

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 ARCHITECTURAL 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/ft<sup>2</sup> 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: 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 Spine 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-Spine 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 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 I. Color Anodic Coating (Color: #20 Dark Bronze) (Standard) or AA-M12C22A44, AAMA 611, Architectural Class I. Color Anodic Coating (Color: #30 Black) (Select).
  - 2. Clear Anodizing Conforming to AA-M12C22A31, AAMA 611, Architectural Class I. Clear Anodic Coating (Clear: #10) (Standard).
  - 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.

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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 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/ft<sup>2</sup>, 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 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.

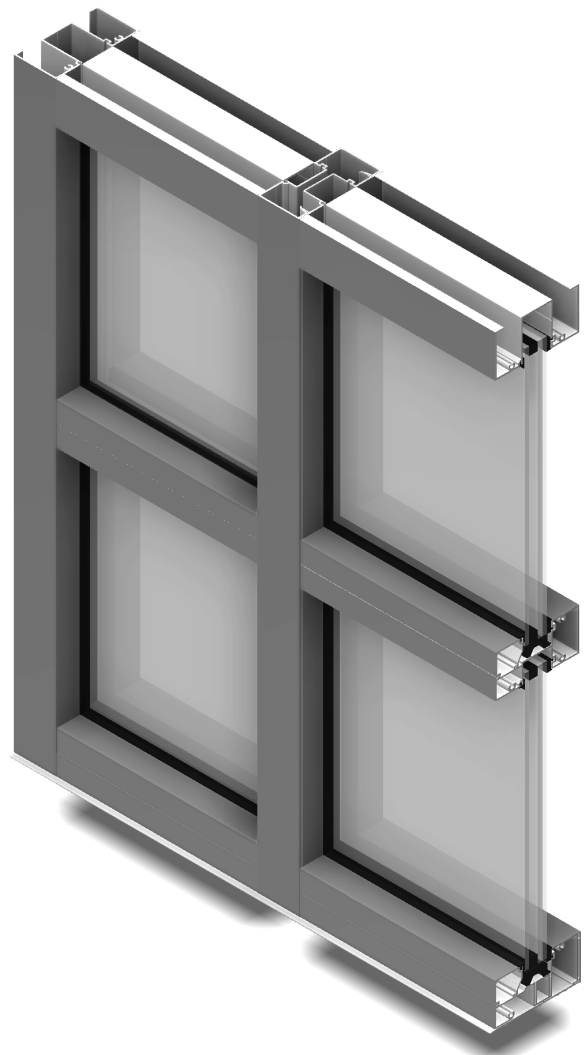
### Features

- 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		
1½" 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
1½" 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.

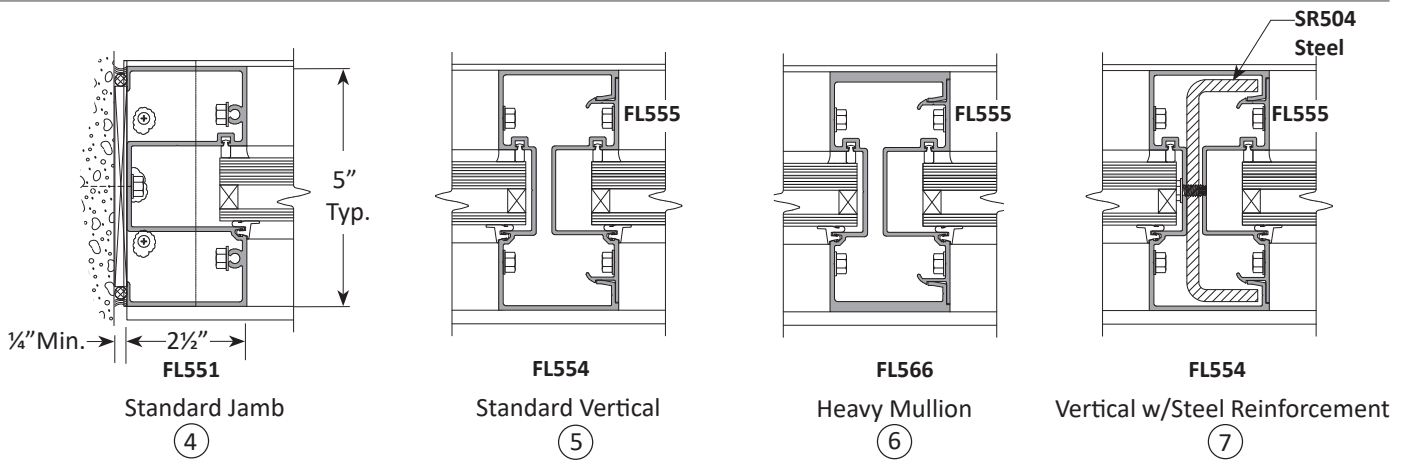
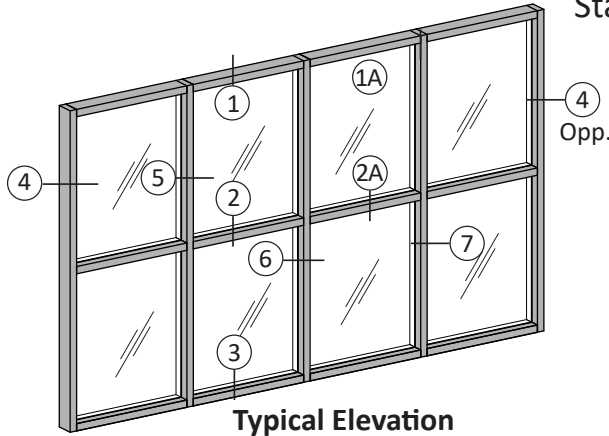
### Qualified Glass Types

Glass Type	Glass Composition			Interlayer Manufacturer	Glass Identification
	Exterior Lite	Air Space/ Spacer Type	Interior Lite		
1⅝" 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

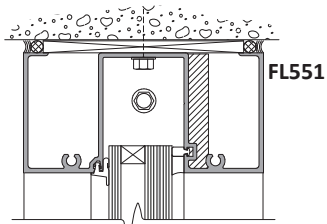
#### Comparative Analysis of Glass Based on ASTM E-1300

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

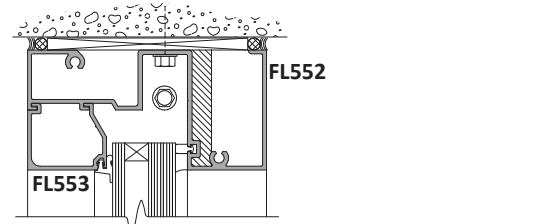
1. Does not exceed maximum cyclic pressure tested.
2. Does not exceed maximum span of mullion tested.
3. Does not exceed maximum mullion spacing of mullion tested.
4. Does not exceed maximum square footage of largest lite tested.
5. Does not exceed aspect ratio of 5:1 (in a rectangular configuration,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



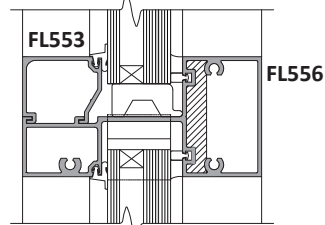
① Head



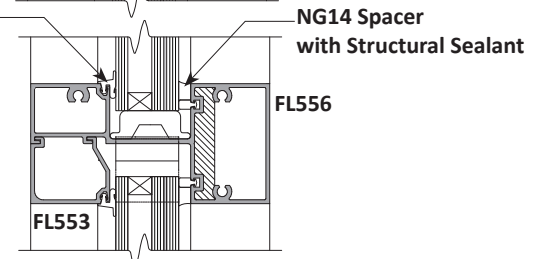
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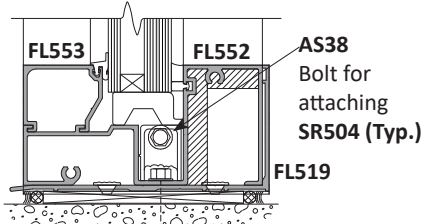
② Horizontal



②A Horizontal



③ Sill



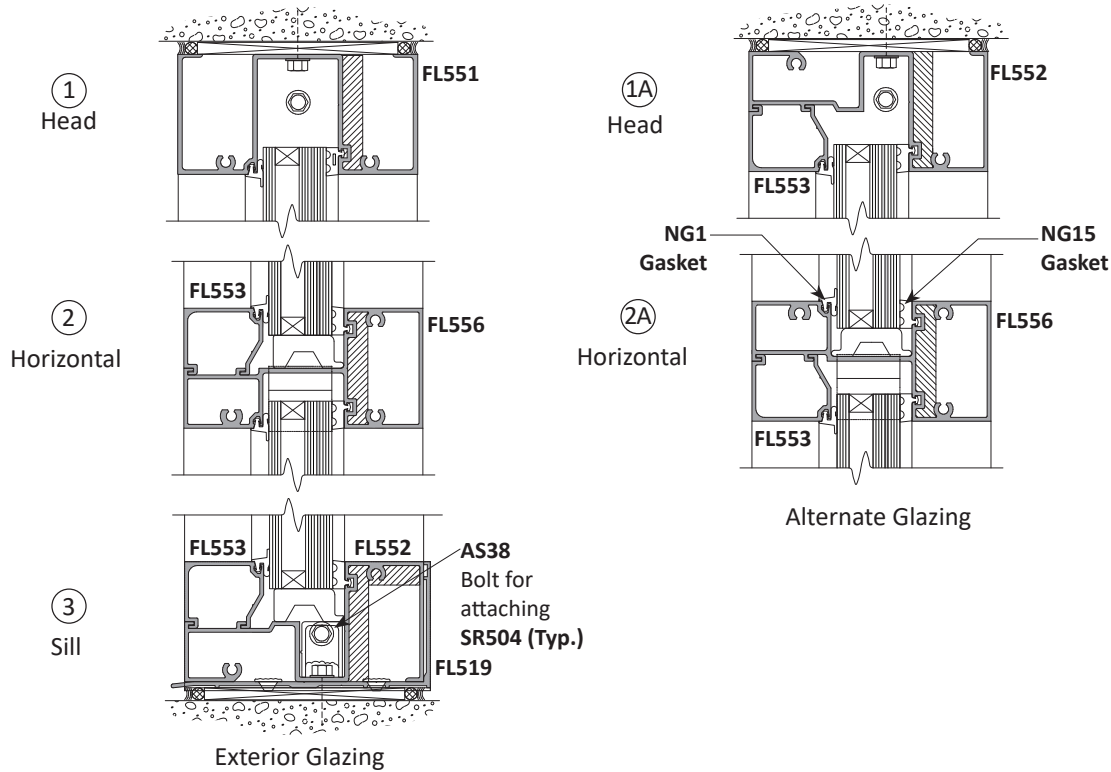
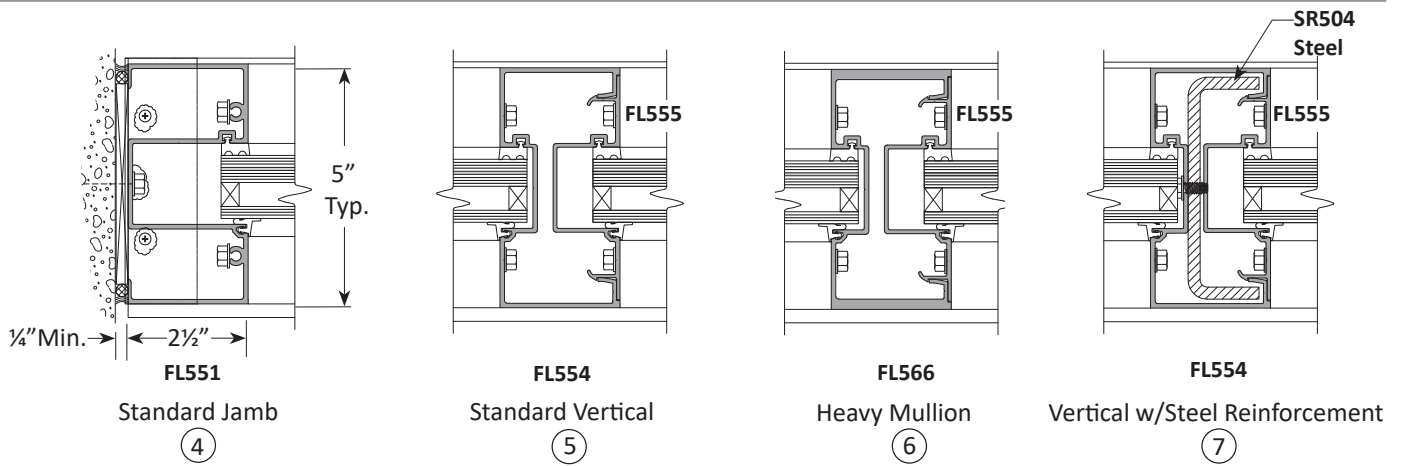
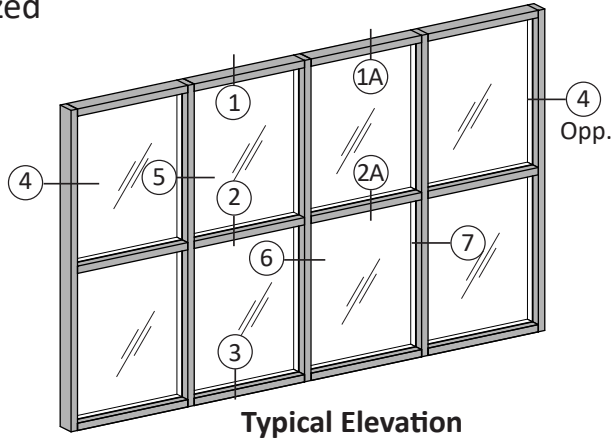
Alternate Glazing

Exterior Glazing

# FL550·2½" x 5"

## Impact-Resistant Storefront

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

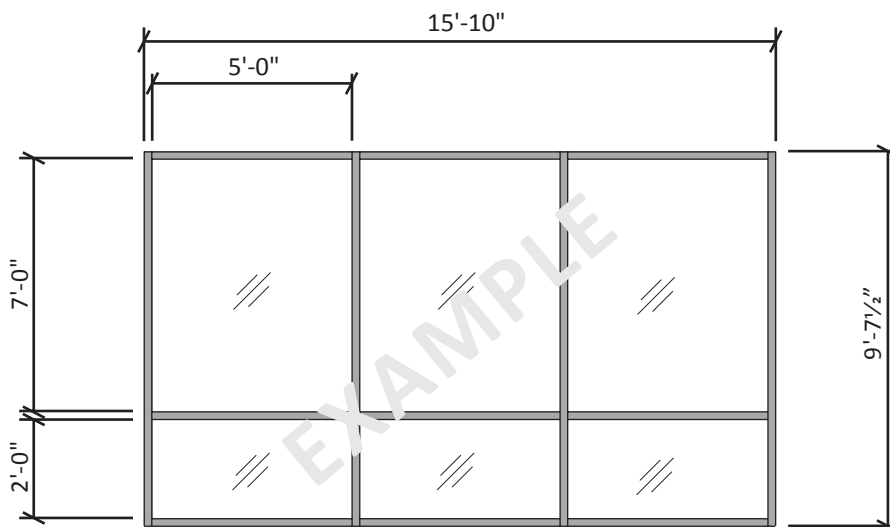


System Thermal Charts listed in the following pages are based on AAMA 507, a standard practice for determining the thermal performance of fenestration systems. AAMA 507 utilizes the same simulation standard as defined by the National Fenestration Rating Council (NFRC) providing an accurate method to 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").

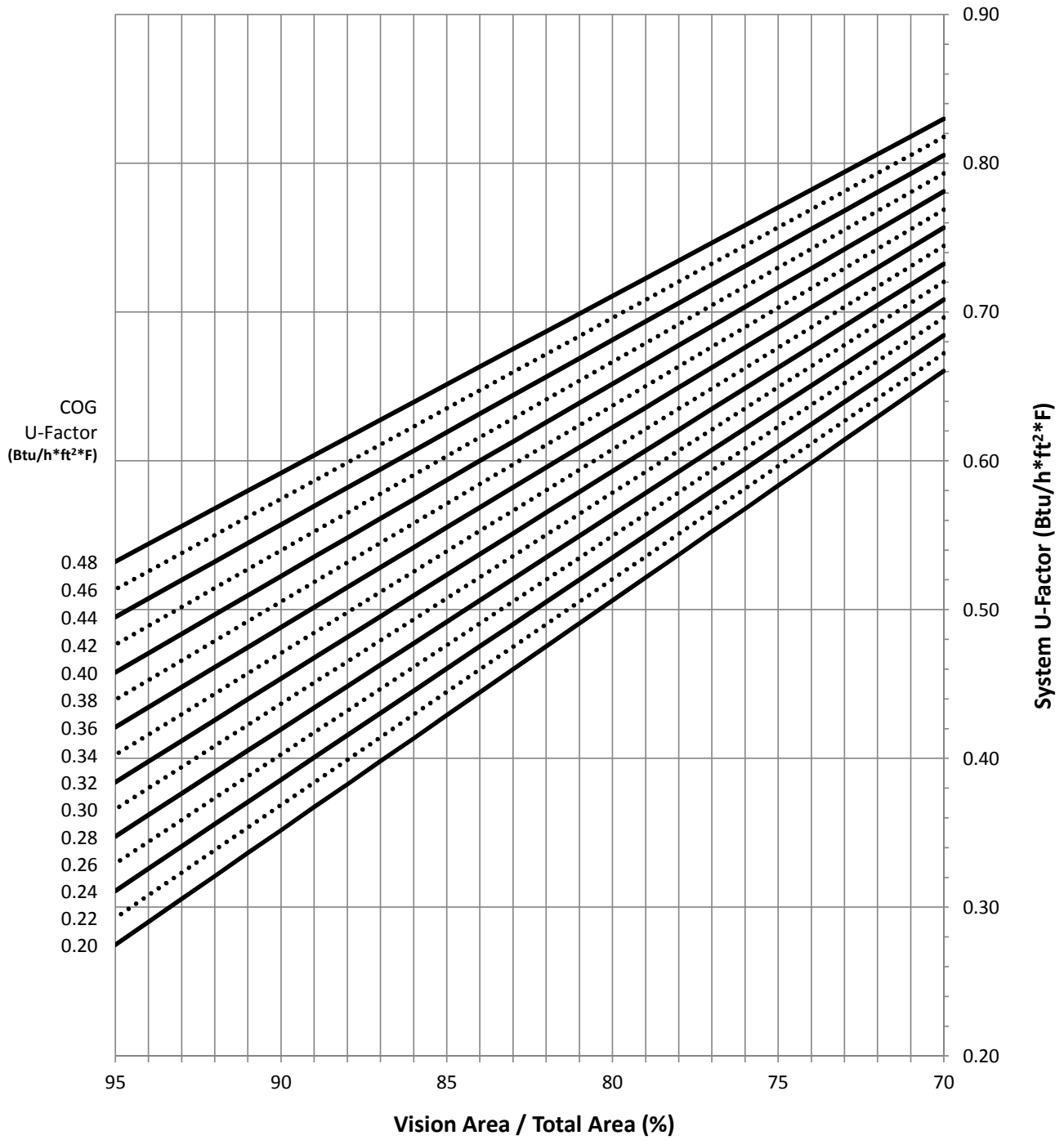
**Project Specific U-Factor Example Calculation**



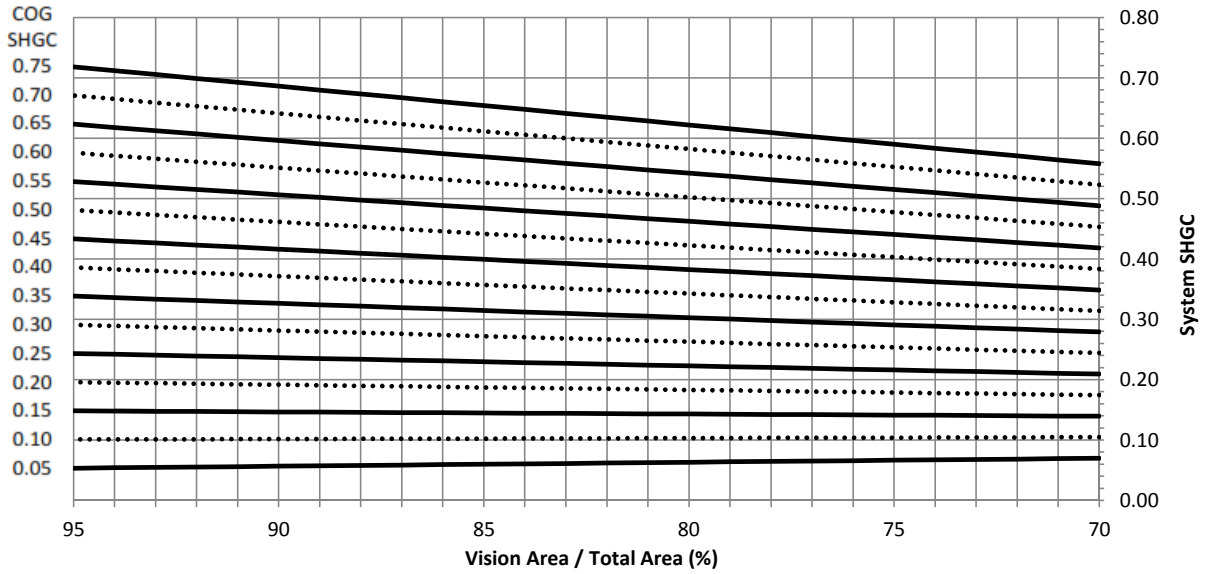
Example Glass U-Factor	= 0.42 Btu/hr·ft²·°F
Total Daylight Opening	= 3 (5'x7') + 3 (5'x2') = 135ft²
Total Projected Area	= (Total Daylight Opening + Total Area of Framing System) = 15'-10" x 9'-7½" = 152.39ft²
Percent of Glass	= (Total Daylight Opening ÷ Total Projected Area) = (135 ÷ 152.39)100 = 88%

Thermal Charts

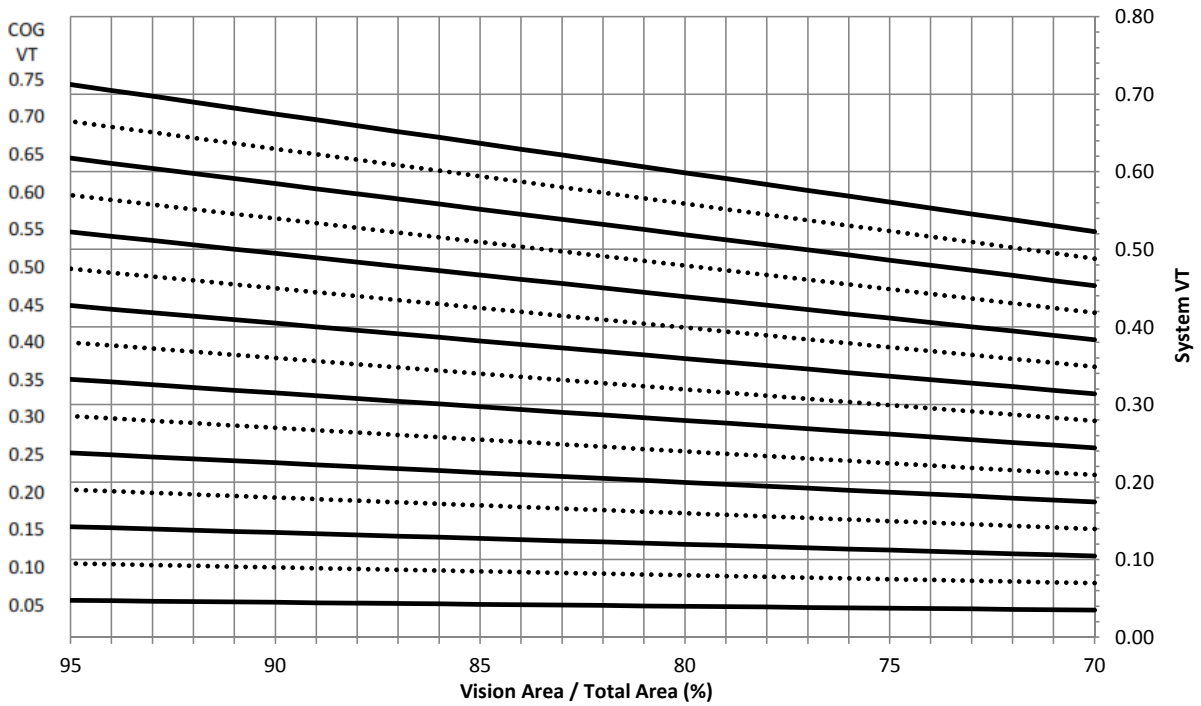
System U-Factor vs. Percentage of Vision Area



**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-ft<sup>2</sup>-F) Matrix: NFRC Standard Size (78.740" x 78.740")<sup>4</sup>**

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")<sup>5</sup>**

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")<sup>5</sup>**

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:**

- 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").