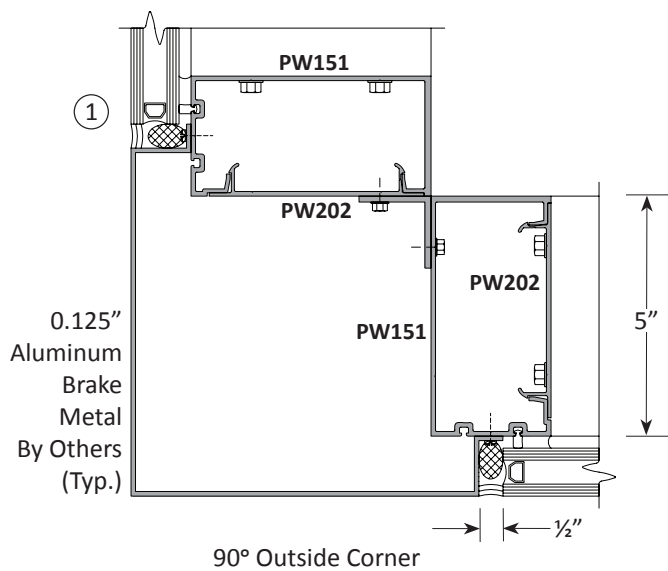




90° Outside Corner Elevation



90° Inside Corner Elevation

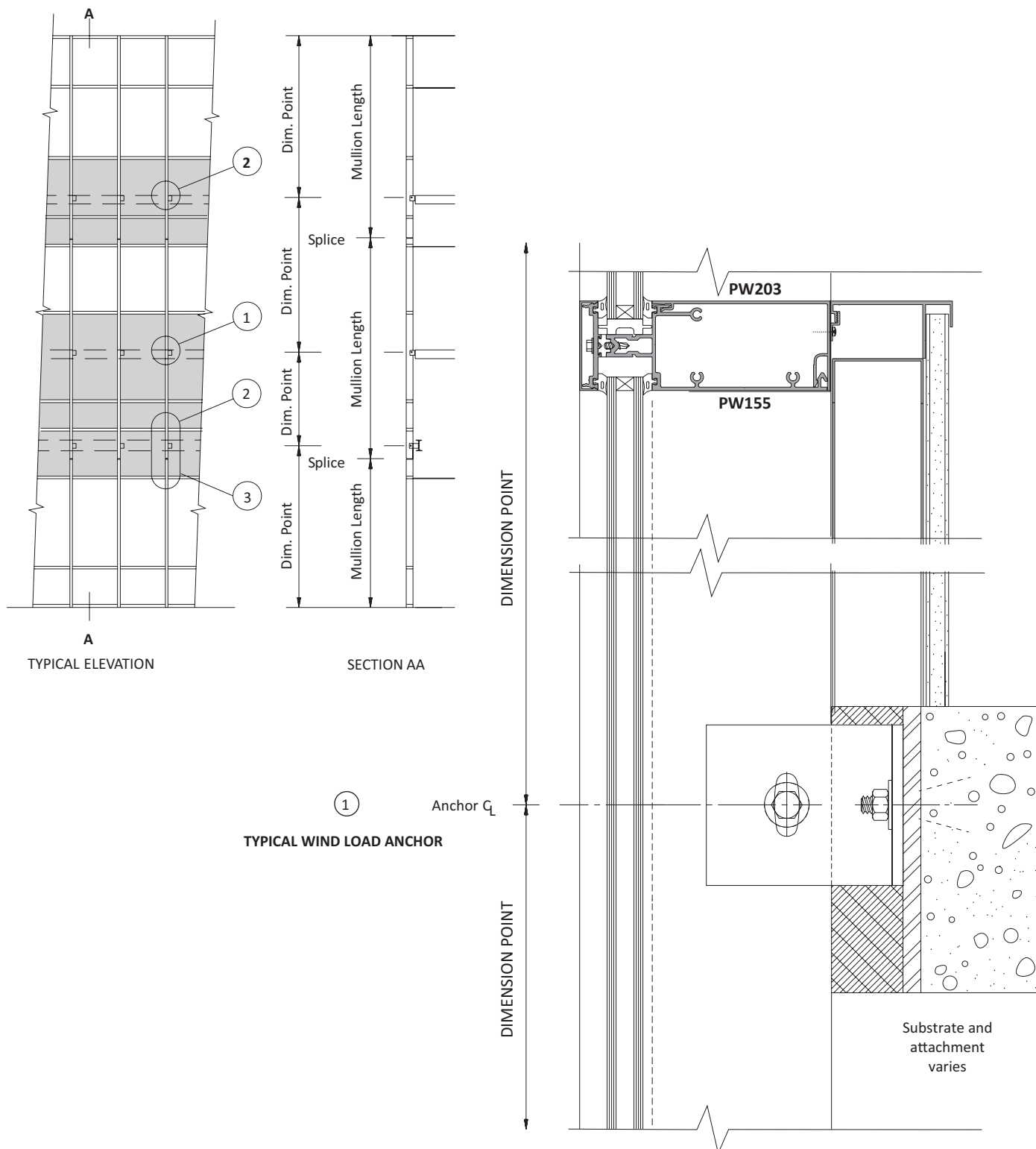


PW251·2½" x 7"

Curtain Wall

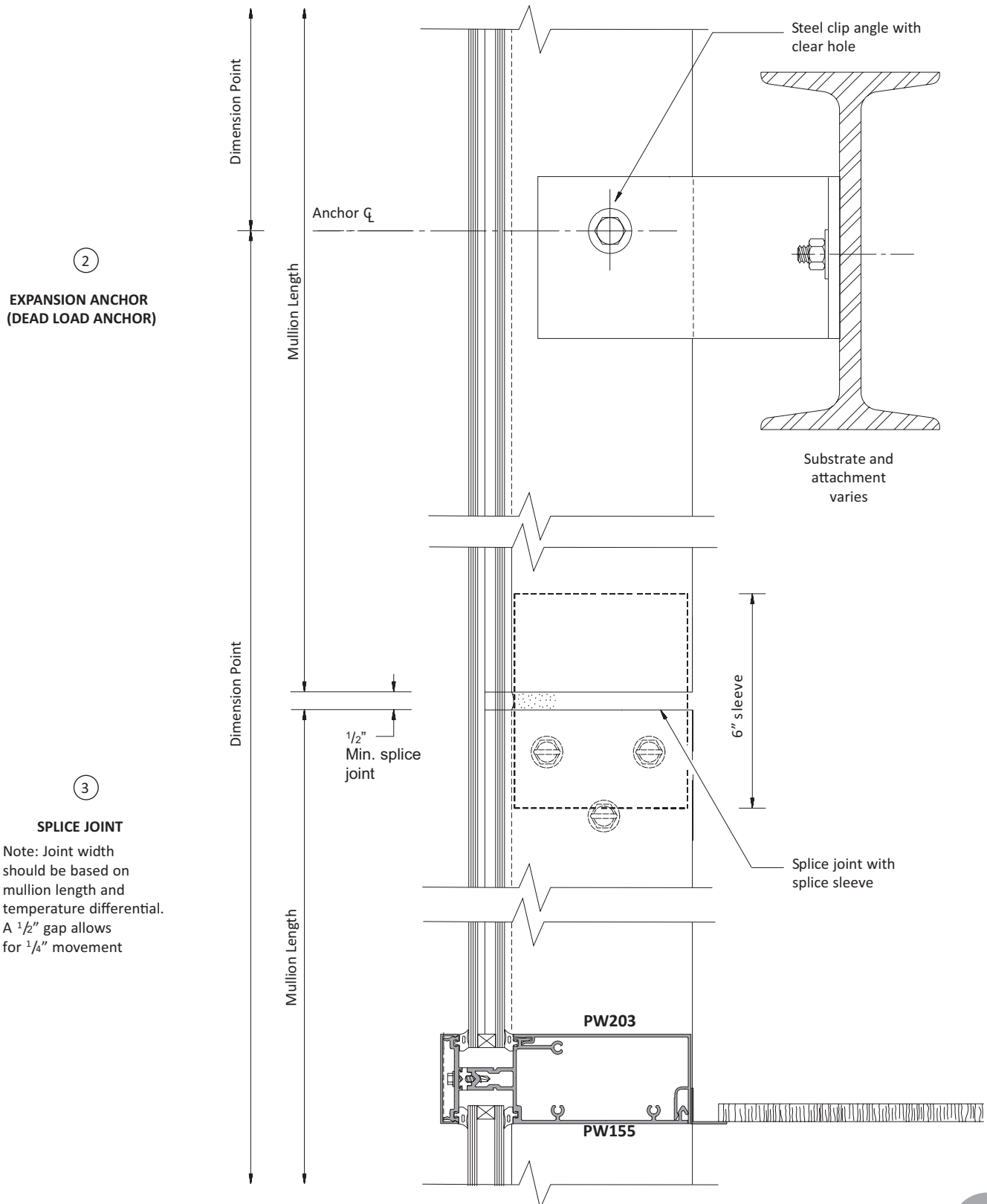
Typical Wind Load Anchoring - Structural Silicone Glazed (SSG) System

Scale: 3" = 1'



Typical Dead Load Anchoring - Structural Silicone Glazed (SSG) System

Scale: 3" = 1'-0"

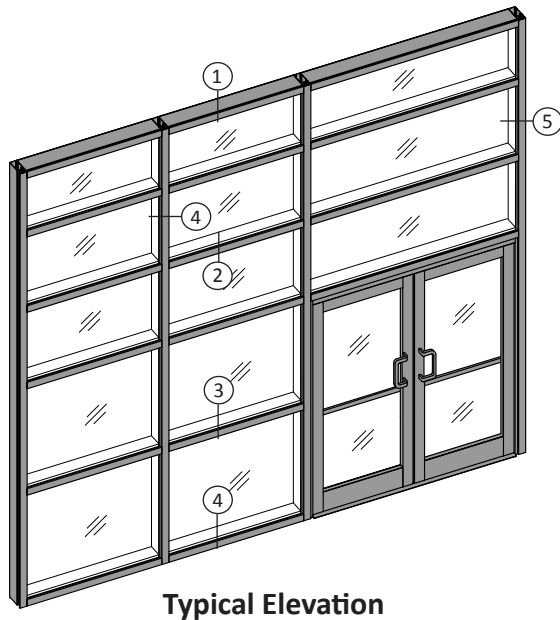


PW251·2½"x10"

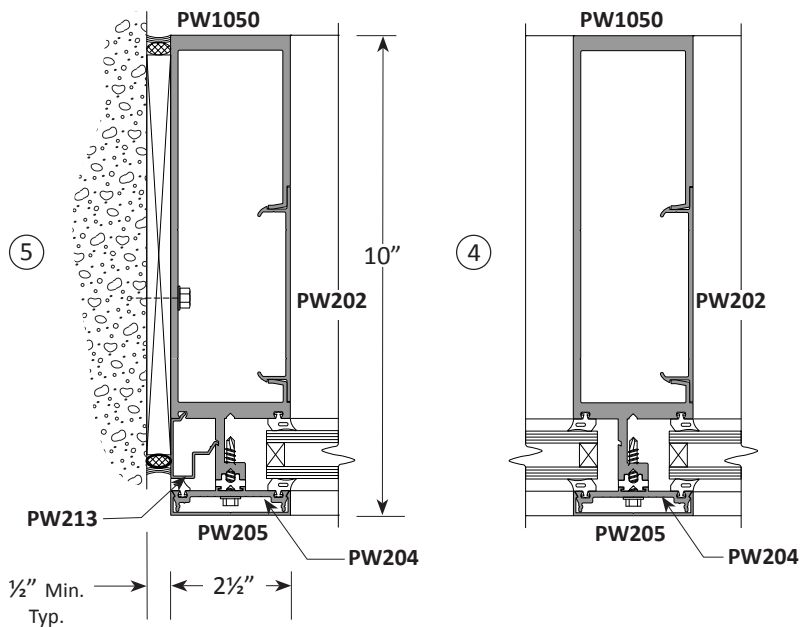
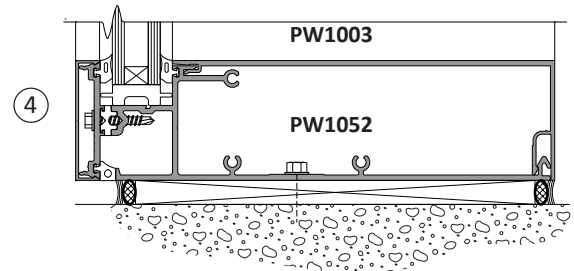
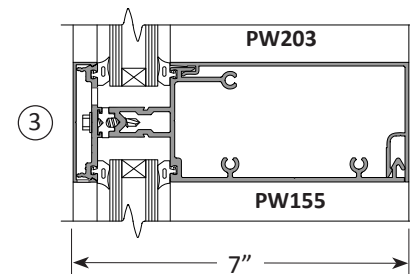
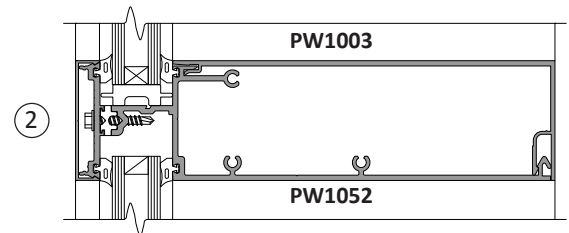
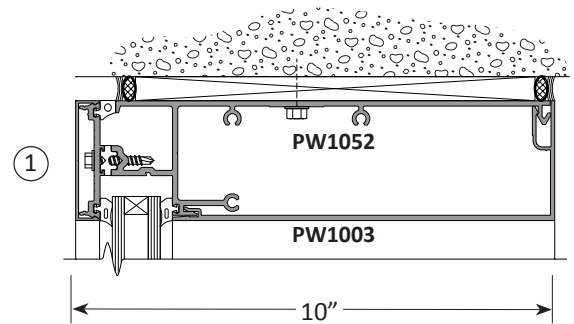
Curtain Wall

Framing for 10" Captured System

Scale: 3" = 1'-0"

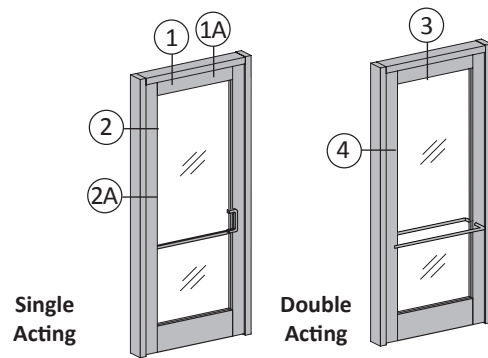


Typical Elevation

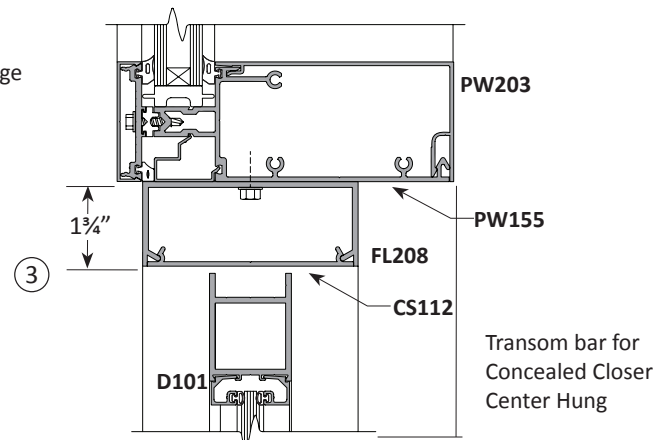
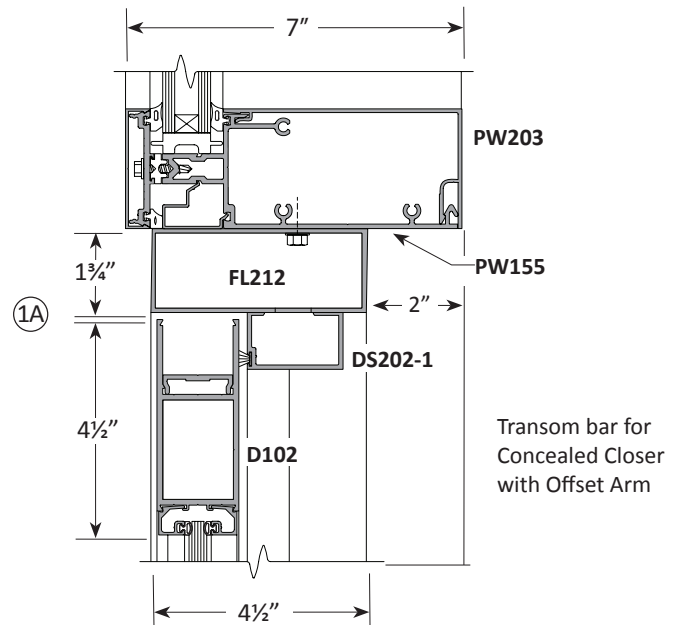
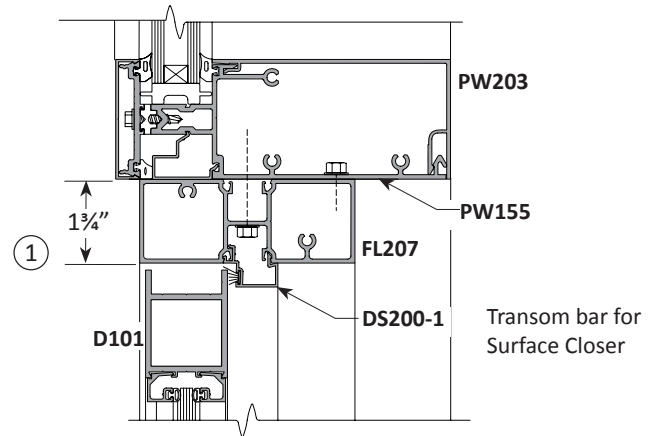
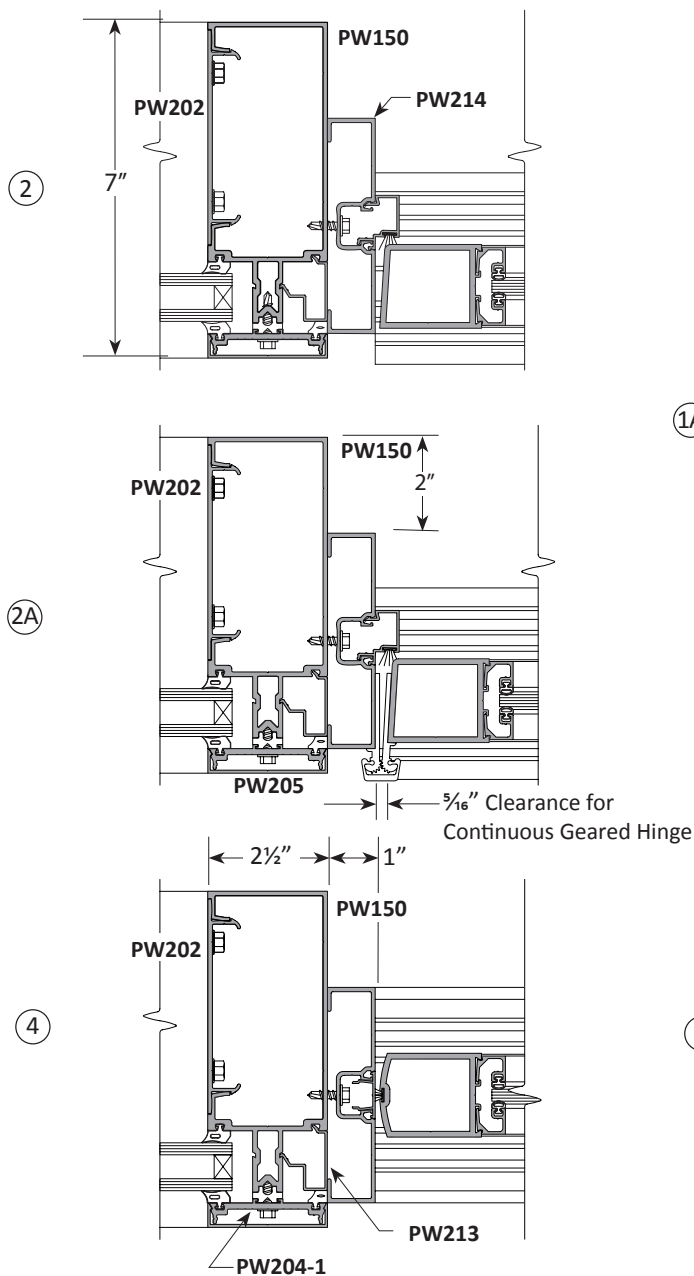


Entrance Framing

Scale: 3" = 1'-0"



Typical Elevation



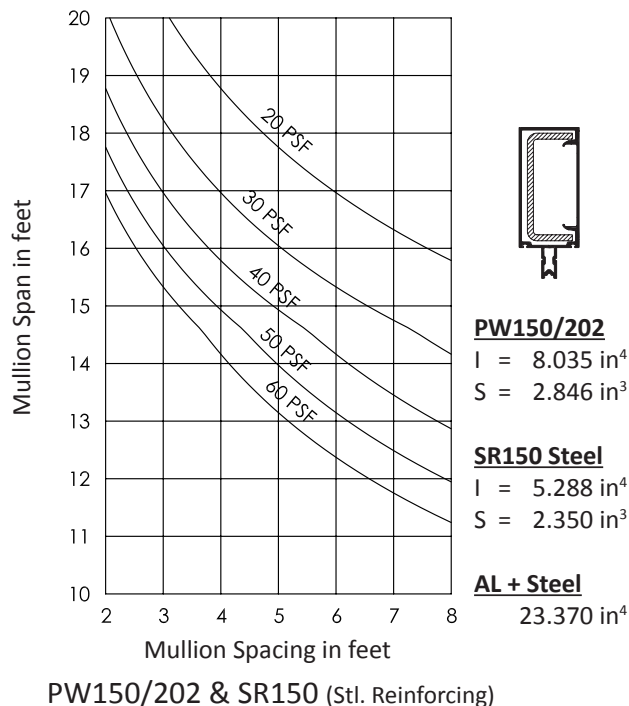
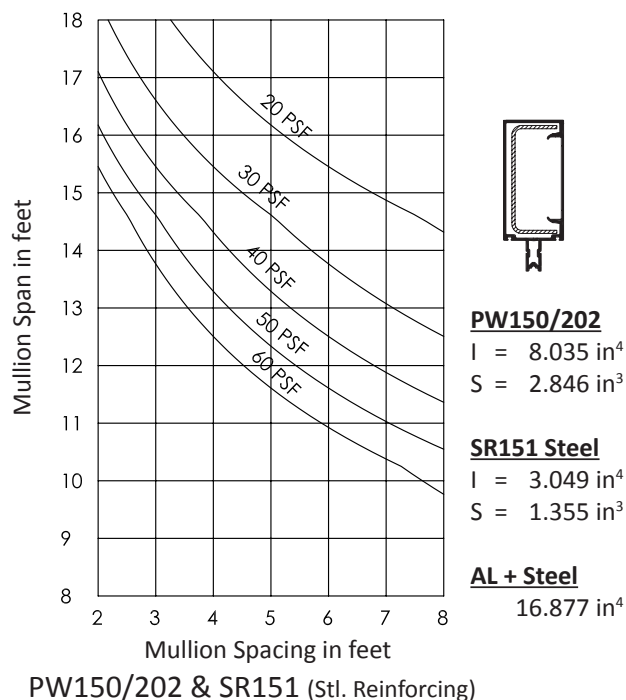
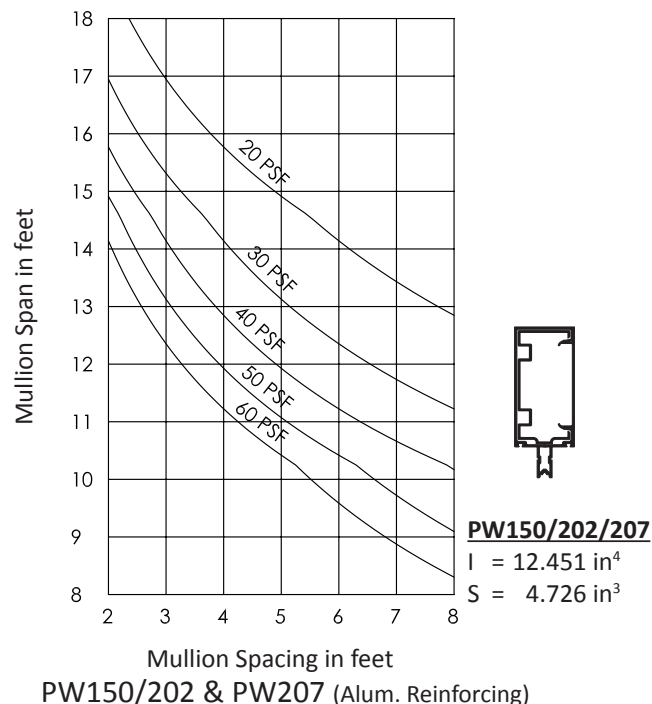
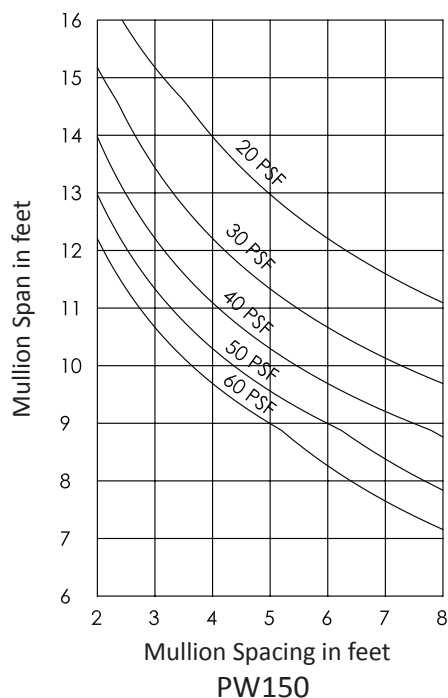
PW251·2½"x7"

Curtain Wall

Wind Load Charts - Captured Single Span

(A 4/3 increase in allowable stress is not reflected in these curves)

Curves are based on deflection limitations of L/175 and reflect the limiting value for mullions with horizontals. Allowable wind load stresses for aluminum alloy 6063-T6 (25 ksi / 1.65 = 15.15 ksi) and A36 steel (36 ksi x 0.67 = 24 ksi) were used.

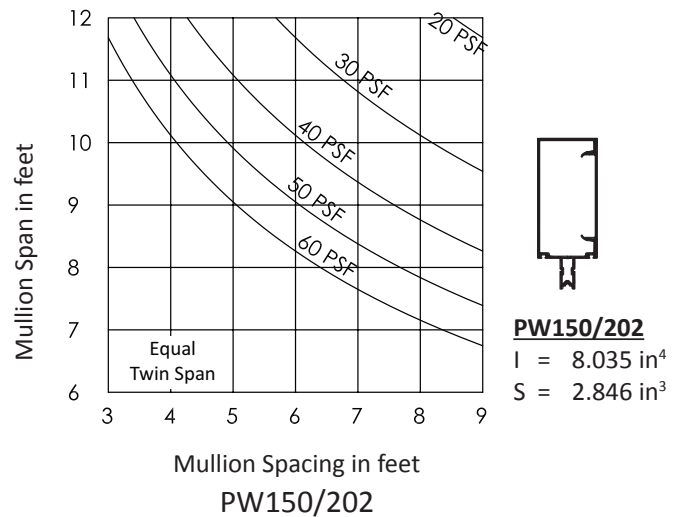
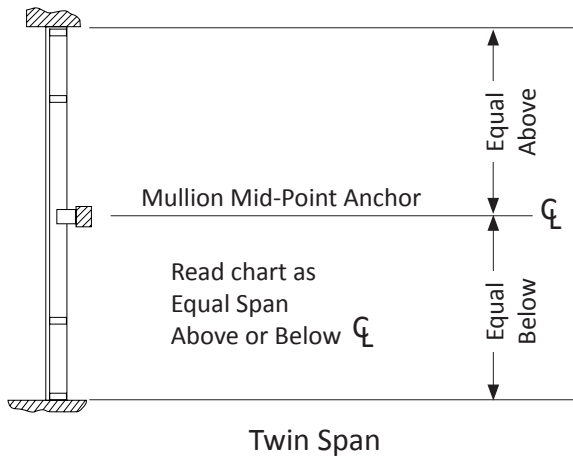


Wind Load Charts - Captured Equal Twin Spans

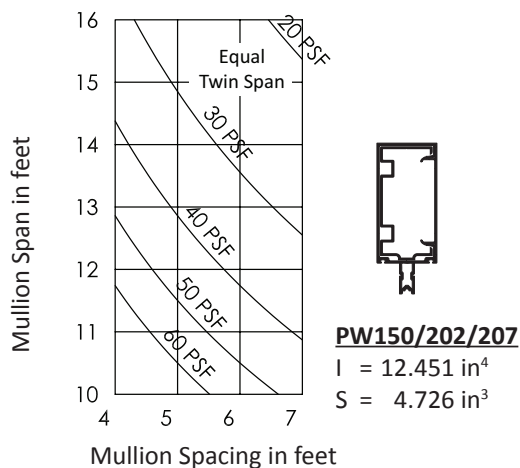
(A 4/3 increase in allowable stress is not reflected in these curves)

Curves are based on deflection limitations of L/175 and reflect the limiting value for mullions with horizontals. Allowable wind load stresses for aluminum alloy 6063-T6 (25 ksi / 1.65 = 15.15 ksi) and A36 steel (36 ksi x 0.67 = 24 ksi) were used.

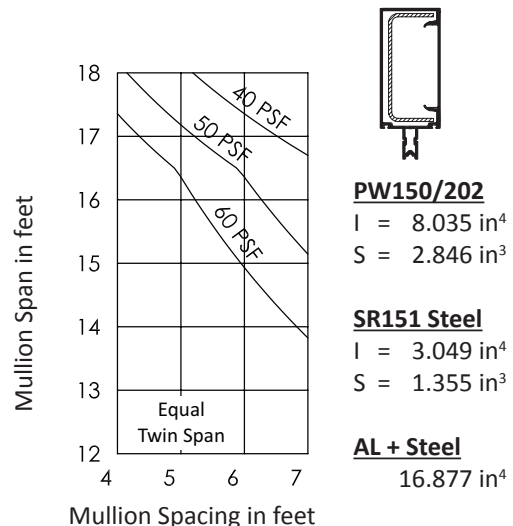
Upper half of curve omitted



Upper half of curve omitted



PW150/202 & PW207 (Alum. Reinforcing)



PW150/202 & SR151 (Stl. Reinforcing)

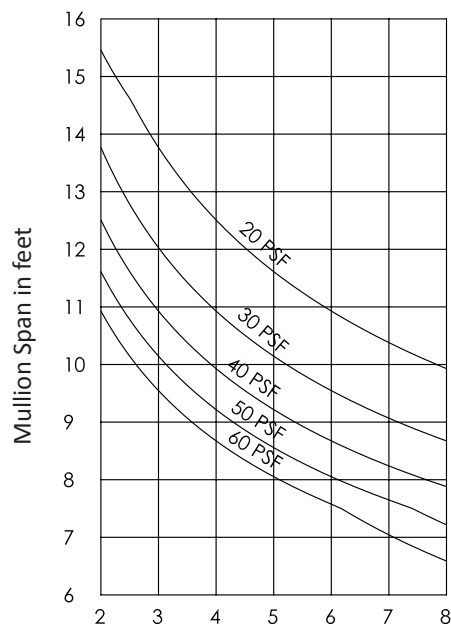
PW251·2½" x 7"

Curtain Wall

Wind Load Charts - Structural Silicone Glazed Single Span

(A 4/3 increase in allowable stress is not reflected in these curves)

Curves are based on deflection limitations of L/175 and reflect the limiting value for mullions with horizontals. Allowable wind load stresses for aluminum alloy 6063-T6 (25 ksi / 1.65 = 15.15 ksi) and A36 steel (36 ksi x 0.67 = 24 ksi) were used.



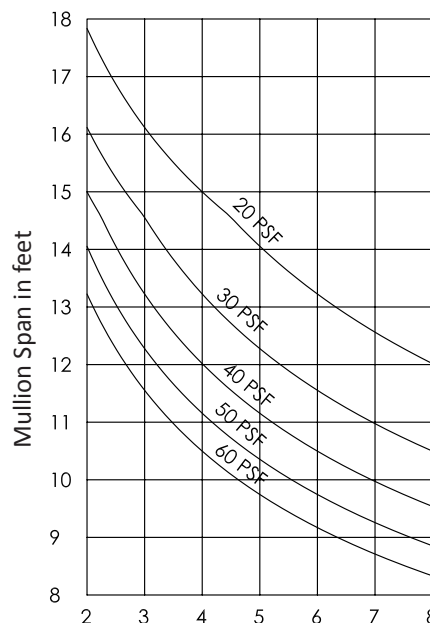
PW151/202

$I = 6.009 \text{ in}^4$

$S = 2.472 \text{ in}^3$

Mullion Spacing in feet

PW151



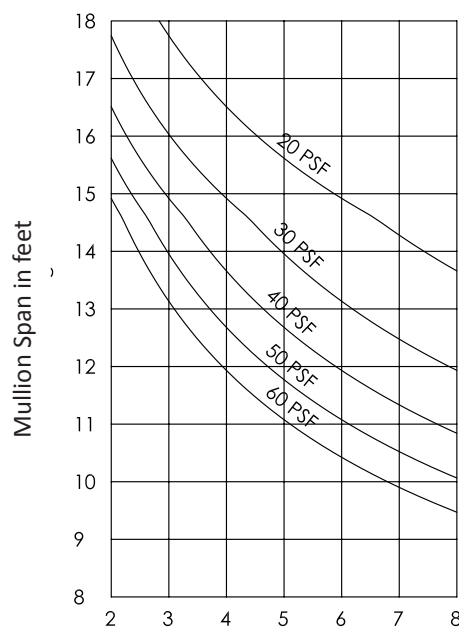
PW151/202/207

$I = 10.420 \text{ in}^4$

$S = 4.352 \text{ in}^3$

Mullion Spacing in feet

PW151 & PW207 (Alum. Reinforcing)



PW151/202

$I = 6.009 \text{ in}^4$

$S = 2.472 \text{ in}^3$

SR151 Steel

$I = 3.049 \text{ in}^4$

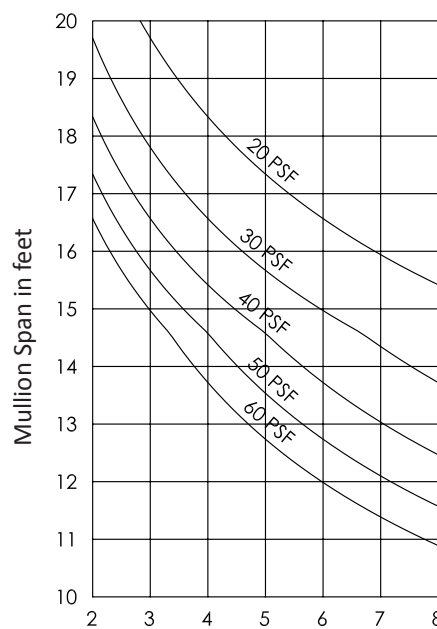
$S = 1.355 \text{ in}^3$

AL + Steel

14.810 in^4

Mullion Spacing in feet

PW151/202 & SR151 (Stl. Reinforcing)



PW151/202

$I = 6.009 \text{ in}^4$

$S = 2.472 \text{ in}^3$

SR150 Steel

$I = 5.288 \text{ in}^4$

$S = 2.350 \text{ in}^3$

AL + Steel

21.344 in^4

Mullion Spacing in feet

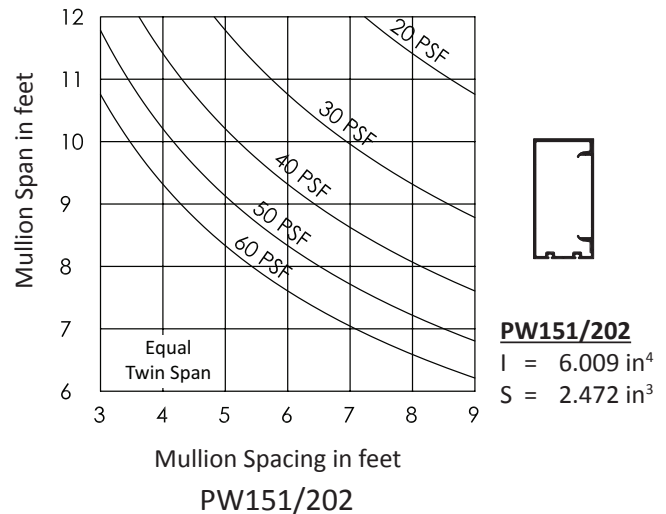
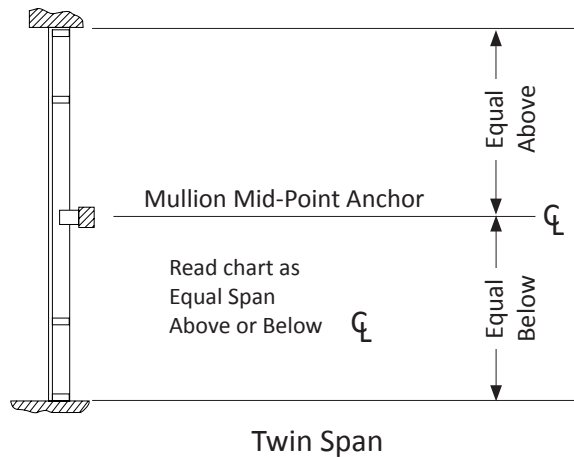
PW151/202 & SR150 (Stl. Reinforcing)

Wind Load Charts - Structural Silicone Glazed Equal Twin Spans

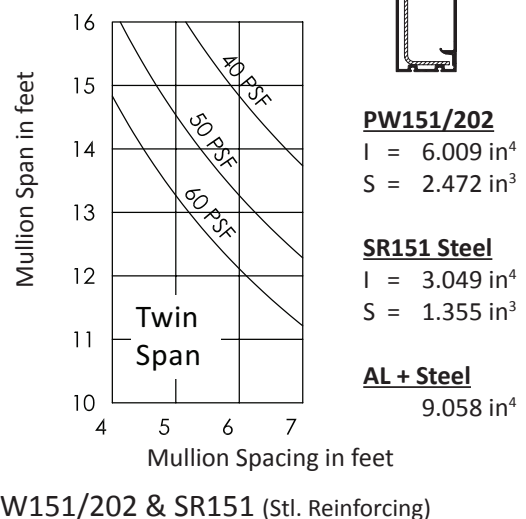
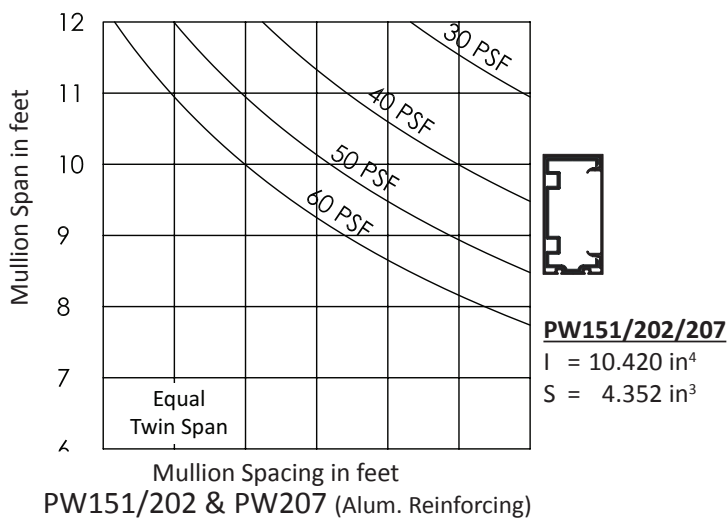
(A 4/3 increase in allowable stress is not reflected in these curves)

Curves are based on deflection limitations of L/175 and reflect the limiting value for mullions with horizontals. Allowable wind load stresses for aluminum alloy 6063-T6 (25 ksi / 1.65 = 15.15 ksi) and A36 steel (36 ksi x 0.67 = 24 ksi) were used.

Upper half of curve omitted



Upper half of curve omitted



PW251·2½" x 7"

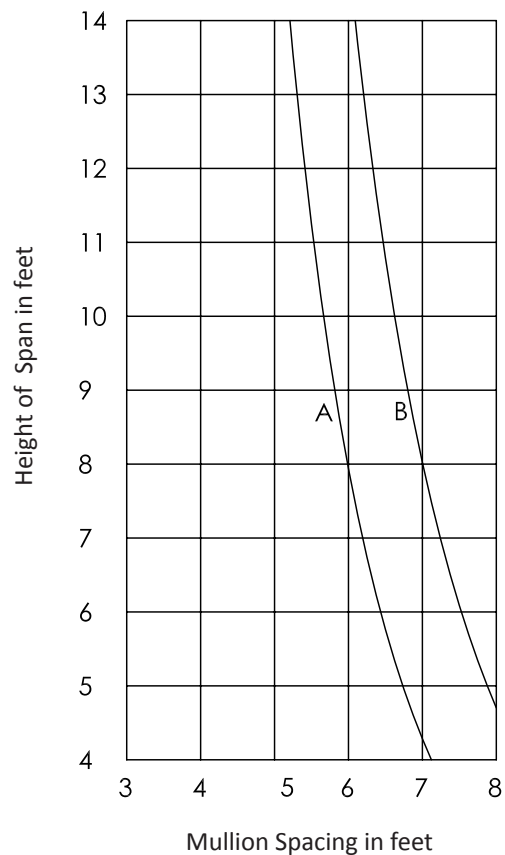
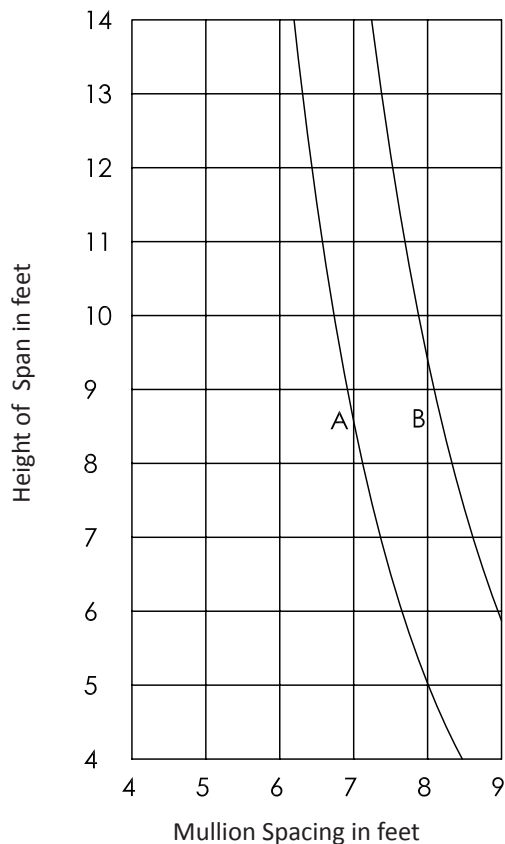
Curtain Wall

Dead Load Charts

Dead load charts are based on 1/8" maximum allowable deflection at the center of an intermediate horizontal. Curves are based on glass resting on two setting blocks at 1/4 or 1/8 point loading locations.

CURVE A = 1/4 points

CURVE B = 1/8 points or 8" from corners (whichever is larger)

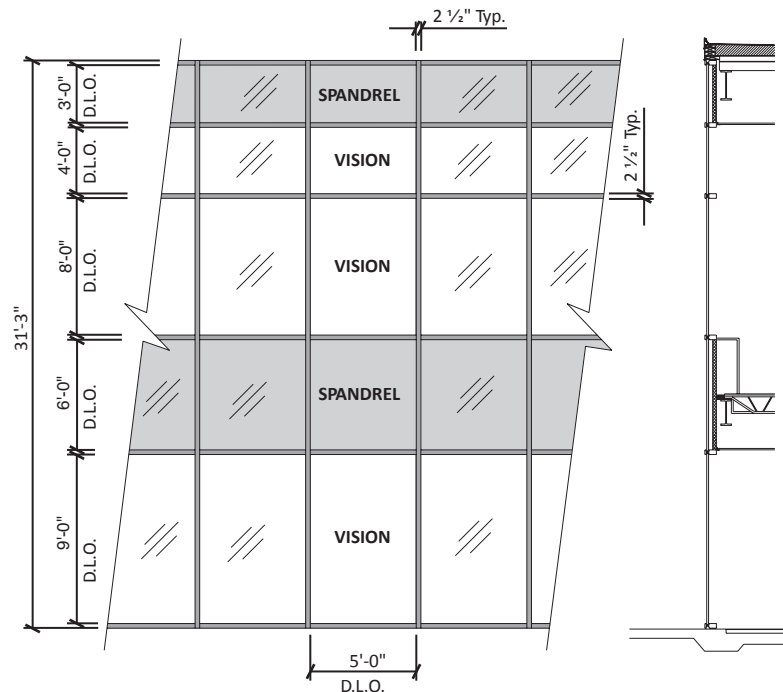


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507, utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

**Project Specific U-factor
Example Calculation
(Based on single bay of Curtain Wall/Window Wall)**



Vision Area

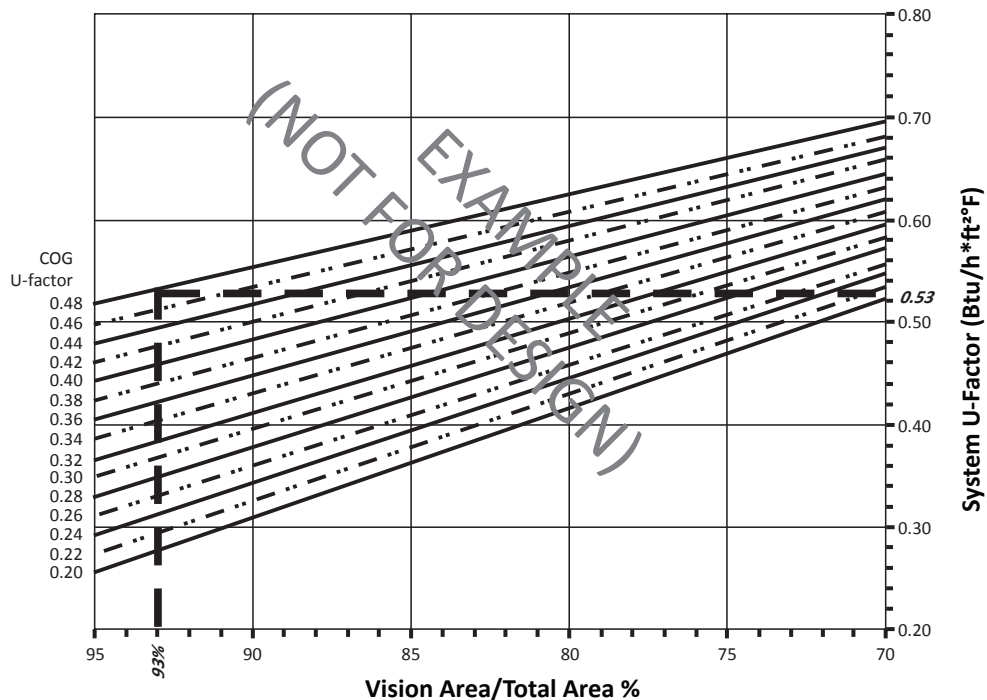
Example Glass U-Factor	= 0.48 Btu/(ft ² · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft ²
Total Area (Vision)	= 5' 2 ½" (9' 3 ¾" + 8' 2 ½" + 4' 2 ½") = 113.2 ft ²
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100
	= (105.0 ÷ 113.2) 100 = 93%

Spandrel Area

Example Spandrel R-Value	= 15 (ft ² · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft ²
Total Area (Spandrel)	= 5' 2 ½" (6 + 3) = 45.0 ft ²
Percentage of Spandrel	= (Spandrel Area ÷ Total Area)100
	= (49.0 ÷ 49.6) 100 = 91%

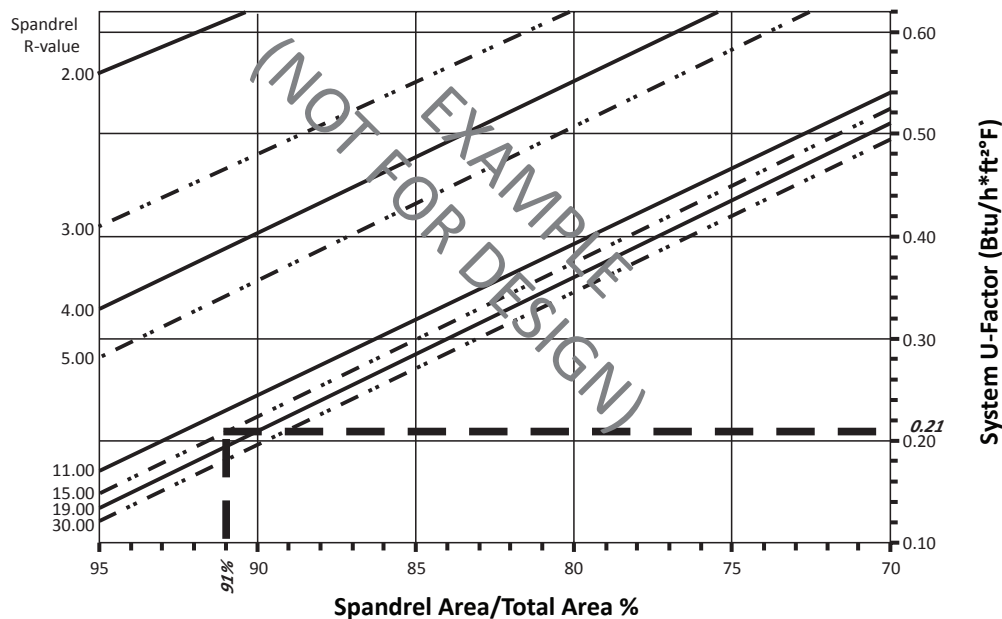
Thermal Charts

System U-Factor vs. Percentage of Vision Area



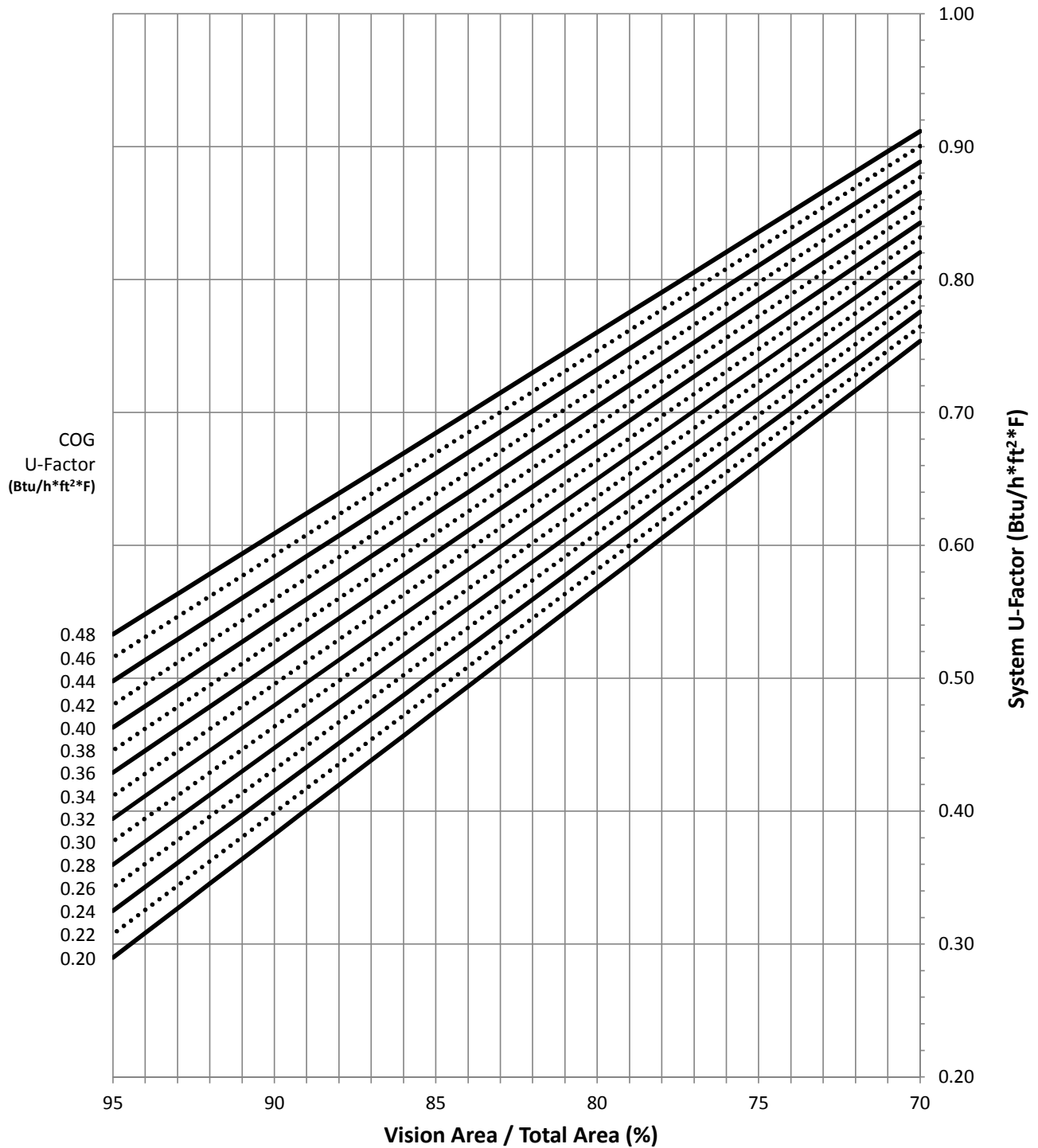
Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft²·°F)

System U-Factor vs. Percentage of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft²·°F)

System U-Factor vs. Percentage of Vision Area

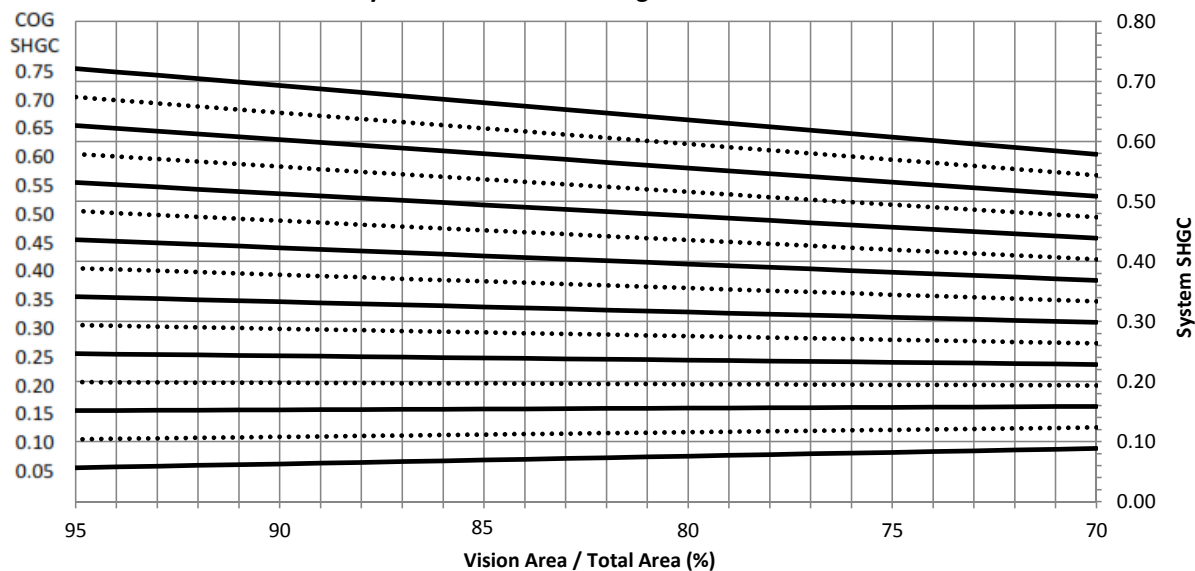


PW251·2½"×7"

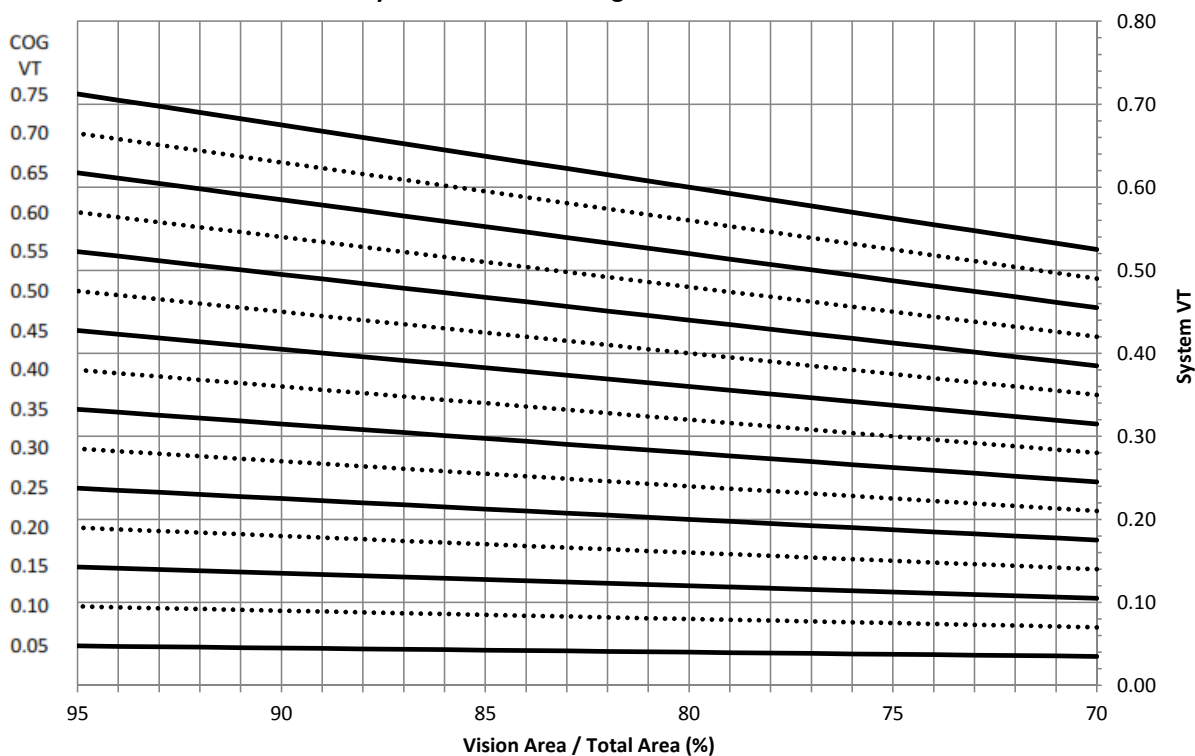
Curtain Wall

Thermal Charts

System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.62
2	0.46	0.60
3	0.44	0.59
4	0.42	0.57
5	0.40	0.55
6	0.38	0.54
7	0.36	0.52
8	0.34	0.50
9	0.32	0.49
10	0.30	0.47
11	0.28	0.45
12	0.26	0.44
13	0.24	0.42
14	0.22	0.41
15	0.20	0.39

**Size-Specific SHGC Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass SHGC	Overall SHGC
0.75	0.69
0.70	0.65
0.65	0.60
0.60	0.56
0.55	0.51
0.50	0.47
0.45	0.42
0.40	0.38
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20
0.15	0.15
0.10	0.11
0.05	0.06

**Size-Specific VT Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass VT	Overall VT
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

- System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
- SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section C2
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PW250
PANELIZED CURTAIN WALL

2½" x 6¼"
for ¼" Glass

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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08900 ALUMINUM CURTAIN WALL

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
- 1. Types of Coral Architectural Products include:
 - a. Series PW250 Panelized Curtain Wall System: 2-1/2" x 6-1/4" outside glazed captured pressure wall system for 1/4" glazing infill. (Select)
 - b. Series PW250 Panelized Curtain Wall System: 2-1/2" x 6-1/4" outside glazed (SSG) structural silicone glazed pressure wall system for 1/4" glazing infill. (Select)
- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 13 PSF as defined in AAMA 501.
 - 4. Uniform Load: A static air design load of 65 PSF shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

GUIDE SPECIFICATION

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
 - 1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web address: www.coralap.com

GUIDE SPECIFICATION

2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: PW250 outside glazed pressure wall curtain wall system

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
 - c. Framing Member Profile: 2-1/2 x 6-1/4" nominal dimension; pressure bar; screw-spline fabrication
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Architectural Aluminum
 - b. Series PW250 Panelized System: 2-1/2" x 6-1/4" nominal dimension; pressure bar; screw-spline fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Storefront and Components):
 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Architectural Aluminum Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: Aluminum; When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

GUIDE SPECIFICATION

2.05 Fabrication

A. General:

1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
3. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

A. Shop Finishing

1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum storefront specified herein from a single source.

1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- #### A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- #### A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure bars anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.

GUIDE SPECIFICATION

3. Water Drainage: Each light of glass shall be compartmentalized by using end dams at horizontal/vertical joint intersections and silicone sealant to divert water to the horizontal weeps. Weep holes shall be located in the horizontal pressure bars and covers to divert water to the exterior of the building.
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FEATURES AND BENEFITS

System Description

Panelized construction using proven screw spline joinery reduces fabrication and installation time. Interior horizontal snap-on trim covers increase quality by allowing inspection and repair of critical horizontal/vertical seals and perimeter anchor attachment to substrate prior to or after glazing.

Framing panels can be shop fabricated, assembled, transported to job site and then coupled together creating a complete panelized curtain wall installation.

Glazing Features:

- Same EPDM dense gasket used on interior and exterior at glass

Screw spline joinery allows:

- Coral Punch die shop fabrication
- Die set punches spline and pressure bar weep holes
- Panelized frame assembly for easy transporting and installation
- Eliminates "T" anchors

Pressure Bars:

- Factory installed EPDM thermal isolator with attachment holes pre-punched 9" O.C.

Interior Snap-on Covers:

- Inspection and/or repair of critical joint seal areas prior to and after glazing
- Perimeter anchor attachment and inspection

Injection molded plastic end dams and bridges at horizontals provide:

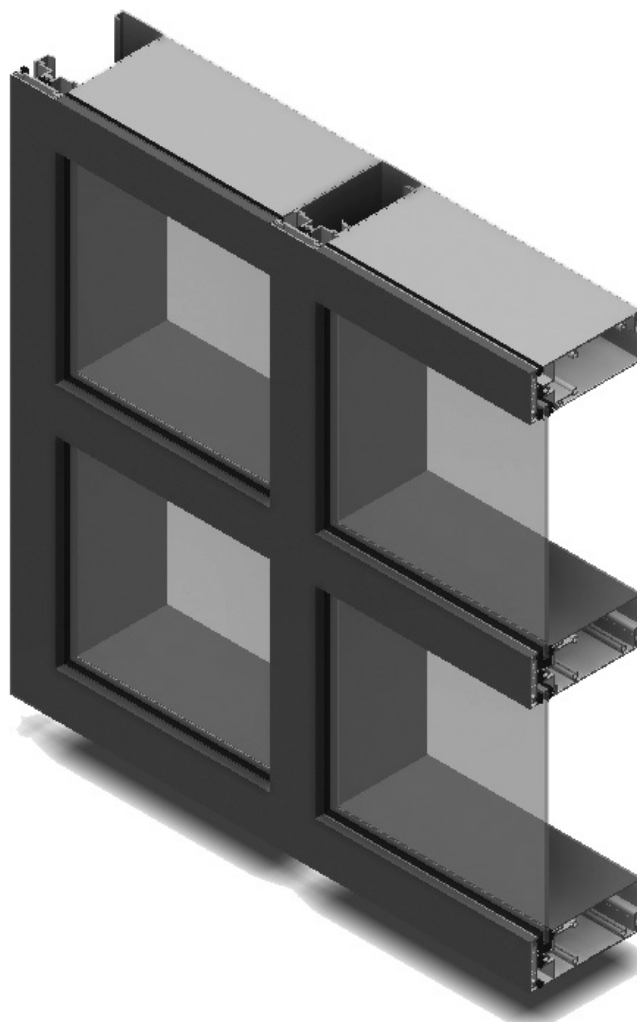
- Tight seals at intersection of vertical/horizontal joints for zone glazing

Injection molded plastic top and bottom vertical mullion caps:

- Accurate compression fit
- Provides continuous perimeter seal

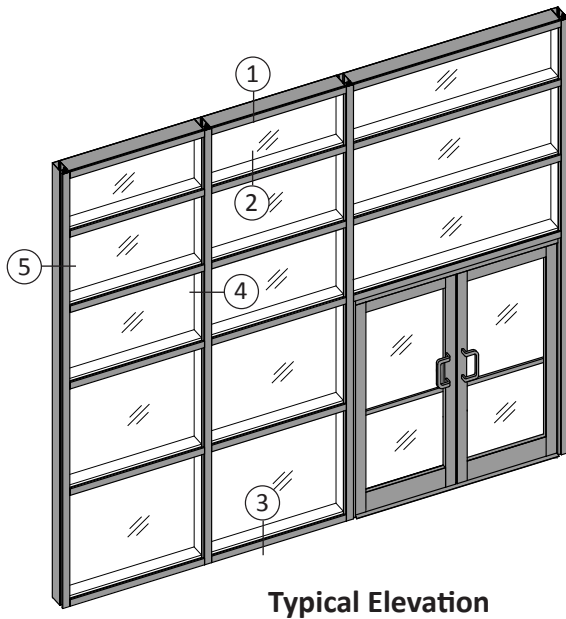
Injection molded plastic temporary glazing retainer:

- Reduces labor
- Distributes uniform pressure on glass reducing risk of breaking glass
- Reusable for next project

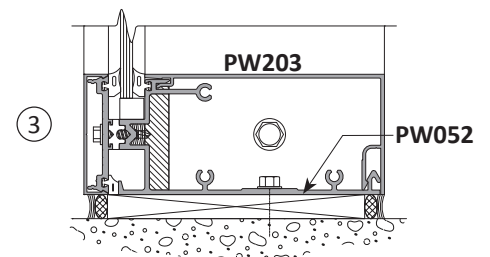
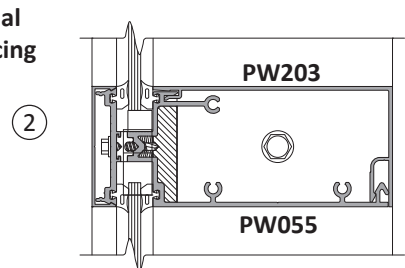
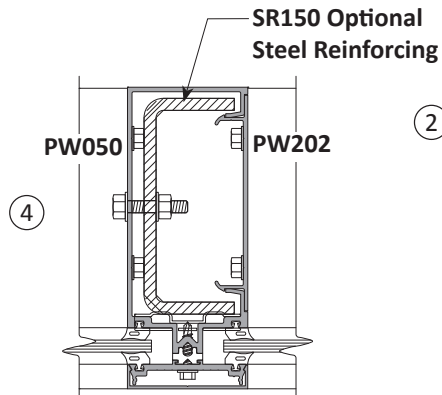
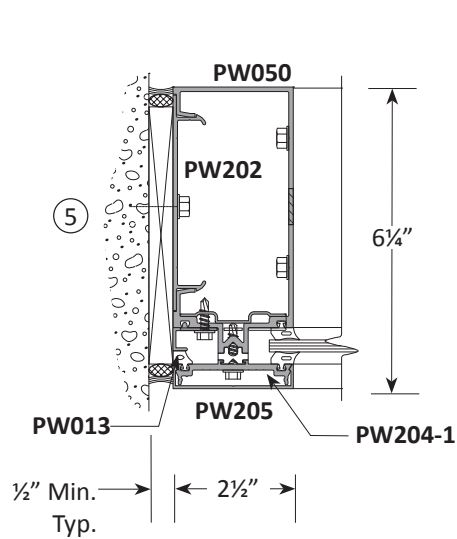
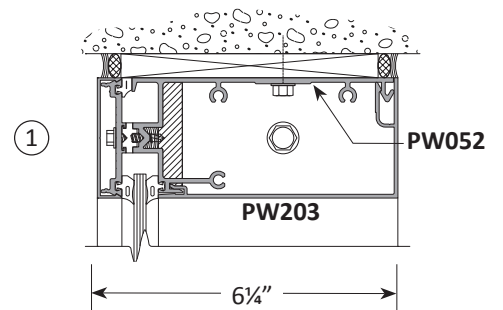


Performance Test Standards

- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- Florida Product Approval Number - FL15799 (Non-impact for use outside HVHZ)



Typical Elevation

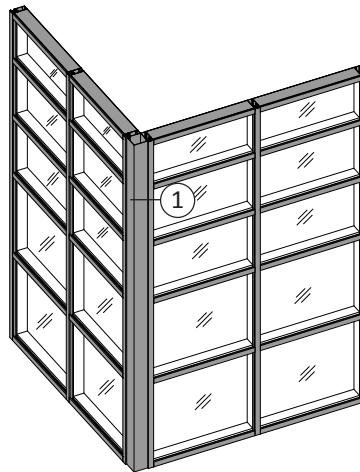


PW250·2½" x 6¼"

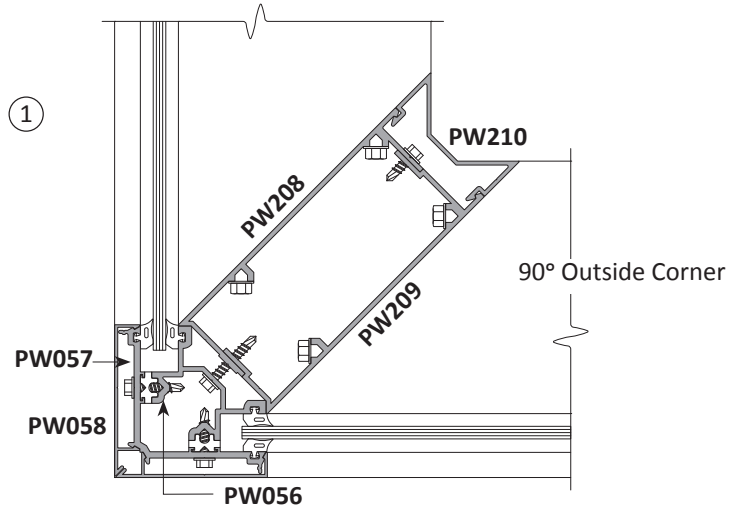
Curtain Wall

90° Corner Framing - Captured System

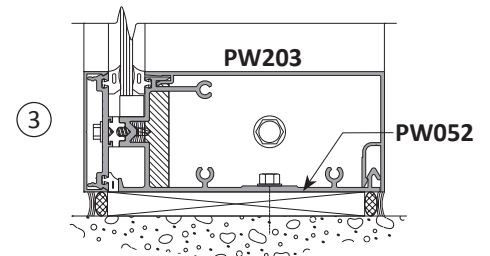
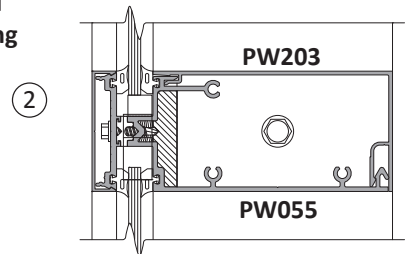
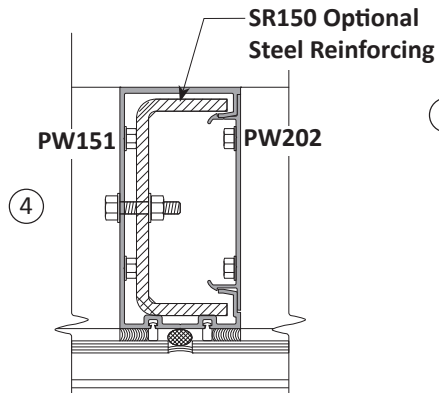
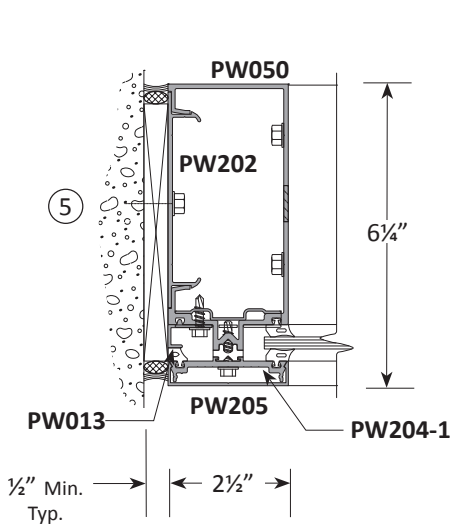
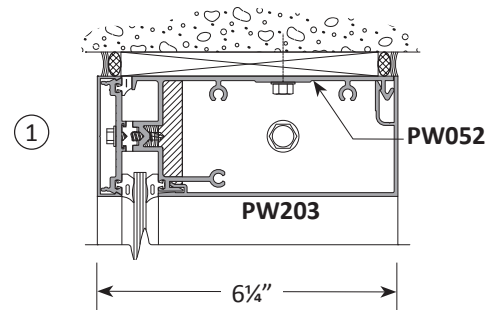
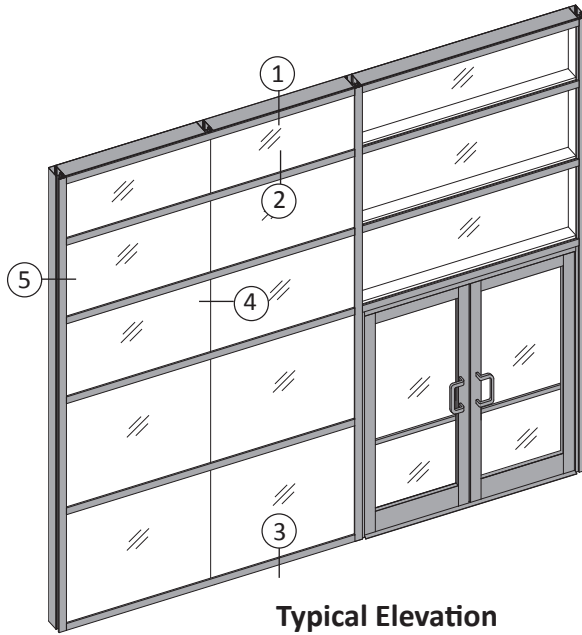
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90° Outside Corner Elevation



Standard Framing - Structural Silicone Glazed (SSG) System
Scale: 3" = 1'-0"

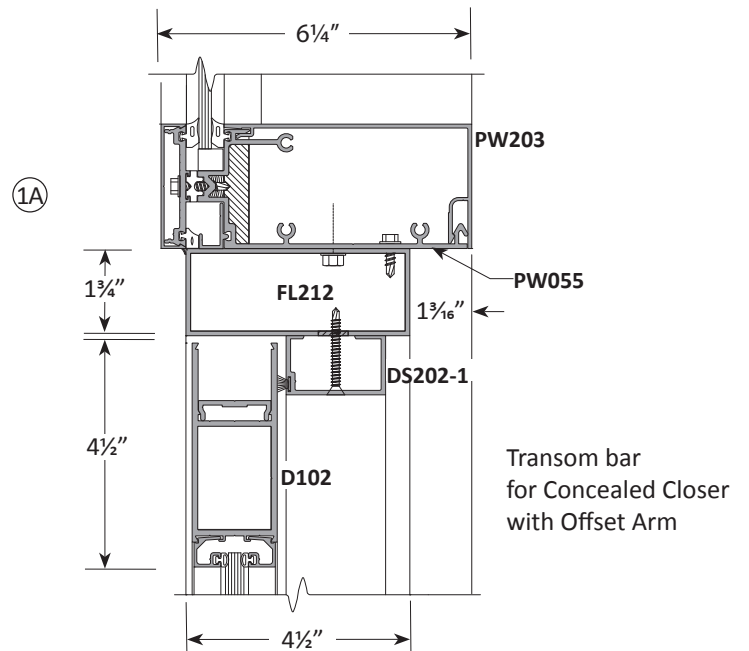
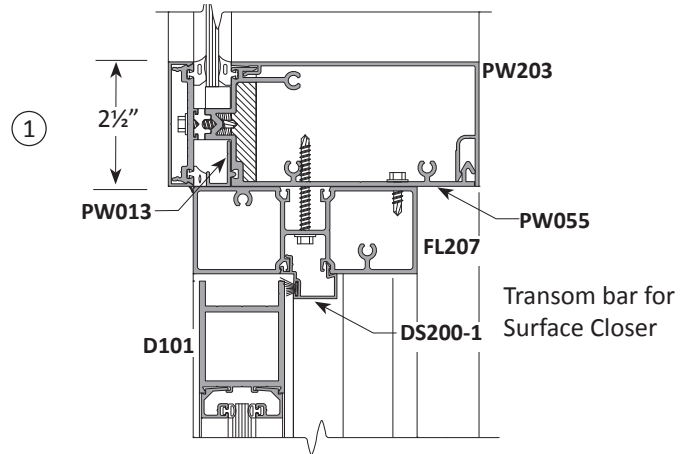
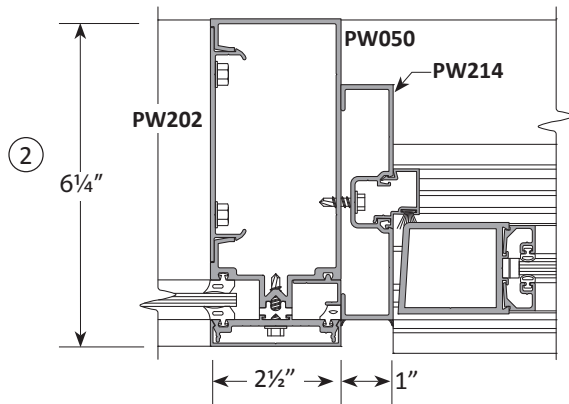
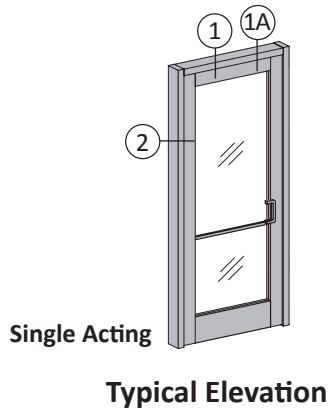


PW250·2½" x 6¼"

Curtain Wall

Entrance Framing

Scale: 3" = 1'-0"



Section D1 Table of Contents

HURRICANE IMPACT-RESISTANT ENTRANCES

Series 281 Narrow Stile

Series 381 Medium Stile

Series 581 Wide Stile

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Impact-Resistant Entrances

Series 281 • 381 • 581



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GUIDE SPECIFICATION

Manufacturer:

Coral Architectural Products

3010 Rice Mine Road

Tuscaloosa, AL. 35406

Voice: (800) 772-7737

Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MASTERSPEC Program was recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Entrances by Coral Architectural Products, including glass and glazing, door hardware and components.
 - 1. Types of Coral Architectural Products Hurricane Impact-Resistant Entrances:
 - a. [281] Swing Door; Narrow stile, 2-1/8" vertical face dimension, 1-3/4" depth. Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed (Select), Normal to Moderate traffic impact-resistant applications.
 - b. [381] Swing Door; Medium stile, 3-3/4" vertical face dimension, 1-3/4" depth. Interior and Exterior EPDM Gaskets Dry-glazed (Select – Hurricane Applications Only) or Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed (Select), Moderate to Heavy traffic impact-resistant applications.
 - c. [581] Wide Stile, 5" vertical face dimension, 1-3/4" depth. Interior and exterior EPDM Gaskets Dry-Glazed (Select) or Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed (Select), Heavy traffic impact-resistant applications.

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE. HOWEVER, CORAL ARCHITECTURAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07: SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Section 08450 – All Glass Entrances
 - 2. Section 08491 – Sliding Doors
 - 3. Section 08491 – Aluminum Mall Sliding Doors
 - 4. Section 08520 – Aluminum Framed Window Wall
 - 5. Section 08700 – Finish Hardware
 - 6. Section 08900 – Curtain Wall Systems

1.02 References (Industry Standards)

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.03 System Description

- A. Entrance Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: For a pair of single acting butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with the Florida Building Code Protocol TAS 202 and ASTM E 283 at a pressure differential of 1.57 PSF for a pair of doors The air infiltration shall not exceed 0.46 CFM/ft.2 for door opening sizes of 6'-0" x 7'-0" (Series 281) or 7'-0" x 8'-0" (Series 381 & Series 581).

GUIDE SPECIFICATION

3. Structural: Corner strength shall be tested in accordance with cyclic load test as specified by Florida Building Code TAS 201 and ASTM E1886/1996 to ensure corner integrity without welded corners. Upon completion of positive and negative cyclic testing, the structural integrity of each corner shall remain intact. Manufacturer shall provide a limited lifetime warranty for the life of the door under normal use without welded corner construction for Hurricane Impact –Resistant doors.
4. Uniform Load: A static air design load shall be applied in the positive and negative direction in accordance with the Florida Building Code Protocol TAS 202 and ASTM E 330. The design load for a pair of doors shall be +/- 65 PSF for Series 281 and +/-70/-80 PSF for Series 381. At a structural test load equal to 1.5 times the specified design load, the measured permanent set deflection at midpoint of the meeting stiles shall not exceed 50% of the allowable and no glass breakage shall occur.
5. Impact Resistance: Large Missile, tested in accordance with the Florida Building Code Protocols TAS 201, TAS 203 and ASTM E 1886/1996 at a door opening sizes of 6'-0" x 7'-0" (Series 281) or 7'-0" x 8'-0" (Series 381 & Series 581) (Select)
6. Forced Entry: Tested in accordance with AAMA 1304.
7. Blast Mitigation: Series 381 Entrances meet Performance Condition 2 level of protection for GSA-TS01-2003 standard and Medium Level of Protection for UFC 4-010-01 and Minimal Hazard Protection in accordance with ASTM F 1642.

1.04 Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from initial date of shipment by Coral Architectural Products. In addition, door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle entrance doors and components to avoid damage. Protect entrance doors against damage from elements, construction activities, and other hazards before, during and after entrance installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL" OR SIMILAR PHRASES. USE OF SUCH PHRASES MAY CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO OF DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

GUIDE SPECIFICATION

2.01 Manufacturers (Acceptable Manufacturers/Products)

A. Acceptable Manufacturers:

1. Address: Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
a. Telephone: (800) 772-7737
b. Fax: (800) 443-6261
c. Email: info@coralap.com
d. Web Address: www.coralap.com
2. Proprietary Product(s)/System(s) Coral Architectural Products Impact-Resistant Entrance Doors
a. Series: [(281)(381) or (581)] Swing Doors (Select) Finish/Color: (See 2.06 Finishes)
b. Finish/Color: (See 2.06 Finishes)

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE.

B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.

1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
a. Product: Aluminum Entrances
b. Series: [(281) (381) (581)], Impact-Resistant Swing Doors (Select)

C. Substitutions:

1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid entrance installation and construction delays.
2. Substitution Documentation:
a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for entrance system performance criteria.
c. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
d. Product Sample and Finish: Submit product sample, with specified finish and color.
3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

A. Aluminum (Entrances and Components):

1. Material Standard: ASTM B 221; 6063-T6 alloy and temper
2. The door stile and rail face dimensions of the [] (choose one: [(281) (381) (581)] entrance door will be as follows)

Door Series	Vertical Stile	Top Rail	Bottom Rail	ADA Bottom Rail	Traffic Application
281	2 1/8"	2 1/4"	4"	9 1/2" (optional)	Normal
381	3 3/4"	4"	7 1/2"	9 1/2" (optional)	Moderate
581	5"	4"	7 1/2"	9 1/2" (optional)	Heavy

Impact-Resistant Entrances

Series 281 • 381 • 581



GUIDE SPECIFICATION

3. Major portions of the door members to be 0.125" nominal in thickness and glazing molding to be 0.05" thick.
4. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of entrance members are nominal and in compliance with Aluminum Standards and Data published by The Aluminum Association.
- B. Glazing gaskets shall be EPDM elastomeric extrusions.
- C. Provide adjustable glass jack to help center the glass in the door opening.

2.03 Accessories

- A. Fasteners: Where exposed, shall be aluminum, stainless steel or plated steel.
- B. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

EDITOR NOTE: REVISE BELOW FOR SPECIFIC HARDWARE FOR EACH SPECIFIC ENTRANCE TYPE. TO INSURE SINGLE SOURCE RESPONSIBILITY AND TIMELY COORDINATION, CORAL ARCHITECTURAL PRODUCTS RECOMMENDS THAT YOUR FINISH HARDWARE REQUIREMENTS BE INCLUDED IN THIS SECTION. IF THESE REQUIREMENTS MUST BE FURNISHED UNDER THE "FINISH HARDWARE" SECTION OF THE SPECIFICATIONS, THE FOLLOWING STATEMENT SHOULD BE INCLUDED. "THE FINISH HARDWARE SUPPLIER SHALL BE RESPONSIBLE FOR FURNISHING PHYSICAL HARDWARE TO THE ENTRANCE MANUFACTURER PRIOR TO FABRICATION AND FOR COORDINATING HARDWARE DELIVERY REQUIREMENTS WITH THE HARDWARE MANUFACTURER, THE GENERAL CONTRACTOR AND THE ENTRANCE MANUFACTURER TO INSURE THE BUILDING PROJECT IS NOT DELAYED." IF LOCK CYLINDERS FOR ALUMINUM DOORS ARE TO BE MASTER-KEYED, IT IS SUGGESTED THAT CYLINDERS BE INCLUDED UNDER THE "FINISH HARDWARE" SECTION OF THE SPECIFICATIONS.

C. Standard Entrance Hardware

1. Weather-stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with a spring-loaded adjustable astragal with a double row of wool pile weather-stripping.
 - b. The door weathering on a single acting butt hung or continuous geared hinge frame (single or pairs) shall have EPDM bulb gasket (Necessary to meet specified performance tests).
2. Bottom Door Sweep: EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners. (Note: Bottom Door Sweeps are required to meet specified performance for air infiltration and FBC approval).
3. Threshold: Extruded aluminum, one piece per door opening, with ribbed surface.
4. Butt Hinge: [_____].
5. Continuous Gear Hinge: [_____].
6. Push/Pull: [_____] style.
7. Panic Device: [_____].
8. Closer: [_____].
9. Security Lock/Dead Lock: Active Leaf [_____]; Inactive Leaf [_____].
10. Cylinder(s)/Thumb-turn: [_____].

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. Entrance System Fabrication:
 1. Door corner construction shall consist of an interlocking slide-in stabilizer corner block mechanically fastened to door stile with 3/8" diameter bolts threaded into steel square nut back-up plates. Top and bottom rails are mechanically attached to corner blocks at all four corners with #10 x 3/4" FHMS steel fasteners. Glazing stops shall be compression fit type with EPDM glazing gaskets.
 2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
 3. Prepare components with internal reinforcement for door hardware.
 4. Arrange fasteners and attachments to conceal from view.

GUIDE SPECIFICATION

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

A. Shop Finishing

1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

A. Source Quality: Provide aluminum entrances specified herein from a single source.

1. Building Enclosure System: When aluminum entrances are part of a building enclosure system, including storefront framing, window wall systems, curtain wall systems and related products, provide building enclosure system products from a single source manufacturer.

B. Fabrication Tolerances: Fabricate aluminum entrances in accordance with entrance manufacturer's prescribed tolerances.

PART 3 – EXECUTION

3.01 Examination

- #### A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive entrance system and sill is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measuring them before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

A. General: Install entrance system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.

1. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
2. Provide alignment attachments and shims to permanently fasten system to building structure.
3. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.
4. Set thresholds in bed of mastic and secure.
5. Adjusting: Adjust operating hardware for smooth operation.

B. Related Products Installation Requirements:

1. Sealants (Perimeter): Refer to Section 7 Joint Treatment (Sealants).
2. Glass: Refer to Section 8 Glass and Glazing.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

Impact-Resistant Entrances

Series 281 • 381 • 581



GUIDE SPECIFICATION

3.03 Cleaning and Protection This guide specification is to only be used by qualified construction specifiers. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm, and the particular requirements of a specific construction project.

END OF SECTION 08410

High Velocity Hurricane Zone (HVHZ) Applications

Series 281 Narrow Stile Impact-Resistant Entrances (Wet-Glazed)

Qualified System Configuration Chart

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Single	Double	D.L.O. (WxH)	Sq. Ft.	
Series 281 Narrow Stile - Large Missile					
+65/-65	36 x 84	72 x 84	29 ⁹ / ₁₆ " x 71 ⁷ / ₁₆ "	14.7	B

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Hardware Applications

Locking and Closer Options		
Active Leaf	DH072 3-Point Lock with DH078 Cylinder and DH079 Thumbturn	
Inactive Leaf	DH176 Steel Tip Flush Bolts (2 each)	
Surface Applied Closer	Heavy Duty ANSI Grade 1 (Required)	
Concealed Overhead Closer	ANSI Grade 1 (Required)	
Hinging Options		
Type	Description	Quantity
Butt Hinges	DH110SS (Stainless Steel) 4½" x 4"	1½ Pairs
Continuous Geared Hinge	DH111HD (Heavy Duty)	Full Door Height
Panic Exit Devices Options		
Jackson	2086-HR ANSI Grade 1	Concealed Vertical Rod

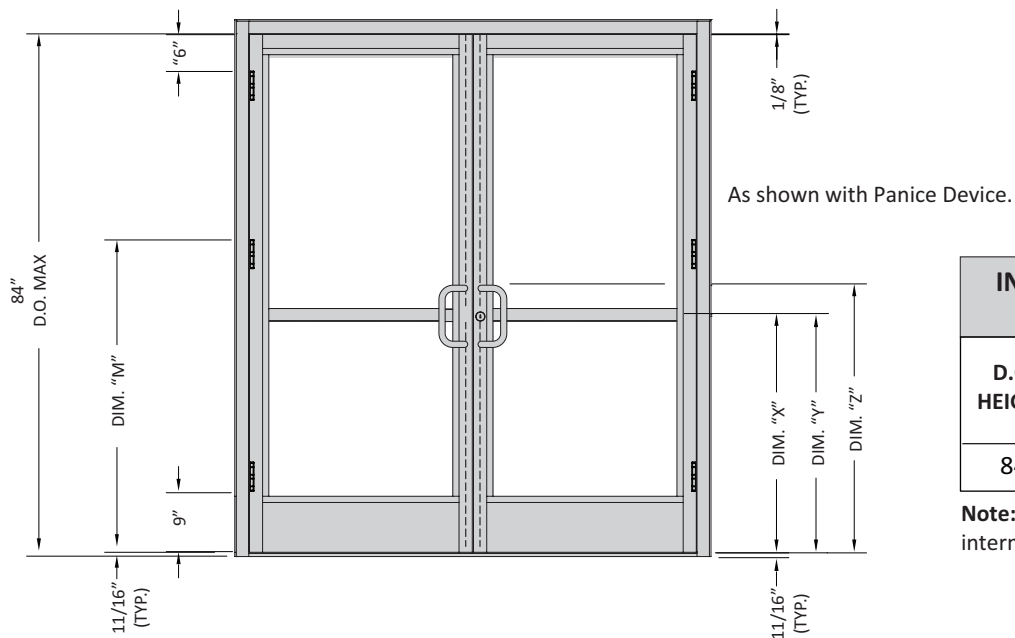
Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
$\frac{9}{16}$ " Monolithic Glass	$\frac{1}{4}$ " Heat Strengthened Glass	.090 Saflex PVB Interlayer	$\frac{1}{4}$ " Heat Strengthened Glass	Solutia	B

Impact-Resistant Entrances

Series 281 Narrow Stile

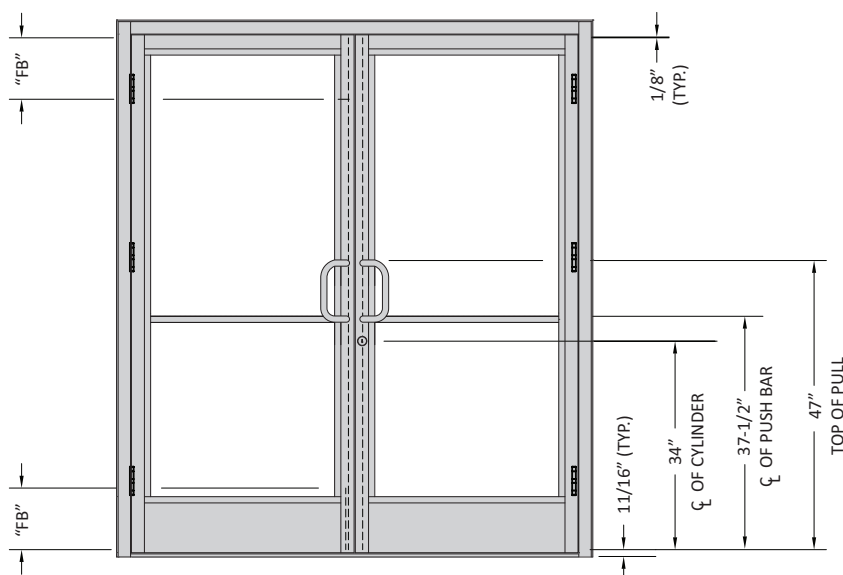
Hardware and Hinge Locations



INTERMEDIATE HINGE	
D.O. HEIGHT	DIM. "M"
	BUTT HUNG
84"	45 ¹¹ / ₃₂ "

Note: All doors require an intermediate hinge.

HARDWARE LOCATIONS FOR PANIC DOORS				
MANUFACTURER	PANIC DEVICE	DIM "X" CL OF CYLINDER	DIM "Y" CL OF PANIC	DIM "Z" TOP OF PULL
JACKSON	2086 C.V.R.	37 ⁷ / ₈ "	38 ⁵ / ₃₂ "	42 ⁷ / ₈ "



Impact-Resistant Entrances

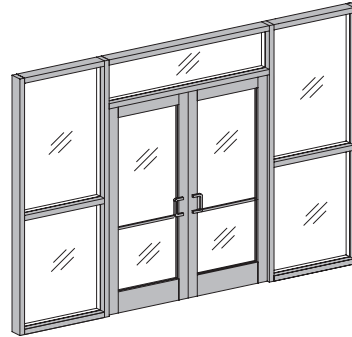
Series 281 Narrow Stile

Standard Details - Single Acting

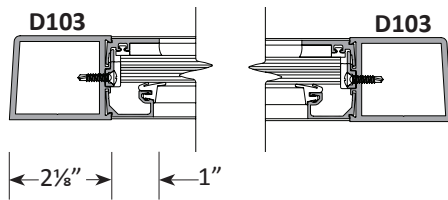
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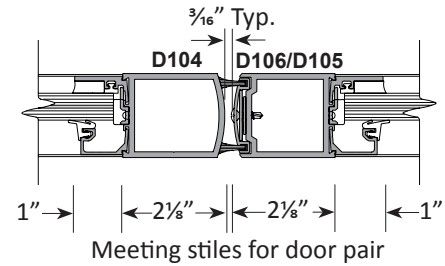
Single Door



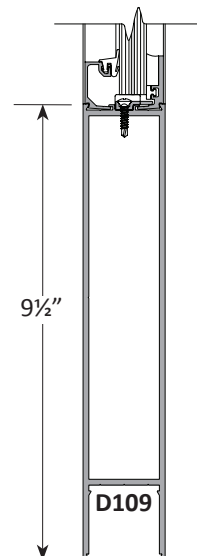
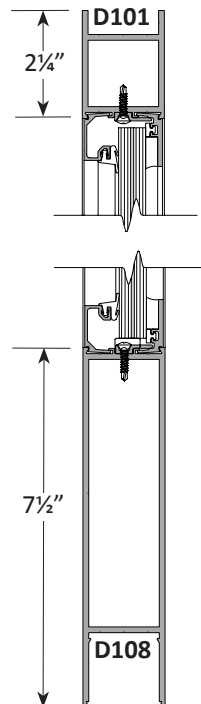
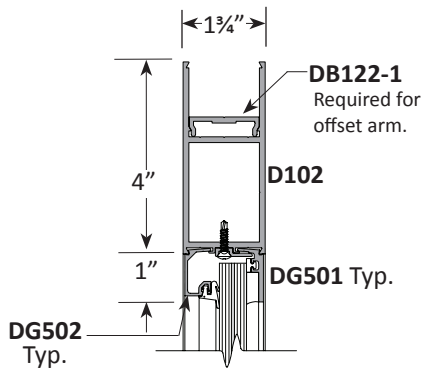
Pair of Doors



Single Door



Meeting stiles for door pair

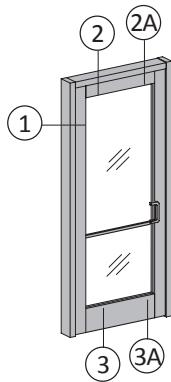


Impact-Resistant Entrances

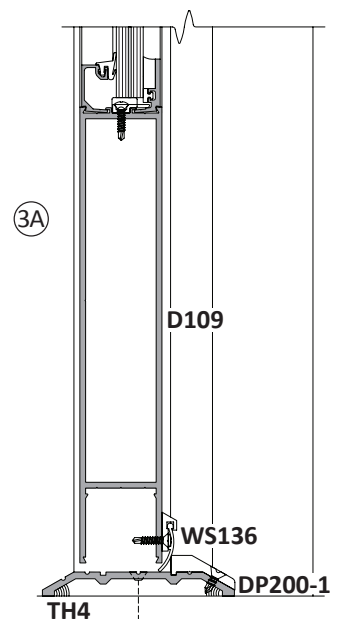
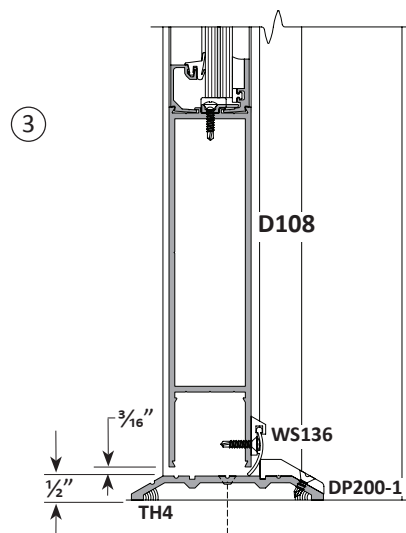
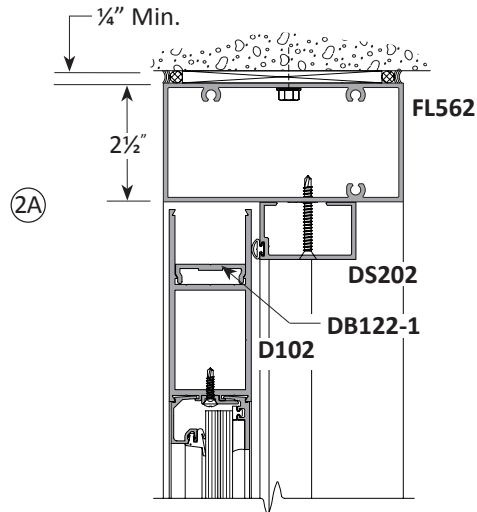
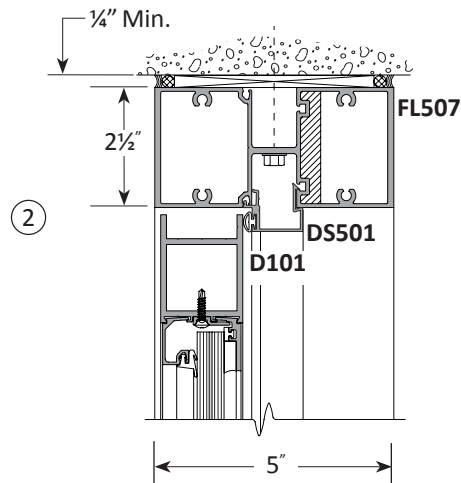
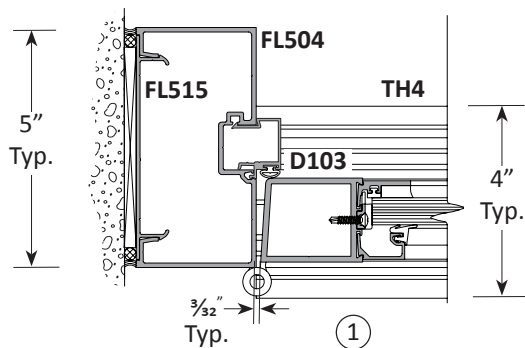
Series 281 Narrow Stile

Entrance Framing - Single Acting Non-Transom

Scale: 3" = 1'-0"



**Single Acting Doors
Non-Transom Frame**

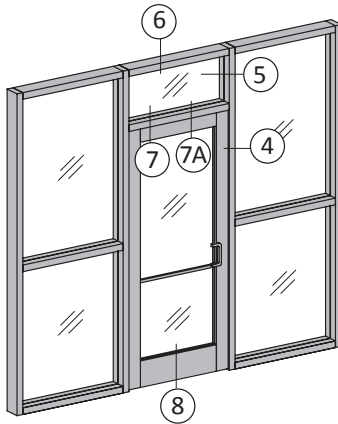


Impact-Resistant Entrances

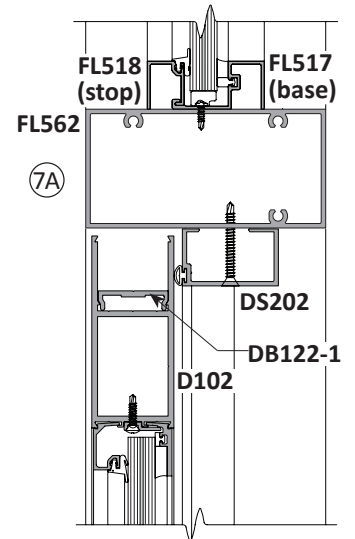
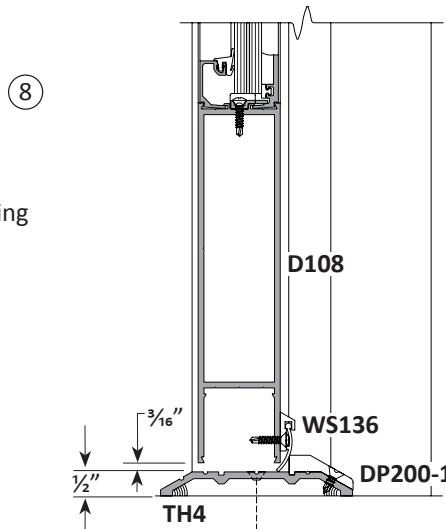
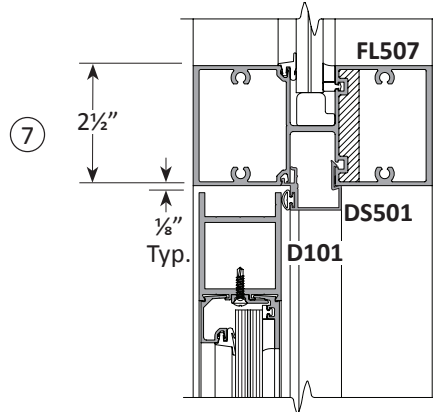
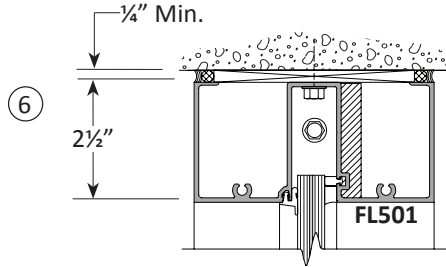
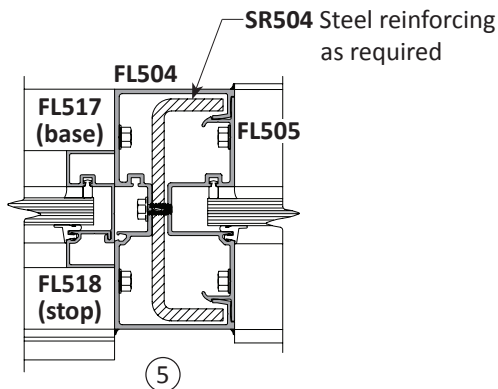
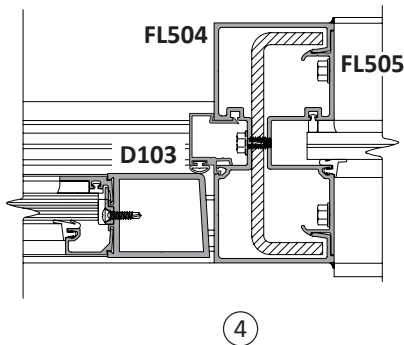
Series 281 Narrow Stile

Entrance Framing - Single Acting with Transom

Scale: 3" = 1'-0"



**Single Acting Doors
with Transom Frame**



Impact-Resistant Entrances

Series 381 Medium Stile



High Velocity Hurricane Zone (HVHZ) Applications

Series 381 Medium Stile Impact-Resistant Entrances (Wet-Glazed)

Qualified System Configuration Chart

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Single	Double	D.L.O. (WxH)	Sq. Ft.	
Series 381 Medium Stile - Large Missle Impact					
+70/-80	42 x 96	84 x 96	32 ³ / ₁₆ " x 81 ¹ / ₁₆ "	18.3	B

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Hardware Applications

Locking and Closer Options		
Active Leaf	DH072 3-Point Lock with DH078 Cylinder and DH079 Thumbturn	
Inactive Leaf	DH176 Steel Tip Flush Bolts (2 each)	
Surface Applied Closer	Heavy Duty ANSI Grade 1 (Required)	
Concealed Overhead Closer	ANSI Grade 1 (Required)	
Hinging Options		
Type	Description	Quantity
Butt Hinges	DH110SS (Stainless Steel) 4½” x 4”	1½ Pairs
Continuous Geared Hinge	DH111HD (Heavy Duty)	Full Door Height
Panic Exit Devices Options		
First Choice*	3692-HR ANSI Grade 1	Concealed Vertical Rod
Jackson	2086-HR ANSI Grade 1	Concealed Vertical Rod

*Note: Maximum tested door size 72" x 84"

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
³ / ₁₆ " Monolithic Glass	¹ / ₄ " Heat Strengthened Glass	.090 Saflex PVB Interlayer	¹ / ₄ " Heat Strengthened Glass	Solutia	B

High Velocity Hurricane Zone (HVHZ) Applications

Series 381 Medium Stile Impact-Resistant Entrances (Dry-Glazed)

Qualified System Configuration Chart

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Single	Double	D.L.O. (WxH)	Sq. Ft.	
Series 381 Medium Stile - Large Missle Impact					
+70/-70	36 x 84	72 x 84	26 ⁵ / ₁₆ " x 69 ¹ / ₁₆ "	12.7	D

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Hardware Applications

Locking and Closer Options		
Active Leaf	DH072 3-Point Lock with DH078 Cylinder and DH079 Thumbturn	
Inactive Leaf	DH176 Steel Tip Flush Bolts (2 each)	
Surface Applied Closer	Heavy Duty ANSI Grade 1 (Required)	
Concealed Overhead Closer	ANSI Grade 1 (Required)	
Hinging Options		
Type	Description	Quantity
Butt Hinges	DH110SS (Stainless Steel) 4½" x 4"	1½ Pairs
Continuous Geared Hinge	DH111HD (Heavy Duty)	Full Door Height
Panic Exit Devices Options		
First Choice	3692-HR ANSI Grade 1	Concealed Vertical Rod
First Choice	3192-HR Midpanel	Concealed Vertical Rod
Jackson	2086-HR ANSI Grade 1	Concealed Vertical Rod

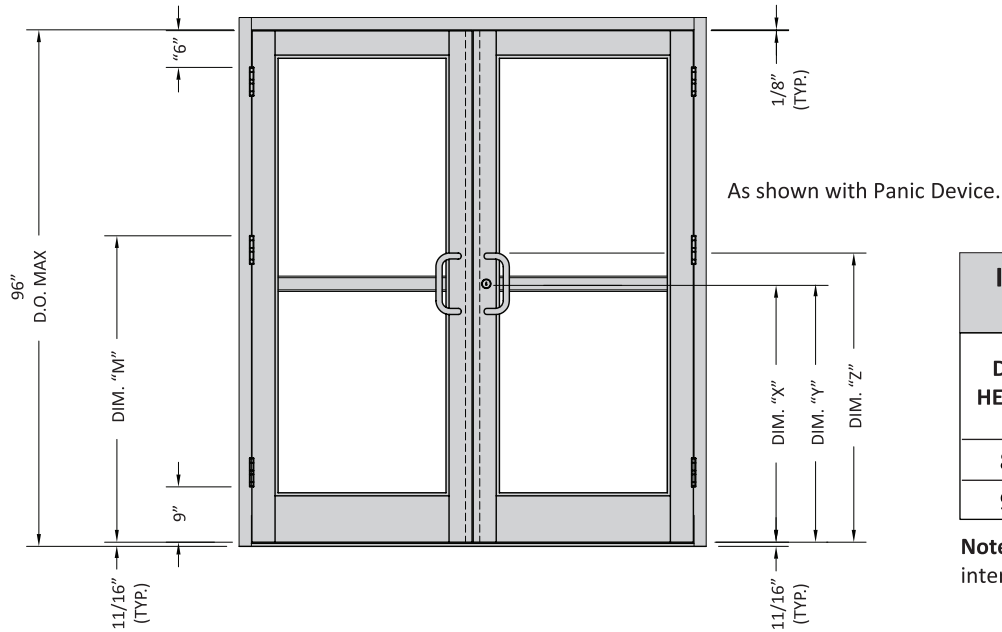
Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
$\frac{3}{16}$ " Monolithic Glass	$\frac{1}{4}$ " Heat Strengthened Glass	.090 SentryGlas	$\frac{1}{4}$ " Heat Strengthened Glass	DuPont™	D

Impact-Resistant Entrances

Series 381 Medium Stile

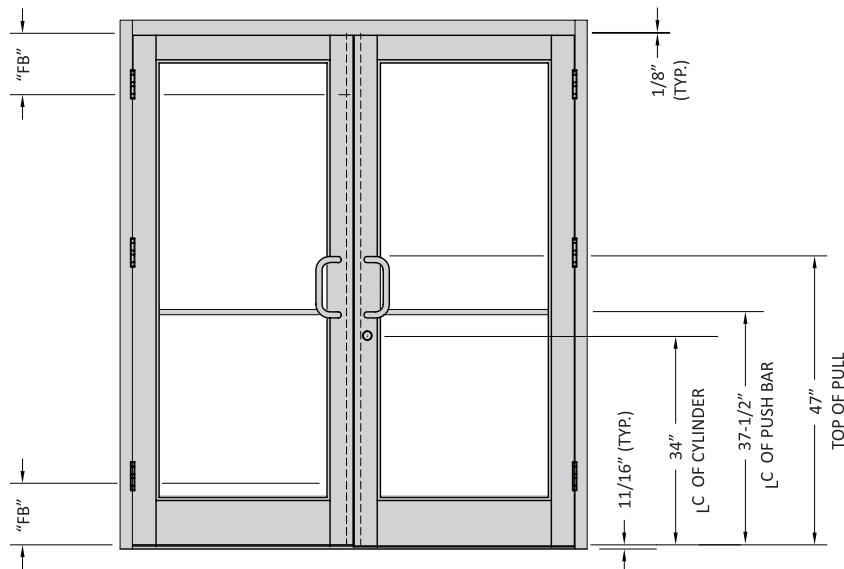
Hardware and Hinge Locations



INTERMEDIATE HINGE	
D.O. HEIGHT	DIM. "M"
	BUTT HUNG
84"	45 ¹¹ / ₃₂ "
96"	51 ¹¹ / ₃₂ "

Note: All doors require an intermediate hinge.

HARDWARE LOCATIONS FOR PANIC DOORS				
MANUFACTURER	PANIC DEVICE	DIM "X" CL OF CYLINDER	DIM "Y" CL OF PANIC	DIM "Z" TOP OF PULL
JACKSON	2086 C.V.R.	37 ⁷ / ₈ "	38 ⁵ / ₃₂ "	42 ⁷ / ₈ "
FIRST CHOICE	3692 C.V.R.	41 ⁹ / ₁₆ "	40 ⁵ / ₈ "	46 ⁹ / ₁₆ "



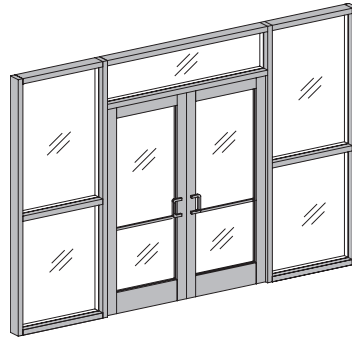
Impact-Resistant Entrances

Series 381 Medium Stile

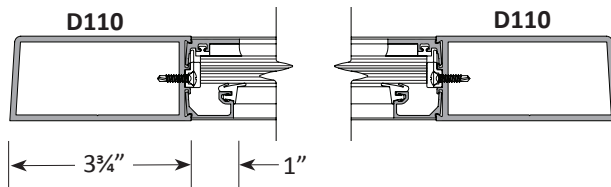
Standard Details - Single Acting Wet Glazed
Scale: 3" = 1'-0"



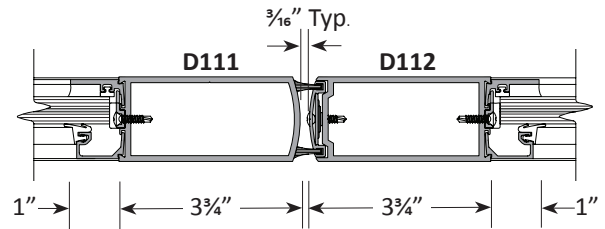
Single Door



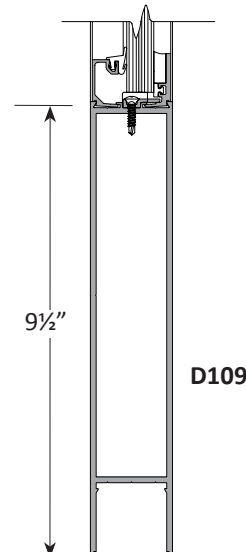
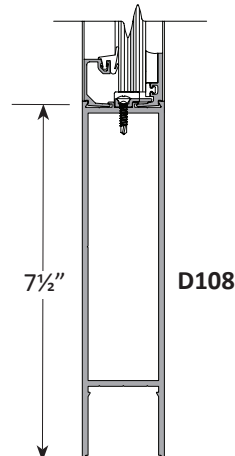
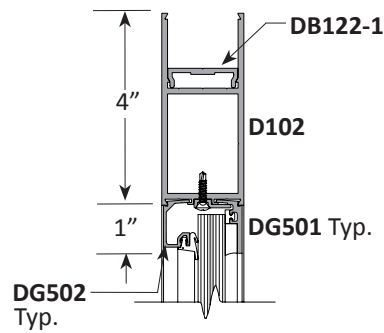
Pair of Doors



Single Door



Meeting stiles for door pair



Impact-Resistant Entrances

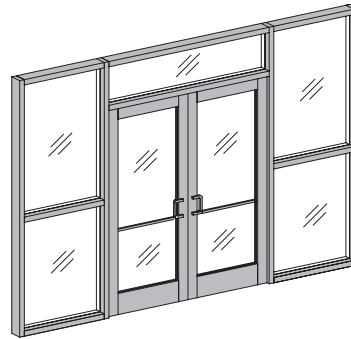
Series 381 Medium Stile

Standard Details - Single Acting Dry Glazed

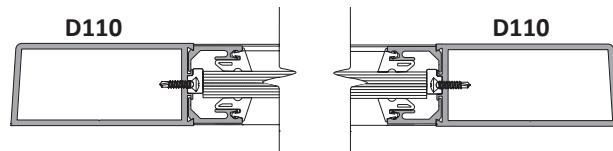
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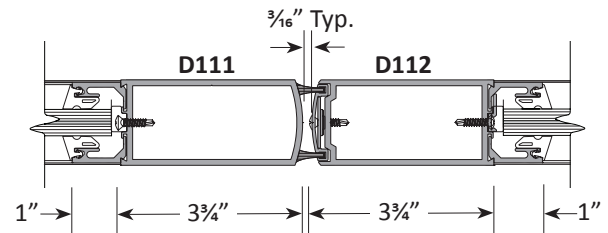
Single Door



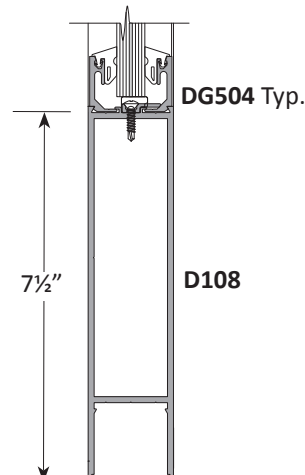
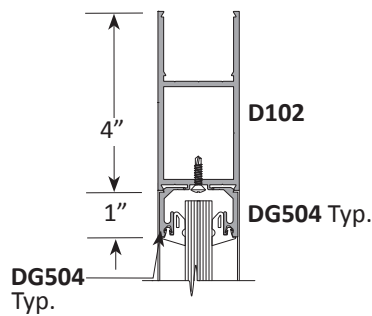
Pair of Doors



Single Door

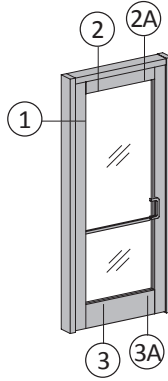


Meeting stiles for door pair

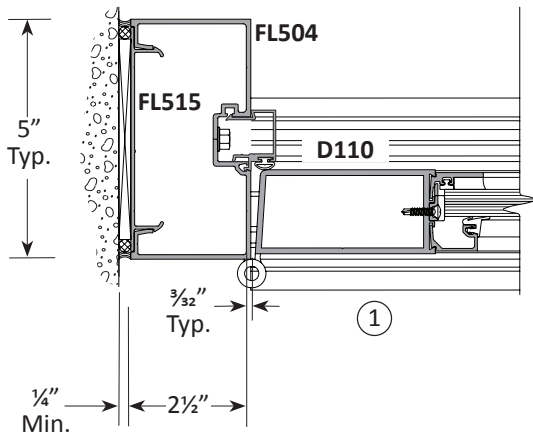


Impact-Resistant Entrances

Series 381 Medium Stile

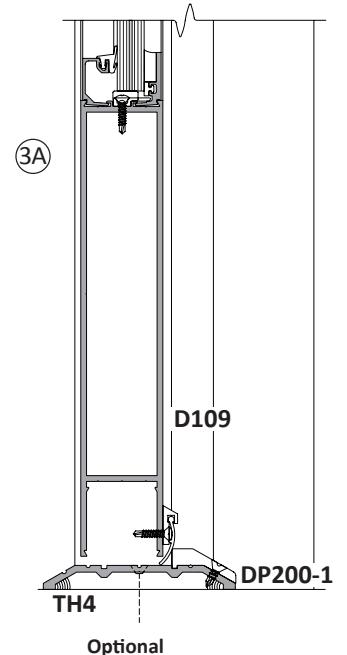
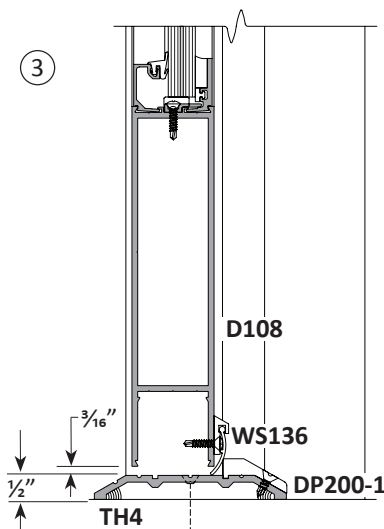
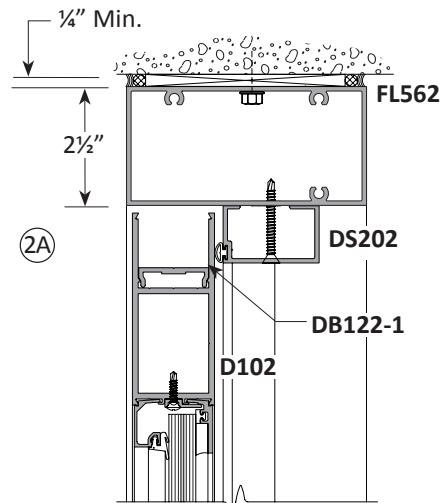
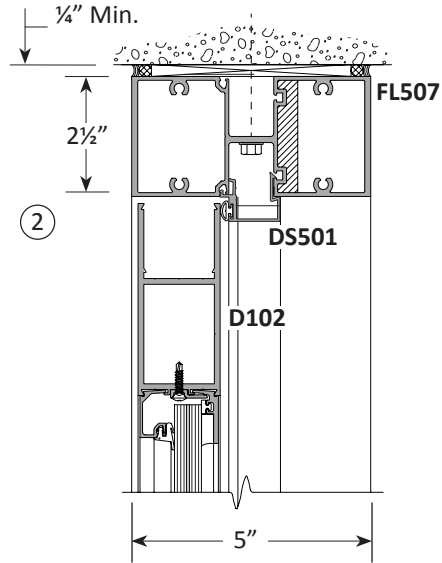


**Single Acting Doors
Non-Transom Frame**



Entrance Framing - Single Acting Non-Transom

Scale: 3" = 1'-0"

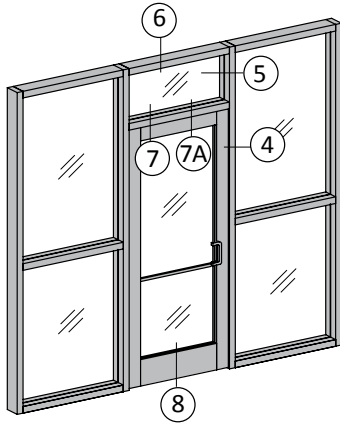


Impact-Resistant Entrances

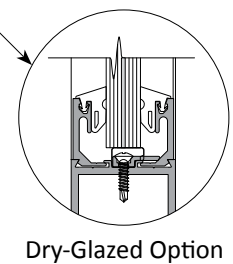
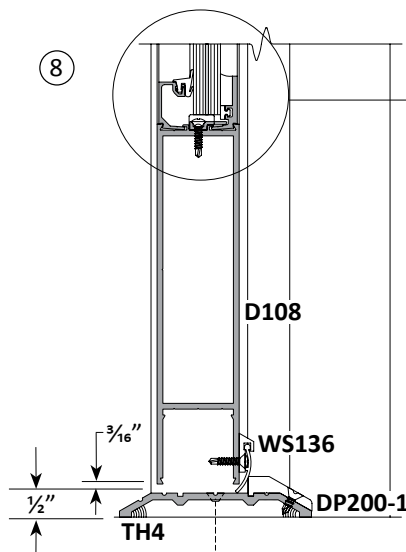
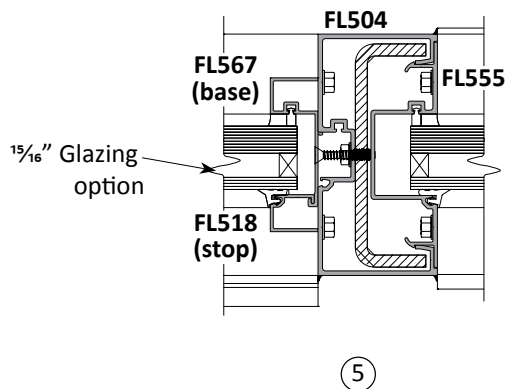
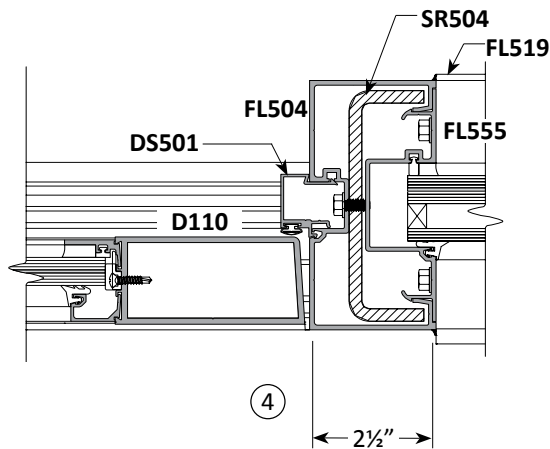
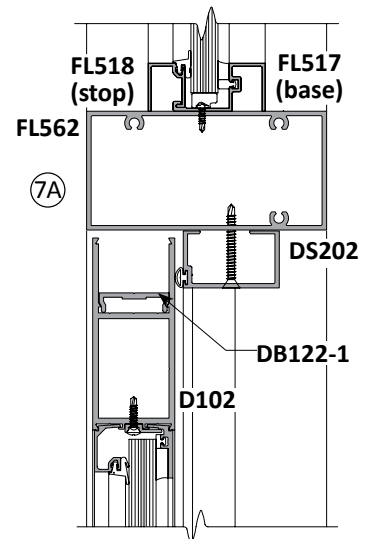
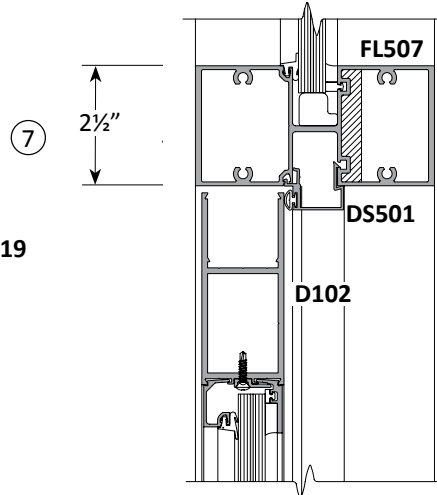
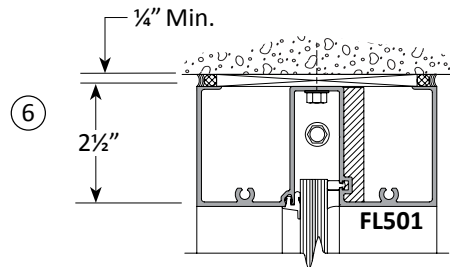
Series 381 Medium Stile

Entrance Framing - Single Acting with Transom

Scale: 3" = 1'-0"



**Single Acting Doors
with Transom Frame**



High Velocity Hurricane Zone (HVHZ) Applications

Series 581 Wide Stile Impact-Resistant Entrances (Wet-Glazed)

Qualified System Configuration Chart

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Double		D.L.O. (WxH)	Sq. Ft.	
Series 581 Wide Stile - Large Missile Impact					
+70/-80	42 x 96	84 x 96	29 ¹³ / ₁₆ " x 81 ¹¹ / ₁₆ "	16.9	B

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Hardware Applications

Locking and Closer Options		
Active Leaf	DH072 3-Point Lock with DH078 Cylinder and DH079 Thumbturn	
Inactive Leaf	DH176 Steel Tip Flush Bolts (2 each)	
Surface Applied Closer	Heavy Duty ANSI Grade 1 (Required)	
Concealed Overhead Closer	ANSI Grade 1 (Required)	
Hinging Options		
Type	Description	Quantity
Butt Hinges	DH110SS (Stainless Steel) 4½" x 4"	1½ Pairs
Continuous Geared Hinge	DH111HD (Heavy Duty)	Full Door Height
Panic Exit Devices Options		
Von Duprin	9947-HR ANSI Grade 1	Concealed Vertical Rod

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
⁹ / ₁₆ " Monolithic Glass	¹ / ₄ " Heat Strengthened Glass	.090 Saflex PVB Interlayer	¹ / ₄ " Heat Strengthened Glass	Solutia	B

Impact-Resistant Entrances

Series 581 Wide Stile



High Velocity Hurricane Zone (HVHZ) Applications

Series 581 Wide Stile Impact-Resistant Entrances (Dry-Glazed)

Qualified System Configuration Chart

Design Pressure P.S.F.	Maximum Door Size		Maximum Glass Size		Qualified Glass Types
	Double		D.L.O. (WxH)	Sq. Ft.	
Series 581 Wide Stile - Large Missile Impact					
+70/-80	42 x 96	84 x 96	29 ¹³ / ₁₆ " x 81 ¹¹ / ₁₆ "	16.9	D

Hurricane Impact-Resistant Products Disclaimer Note

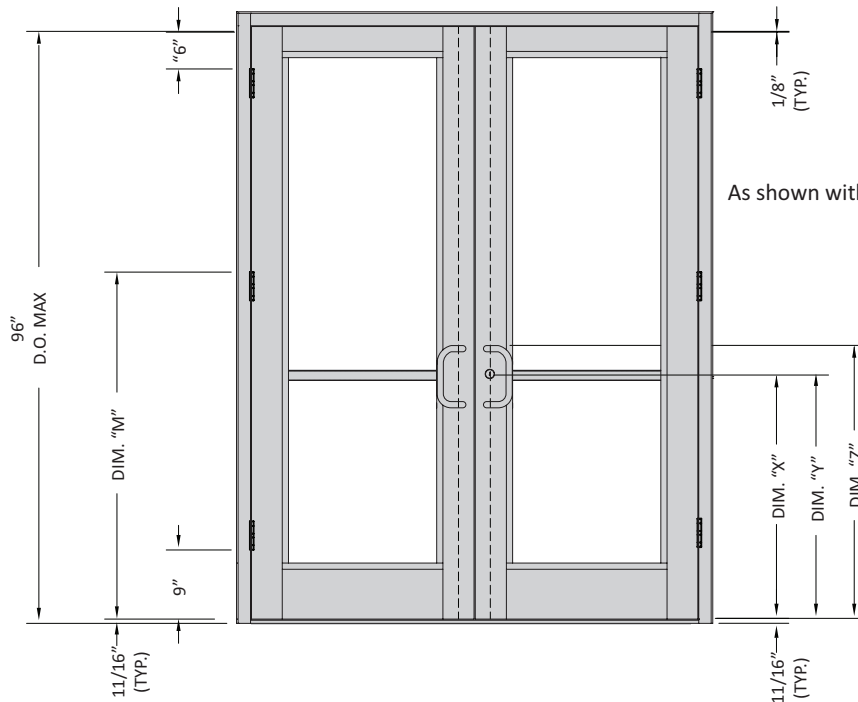
Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Hardware Applications

Locking and Closer Options		
Active Leaf	DH072 3-Point Lock with DH078 Cylinder and DH079 Thumbturn	
Inactive Leaf	DH176 Steel Tip Flush Bolts (2 each)	
Surface Applied Closer	Heavy Duty ANSI Grade 1 (Required)	
Concealed Overhead Closer	ANSI Grade 1 (Required)	
Hinging Options		
Type	Description	Quantity
Butt Hinges	DH110SS (Stainless Steel) 4½" x 4"	1½ Pairs
Continuous Geared Hinge	DH111HD (Heavy Duty)	Full Door Height
Panic Exit Devices Options		
Von Duprin	9947-HR ANSI Grade 1	Concealed Vertical Rod

Qualified Glass Types

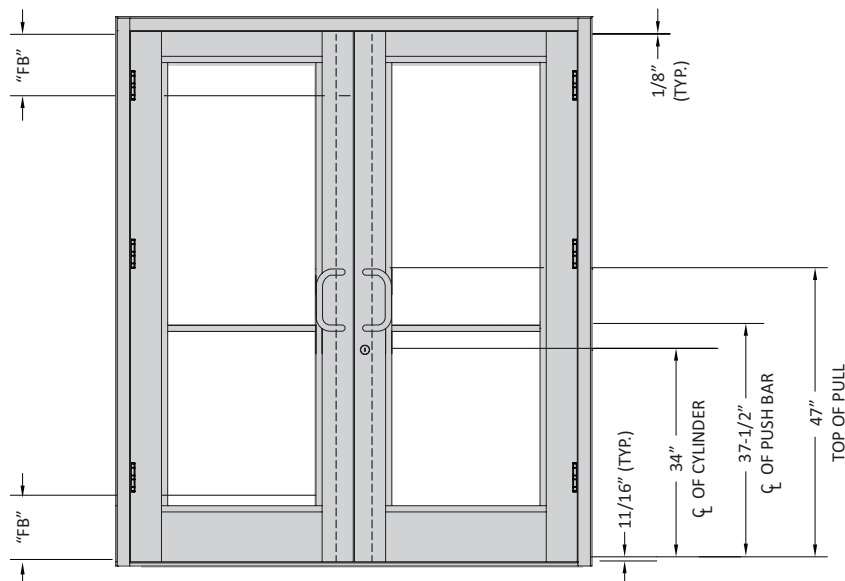
Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Interlayer		Interior Lite		
⁹ / ₁₆ " Monolithic Glass	¹ / ₄ " Heat Strengthened Glass	.090 SentryGlas Interlayer	¹ / ₄ " Heat Strengthened Glass	DuPont™	D



INTERMEDIATE HINGE	
D.O. HEIGHT	DIM. "M" BUTT HUNG
84"	45 11/32"
96"	51 11/32"

Note: All doors require an intermediate hinge.

HARDWARE LOCATIONS FOR PANIC DOORS				
MANUFACTURER	PANIC DEVICE	DIM "X" CL OF CYLINDER	DIM "Y" CL OF PANIC	DIM "Z" TOP OF PULL
Von Duprin	9947	39 3/16"	38 15/16"	43 15/16"



Impact-Resistant Entrances

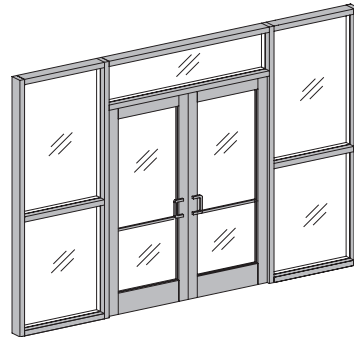
Series 581 Wide Stile

Standard Details - Single Acting Wet Glaze

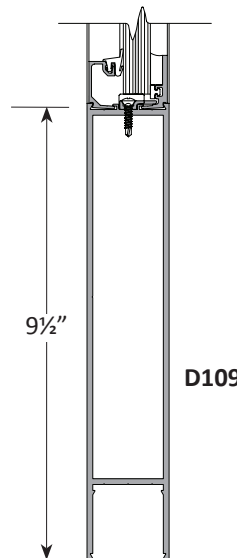
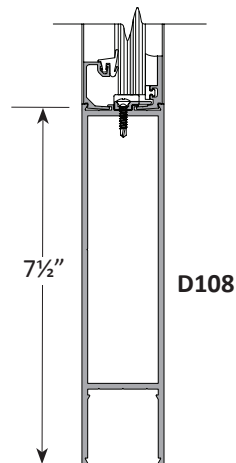
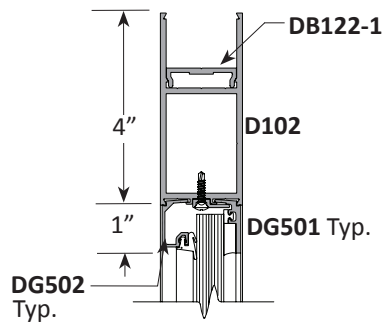
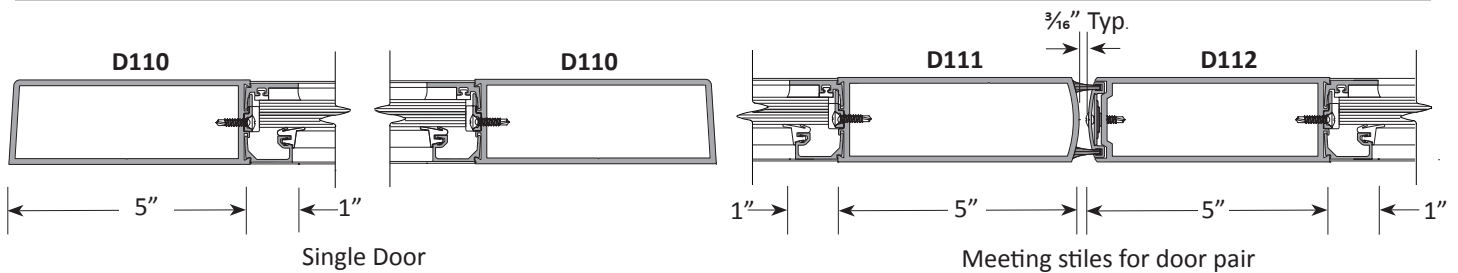
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Single Door



Pair of Doors



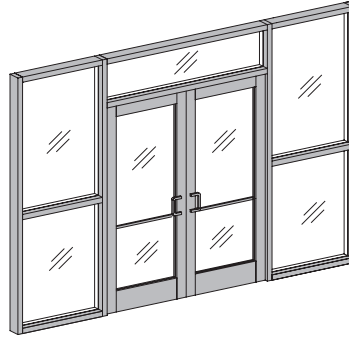
Impact-Resistant Entrances

Series 581 Wide Stile

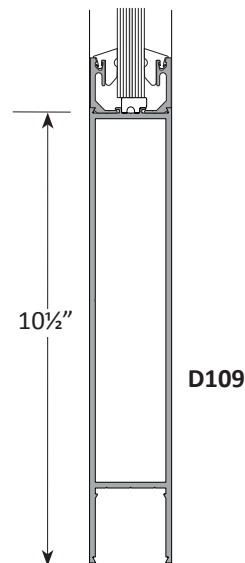
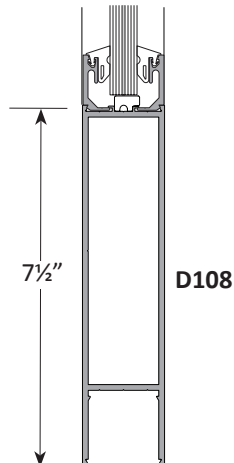
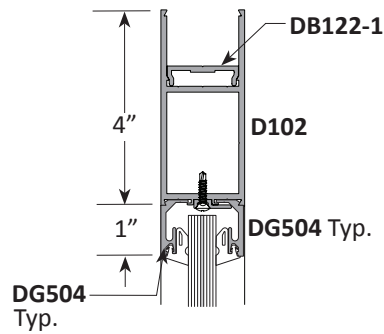
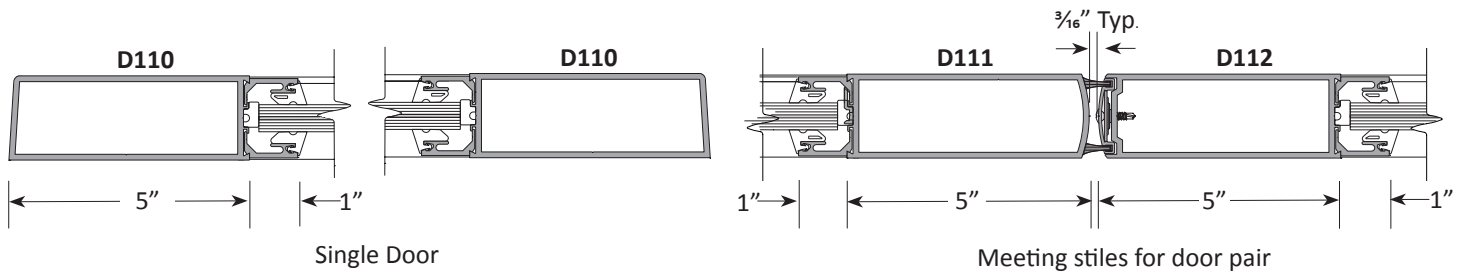
Standard Details - Single Acting Dry Glaze
Scale: 3" = 1'-0"



Single Door



Pair of Doors

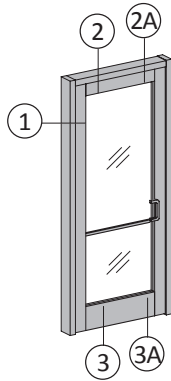


Impact-Resistant Entrances

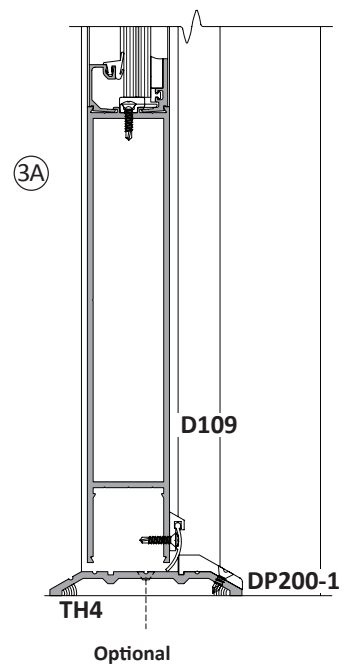
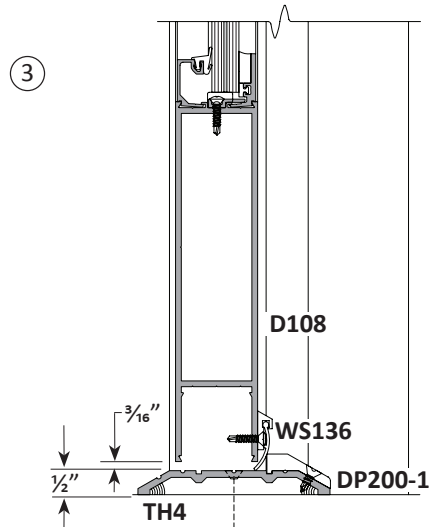
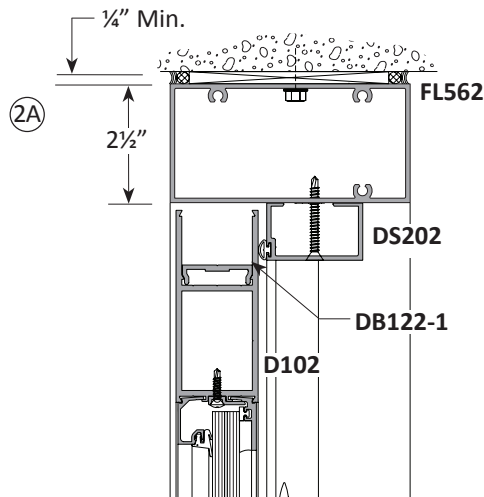
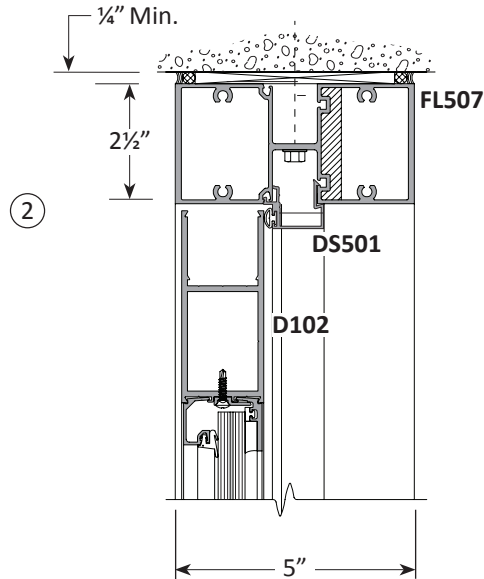
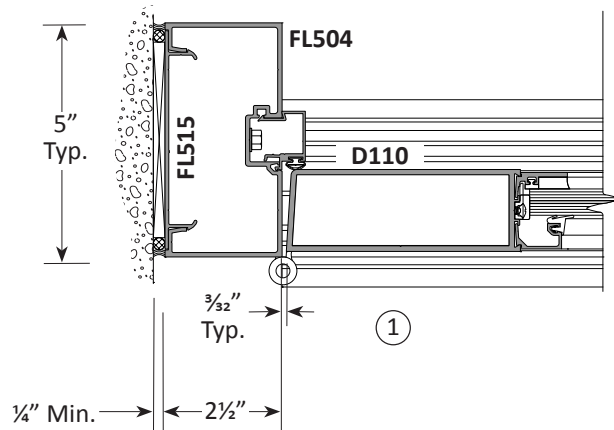
Series 581 Wide Stile

Entrance Framing - Single Acting Non-Transom

Scale: 3" = 1'-0"



**Single Acting Doors
Non-Transom Frame**

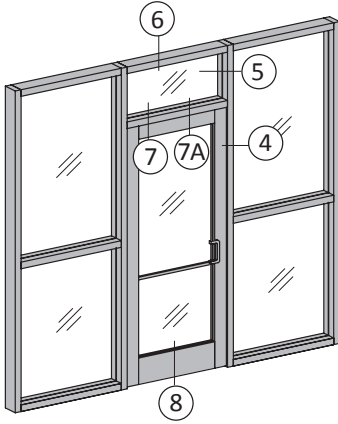


Impact-Resistant Entrances

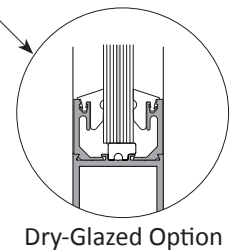
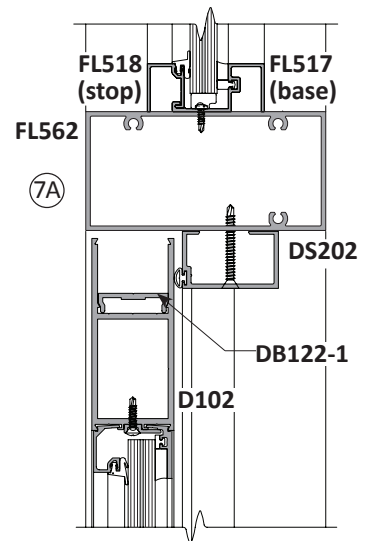
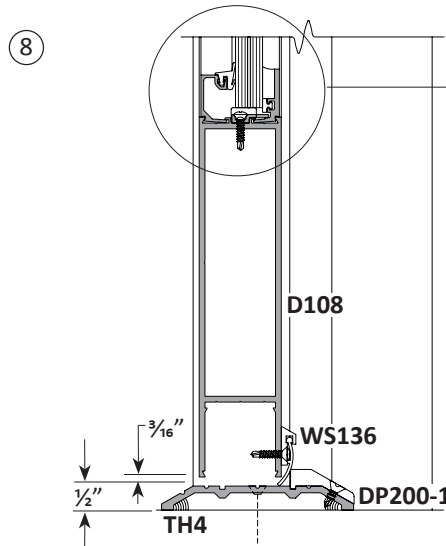
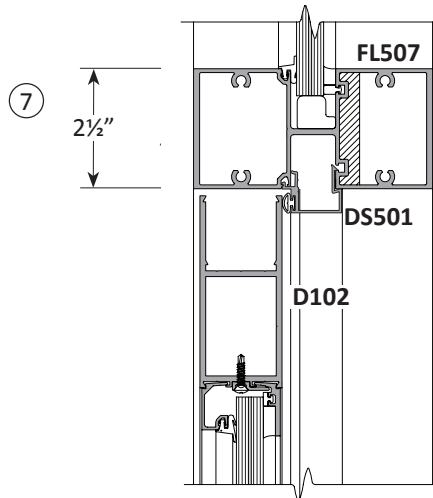
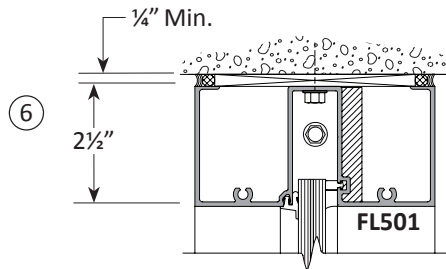
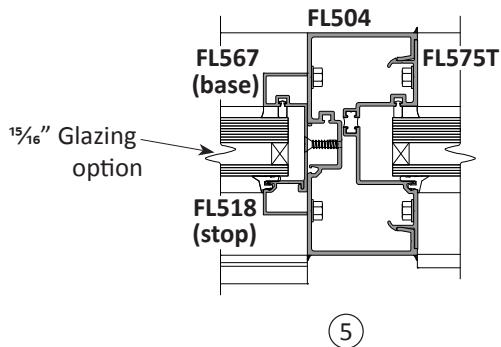
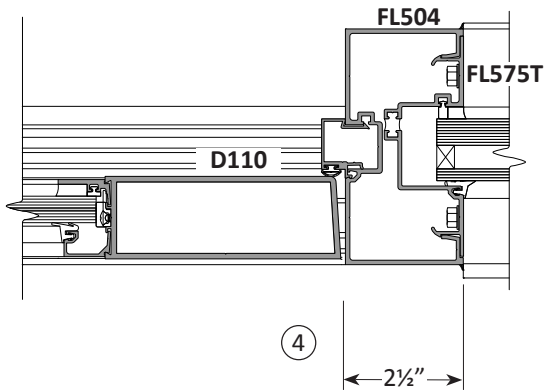
Series 581 Wide Stile

Entrance Framing - Single Acting With Transom

Scale: 3" = 1'-0"



**Single Acting Doors
with Transom Frame**



Dry-Glazed Option

Impact-Resistant Entrances

Impact-Resistant Glass Types



Coral Architectural Products hurricane impact-resistant products are tested and qualified as complete components and must be installed using qualified impact-resistant laminated glass with approved interlayers per Florida Building Code (FPA) documents (rule 9B-72 for statewide approval) or ASTM E 1886 / 1996 standards. Reference the protective glazing section for additional information regarding Coral's qualified impact-resistant products and approved glass types.

QUALIFIED IMPACT-RESISTANT GLASS TYPES (Monolithic Glass)

Glass Label	Glass Type	Glass Thickness	Missile Type Impact	Glass Composition Description
A	.075 VANCEVA® by Solutia	¾"	Large Missile	¼" Heat Strengthened Glass .075 Solutia Vanceva® PVB Interlayer ¼" Heat Strengthened Glass
B	.090 SAFLEX® PVB by Solutia	¾"	Large Missile	¼" Heat Strengthened Glass .090 Solutia Saflex® PVB Interlayer ¼" Heat Strengthened Glass
C	.035 SENTRYGLAS® by DuPont™	¾"	Small Missile (Only)	¼" Heat Strengthened Glass .035 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass
D	.090 SENTRYGLAS® by DuPont™	¾"	Large Missile	¼" Heat Strengthened Glass .090 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass
E	.090 BUTICITE® PVB by DuPont™	¾"	Large Missile	¼" Heat Strengthened Glass .090 DuPont SentryGlas® PVB Interlayer ¼" Heat Strengthened Glass
F	.060 SENTRYGLAS® by DuPont™	¾"	Small Missile (Only)	¼" Heat Strengthened Glass .060 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass

QUALIFIED IMPACT-RESISTANT GLASS TYPES (Insulated Glass)

Glass Label	Glass Type	Glass Thickness	Missile Type Impact	Glass Composition Description		
				Exterior Lite	Air Space	Interior Lite
IA	.075 VANCEVA® by Solutia	1¾"	Large Missile	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .075 Solutia Vanceva® PVB Interlayer ¼" Heat Strengthened Glass
IB	.090 SAFLEX® PVB by Solutia	1¾"	Large Missile	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .090 Solutia Saflex® PVB Interlayer ¼" Heat Strengthened Glass
IC	.035 SENTRYGLAS® by DuPont™	1¾"	Small Missile (Only)	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .035 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass
ID	.090 SENTRYGLAS® by DuPont™	1¾"	Large Missile	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .090 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass
IE	.090 BUTICITE® PVB by DuPont™	1¾"	Large Missile	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .090 DuPont SentryGlas® PVB Interlayer ¼" Heat Strengthened Glass
IF	.060 SENTRYGLAS® by DuPont™	1¾"	Small Missile (Only)	¼" Heat Strengthened Glass	½"	¼" Heat Strengthened Glass .060 DuPont SentryGlas® Interlayer ¼" Heat Strengthened Glass

Section D2
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Standard Framing - Wet Glazed.....	4
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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Aluminum Hurricane-Resistant Framing Systems include:
 - a. Series FL500 Framing System: 2-1/2" x 5"; Non-Thermal; Center Glazed for 9/16" laminated glass for Large Missile Impact-Resistant Glazing; Screw Spline Fabrication, Glazing Method; Interior and Exterior EPDM Gaskets Dry-glazed (Select) or Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed. (Select)

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 15% of the positive design pressure as defined by the Florida Building Code.

GUIDE SPECIFICATION

4. Uniform Load: A static air design load of +70/-80 P.S.F. with steel reinforcing (60" Spacing x 120" Span) or +60/-60 P.S.F. without steel reinforcing (48" Spacing x 120" Span) shall be applied in the positive and negative direction in accordance with DCBCCO Protocol PA 202 and ASTM E 330. There shall be no deflection in excess of L/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.4% of their clear spans shall occur.
5. Impact Resistance: Large Missile, tested in accordance with Florida Building Code Protocols TAS 201, TAS 203, and ASTM E 1886/1996.
6. Framing System shall provide direct structural attachment to substrate through perimeter framing sections eliminating blind seal condition.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

GUIDE SPECIFICATION

2.01 Manufacturers (Acceptable Manufacturers/Products)

A. Acceptable Manufacturers:

1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web address: www.coralap.com
2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL500 Non-Thermal Impact-Resistant Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH **CORAL ARCHITECTURAL PRODUCTS** FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. **CORAL ARCHITECTURAL PRODUCTS** RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
 - c. Framing Member Profile: 2-1/2" x 5" nominal dimension; Center Glazed; Screw Spline Fabrication.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products Impact-Resistant Storefront Framing
 - a. Product: Architectural Aluminum
 - b. Series FL500 Storefront System: 2-1/2" x 5" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

A. Aluminum (Storefront and Components):

1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

GUIDE SPECIFICATION

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

- 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

GUIDE SPECIFICATION

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 - 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 - 2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass (dry-glazed) and extruded EPDM gaskets at exterior and structural silicone sealant at interior side (wet-glazed) of glass.
 - 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
 - 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 - 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 - 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FL500·2½" x 5"

Impact-Resistant Storefront

FEATURES AND BENEFITS

System Description

Series FL500 is a non-thermal 2½" x 5" impact-resistant center set storefront that accepts ⅝" monolithic laminated safety glass designed and engineered for wind-borne debris applications. FL500 impact-resistant storefront is fully tested in accordance with ASTM and Florida Building Code standards for large missile impact and is approved for use in south Florida's High Velocity Hurricane Zone and coastal areas considered wind-borne debris regions.

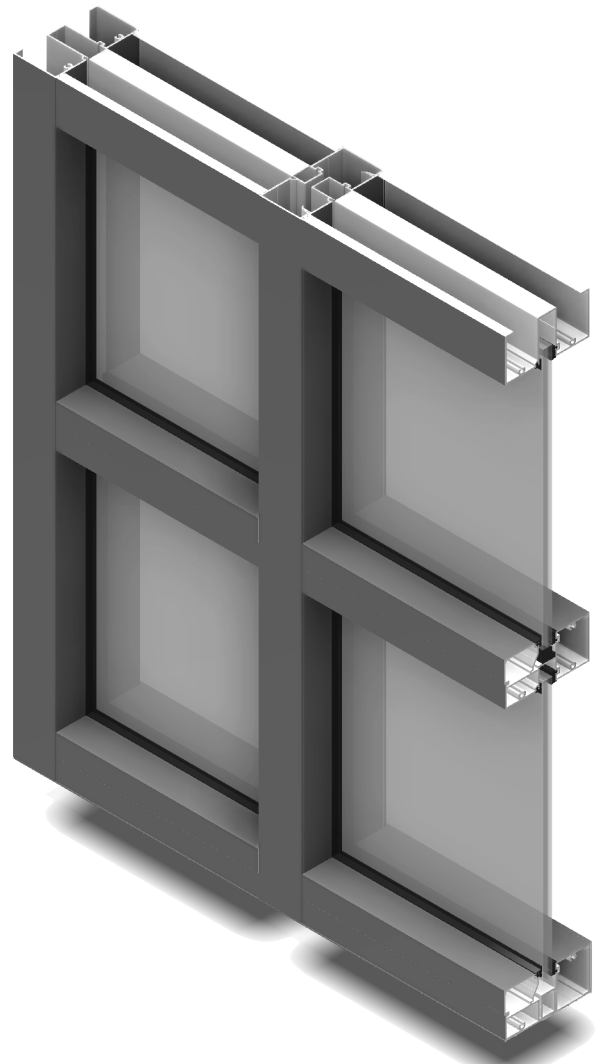
Features

- Outside Glazed
- Screws-spline Assembly
- Accepts ⅝" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill
- Sill Flashing with Full-height Interior Leg and Integral "C" Slot for Continuous Line of Sealant
- Fully Tested

Performance Test Standards

- ASTM E 283 / *TAS 202 – Air Infiltration Test
- ASTM E 331 / *TAS 202 – Water Infiltration Test
- ASTM E 330 / *TAS 202 – Uniform Load Deflection and Structural Test
- ASTM E 1886-1996 / *TAS 201-203 – Missile Impact and Cycling Test
- Florida Product Approval Number- FL15793 (dry-glazed application) FL10467 (wet-glazed application) (impact-resistant for use in HVHZ)

**Indicates test standards in compliance with the current Florida Building Code.*



High Velocity Hurricane Zone Applications

Series FL500 Wet Glazed Hurricane Impact-Resistant Storefront System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion	Wall Jamb Mullion	Maximum Mullion Span	Maximum Mullion Spacing CL to CL	Maximum Glass Size		Qualified Glass Types
					D.L.O. W x H	Sq. Ft.	
+60/-60	FL516/FL505 Heavy Duty Mullion	FL501	120"	48"	45½" x 96"	30.3	A-B
+65/-65	FL504/FL505	FL501	89"	48"	45½" x 84"	26.5	A-B
+70/-80	FL504/FL505 with SR504 Steel Reinforcement	FL501	120"	60"	57½" x 96"	38.3	A

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.075 Vanceva Interlayer	¼" Heat Strengthened Glass	Solutia	A
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.090 Saflex PVB Interlayer	¼" Heat Strengthened Glass	Solutia	B

Comparative Analysis of Glass Based on ASTM E-1300

Dade County Building Compliance Office allows comparative analysis of tested glass types provided the following five conditions are met:

1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration, the ratio of the long-side to the short-side is defined as the aspect ratio).

High Velocity Hurricane Zone Applications

Series FL500 Dry Glazed Hurricane Impact-Resistant Storefront System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion	Wall Jamb Mullion	Maximum Mullion Span	Maximum Mullion Spacing CL to CL	Maximum Glass Size		Qualified Glass Types
					D.L.O. W x H	Sq. Ft.	
+45/-45	FL516/FL505 Heavy Duty Mullion	FL501	120"	60"	57½" x 96"	38.3	D
+70/-70	FL504/FL505 with SR504 Steel Reinforcement	FL501	120"	60"	57½" x 96"	38.3	D

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.090 Sentry Glas Interlayer (Dry-Glazed Application)	¼" Heat Strengthened Glass	DuPont™	D

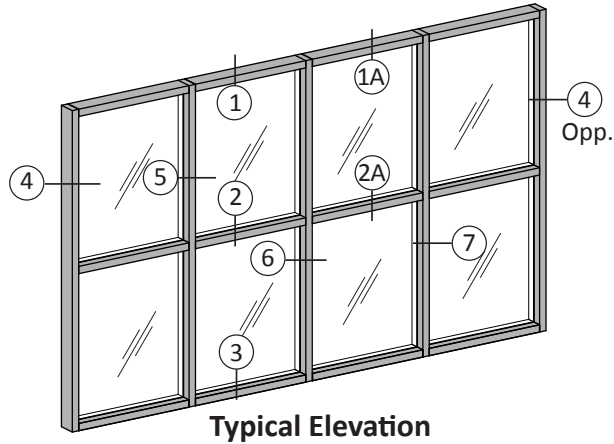
Comparative Analysis of Glass Based on ASTM E-1300

Florida Product Control Office allows comparative analysis of tested glass types provided the following five conditions are met:

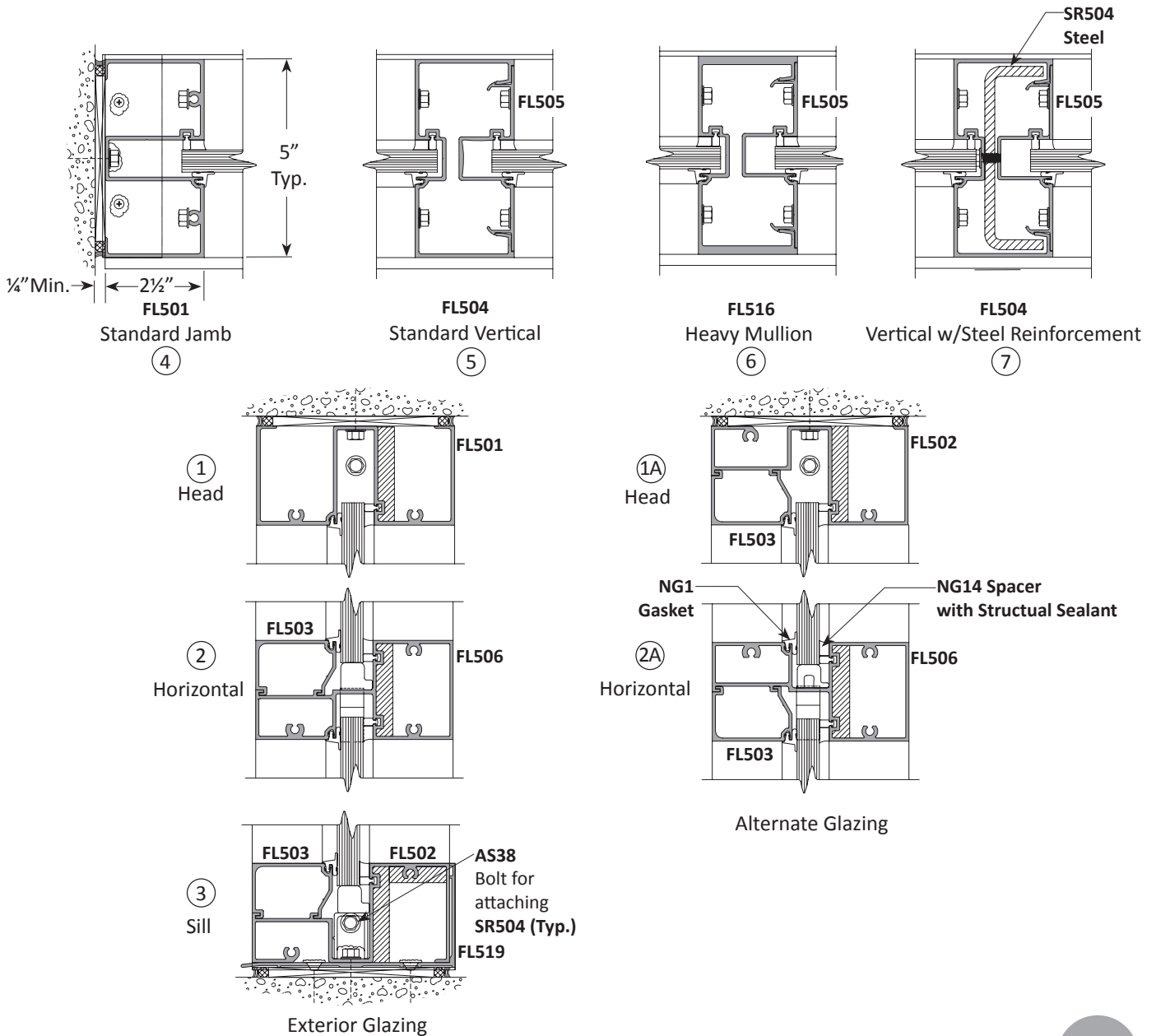
1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration, the ratio of the long-side to the short-side is defined as the aspect ratio).

Standard Framing-Wet Glazed

Scale: 3" = 1'-0"



Typical Elevation

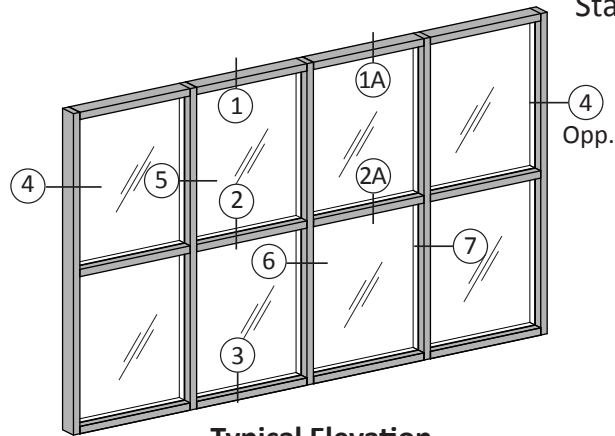


FL500·2½" x 5"

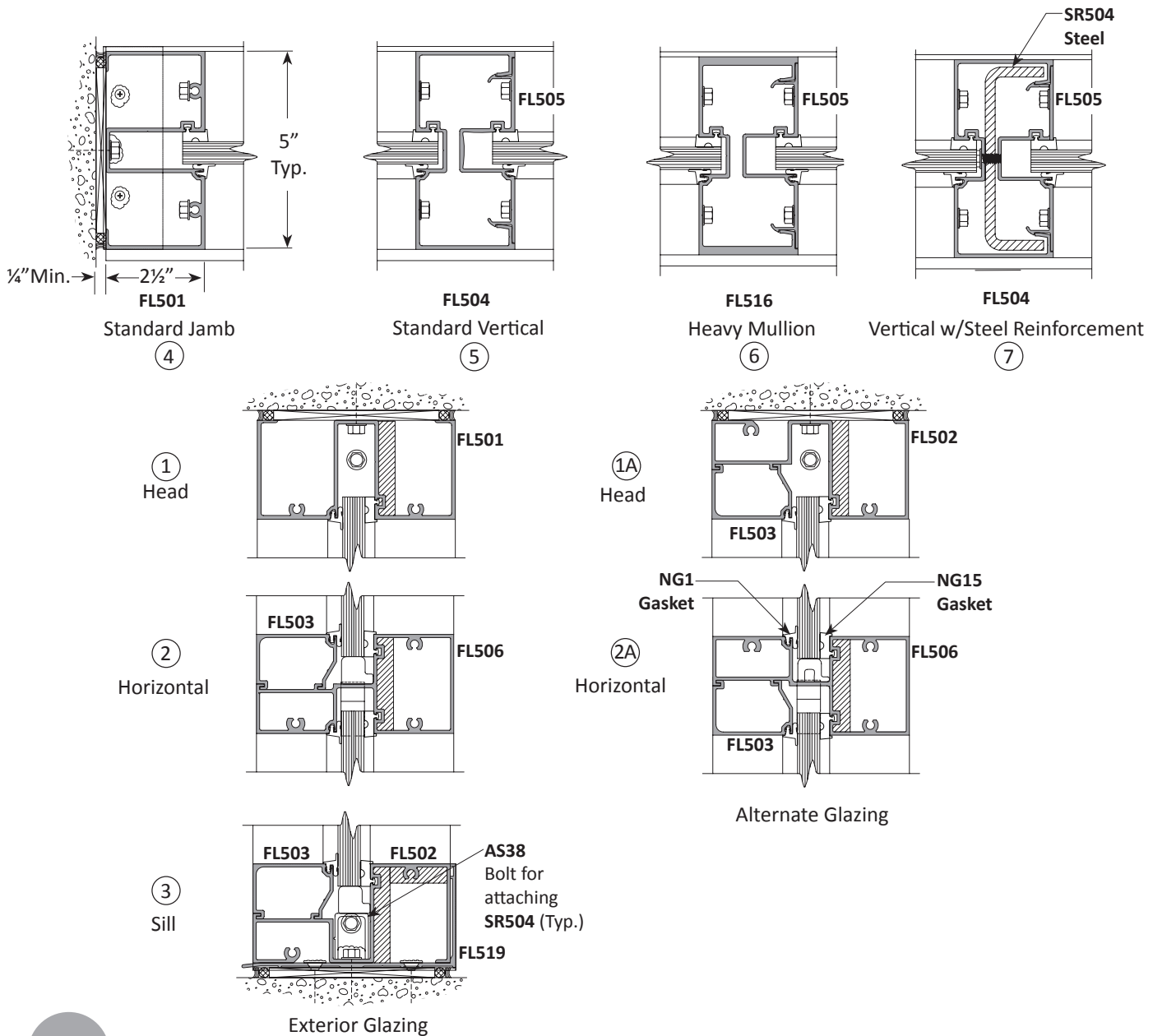
Impact-Resistant Storefront

Coral
ARCHITECTURAL PRODUCTS
A Division of Coral Industries, Inc.

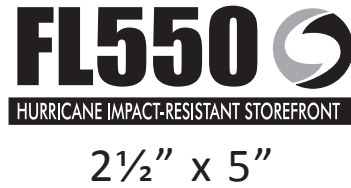
Standard Framing - Dry Glazed
Scale: 3" = 1'-0"



Typical Elevation



Section D3
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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Aluminum Hurricane-Resistant Framing Systems include:
 - a. Series FL550 Framing System: 2-1/2" x 5"; Non-Thermal; Center Glazed for for 1-5/16" laminated glass for Large Missile Impact-Resistant Glazing; Screw Spline Fabrication, Glazing Method; Interior and Exterior EPDM Gaskets Dry-glazed (Select) or Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed. (Select)

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSE WHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Storefront System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 15% of the positive design pressure as defined by the Florida Building Code.

GUIDE SPECIFICATION

4. Uniform Load: A static air design load of +70/-80 P.S.F. with steel reinforcing (60" Spacing x 120" Span) or +60/-60 P.S.F. without steel reinforcing (48" Spacing x 120" Span) shall be applied in the positive and negative direction in accordance with DCBCCO Protocol PA 202 and ASTM E 330. There shall be no deflection in excess of L/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.4% of their clear spans shall occur.
5. Impact Resistance: Large Missile, tested in accordance with Florida Building Code Protocols TAS 201, TAS 203, and ASTM E 1886/1996.
6. Framing System shall provide direct structural attachment to substrate through perimeter framing sections eliminating blind seal condition.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by **Coral Architectural Products** without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

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GUIDE SPECIFICATION

2.01 Manufacturers (Acceptable Manufacturers/Products)

A. Acceptable Manufacturers:

1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web address: www.coralap.com
2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL550 Non-Thermal Impact-Resistant Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
 - c. Framing Member Profile: 2-1/2" x 5" nominal dimension; Center Glazed; Screw Spline Fabrication.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products Impact-Resistant Storefront Framing
 - a. Product: Architectural Aluminum
 - b. Series FL550 Storefront System: 2-1/2" x 5" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
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 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

A. Aluminum (Storefront and Components):

1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Standards and Data.

GUIDE SPECIFICATION

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

GUIDE SPECIFICATION

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass (dry-glazed) and extruded EPDM gaskets at exterior and structural silicone sealant at interior side (wet-glazed) of glass.
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FL550·2½" x 5"

Impact-Resistant Storefront

FEATURES AND BENEFITS

System Description

Series FL550 is a non-thermal 2½" x 5" high-performance storefront system designed to accept 1½" insulated laminated glass. FL550 meets the requirements for hurricane impact-resistance and blast mitigation in accordance with ASTM, Florida Building Code and Federal Government standards. The system can integrate the Series 381 entrance door for blast mitigation and impact-resistant requirements. Coral offers additional options when considering impact-resistant entrance doors. Please contact your Coral representative for more information.

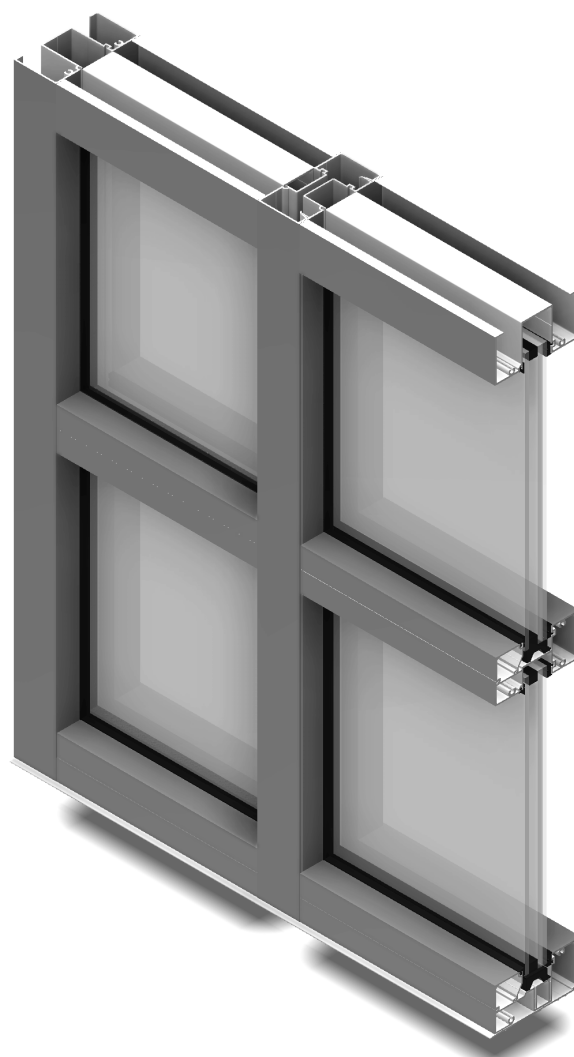
Features

- Outside Glazed
- Screws-spline Assembly
- Accepts 1½" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill
- Fully Tested

Performance Test Standards

- ASTM E 283 / *TAS 202 – Air Infiltration Test
- ASTM E 331 / *TAS 202 – Water Infiltration Test
- ASTM E 330 / *TAS 202 – Uniform Load Deflection and Structural Test
- ASTM E 1886-1996 / *TAS 201-203 – Missile Impact and Cycling Test
- ASTM F 1642 / GSA-TS01 / UFC 4-010-01 Blast Mitigation Test and Performance Levels
- Florida Product Approval Number – FL10467 (wet-glazed application) FL15794 (dry-glazed application) (impact-resistant for use in HVHZ)

**Indicates test standards in compliance with the current Florida Building Code.*



High Velocity Hurricane Zone Applications

Series FL550 Wet Glazed Hurricane Impact-Resistant Storefront System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion	Wall Jamb Mullion	Maximum Mullion Span	Maximum Mullion Spacing CL to CL	Maximum Glass Size		Qualified Glass Types
					D.L.O. W x H	Sq. Ft.	
+60/-60	FL566/FL555 Heavy Duty Mullion	FL551	120"	48"	45½" x 96"	30.3	IA-IB
+65/-65	FL554/FL555	FL551	89"	48"	45½" x 84"	26.5	IA-IB
+70/-80	FL554/FL555 with SR504 Steel Reinforcement	FL551	120"	60"	57½" x 96"	38.3	1A

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Air Space/Spacer Type	Interior Lite		
1⅝" Insulated Glass	¼" Heat Strengthened Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .075 Vanceva Interlayer ¼" Heat Strengthened Glass	Solutia	IA
1⅝" Insulated Glass	¼" Heat Strengthened Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Saflex Interlayer ¼" Heat Strengthened Glass	Solutia	IB

Comparative Analysis of Glass Based on ASTM E-1300

Dade County Building Compliance Office allows comparative analysis of tested glass types provided the following five conditions are met:

1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration, the ratio of the long-side to the short-side is defined as the aspect ratio).

High Velocity Hurricane Zone Applications

Series FL550 Dry Glazed Hurricane Impact-Resistant Storefront System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion	Wall Jamb Mullion	Maximum Mullion Span	Maximum Mullion Spacing CL to CL	Maximum Glass Size		Qualified Glass Types
					D.L.O. W x H	Sq. Ft.	
+45/-45	FL566/FL555 Heavy Duty Mullion	FL551	120"	60"	57½" x 96"	38.3	ID
+70/-70	FL554/FL555 with SR504 Steel Reinforcement	FL551	120"	60"	57½" x 96"	38.3	ID

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Air Space/ Spacer Type	Interior Lite		
1⅞" Laminated Glass	¼" Heat Strengthened Glass or Tempered	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Sentry Glass Interlayer ¼" Heat Strengthened Glass	DuPont™	ID

Comparative Analysis of Glass Based on ASTM E-1300

Florida Product Control Office allows comparative analysis of tested glass types provided the following five conditions are met:

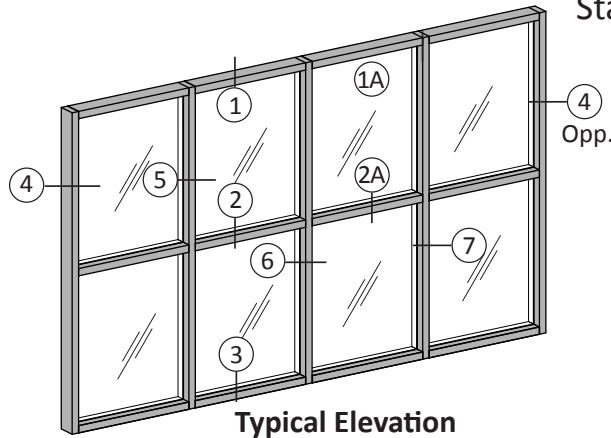
1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration, the ratio of the long-side to the short-side is defined as the aspect ratio).

FL550·2½" x 5"

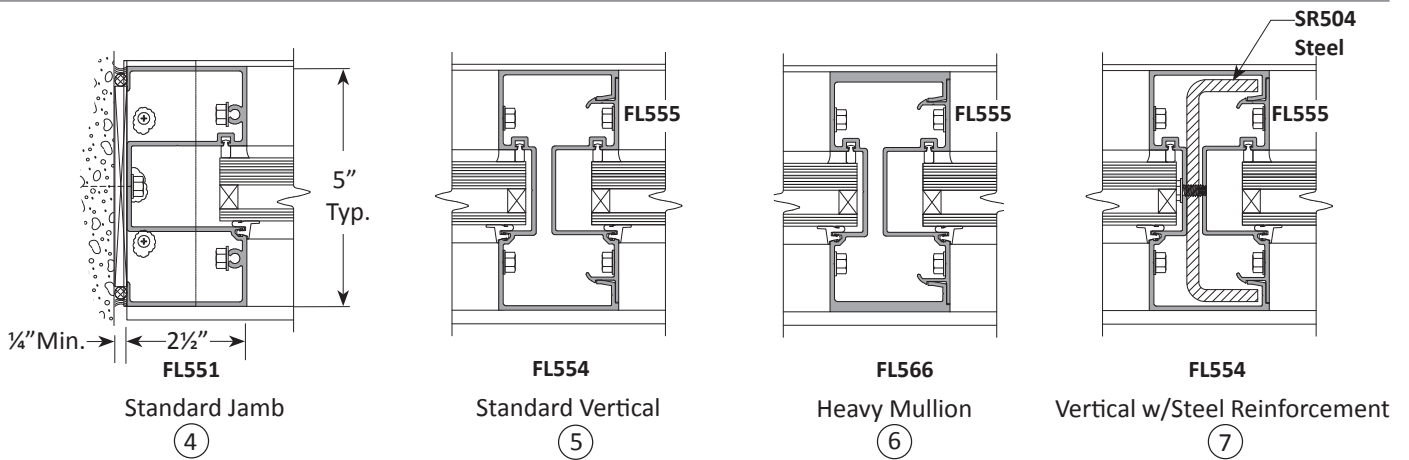
Impact-Resistant Storefront

Standard Framing-Wet Glazed

Scale: 3" = 1'-0"



Typical Elevation

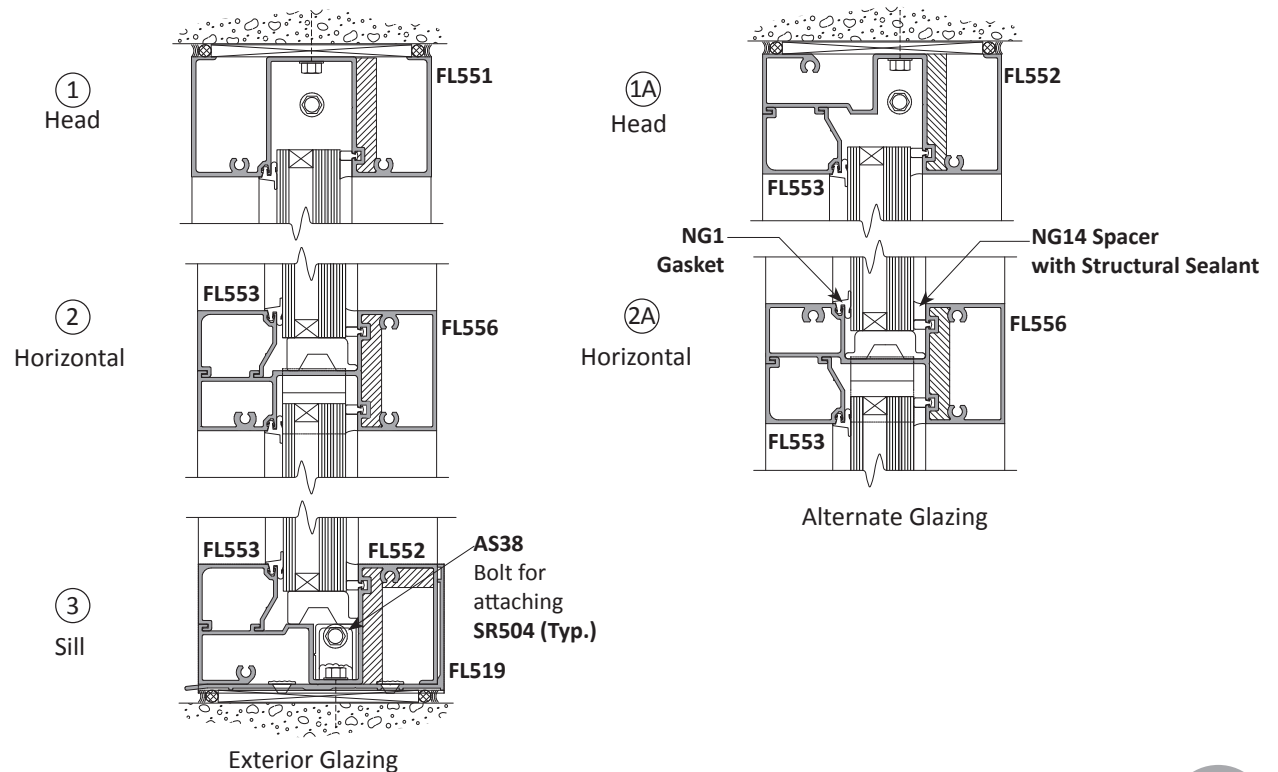


Standard Jamb

Standard Vertical

Heavy Mullion

Vertical w/Steel Reinforcement



Head

Head

Horizontal

Horizontal

Sill

Alternate Glazing

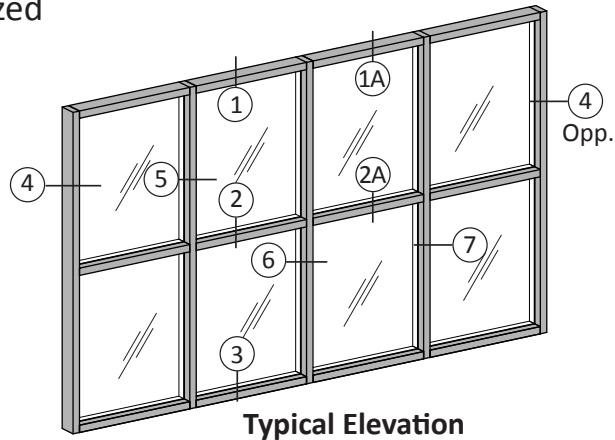
Exterior Glazing

FL550·2½" x 5"

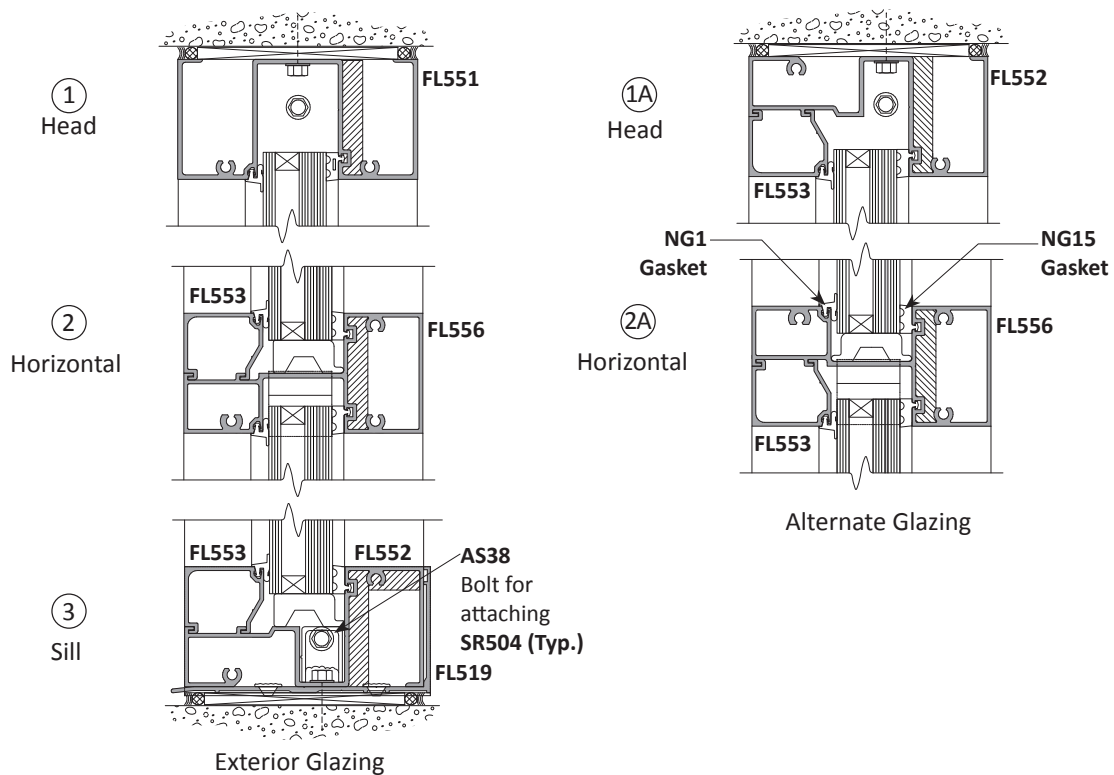
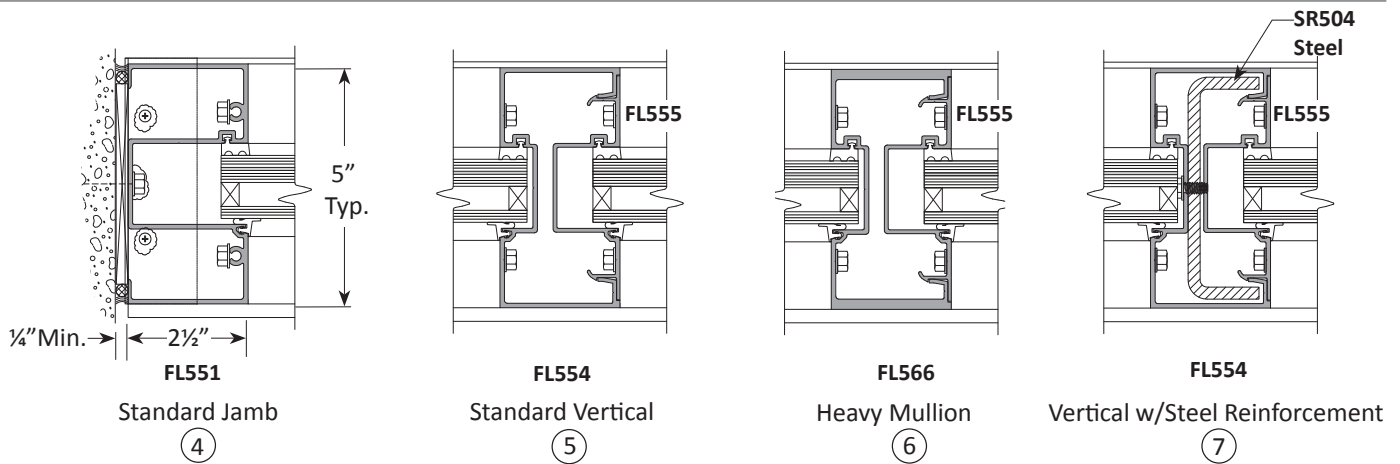
Impact-Resistant Storefront

Standard Framing-Dry Glazed

Scale: 3" = 1'-0"



Typical Elevation

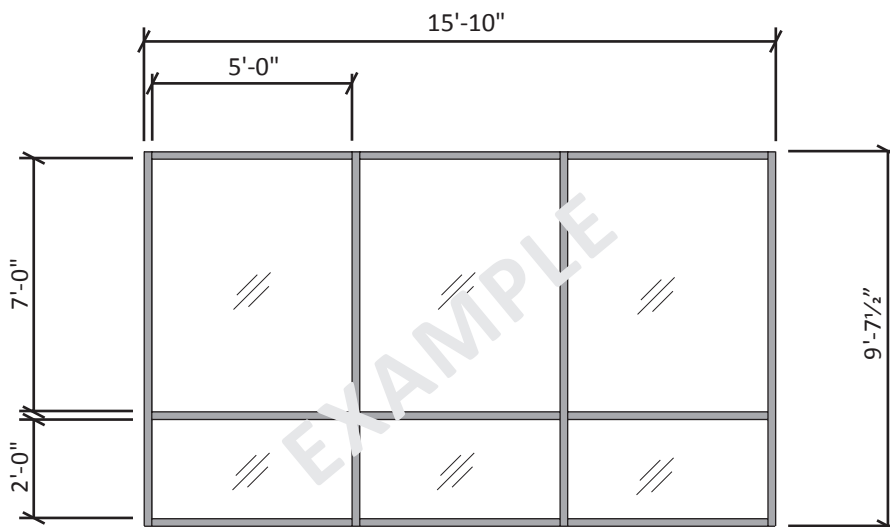


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507 utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation



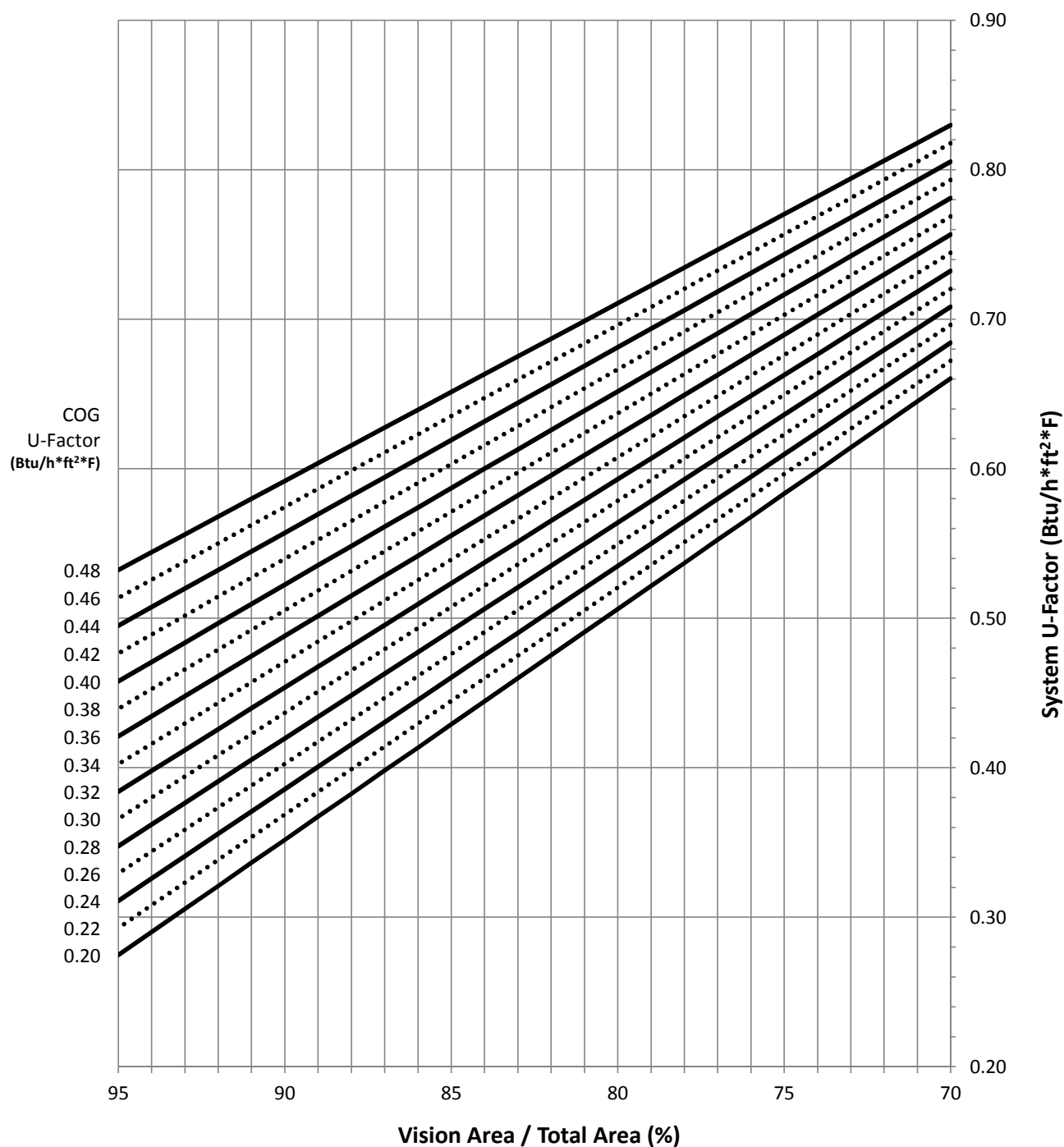
Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System) = 15'-10"x9-7½" = 152.39ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area) = (135 ÷ 152.39)100 = 88%

FL550·2½"×5"

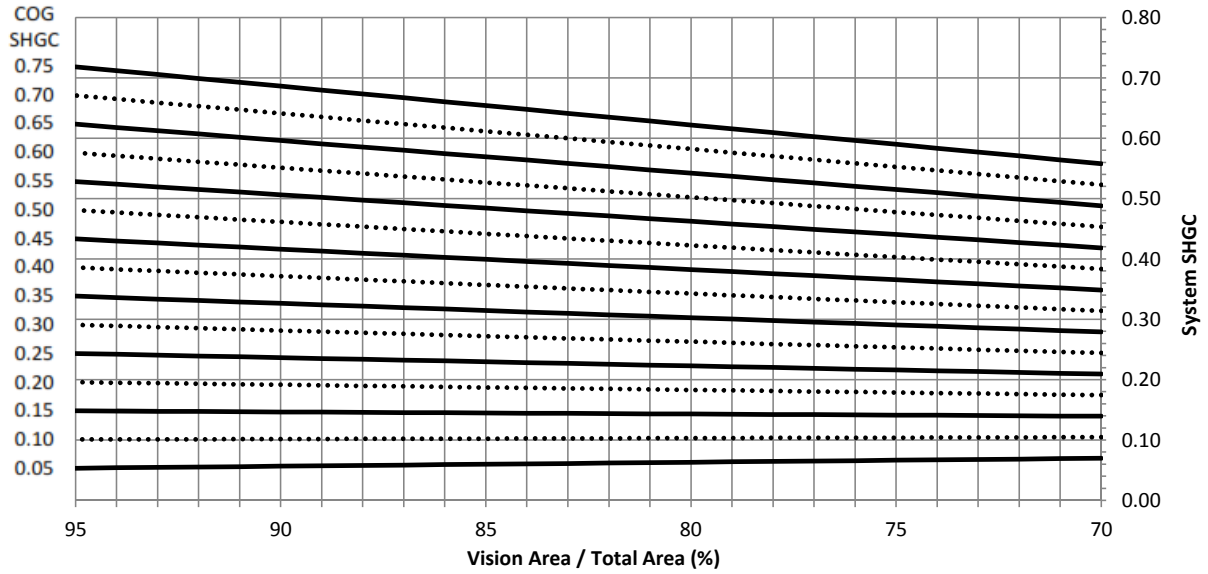
Impact-Resistant Storefront

Thermal Charts

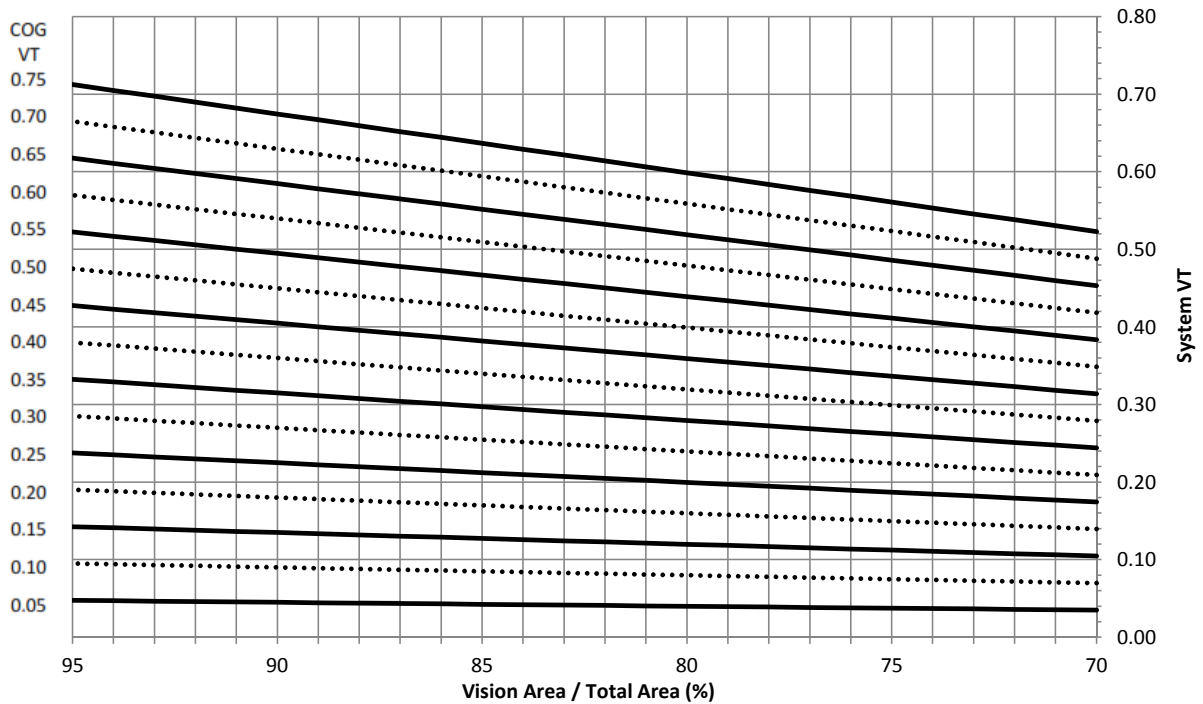
System U-Factor vs. Percentage of Vision Area



System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



FL550·2½" x 5"

Impact-Resistant Storefront



Thermal Charts

Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.64
2	0.46	0.62
3	0.44	0.61
4	0.42	0.59
5	0.40	0.58
6	0.38	0.56
7	0.36	0.54
8	0.34	0.53
9	0.32	0.51
10	0.30	0.50
11	0.28	0.48
12	0.26	0.47
13	0.24	0.45
14	0.22	0.43
15	0.20	0.42

**Size-Specific SHGC Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass SHGC	Overall SHGC
0.75	0.66
0.70	0.62
0.65	0.57
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.19
0.15	0.15
0.10	0.10
0.05	0.06

**Size-Specific VT Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass VT	Overall VT
0.75	0.64
0.70	0.60
0.65	0.56
0.60	0.51
0.55	0.47
0.50	0.43
0.45	0.39
0.40	0.34
0.35	0.30
0.30	0.26
0.25	0.21
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section D4
Table of Contents



2½" x 5"

Specifications - FL550T	S1-S5
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High Velocity Hurricane Zone Applications	2
Standard Framing	3
Thermal Charts	4-7

FL550T·2½" x 5"

Thermal Impact-Resistant Storefront



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GUIDE SPECIFICATION

Series FL550T Thermal (2½" x 5") Impact-Resistant Storefront

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08410 ALUMINUM ENTRANCES AND STOREFRONT SYSTEMS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront framing.
 - 1. Types of Coral Aluminum Hurricane-Resistant Framing Systems include:
 - a. FL550T Framing System: 2-1/2" x 5"; Thermal; Center Glazed for 1-5/16" insulated laminated glass for Large and Small Missile Impact-Resistant Glazing; Screw Spline Fabrication, Glazing Method; Interior and Exterior EPDM Gaskets Dry-glazed (Select) or Interior Structural Silicone and Exterior EPDM Gaskets Wet-glazed. (Select)

EDITOR NOTE: BELOW RELATED SECTIONS ARE SPECIFIED ELSEWHERE, HOWEVER, CORAL ARCHITECTUAL PRODUCTS RECOMMENDS SINGLE SOURCE RESPONSIBILITY FOR ALL OF THESE SECTIONS AS INDICATED IN 2.07 SOURCE QUALITY CONTROL.

- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

EDITOR NOTE: AIR AND WATER PERFORMANCE RESULTS ARE BASED UPON ASTM AND AAMA STANDARDS FOR STOREFRONT FRAMING SYSTEMS. HIGHER PERFORMANCE RESULTS HAVE BEEN CERTIFIED AND ARE AVAILABLE. CONSULT YOUR LOCAL CORAL ARCHITECTURAL REPRESENTATIVE CONCERNING SPECIFIC PROJECT PERFORMANCE REQUIREMENTS. THE SPECIFIER MUST SELECT GLASS AND MULLION COMBINATIONS FROM THE OPTIONS AND LIMITATIONS CHART PROVIDED IN 2.04 B. THE GLASS AND MULLIONS FUNCTION AS AN INTEGRAL UNIT. THESE COMBINATIONS ARE BASED ON ACTUAL PERFORMANCE TESTING AND CANNOT BE ALTERED WITHOUT SACRIFICING THE INTEGRITY OF THE SYSTEM.

GUIDE SPECIFICATION

A. Storefront System Performance Requirements:

1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
2. Air Infiltration: The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
3. Water Resistance (static): The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 15 of the positive design pressure as defined by the Florida Building Code.
4. Uniform Load: A static air design load pressure of +55 / -55 P.S.F. without steel reinforcing (48" x 120" Span) shall be applied in the positive and negative direction in accordance with the Florida Building Code Protocol TAS 202 and ASTM E 330. There shall be no deflection in excess of L/180 of the span of any framing member at a structural test load equal to 1.5 times the specified design load or permanent set in the framing members in excess of 0.4% of their clear spans shall occur.
5. Impact Resistance: Large and Small Missile, tested in accordance with Florida Building Code Protocols TAS 201, TAS 203, and ASTM E 1886/1996.
6. Thermal: The test specimen shall be tested in accordance with AAMA 1503-09 Voluntary Test Method for Thermal Transmittance and Condensation resistance of Windows, Doors and Glazed Wall Sections. Thermal transmittance due to conduction (U) shall not exceed 0.42 (expressed in Btu/hr•ft²•F) and the condensation resistance factor (CRFf) at frame shall not be less than 57.
7. Framing System shall provide direct structural attachment to substrate through perimeter framing sections eliminating blind seal condition.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for storefront system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by **Coral Architectural Products** without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has special ized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities and other hazards before, during and after storefront installation.

GUIDE SPECIFICATION

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
 - a. Telephone: (800) 772-7737
 - b. Fax: (800) 443-6261
 - c. Email: info@coralap.com
 - d. Web address: www.coralap.com
 2. Proprietary Product(s)/System(s): Coral Architectural Products
 - a. Series: FL550T Thermal Impact-Resistant Storefront System

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY), AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
 - c. Framing Member Profile: 2-1/2" x 5" nominal dimension; Center Glazed; Screw Spline Fabrication.
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products Impact-Resistant Storefront Framing
 - a. Product: Architectural Aluminum
 - b. Series FL550T Storefront System: 2-1/2" x 5" nominal dimension, Center Glazed; Screw-Spline Fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid storefront installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for storefront system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for storefront required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of storefront for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

GUIDE SPECIFICATION

2.02 Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Aluminum Association Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier:
 - a. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCTS' STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

2.06 Finishes

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____.

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

GUIDE SPECIFICATION

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install storefront systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be (outside) or (inside) glazed and held in place with extruded EPDM glazing gaskets on both sides of the glass (dry-glazed).
 3. Water Drainage: ***Water deflectors shall be installed at each end of intermediate horizontal allowing infiltrated water to drain down the vertical member's glazing pocket into subsill flashing where it weeps to the exterior.***
- B. Related Products Installation Requirements:
1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

FL550T·2½" x 5"

Thermal Impact-Resistant Storefront



FEATURES AND BENEFITS

System Description

Series FL550T is a thermally broken 2½" x 5" impact-resistant center set storefront that accepts 1⅝" insulated laminated safety glass designed and engineered for wind-borne debris applications. FL550T impact-resistant storefront is fully tested for large and small missile impact in accordance with ASTM and Florida Building Code standards for use in south Florida's High Velocity Hurricane Zone and coastal areas requiring protection. Enhanced thermal performance is achieved using thermal break construction in response to increased demands for energy efficient commercial buildings.

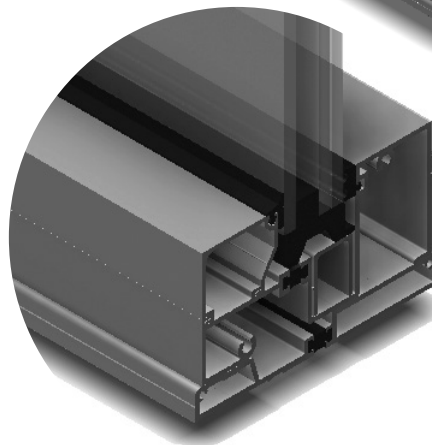
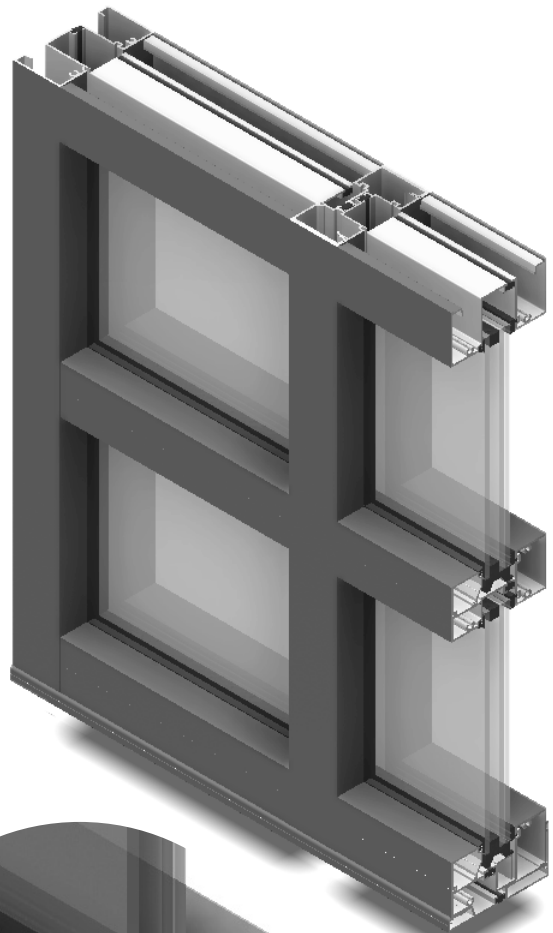
Features

- Outside or Inside Glazed
- Screws-spline Assembly
- Accepts 1⅝" Glazing Infill
- CoraPunch Punch Press Die Sets or Drill Jigs Available
- Deep Glazing Pocket Profiles eliminates blind seal conditions at sill
- Fully Tested

Performance Test Standards

- ASTM E 283 / *TAS 202 – Air Infiltration Test
- ASTM E 331 / *TAS 202 – Water Infiltration Test
- ASTM E 330 / *TAS 202 – Uniform Load Deflection and Structural Test
- ASTM E 1886-1996 / *TAS 201-203 – Missile Impact and Cycling Test
- AAMA 1503-09 / NFRC 102-2010 Thermal Transmittance Performance – Pending
- Florida Product Approval Number – FL16719 (impact-resistant for use in HVHZ)

**Indicates test standards in compliance with the current Florida Building Code.*



High Velocity Hurricane Zone Applications

Series FL550T Thermal Dry Glazed Hurricane Impact-Resistant Storefront System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion	Wall Jamb Mullion	Maximum Mullion Span	Maximum Mullion Spacing CL to CL	Maximum Glass Size		Qualified Glass Types
					D.L.O. W x H	Sq. Ft.	
+55/-55 Large Missile	FL574T/FL575T Heavy Duty Mullion	FL571T	120"	48"	45½" x 96"	30.3	ID
+55/-55 Small Missile	FL574T/FL575T Heavy Duty Mullion	FL571T	108"	48"	45½" x 103"	32.5	IC

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Air Space/ Spacer Type	Interior Lite (Laminated Glass)		
1⅝" Insulated Glass	¼" Heat Strengthened or Tempered Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Sentry Glass Interlayer ¼" HeatStrengthened Glass (Dry Glazed)	DuPont™	ID
1⅝" Insulated Glass	¼" Heat Strengthened or Tempered Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .035 Sentry Glass Interlayer ¼" HeatStrengthened Glass (Small Missile Application Only)	DuPont™	IC

Comparative Analysis of Glass Based on ASTM E-1300

Florida Product Control Office allows comparative analysis of tested glass types provided the following five conditions are met:

1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration, the ratio of the long-side to the short-side is defined as the aspect ratio).

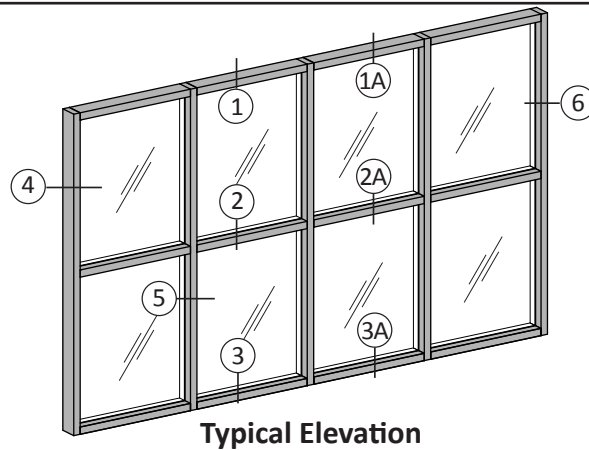
FL550T·2½" x 5"

Thermal Impact-Resistant Storefront

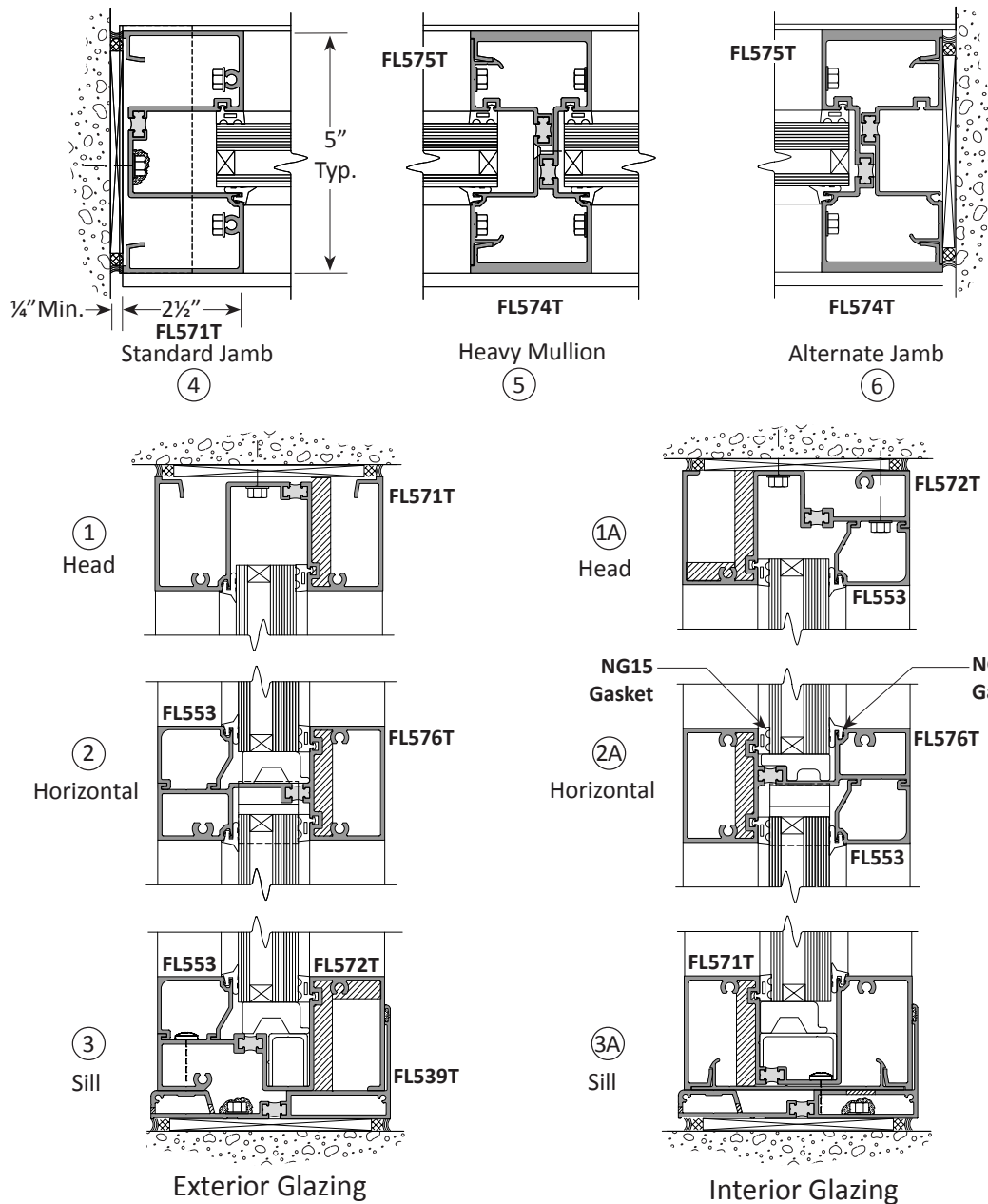
Coral
ARCHITECTURAL PRODUCTS
A Division of Coral Industries, Inc.

Standard Framing

Scale: 3" = 1'-0"



Typical Elevation

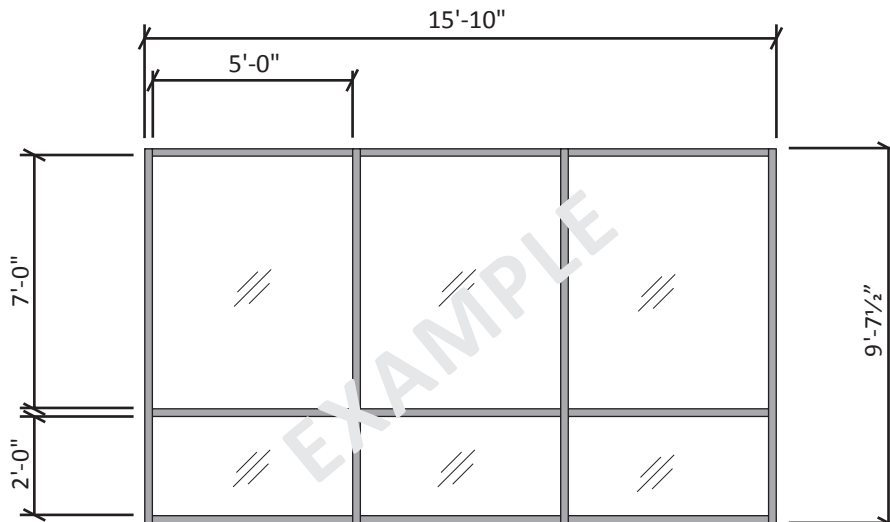


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507 utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts.

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Project Specific U-Factor Example Calculation



Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System) = 15'-10"x9-7½" = 152.39ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area) = (135 ÷ 152.39)100 = 88%

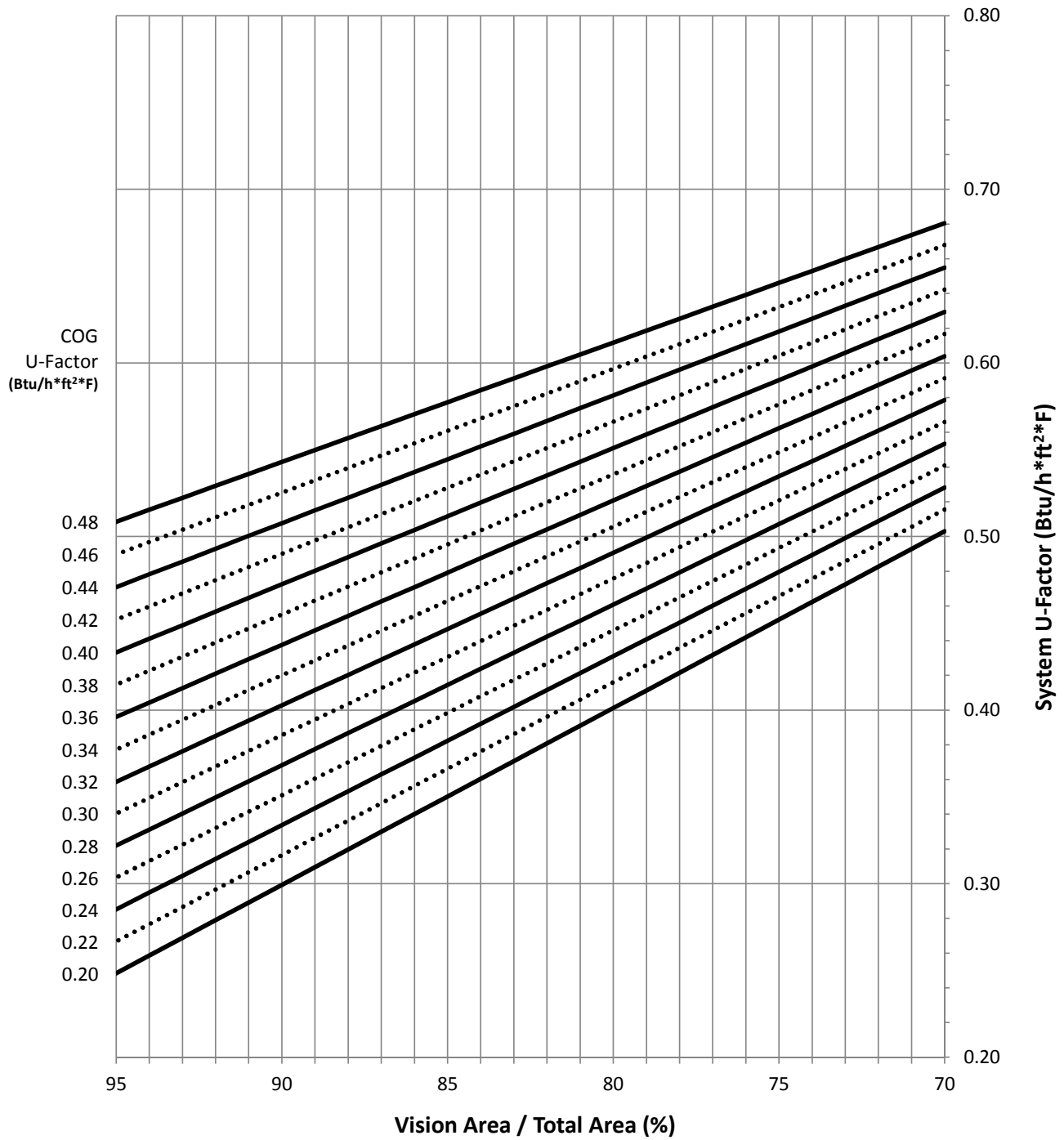
FL550T·2½" x 5"

Thermal Impact-Resistant Storefront

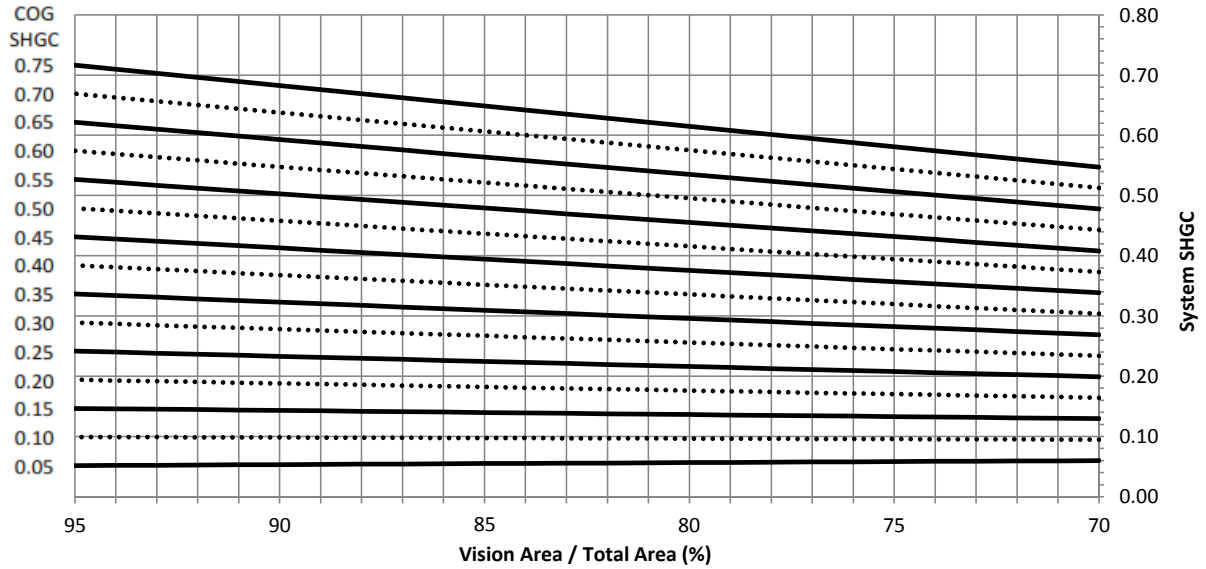


Thermal Charts

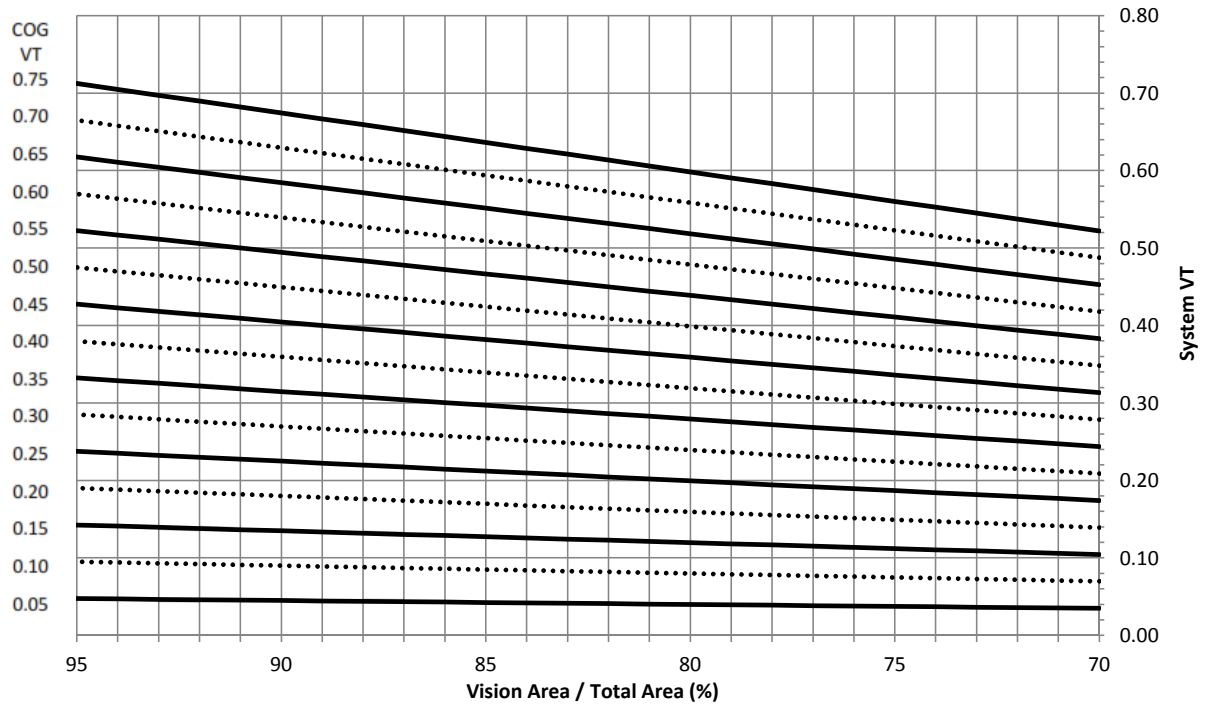
System U-Factor vs. Percentage of Vision Area



System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



FL550T·2½" x 5"

Thermal Impact-Resistant Storefront



Thermal Charts

Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.57
2	0.46	0.55
3	0.44	0.54
4	0.42	0.52
5	0.40	0.51
6	0.38	0.49
7	0.36	0.48
8	0.34	0.46
9	0.32	0.44
10	0.30	0.43
11	0.28	0.41
12	0.26	0.40
13	0.24	0.38
14	0.22	0.37
15	0.20	0.35

**Size-Specific SHGC Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass SHGC	Overall SHGC
0.75	0.65
0.70	0.61
0.65	0.57
0.60	0.52
0.55	0.48
0.50	0.44
0.45	0.40
0.40	0.35
0.35	0.31
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.10
0.05	0.05

**Size-Specific VT Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass VT	Overall VT
0.75	0.64
0.70	0.60
0.65	0.55
0.60	0.51
0.55	0.47
0.50	0.43
0.45	0.38
0.40	0.34
0.35	0.30
0.30	0.26
0.25	0.21
0.20	0.17
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

- System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
- SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

Section D5
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2½" x 6⅞"
 for ⅞" Laminated Glass

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Captured Corner Framing - Captured System.....,,,,,,,,,	4
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Entrance Framing	6

PW256·2½" x 6⁹/₁₆"

Impact-Resistant Curtain Wall



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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08900 ALUMINUM CURTAIN WALL

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series PW256 Panelized Curtain Wall System: 2-1/2" x 6-9/16" Impact-Resistant Curtain Wall System outside glazed captured pressure wall system for 9/16" monolithic laminated safety glass. (Select)
 - b. Series PW256 Panelized Curtain Wall System: 2-1/2" x 6-9/16" Impact-Resistant Curtain Wall System outside glazed (SSG) structural silicone glazed pressure wall system for 9/16" monolithic laminated safety glass. (Select)
- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance, storefront, and curtain wall system
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and curtain walls"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Curtain Wall System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance (static): The test specimen shall be tested in accordance with ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 20 PSF as defined in AAMA 501.

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4. Uniform Load: A static air design load of +80/-80 P.S.F. with steel reinforcing (60" Spacing x 150" Span) or +65/-65 P.S.F. without steel reinforcing (48" Spacing x 108" Span) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.4% of their clear spans shall occur.
5. Impact Resistance: Large Missile, tested in accordance with ASTM E 1886/1996.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for curtain wall system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by Coral Architectural Products without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle curtain wall material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities and other hazards before, during and after curtain wall installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

GUIDE SPECIFICATION

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
- Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
a. Telephone: (800) 772-7737
b. Fax: (800) 443-6261
c. Email: info@coralap.com
d. Web address: www.coralap.com
 - Proprietary Product(s)/System(s): Coral Architectural Products
a. Series: PW256 outside glazed impact-resistant pressure wall curtain wall system

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- Finish/Color: (See 2.06 Finishes)
 - Framing Member Profile: 2-1/2 x 6-9/16" nominal dimension; pressure bar; screw-spline fabrication
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
- Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - Product: Architectural Aluminum
 - Series PW256 Panelized System: 2-1/2" x 6-9/16" nominal dimension; pressure bar; screw-spline fabrication
- C. Substitutions:
- General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid curtain wall installation and construction delays.
 - Substitution Documentation
 - Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - Certificates: Submit certificate(s) certifying substitute manufacturer, attesting to adherence to specification requirements for curtain wall system performance criteria.
 - Test Reports: Submit test reports verifying compliance with each test requirement for curtain wall required by the project.
 - Product Sample and Finish: Submit product sample, representative of curtain wall for the project, with specified finish and color.
 - Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Curtain wall and Components):
- Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 - Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 - Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Architectural Aluminum Standards and Data.

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for

PW256·2½" x 6⅞"

Impact-Resistant Curtain Wall



GUIDE SPECIFICATION

silicone adhesion.

- C. Perimeter Anchors: Aluminum; When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum storefront specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

EDITOR NOTE: COORDINATE BELOW ARTICLE WITH MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND INSTALLATION INSTRUCTIONS.

GUIDE SPECIFICATION

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install curtain wall systems plumb, level and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure bars anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.
 3. Water Drainage: Each light of glass shall be compartmentalized by using end dams at horizontal/vertical joint intersections and silicone sealant to divert water to the horizontal weeps. Weep holes shall be located in the horizontal pressure bars and covers to divert water to the exterior of the building.
- B. Related Products Installation Requirements:
 1. Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section.
 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

PW256·2½" x 6⅞"

Impact-Resistant Curtain Wall

FEATURES AND BENEFITS

System Description

Panelized construction using proven screw spline joinery reduces fabrication and installation time. Interior horizontal snap-on trim covers increase quality by allowing inspection and repair of critical horizontal/vertical seals and perimeter anchor attachment to substrate prior to or after glazing.

Framing panels can be shop fabricated, assembled, transported to job site and then coupled together creating a complete panelized curtain wall installation.

Glazing Features:

- Same EPDM dense gasket used on interior and exterior at glass

Screw spline joinery allows:

- Coral Punch die shop fabrication
- Die set punches spline and pressure bar weep holes
- Panelized frame assembly for easy transporting and installation
- Eliminates "T" anchors

Pressure Bars:

- Factory installed EPDM thermal isolator with attachment holes pre-punched 9" O.C.

Interior Snap-on Covers:

- Inspection and/or repair of critical joint seal areas prior to and after glazing
- Perimeter anchor attachment and inspection

Injection molded plastic end dams

and bridges at horizontals provide:

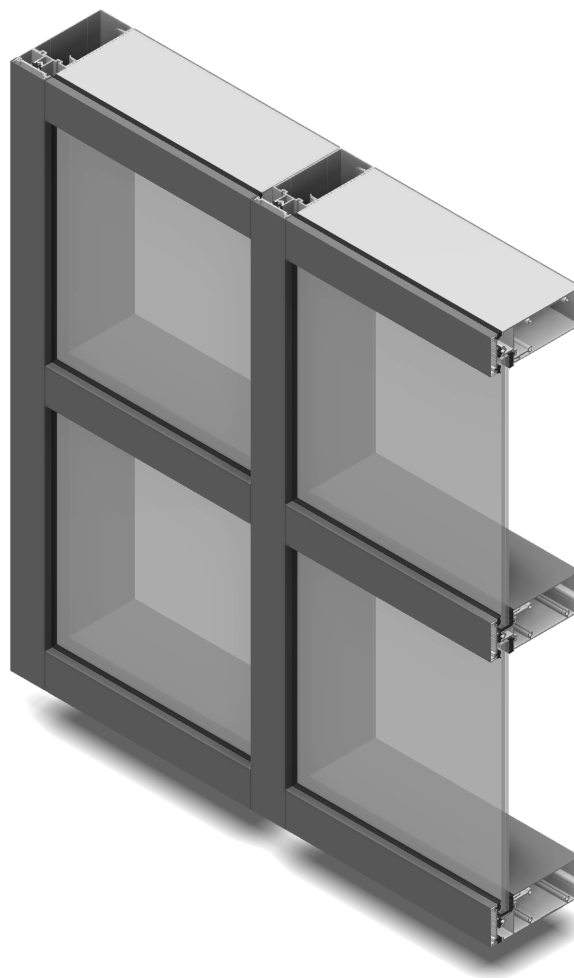
- Tight seals at intersection of vertical/horizontal joints for zone glazing.

Aluminum top and bottom vertical mullion caps:

- Provides continuous perimeter seal

Injection molded plastic temporary glazing retainer:

- Reduces labor
- Distributes uniform pressure on glass reducing risk of breaking glass
- Reusable for next project



Performance Test Standards

- ASTM E 283 – Air Infiltration Test
- ASTM E 331 – Water Infiltration Test
- ASTM E 330 – Uniform Load Deflection and Structural Test
- Florida Product Approval Number – FL12880 (impact-resistant for use outside HVHZ)

Series PW256 Hurricane Impact-Resistant Curtain Wall System Applications

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion Without Steel	Intermediate Vertical Mullion With Steel SR150 with 1/2"x4" Bar Welded	Intermediate Vertical Mullion With Steel SR150 with 3/4"x4" Bar Welded	Wall Jamb Mullion Must Be Anchored at Horizontals	Maximum Mullion	Maximum Mullion Anchor Point	Maximum Mullion Spacing Center to Center * see notes	Maximum Glass Size D.L.O.	Square Feet	Qualified Glass Types
PW256 Impact Resistant Curtain Wall - Captured										
+65/-65	PW550/202			PW550/202	108"		48"	45 ½" x 84"	26.5	B, A
+80/-80		PW550/202		PW550/202	150"	150"	60"	57 ½" x 96"	38.3	A
+80/-80			PW550/202	PW550/202	150"	150"	76 1/2" *(1)	72" x 47 ¼"	23.6	A
+80/-80	*(3)	Corner PW208/209 and SR504			150"	150"	60"	57 ½" x 96"	38.3	A
PW256 Impact Resistant Curtain Wall - Butt Glazed										
+80/-80		PW151/202		PW550/202		150"	48"	45 ½" x 96"	30.5	A
+80/-80	*(2)	Corner Captured Only PW208/209 and SR504			150"	150"	48"	45 ½" x 96"	30.5	A
PW256 Impact Resistant Curtain Wall - Dry Glazed										
+65/-65		PW550/202		PW550/202	150"		60"			D

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Interlayer	Interior Lite		
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.075 Vanceva Interlayer	¼" Heat Strengthened Glass	Solutia	A
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.090 Saflex PVB Interlayer	¼" Heat Strengthened Glass	Solutia	B
⅝" Monolithic Glass	¼" Heat Strengthened Glass	.090 Sentry GlasInterlayer (Dry-Glazed Application)	¼" Heat Strengthened Glass	DuPont™	D

Comparative Analysis of Glass Based on ASTM E-1300

* Notes

- Based on opening for door and frame. Horizontals must be used at 48" intervals.
- Captured corner can be used with butt glazed system. Mullion spacing cannot exceed 48" on center.
- Corner assembly consists of PW 208/209/154/PW210 and SR 504 Steel.

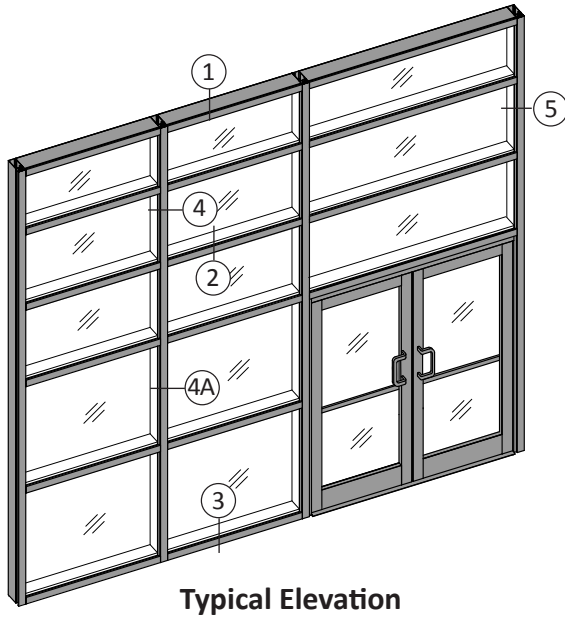
PW256·2½" x 6⅞"

Impact-Resistant Curtain Wall

Coral
ARCHITECTURAL PRODUCTS
A Division of Coral Industries, Inc.

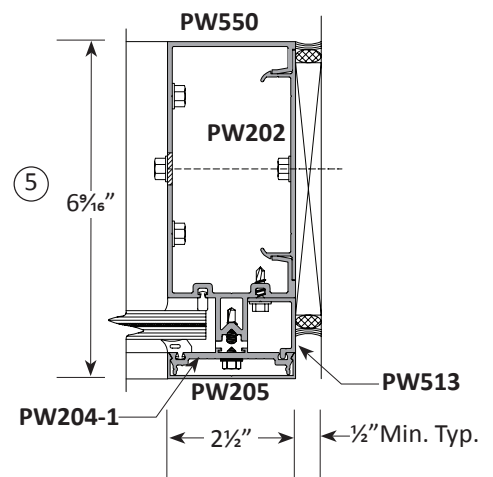
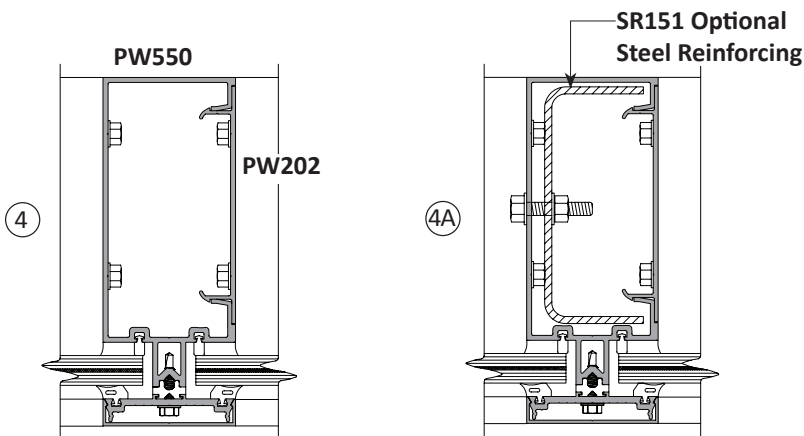
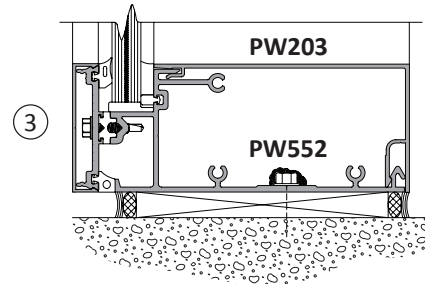
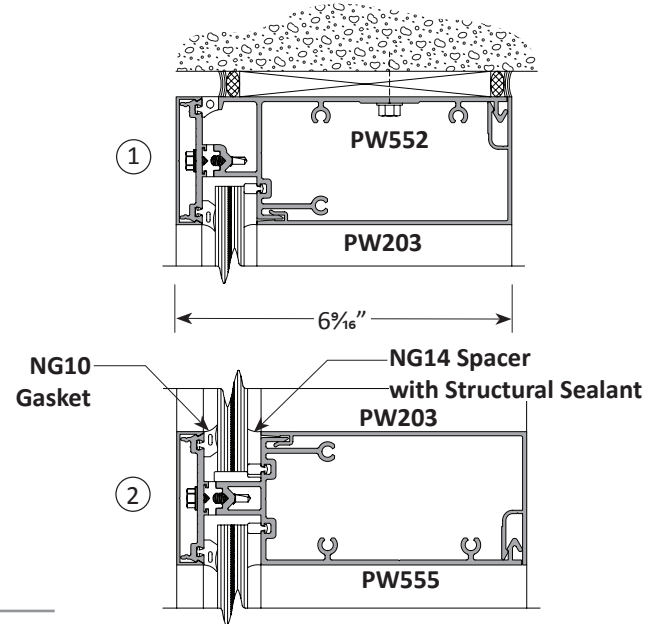
Standard Framing - Captured System

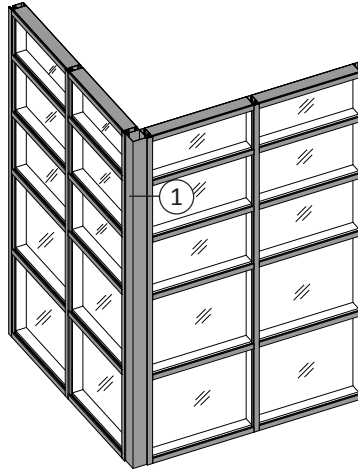
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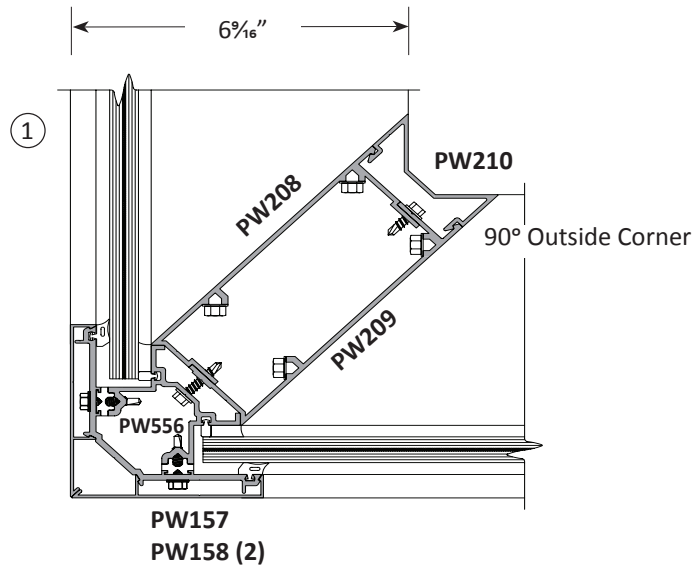
Typical Elevation

Wet Glazed Application





90° Corner Elevation

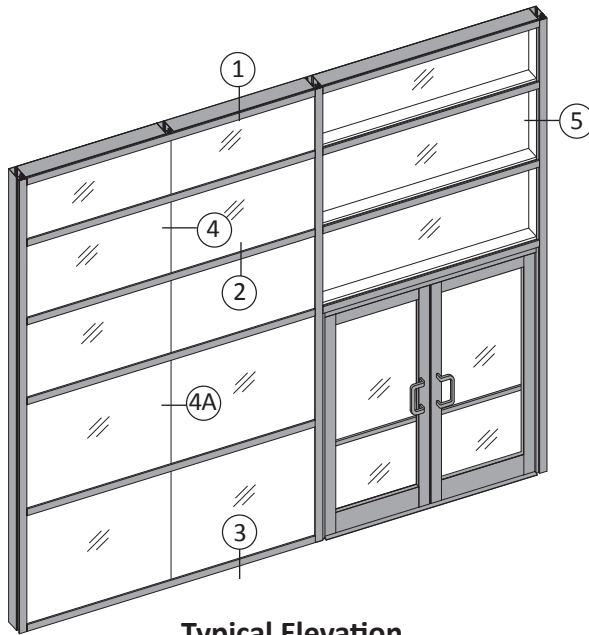


PW256·2½" x 6⅞"

Impact-Resistant Curtain Wall

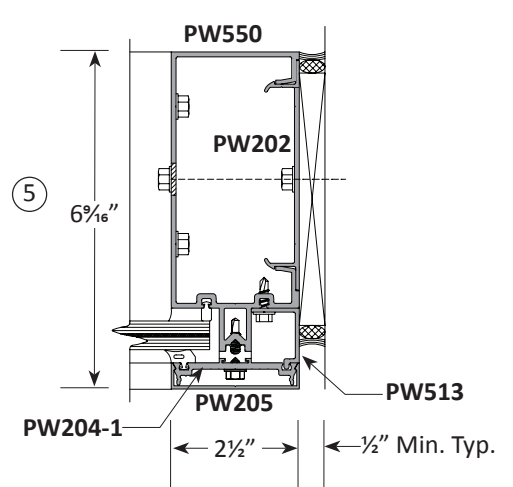
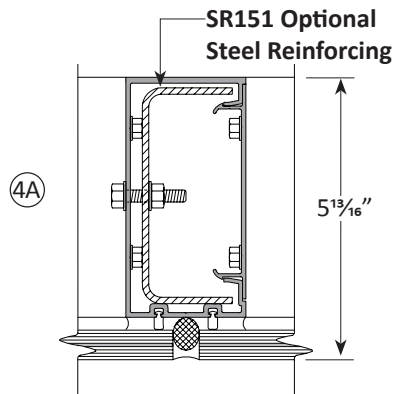
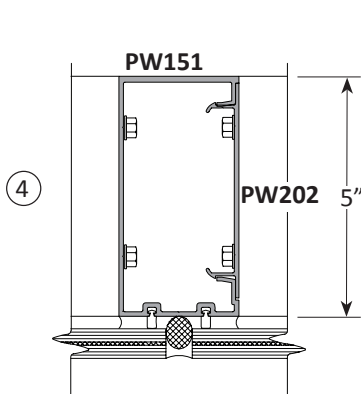
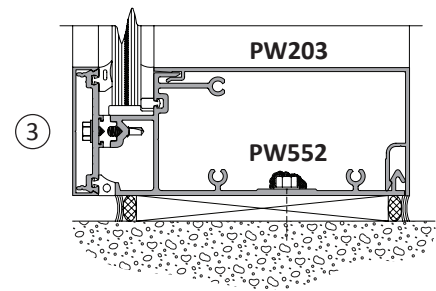
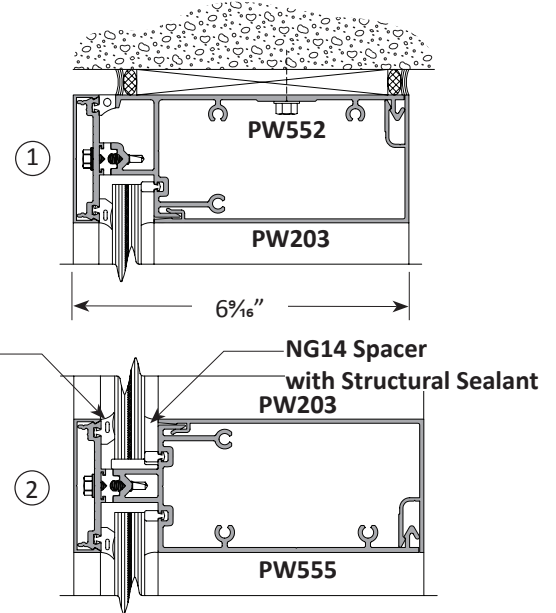
Standard Framing - Structural Silicone Glazed (SSG) System

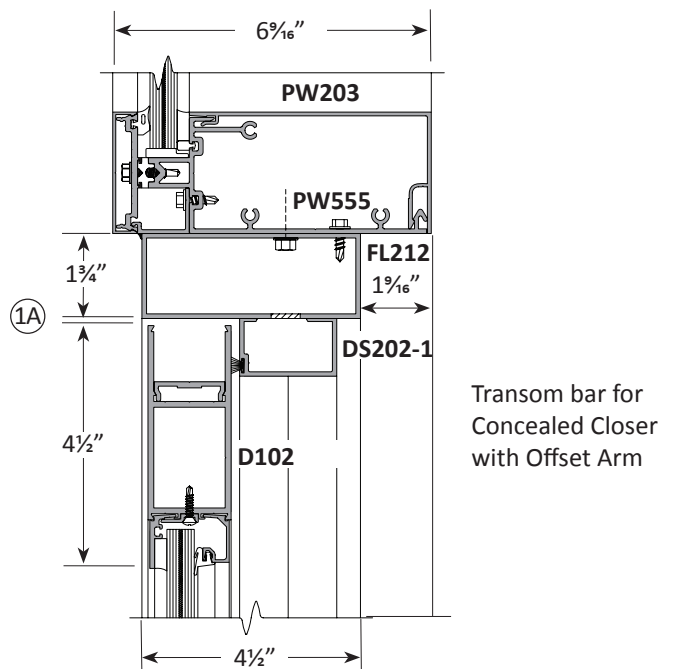
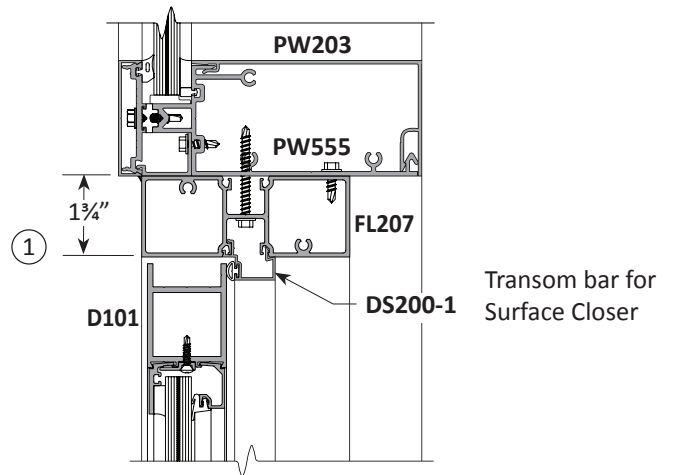
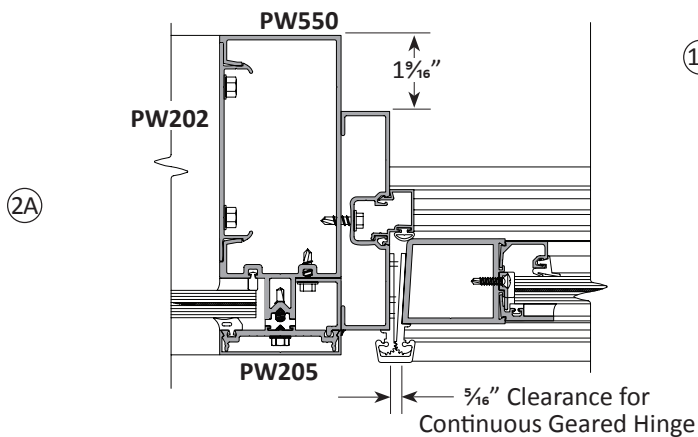
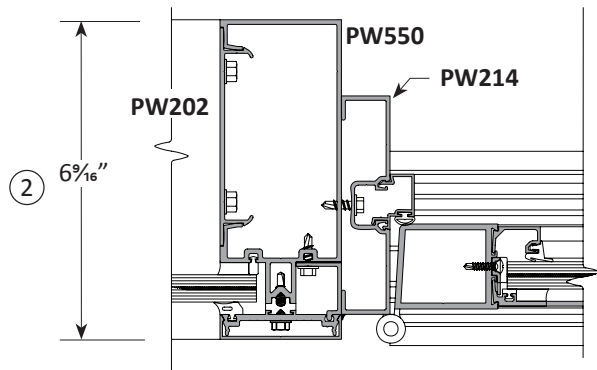
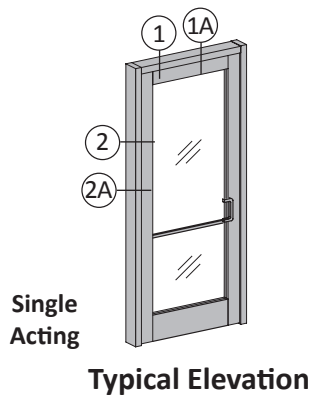
Scale: 3" = 1'-0"



Typical Elevation

Wet Glazed Application





Section D6
Table of Contents



2½" x 7⁵/₁₆"
for 1⁵/₁₆" Laminated Glass

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PW257·2½" x 7⁵/₁₆"

Impact-Resistant Curtain Wall



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GUIDE SPECIFICATION

Manufacturer:
Coral Architectural Products
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Voice: (800) 772-7737
Fax: (800) 443-6261

SECTION 08900 ALUMINUM CURTAIN WALL

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI 3 Part Section Format and the CSI Page Format. The developmental concept and organizational arrangement used by the American Institute of Architects (AIA) MASTERSPEC Program were recognized in the preparation of this guide specification. Neither CSI nor AIA endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

PART 1 – GENERAL

1.01 Summary

- A. Section Includes: Coral Architectural Products™, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.
 - 1. Types of Coral Architectural Products include:
 - a. Series PW257 Panelized Curtain Wall System: 2-1/2" x 7-5/16" Impact-Resistant Curtain Wall System outside glazed captured pressure wall system for 1-5/16" monolithic laminated safety glass. (Select)
 - b. Series PW257 Panelized Curtain Wall System: 2-1/2" x 7-5/16" Impact-Resistant Curtain Wall System outside glazed (SSG) structural silicone glazed pressure wall system for 1-5/16" monolithic laminated safety glass. (Select)
- B. Related Sections:
 - 1. Division 7 Section "Vapor Barriers" between glazed wall systems and adjacent construction
 - 2. Division 7 Section "Fire Stopping"
 - 3. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance, storefront system, and curtain wall systems.
 - 4. Division 8 Section "Glazed Aluminum Curtain Walls"
 - 5. Division 8 Section "Aluminum Windows Walls"
 - 6. Division 8 Section "Aluminum Entrances and Storefronts"
 - 7. Division 8 Section "Aluminum Mall Sliding Doors"
 - 8. Division 8 Section "Finish Hardware"
 - 9. Division 8 Section "Glass and Glazing"

EDITOR NOTE: REFER TO INDEX FOR ANY AND ALL APPLICABLE STANDARDS.

1.02 References (Industry Standards)

1.03 System Description

- A. Curtain Wall System Performance Requirements:
 - 1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures of () P.S.F. inward () P.S.F. outward. The design pressures are based on the () Building Code; () Edition.
 - 2. Air Infiltration: The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a (static) air pressure differential of 6.24 PSF.
 - 3. Water Resistance, (static): The test specimen shall be tested in accordance with the Florida Building Code TAS 202 and ASTM E 331 for (outside) or (inside). There shall be no leakage at a minimum static air pressure differential of 20 PSF as defined in AAMA 501.

GUIDE SPECIFICATION

4. Uniform Load: A static air design load of +80/-80 P.S.F. with steel reinforcing (60" Spacing x 150" Span) or +65/-65 P.S.F. without steel reinforcing (48" Spacing x 108" Span) shall be applied in the positive and negative direction in accordance with DCBCCO Protocol PA 202 and ASTM E 330. There shall be no deflection in excess of L/180 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.4% of their clear spans shall occur.
5. Impact Resistance: Large Missile, tested in accordance with Florida Building Code Protocols TAS 201, TAS 203, and ASTM E 1886/1996.

1.04 Submittals

- A. General: Prepare, review, approve and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 Submittals Sections. Product data, shop drawings, samples and similar submittals are defined in "Conditions of the Contract."
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 Warranty

- A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for curtain wall system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project. The Limited Warranty shall begin in no event later than six months from date of initial shipment by **Coral Architectural Products** without regard to the date selected as substantial completion.

1.06 Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.07 Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and scheduling requirements to avoid construction delays.
- B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle curtain wall material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities and other hazards before, during and after curtain wall installation.

PART 2 – PRODUCTS

EDITOR NOTE: RETAIN BELOW ARTICLE FOR PROPRIETARY METHOD SPECIFICATION; ADD PRODUCT ATTRIBUTES, PERFORMANCE CHARACTERISTICS, MATERIAL STANDARDS, AND DESCRIPTIONS AS APPLICABLE. DO NOT USE THE PHRASE "OR EQUAL" / "OR APPROVED EQUAL," OR SIMILAR PHRASES. USE OF SUCH PHRASES CAN CAUSE AMBIGUITY IN THE SPECIFICATIONS DUE TO THE DIFFERENT INTERPRETATIONS AMONG THE DIVERGENT PARTIES OF THE CONSTRUCTION PROCESS AND READERS OF THESE SPECIFICATIONS. SUCH PHRASES REQUIRE EXTENSIVE AND COMPLETE REQUIREMENTS (PROCEDURAL, LEGAL, REGULATORY AND RESPONSIBILITY) FOR DETERMINING "OR EQUAL."

GUIDE SPECIFICATION

2.01 Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers:
1. Address: Coral Architectural Products, a division of Coral Industries
3010 Rice Mine Road
Tuscaloosa, AL. 35406
Contact Numbers:
a. Telephone: (800) 772-7737
b. Fax: (800) 443-6261
c. Email: info@coralap.com
d. Web address: www.coralap.com
 2. Proprietary Product(s)/System(s): Coral Architectural Products
a. Series: PW257 outside glazed impact-resistant pressure wall curtain wall system

EDITOR NOTE: RETAIN BELOW FOR ALTERNATE MANUFACTURERS/PRODUCTS AS SPECIFIED IN THE CONTRACT DOCUMENTS. COORDINATE BELOW WITH BID DOCUMENTS (IF ANY) AND DIVISION 1 ALTERNATES SECTION. CONSULT WITH CORAL ARCHITECTURAL PRODUCTS FOR RECOMMENDATIONS ON ALTERNATE MANUFACTURERS AND PRODUCTS MEETING THE DESIGN CRITERIA AND PROJECT REQUIREMENTS. CORAL ARCHITECTURAL PRODUCTS RECOMMENDS OTHER MANUFACTURERS REQUESTING APPROVAL TO BID THEIR PRODUCT AS AN EQUAL, MUST SUBMIT THEIR REQUEST IN WRITING, TEN (10) DAYS PRIOR TO CLOSE OF BIDDING.

- b. Finish/Color: (See 2.06 Finishes)
- c. Framing Member Profile: 2-1/2 x 7-5/16" nominal dimension; pressure bar; screw-spline fabrication
- B. Alternate (Manufacturers/Products): In lieu of providing below specified base bid/contract manufacturer, provide below specified alternate manufacturers. Refer to Division 1 Alternates Section.
 1. Base Bid/Contract Manufacturer/Product: Coral Architectural Products
 - a. Product: Architectural Aluminum
 - b. Series PW257 Panelized System: 2-1/2" x 7-5/16" nominal dimension; pressure bar; screw-spline fabrication
- C. Substitutions:
 1. General: Refer to Division 1 Substitutions for procedures and submission requirements.
 - a. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
 - b. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid curtain wall installation and construction delays.
 2. Substitution Documentation
 - a. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
 - b. Certificates: Submit certificate(s) certifying substitute manufacturer attesting to adherence to specification requirements for curtain wall system performance criteria.
 - c. Test Reports: Submit test reports verifying compliance with each test requirement for curtain wall required by the project.
 - d. Product Sample and Finish: Submit product sample, representative of curtain wall for the project, with specified finish and color.
 3. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

2.02 Materials

- A. Aluminum (Curtain wall and Components):
1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
 2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront framing members are nominal and in compliance with Architectural Aluminum Standards and Data.

PW257·2½" x 7⅝/16"

Impact-Resistant Curtain Wall

GUIDE SPECIFICATION

2.03 Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of silicone compatible EPDM material that provides for silicone adhesion.
- C. Perimeter Anchors: Aluminum; When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- D. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

2.04 Related Materials

- A. Sealants: Refer to Joint Treatment (Sealants) Section.
- B. Glass: Refer to Glass and Glazing Section.

2.05 Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Arrange fasteners and attachments to conceal from view.

2.06 Finishes

EDITOR NOTE: SELECT BELOW FINISH AND COLOR FROM CORAL ARCHITECTURAL PRODUCT'S STANDARD COLORS. CORAL'S POWDER COAT FINISHES ARE HIGH-PERFORMANCE DURABLE FINISHES OFFERING IMPROVED GLOSS RETENTION AND ENHANCED RESISTANCE TO CHALKING AND FADING. CUSTOM COLORS ARE AVAILABLE UPON REQUEST FROM CORAL ARCHITECTURAL PRODUCTS IN A TWO COMPONENT POLYESTER POWDER COAT FINISH CONFORMING TO AAMA 2604 AND (70%) THERMOSETTING FLUOROPOLYMER POWDER COAT FINISH CONFORMING TO AAMA 2605. CONSULT WITH YOUR CORAL SALES OR ARCHITECTURAL REPRESENTATIVE FOR OTHER SURFACE TREATMENTS AND FINISHES.

- A. Shop Finishing
 - 1. Color Anodizing Conforming to AA-M12C22A34, AAMA 611, Architectural Class II. Color Anodic Coating (Color: #20 **Dark Bronze**) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #21 **Dark Bronze**) (Select).
 - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class II. Clear Anodic Coating (**Clear**: #10) (Standard) or AA-M12C22A41, AAMA 611, Architectural Class I. Clear Anodic Coating (**Clear**: #11) (Select).
 - 3. Two Component Polyester Powder Coating Conforming to AAMA 2604 (Color: _____).
 - 4. (70%) Fluoropolymer Thermosetting Powder Coating Conforming to AAMA 2605 (Color: _____).
 - 5. Other: Manufacturer _____ Type _____ Color: _____).

2.07 Source Quality Control

- A. Source Quality: Provide aluminum curtain wall specified herein from a single source.
 - 1. Building Enclosure System: When aluminum curtain walls are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

3.01 Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive specified system and sill plate is level in accordance with manufacturer's acceptable tolerances.

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1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 Installation

- A. General: Install curtain wall systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure bars anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.
 3. Water Drainage: Each light of glass shall be compartmentalized by using end dams at horizontal/vertical joint intersections and silicone sealant to divert water to the horizontal weeps. Weep holes shall be located in the horizontal pressure bars and covers to divert water to the exterior of the building.
- B. Related Products Installation Requirements:
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 2. Glass: Refer to Division 8 Glass and Glazing Section.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

- A. Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected as part of the contract amount.
 1. Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Division Testing Section for payment of testing and testing requirements.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which, ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 PSF.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement or other harmful contaminants.
- B. Cleaning: Repair or replace damaged installed products. Installed products are to be cleaned in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

DISCLAIMER STATEMENT

This guide specification is intended for use by a qualified construction specifier. The guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended. The guide specification must be used and coordinated with the procedures of each design firm and the particular requirements of a specific construction project.

END OF SECTION 08410

PW257·2½" x 7⁵/₁₆"

Impact-Resistant Curtain Wall

FEATURES AND BENEFITS

System Description

Panelized construction using proven screw spline joinery reduces fabrication and installation time. Interior horizontal snap-on trim covers increase quality by allowing inspection and repair of critical horizontal/vertical seals and perimeter anchor attachment to substrate prior to or after glazing. Framing panels can be shop fabricated, assembled, transported to job site and then coupled together creating a complete panelized curtain wall installation.

Glazing Features:

- Same EPDM dense gasket used on interior and exterior at glass

Screw spline joinery allows:

- Coral Punch die shop fabrication
- Die set punches spline and pressure bar weep holes
- Panelized frame assembly for easy transporting and installation
- Eliminates "T" anchors

Pressure Bars:

- Factory installed EPDM thermal isolator with attachment holes pre-punched 9" O.C.

Interior Snap-on Covers:

- Inspection and/or repair of critical joint seal areas prior to and after glazing
- Perimeter anchor attachment and inspection

Injection molded plastic end dams and bridges at horizontals provide:

- Tight seals at intersection of vertical/horizontal joints for zone glazing

Aluminum top and bottom vertical mullion caps:

- Provides continuous perimeter seal

Injection molded plastic temporary glazing retainer:

- Reduces labor
- Distributes uniform pressure on glass reducing risk of breaking glass
- Reusable for next project



Performance Test Standards

- ASTM E 283 / *TAS 202 – Air Infiltration Test
- ASTM E 331 / *TAS 202 – Water Infiltration Test
- ASTM E 330 / *TAS 202 – Uniform Load Deflection and Structural Test
- ASTM E 1886/1996 / *TAS 201-203 – Missile Impact and Cycling Test
- Florida Product Approval Number – FL14495 (Impact-Resistant use in HVHZ)

**Indicates test standards in compliance with the current Florida Building Code.*

High Velocity Hurricane Zone Applications

Series PW257 Hurricane Impact-Resistant Curtain Wall System

Qualified System Configuration Chart

Design Pressure P.S.F.	Intermediate Vertical Mullion Without Steel	Intermediate Vertical Mullion With Steel SR150 with 1/2"x4" Bar Welded	Intermediate Vertical Mullion With Steel SR150 with 3/4"x4" Bar Welded	Wall Jamb Mullion Must Be Anchored at Horizontals	Maximum Un-Spliced Mullion	Maximum Mullion Anchor Point	Maximum Mullion Spacing Center to Center * see notes	Maximum Glass Size D.L.O.	Square Feet	Qualified Glass Types
PW257 Impact Resistant Curtain Wall - Captured										
+65/-65	PW650/202			PW650/202	108"		48"	45 ½" x 84"	26.5	IB, ID, IE
+80/-80		PW650/202		PW650/202	150"	150"	60"	57 ½" x 96"	38.3	ID
+80/-80			PW650/202	PW650/202	150"	150"	76 1/2" *(1)	74" x 47 ¼"	28.2	ID
+80/-80	*(3)	Corner PW208/209 and SR504			150"	150"	60"	57 ½" x 96"	38.3	ID
PW257 Impact Resistant Curtain Wall - Butt Glazed										
+80/-80		PW151/202		PW650/202		150"	48"	45 ½" x 96"	30.5	IB, ID, IE
+80/-80	*(2)	Corner Captured Only PW208/209 and SR504			150"	150"	48"	45 ½" x 96"	30.5	ID
PW257 Impact Resistant Curtain Wall - Dry Glazed										
+80/-80		PW650/202		PW650/202	150"		60"	57 ½" x 96"	38.3	ID

Hurricane Impact-Resistant Products Disclaimer Note

Coral's hurricane impact-resistant products meet a variety of test standards for applications in coastal construction regions satisfying the demands for wind-borne debris hazards and high-velocity winds associated with hurricanes. All of Coral's hurricane impact-resistant products are independent laboratory tested based on a variety of test standards for air infiltration, water resistance, structural loads, missile impact and air-pressure cycling based on ASTM and/or Florida Building Code. The informational chart above is intended to provide recommended limits in frame heights, glass sizes and design pressures based on product testing. When exceeding conditions listed above, it is recommended to consult with a licensed structural engineer or contact Coral Architectural Products.

Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Air Space/ Spacer Type	Interior Lite		
1⅝" Insulated Glass	¼" Heat Strengthened Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Saflex PVB Interlayer ¼" Heat Strengthened Glass	Solutia	IB
1⅝" Insulated Glass	¼" Heat Strengthened Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Butacite PVB Interlayer ¼" Heat Strengthened Glass	DuPont™	IE
1⅝" Insulated Glass	¼" Heat Strengthened Glass	½" Air Space with Aluminum Box Spacer	¼" Heat Strengthened Glass .090 Sentry GlasInterlayer ¼" Heat Strengthened Glass (Dry-Glazed Application)	DuPont™	ID

Comparative Analysis of Glass Based on ASTM E-1300

* Notes

1. Based on opening for door and frame. Horizontals must be used at 48" intervals.
2. Captured corner can be used with butt glazed system. Mullion spacing cannot exceed 48" on center.
3. Corner assembly consists of PW 208/209/154/PW210 and SR 504 Steel.

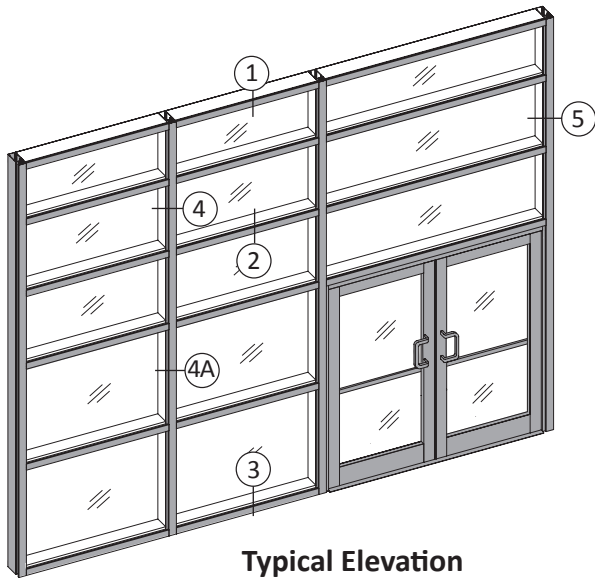
PW257·2½" x 7⅝"

Impact-Resistant Curtain Wall

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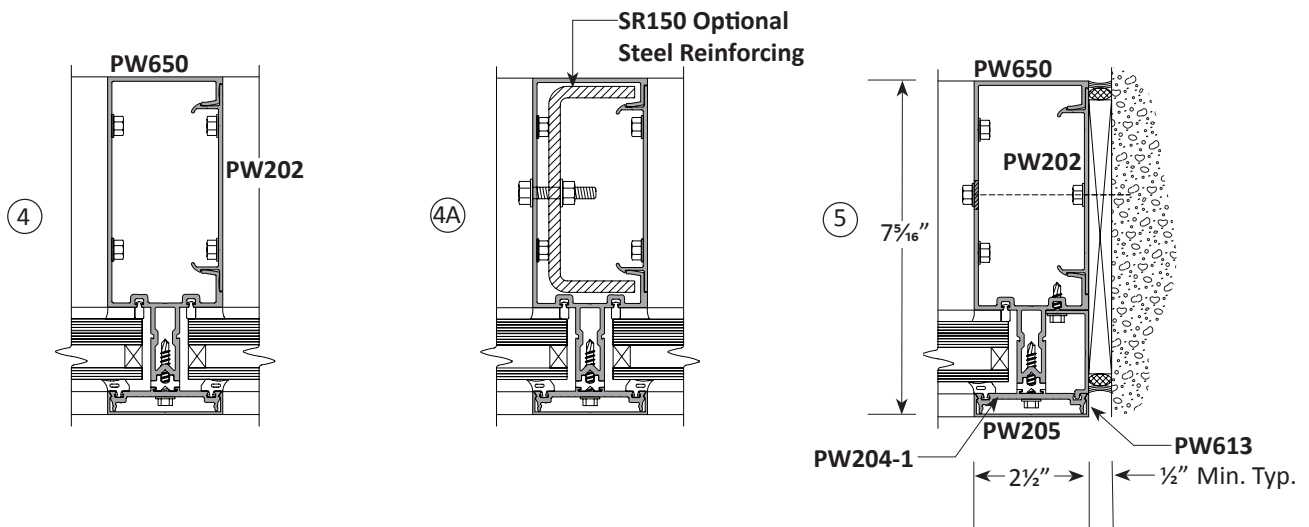
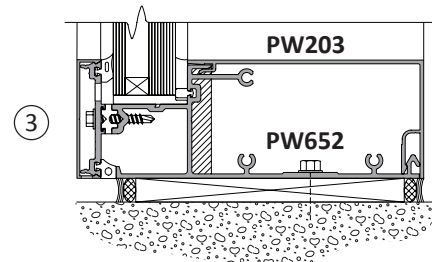
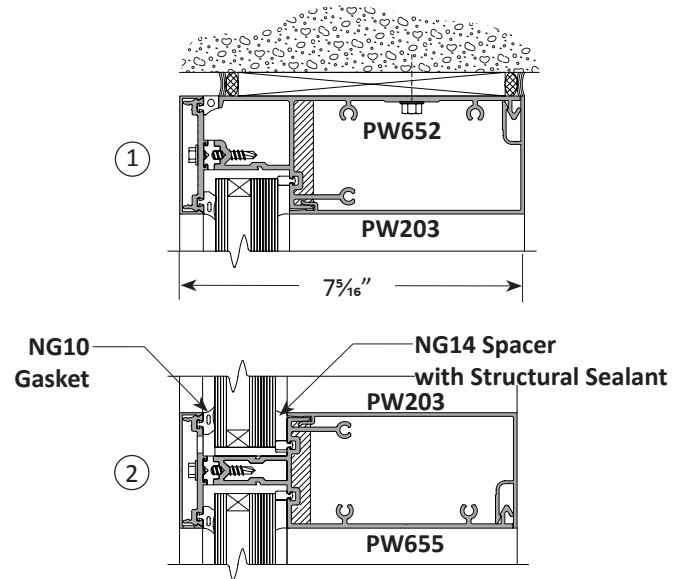
Standard Framing - Captured System

Scale: 3" = 1'-0"



Typical Elevation

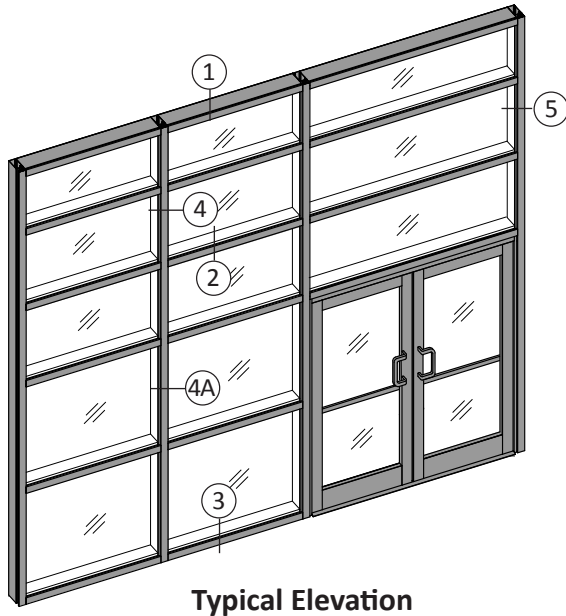
Wet Glazed Application



PW257·2½" x 7⅝"

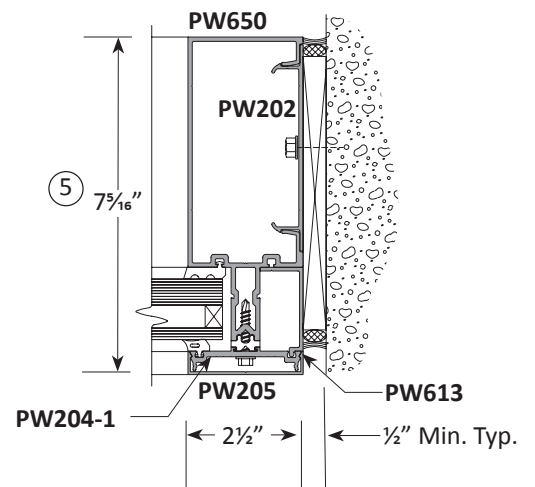
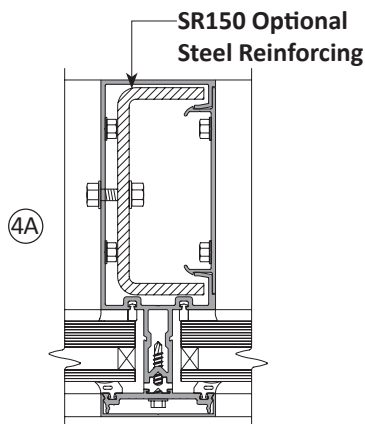
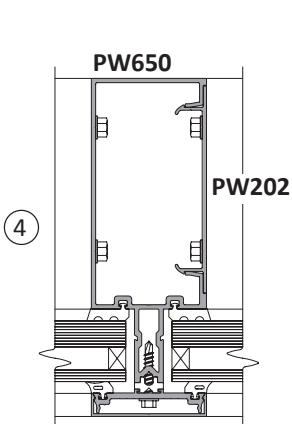
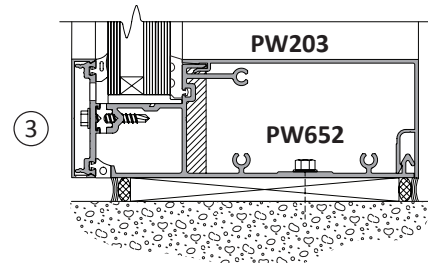
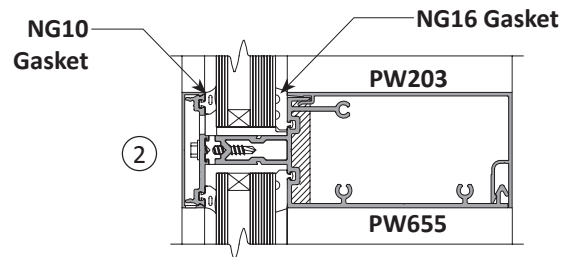
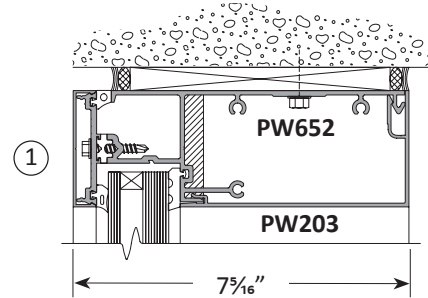
Impact-Resistant Curtain Wall

Standard Framing - Captured System
Scale: 3" = 1'-0"



Typical Elevation

Dry Glazed Application



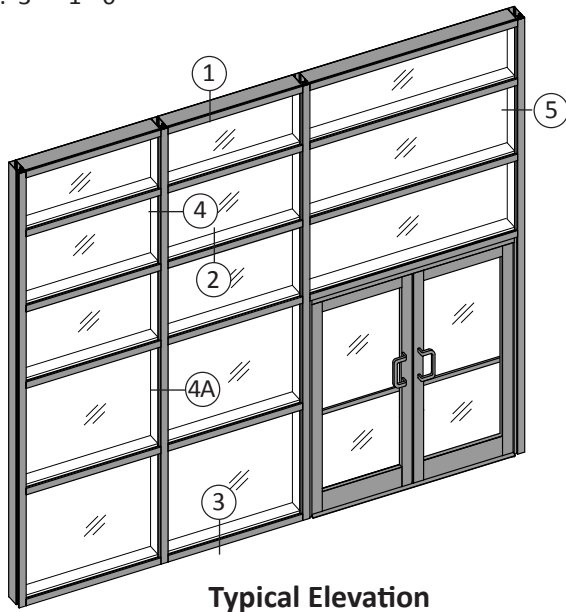
PW257·2½" x 7⅝"

Impact-Resistant Curtain Wall

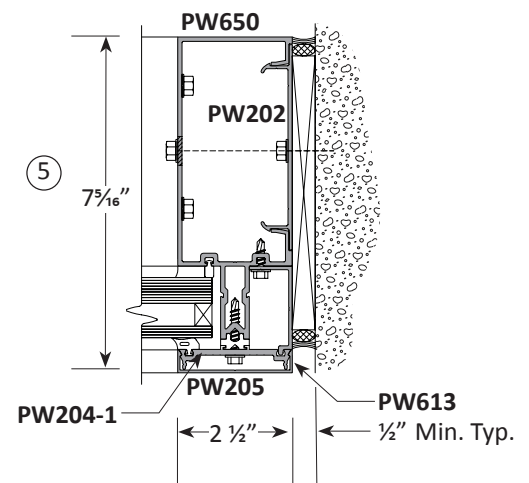
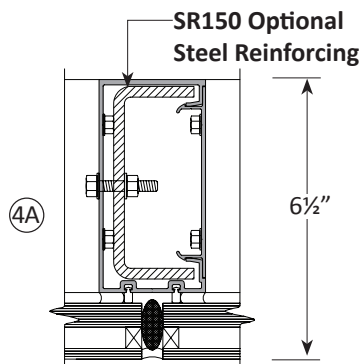
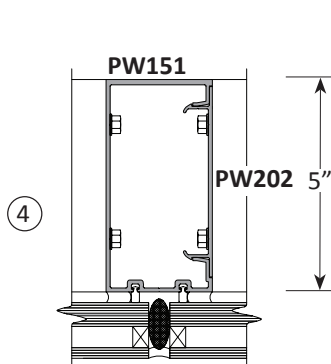
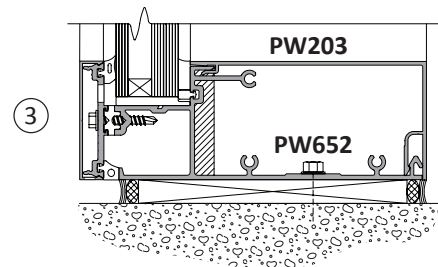
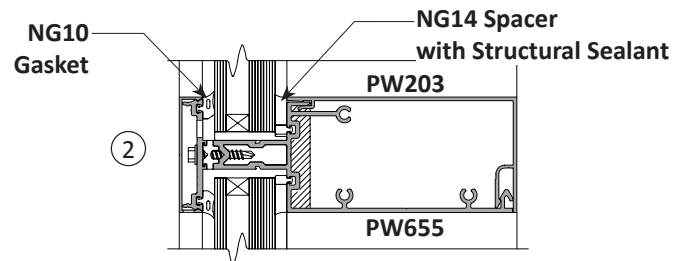
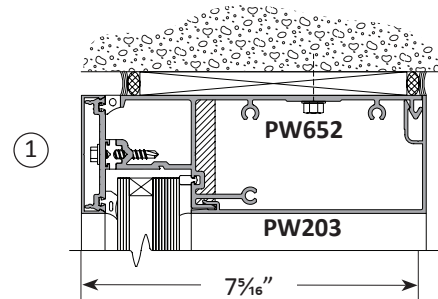
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Standard Framing - Structural Silicone Glazed (SSG) System

Scale: 3" = 1'-0"



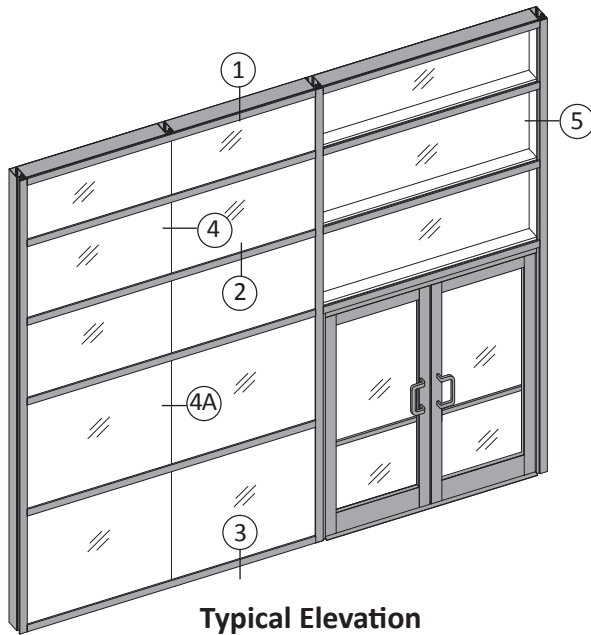
Wet Glazed Application



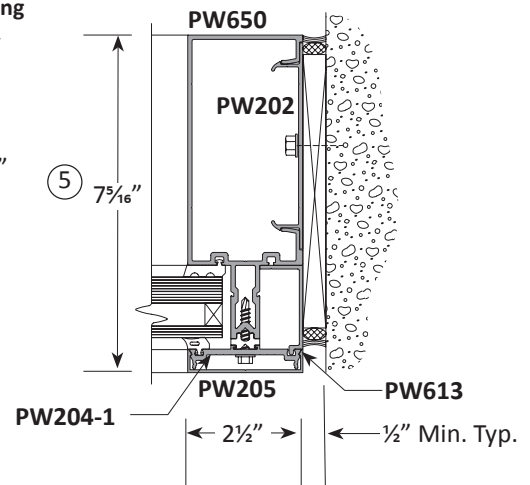
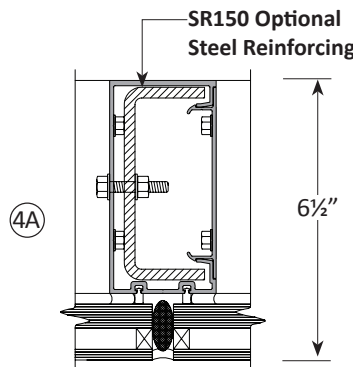
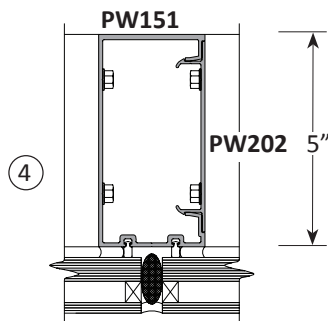
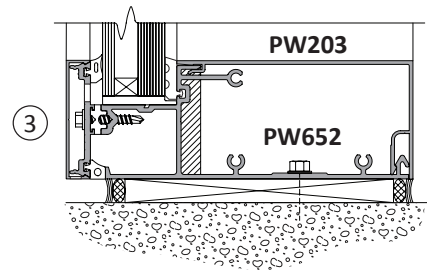
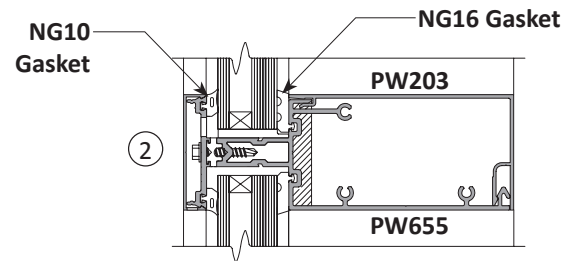
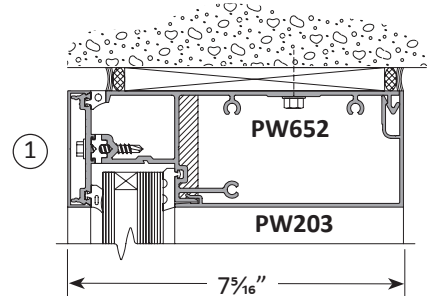
PW257·2½" x 7⅝"

Impact-Resistant Curtain Wall

Standard Framing - Structural Silicone Glazed (SSG) System
Scale: 3" = 1'-0"



Dry Glazed Application

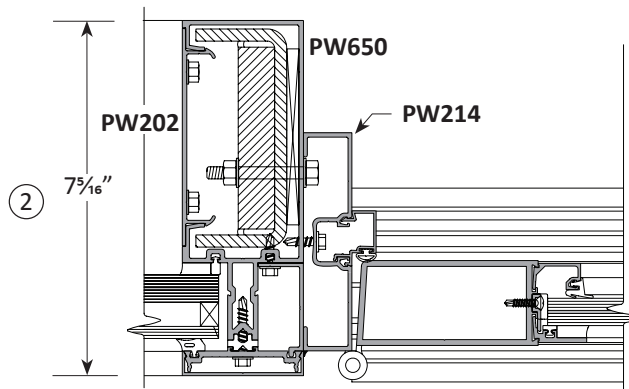
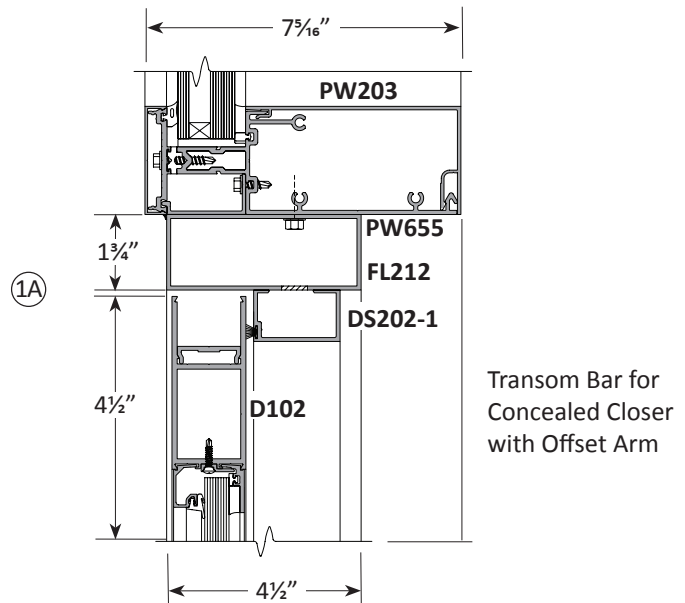
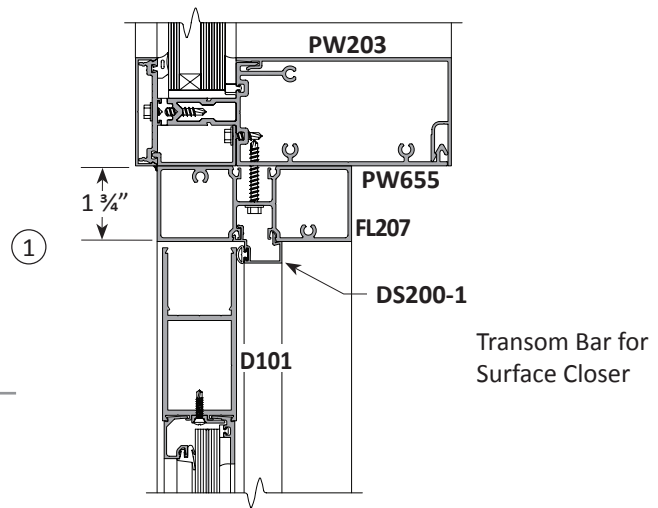
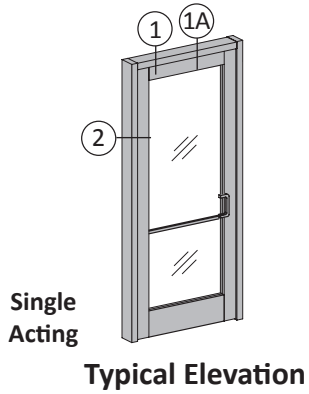


PW257·2½" x 7⅝"

Impact-Resistant Curtain Wall

Entrance Framing

Scale: 3" = 1'-0"

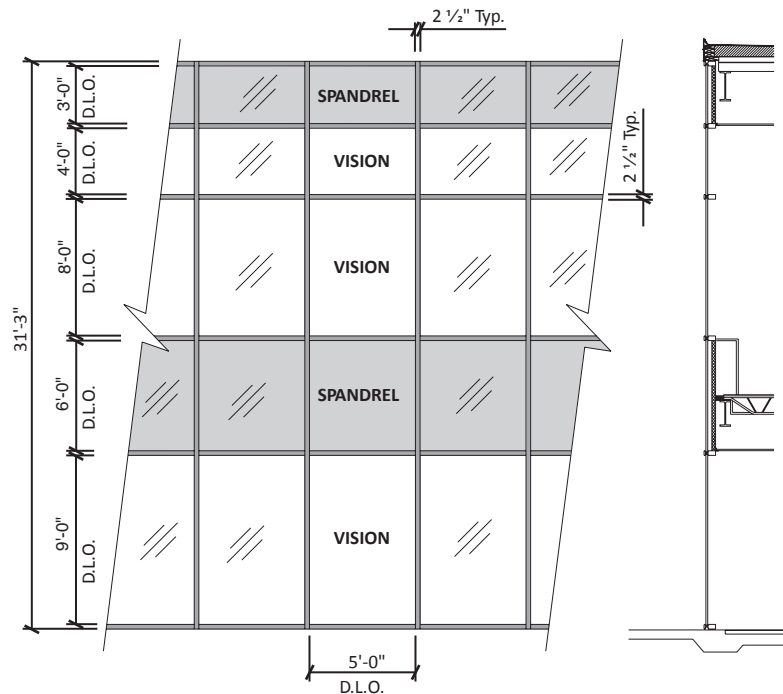


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507, utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to evaluate how various insulating glass will perform in a storefront, entrance, curtain wall and window system.

Notes: System U-Factors, SHGC and VT charts

1. Glass properties are based on center of glass values.
2. Linear interpolation is permitted for glass values that are not included in the charts.
3. Center of glass values can be obtained from the glass supplier.
4. System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
5. SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").

**Project Specific U-factor
Example Calculation
(Based on single bay of Curtain Wall/Window Wall)**



Vision Area

Example Glass U-Factor	= 0.48 Btu/(ft ² · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft ²
Total Area (Vision)	= 5' 2 ½" (9' 3 ¾" + 8' 2 ½" + 4' 2 ½") = 113.2 ft ²
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100
	= (105.0 ÷ 113.2) 100 = 93%

Spandrel Area

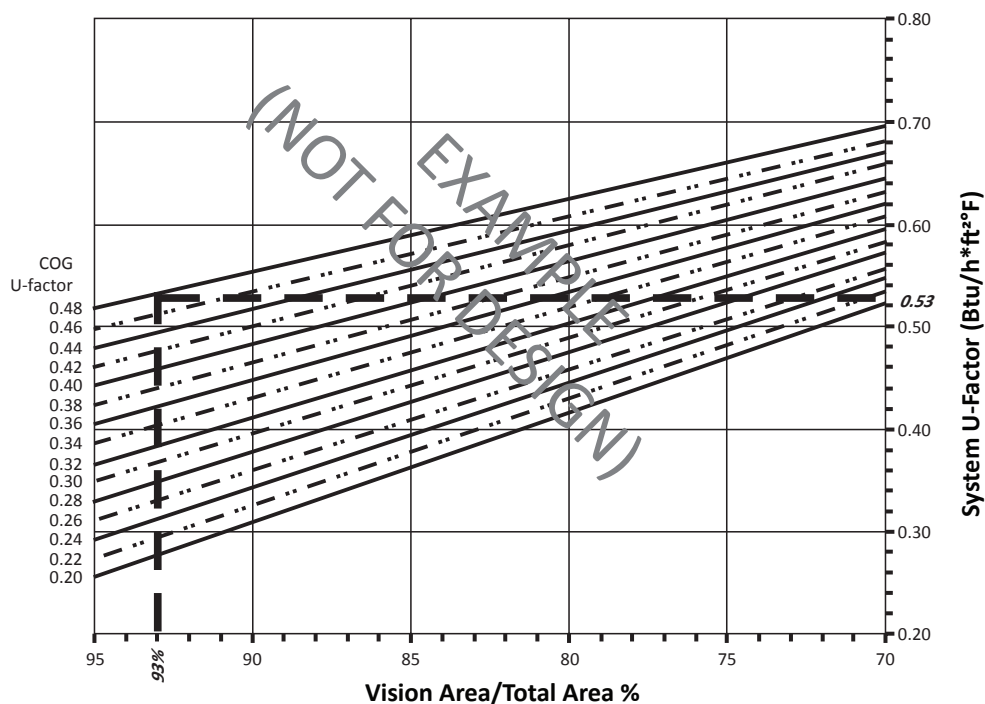
Example Spandrel R-Value	= 15 (ft ² · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft ²
Total Area (Spandrel)	= 5' 2 ½" (6 + 3) = 45.0 ft ²
Percentage of Spandrel	= (Spandrel Area ÷ Total Area)100
	= (49.0 ÷ 49.6) 100 = 91%

PW257·2½" x 7⅝"

Impact-Resistant Curtain Wall

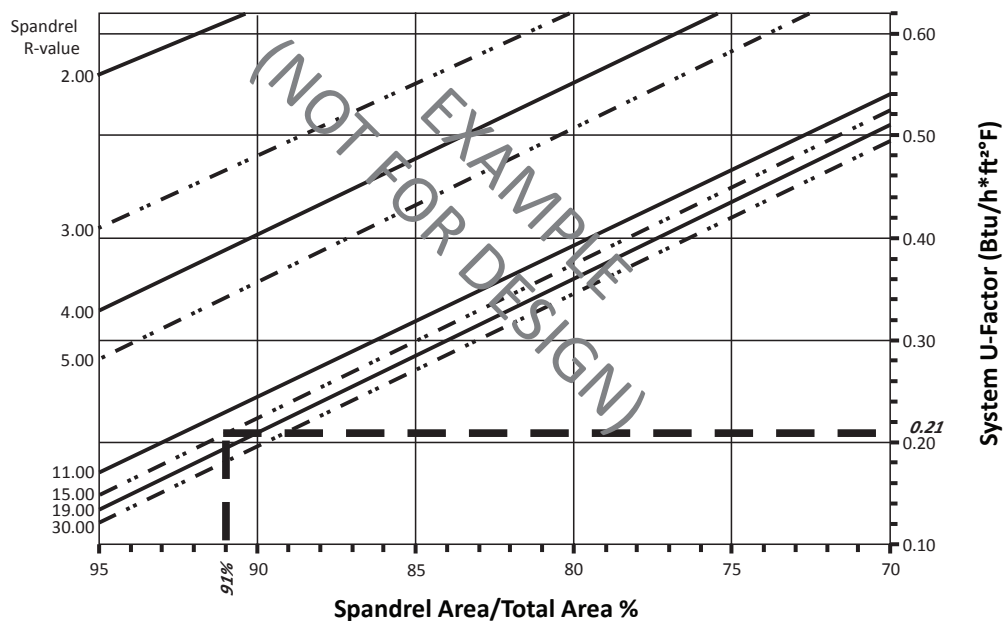
Thermal Charts

System U-Factor vs. Percentage of Vision Area



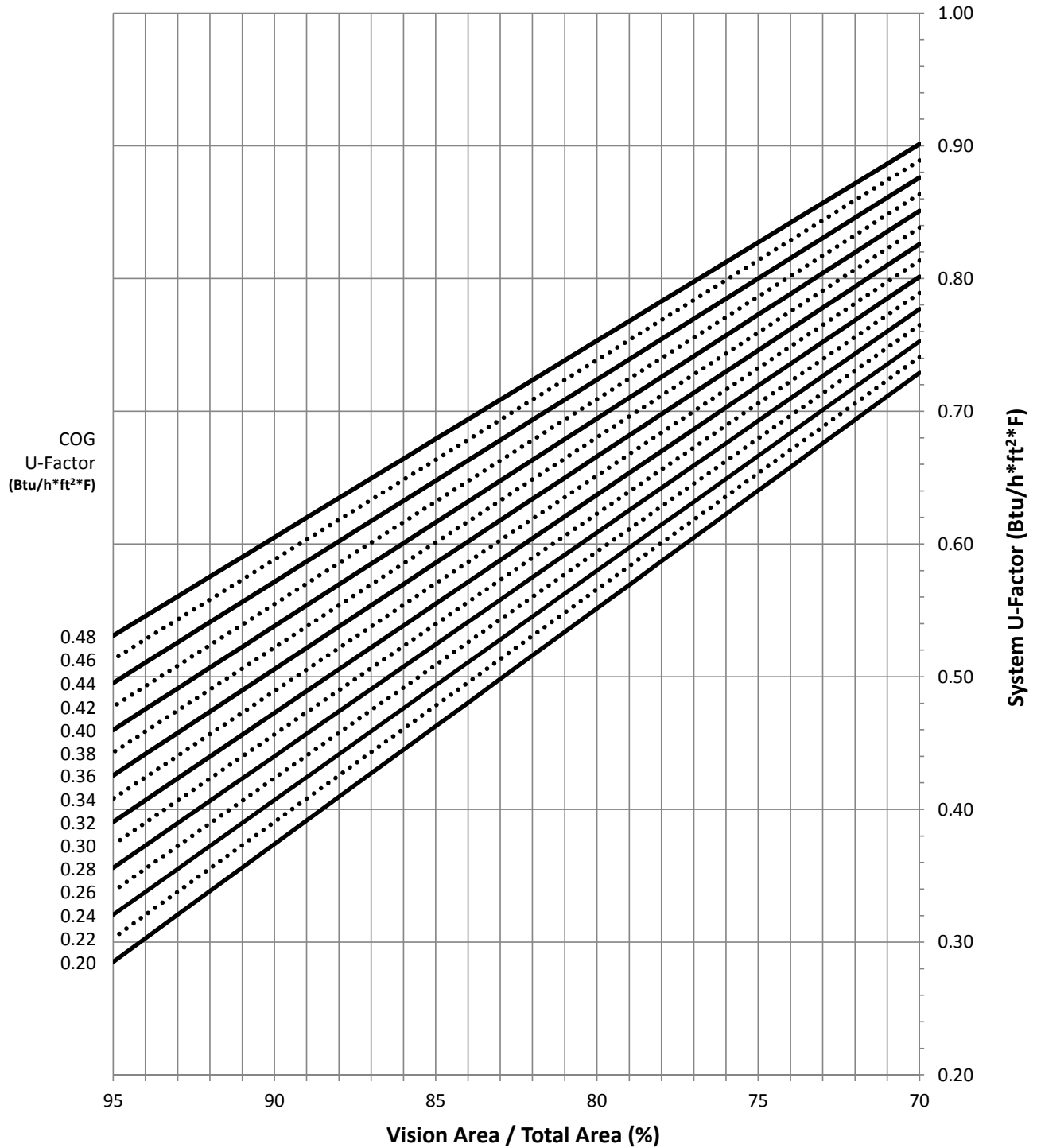
Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft²·°F)

System U-Factor vs. Percentage of Spandrel Area



Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft²·°F)

System U-Factor vs. Percentage of Vision Area

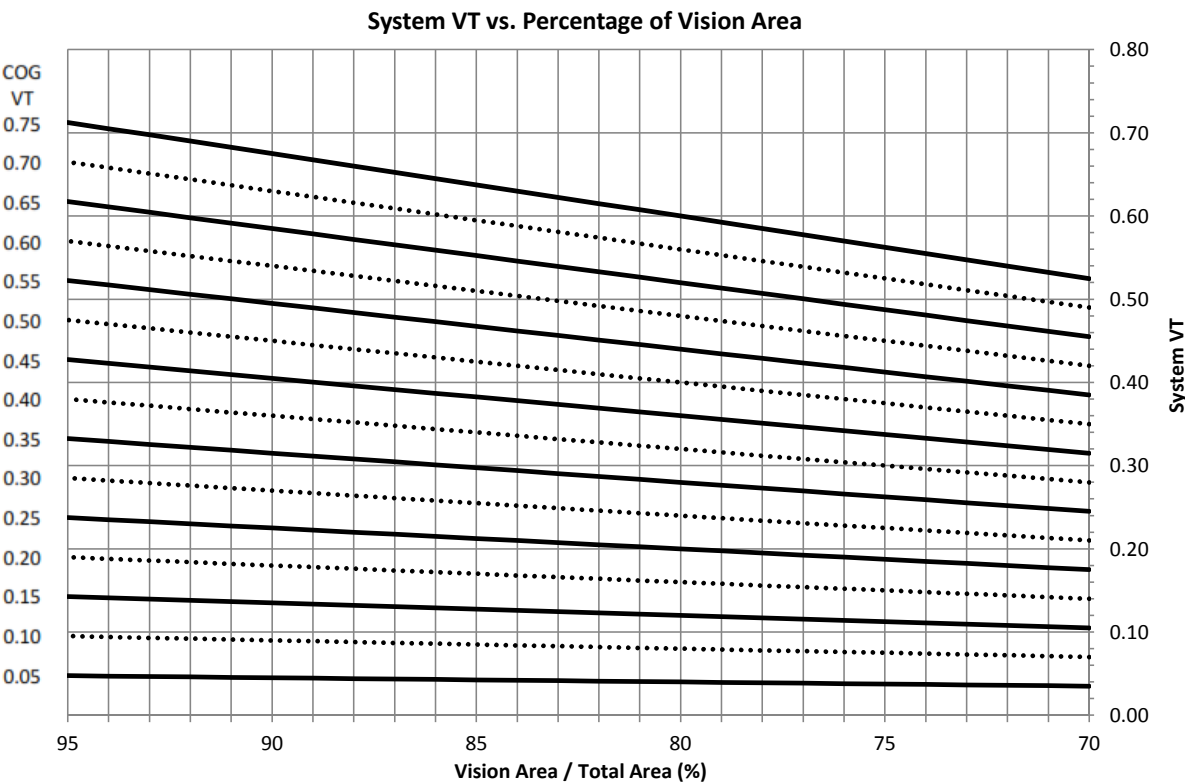
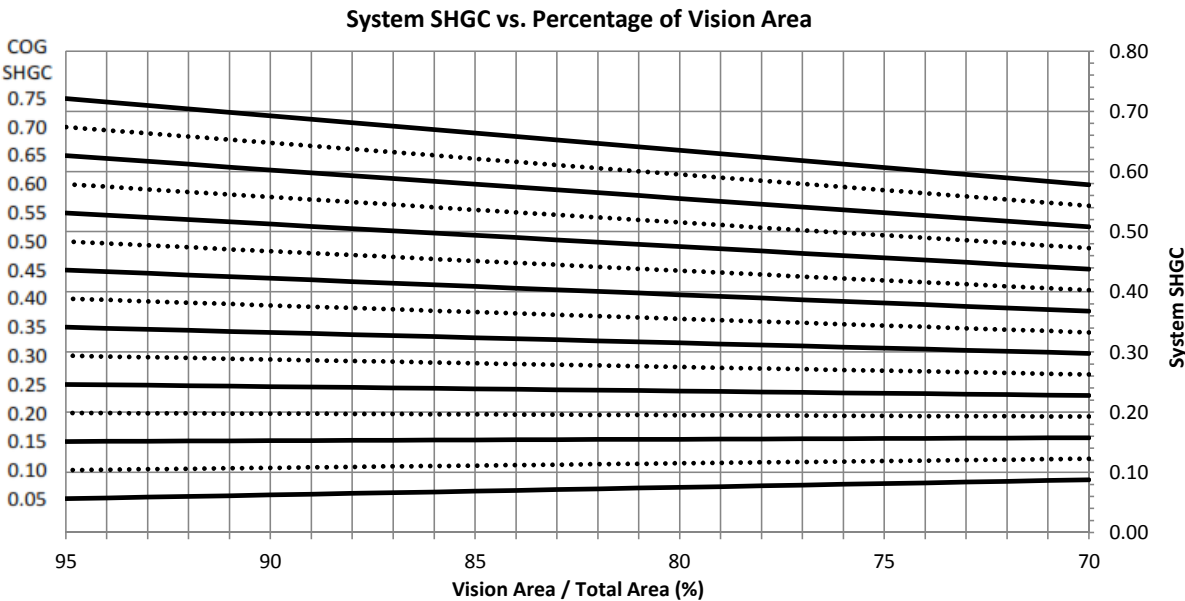


PW257·2½" x 7⁵/₁₆"

Impact-Resistant Curtain Wall



Thermal Charts



Size-Specific U-Factor (Btu/h-ft²-F) Matrix: NFRC Standard Size (78.740" x 78.740")⁴

Glazing Option	Center-of-Glass U-Factor	Overall U-Factor
1	0.48	0.62
2	0.46	0.60
3	0.44	0.59
4	0.42	0.57
5	0.40	0.55
6	0.38	0.54
7	0.36	0.52
8	0.34	0.50
9	0.32	0.48
10	0.30	0.47
11	0.28	0.45
12	0.26	0.43
13	0.24	0.42
14	0.22	0.40
15	0.20	0.38

**Size-Specific SHGC Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass SHGC	Overall SHGC
0.75	0.69
0.70	0.65
0.65	0.60
0.60	0.56
0.55	0.51
0.50	0.47
0.45	0.42
0.40	0.38
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20
0.15	0.15
0.10	0.11
0.05	0.06

**Size-Specific VT Matrix:
NFRC Standard Size (78.740" x 78.740")⁵**

Center-of-Glass VT	Overall VT
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

Notes:

- System U-Factors are determined in accordance with NFRC 100 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").
- SHGC and VT values are determined in accordance with NFRC 200 and based on the standard NFRC specimen size equal to a height of 2000mm x a width of 2000mm (78¾" x 78¾").