

SECTION 083613 - SECTIONAL DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes manually operated sectional doors.

1.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Sectional doors shall meet performance requirements specified without failure due to defective manufacture, fabrication, installation, or other defects in construction and without requiring temporary installation of reinforcing components.
- B. Structural Performance: Exterior sectional doors shall withstand the effects of gravity loads, and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

- 1. Wind Loads: Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward.

- C. Air Infiltration: Maximum rate not more than indicated when tested according to ASTM E 283 or DASMA 105.

- 1. Air Infiltration: Maximum rate of 0.08 cfm/sq. ft. at 15 and 25 mph.

1.3 SUBMITTALS

- A. Shop Drawings: For each type and size of sectional door and accessory.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Standard for Sectional Doors: Fabricate sectional doors to comply with DASMA 102 unless otherwise indicated.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 STEEL DOOR SECTIONS

- A. Exterior Section Faces and Frames: Fabricate from manufacturer's standard zinc-coated (galvanized), cold-rolled, steel sheet.
  - 1. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weathertight seal, with a reinforcing flange return.
  - 2. For insulated doors, provide sections with continuous thermal-break construction, separating the exterior and interior faces of door.
- B. Section Ends and Intermediate Stiles: Enclose open ends of sections with channel end stiles formed from galvanized-steel sheet welded to door section. Provide intermediate stiles formed from galvanized-steel sheet, cut to door section profile, and welded in place. Space stiles not more than 48 inches apart.
- C. Provide reinforcement for hardware attachment.

- D. Thermal Insulation: Insulate interior of steel sections with door manufacturer's standard CFC-free insulation, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within steel sections that incorporate the following interior facing material, with no exposed insulation:

- 1. Interior Facing Material: Zinc-coated (galvanized), cold-rolled, commercial steel (CS) sheet.

## 2.2 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Manufacturer's standard, galvanized-steel track system of configuration indicated, sized for door size and weight, designed for lift type indicated and clearances shown on Drawings. Provide complete track assembly including brackets, bracing, and reinforcement for rigid support of ball-bearing roller guides for required door type and size. Slot vertical sections of track spaced **2 inches** apart for door-drop safety device if required and acceptable to wind load requirements. Slope tracks at proper angle from vertical or design tracks to ensure tight closure at jambs when door unit is closed.
- B. Track Reinforcement and Supports: Galvanized-steel track reinforcement and support members. Secure, reinforce, and support tracks as required for door size and weight to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.
- C. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and top of sectional door unless otherwise indicated.
- D. Track Protection: Note that overhead door locks shall be modified as required to accommodate Track Protection.
- E. Viewer: Provide one (1) 698 viewer by the H.B. Ives Company for the overhead door, mounted at 5'-0" a.f.f. Viewer to be provided overhead door contractor.

## 2.3 HARDWARE

- A. General: Provide heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty, galvanized-steel hinges at each end stile and at each intermediate stile, according to manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails.
- C. Rollers: Heavy-duty rollers with steel ball-bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Provide **3-inch-** diameter roller tires for **3-inch-** wide track and **2-inch-** diameter roller tires for **2-inch-** wide track.
- D. Push/Pull Handles: For push-up or emergency-operated doors, provide galvanized-steel lifting handles on each side of door.

## 2.4 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both jambs side, operable from inside only.

## 2.5 COUNTERBALANCE MECHANISM

- A. Torsion Spring: Counterbalance mechanism consisting of adjustable-tension torsion springs mounted on torsion shaft made of steel tube or solid steel. Provide springs designed for number of operation cycles indicated.
- B. Cable Drums and Shaft for Doors: Cast-aluminum or gray-iron casting cable drums mounted on torsion shaft and grooved to receive door-lifting cables as door is raised. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of torsion shaft.
- C. Cables: Galvanized-steel lifting cables.

## ALDI Retail Facility

- D. Cable Safety Device: Include, on each side-edge of door, a device designed to automatically stop door if either lifting cable breaks.
- E. Bracket: Provide anchor support bracket as required to connect stationary end of spring to the wall and to level the shaft and prevent sag.
- F. Provide a spring bumper at each horizontal track to cushion door at end of opening operation.

### 2.6 MANUAL DOOR OPERATORS

- A. Equip door with manufacturer's recommended manual door operator unless another type of door operator is indicated.
- B. Push-up Operation: Lift handles and pull rope for raising and lowering doors, with counterbalance mechanism designed so that required lift or pull for door operation does not exceed **25 lbf**.

### 2.7 DOOR ASSEMBLY

- A. Steel, Insulated Sectional Door: Sectional door formed with hinged sections.
- B. **Manufacturer's products designed and tested to comply with the requirements of the Florida Building Code including High Velocity Hurricane Zone (HVHZ).**
  - 1. Windload: Refer to Structural Drawings for design windloads.
  - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Clopay Building Products; a Griffon company: Clopay Model 3718
    - b. Overhead Door Corporation: WindStorm 525 Series.
    - c. Wayne-Dalton: Thermomark Model 5200
- C. Operation Cycles: Not less than 10,000.
- D. Steel Sections: Zinc-coated (galvanized) steel sheet, formed into sections **1-3/4 inches** thick.
  - 1. Exterior-Face Surface: Flat.
  - 2. Interior Facing Material: Zinc-coated (galvanized) steel sheet.
- E. Track Configuration: High-lift track.
- F. Weatherseals: Fitted to bottom and top and around entire perimeter of door.
- G. Locking Devices: Equip door with slide bolt for padlock.
- H. Manual Door Operator: Push-up operation.
- I. Door Finish:
  - 1. Factory Prime Finish: Manufacturer's standard color. Exterior face to be painted on site.
  - 2. Finish of Interior Facing Material: White (to remain unpainted)

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Tracks: Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment. Repair galvanized coating on tracks according to ASTM A 780.

- C. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion. Adjust doors and seals to provide weathertight fit around entire perimeter.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 083613

## **SECTION 083800 - IMPACT TRAFFIC DOORS**

### **PART 1 – GENERAL**

#### **1.1 SUMMARY**

This section includes the installation of double acting, monolithically formed, insulated, impact traffic doors.

#### **1.2 DELIVERY, STORAGE AND HANDLING**

Acceptance at site: Inspect work upon delivery for damage; reject any damaged items.

Storage and protection: Store materials under cover, 4" off floor, minimum, raised platforms, in vertical position with minimum ¼" space between doors. Avoid use of non vented plastic or canvas shelters creating humidity chambers. Immediately remove wet wrappers.

### **PART 2 – PRODUCTS**

#### **2.1 MANUFACTURERS**

Request current order forms from:

Chase Doors, A Division of Senneca Holdings  
10021 Commerce Park  
Cincinnati, OH 45246  
Mike Evans, National Account Manager 513-403-5908  
Email for quote/price: quotes-orders@senneca.com  
–Place "ALDI" in subject line to expedite filtering to correct contact

#### **2.2 MANUFACTURED UNITS**

Traffic Doors: Durulite Retailer.

84" x 96" with special curb cut-outs at bottom outside corners.

10" x 43" clear windows – 1/8" polycarbonate glazing, complying with properties of category II safety glazing

Color: Chocolate Brown

V-Cam hinges with hold open option (Verify hinges & hold open options with ALDI DoRE).

24" black bumpers.

Full gasket edge trim.

Allow 6 - week lead time.

New Chase Door customers will need to establish account with Chase prior to placing an order.

ALDI National Pricing: Email quotes-orders@senneca.com for price

Net 30 - Days.

ECommerce Traffic Doors: Eliason SCP-8.

42" x 96"

6" x 30" Flush clear windows

Laminate Color: Formica Pecan Woodline #5883-58

Easy Swing Hinge with Lower "L" Bracket

Lockset

18" Stainless Steel Impact Plate front and back

Allow 4 - week lead time.

New customers will need to establish account prior to placing an order (either with Net 30 day terms or credit card).

ALDI National Pricing: Email quotes-orders@senneca.com for price

### **PART 3 – EXECUTION**

#### **3.1 EXAMINATION**

Verify installation conditions: Verify traffic door frames are in accord with reviewed shop drawings. Examine conditions and substrates under which products of this section are to be installed; submit written notification of unacceptable conditions or substrates.

Submit copy of installer's report to Architect of record within 72 hours of report receipt.

Proceeding with construction activity of this section: Indicates installer's acceptance of condition of product and substrates.

#### **3.2 INSTALLATION**

Traffic doors: Install in prepared openings as required by manufacturer's Installation instructions.

ALDI Retail Facility

Plumb and level units, adjust for proper operation.

Follow manufacturer's instructions as required to:

1. Clean and lubricate operating parts.
2. Adjust to open and close smoothly and freely without binding
3. Check seals for proper fit.

Clean surfaces in accord with manufacturer's instructions just prior to Date of Substantial Completion.

END OF SECTION 083800



SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior storefront framing.
2. Interior storefront framing
3. Storefront framing for punched openings.

1.2 SYSTEM DESCRIPTION

A. Performance Requirements YHS 50 TU & YHS 50 FS: Provide aluminum curtain wall systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with Florida Building Code Test Protocols TAS 201, TAS 202 and TAS 203:

1. Air Infiltration: Completed storefront systems shall have 0.06 CFM/FT<sup>2</sup> (1.10 m<sup>3</sup>/h·m<sup>2</sup>) maximum allowable infiltration when tested in accordance with ASTM E 283 at differential static pressure of 6.24 psf (299 Pa).
2. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331 at test pressure differential of: 12 PSF (575 Pa) (or when required, field tested in accordance with AAMA 503). Fastener Heads must be seated and sealed against Sill Flashing on any fasteners that penetrate through the Sill Flashing.
3. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated:
  - a. Exterior Walls:
    - 1) Positive Pressure: 70 psf
    - 2) Negative Pressure: 90 psf
4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AAMA Specifications for Aluminum Structures.
  - a. Without Horizontals: L/175 or 3/4" (19.1mm) maximum.
  - b. With Horizontals: L/175 or L/240 + 1/4" (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m)
5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
6. Thermal Performance for YHS 50 TU shall be:
  - a. Condensation Resistance Factor (CRF): A minimum of 59 when tested in accordance with AAMA 1503.1.
  - b. Thermal Transmittance U-Factor: 0.45 BTU/HR/FT<sup>2</sup>/°F or less when tested in accordance with NFRC 102.

Note: Thermal performance depends on glass specified. U-Factor shown for system when using a 1-5/16" insulating glass unit - 1/4" tempered as required with 0.034 low emissivity coating on surface #2, 1/2" air space with aluminum spacer, 1/4" heat strengthened / 0.090 PVB interlayer / 1/4" heat strengthened. Size: 2000mm x 2000mm (78.7 inches x 78.7 inches).

7. Acoustical Performance YHS 50 TU:: When tested in accordance with ASTM E 1425:
  - a. Sound Transmission Class (STC) shall not be less than 39
  - b. Outdoor-Indoor Transmission Class (OITC) shall not be less than 33

B. Performance Requirements YES 45 FI: Provide aluminum storefront systems that comply with performance requirements indicated, as demonstrated by testing manufacturer's assemblies in accordance with test method indicated.

1. Air Infiltration: When tested in accordance with ASTM E 283 at differential static pressure of 6.24 PSF (299 Pa), completed storefront systems shall have maximum allowable infiltration of:
  - a. 0.06 CFM/FT<sup>2</sup> (1.10 m<sup>3</sup>/h·m<sup>2</sup>) for YES 45 FS systems.
  - b. 0.06 CFM/FT<sup>2</sup> (1.10 m<sup>3</sup>/h·m<sup>2</sup>) for YES 45 FI systems.
2. Water Infiltration: No uncontrolled water when tested in accordance with ASTM E 331 at test pressure differential of:
  - b. 10 PSF (479 Pa) for YES 45 FI systems.

- (or when required, field tested in accordance with AAMA 503). Fastener Heads must be seated and sealed against Sill Flashing on any fasteners that penetrate through the Sill Flashing.
3. Wind Loads: Completed storefront system shall withstand wind pressure loads normal to wall plane indicated:
    - a. Exterior Walls:
      - 1) Positive Pressure:
      - 2) Negative Pressure:
    - b. Interior Walls (Pressure Acting in Either Direction):
  4. Deflection: Maximum allowable deflection in any member when tested in accordance with ASTM E 330 with allowable stress in accordance with AA Specifications for Aluminum Structures.
    - a. Without Horizontals:  $L/175$  or  $3/4"$  (19.1mm) maximum. .
    - b. With Horizontals:  $L/175$  or  $L/240 + 1/4"$  (6.4mm) for spans greater than 13'-6" (4.1m) but less than 40'-0" (12.2m).
  5. Thermal Movement: Provide for thermal movement caused by 180 degrees F. (82.2 degrees C.) surface temperature, without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
  6. Thermal Performance: When tested in accordance with AAMA 1503.1 and NFRC 100:
    - a. Condensation Resistance Factor (CRF<sub>f</sub>): A minimum of 44 for YES 45 FI systems.
    - b. Thermal Transmittance U Value: 0.51 BTU/HR/FT<sup>2</sup>/°F or less for YES 45 FI systems.

Note: Thermal Performance for the glazed system as a whole will be affected by the characteristics of the glass specified.

- C. Manufacturer's products designed and tested to comply with the requirements of the Florida Building Code including High Velocity Hurricane Zone (HVHZ) and large missile impact YHS 50 TU & YHS 50 FS.
  1. Refer to A700 series drawings for Notice of Approval design and installation requirements for each system specified.

### 1.3 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. Product Data: Submit product data for each type storefront series specified.
- C. Substitutions: Whenever substitute products are to be considered, supporting technical data, samples, and test reports must be submitted ten (10) working days prior to bid date in order to make a valid comparison.
- D. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- E. Samples: Submit verification samples for colors on actual aluminum substrates indicating full color range expected in installed system.
- F. Quality Assurance / Control Submittals:
  1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
  2. Installer Qualifications Data: Submit installer qualification data.
- G. Submit Miami Dade Notice of Approval for selected products.
- H. Closeout Submittals:
  1. Warranty: Submit warranty documents specified herein
  2. Project Record Documents: Submit project record documents for installed materials in accordance with Division 1 Project Closeout (Project Record Documents) Section.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
- C. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

#### 1.5 PROJECT CONDITIONS / SITE CONDITIONS

- A. 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

#### 1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

#### PRODUCTS

##### 1.7 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. EFCO Corporation.
  - 2. Tubelite.
  - 3. Vistawall Architectural Products; The Vistawall Group; a Bluescope Steel company.
  - 4. Kawneer North America; an Alcoa company.
  - 5. \*YKK AP America Inc.-
    - a. Basis-of-Design Products:
    - b.
      - 1) Non-Thermal Exterior openings with glazing type GL-1: YHS 50 FS Impact Resistant Aluminum Storefront System.
      - 2) Thermal Exterior openings with glazing type GL-2: YHS-50 TU Thermally Broken, Impact Resistant Aluminum Storefront System.
      - 3) Thermal Exterior VMT: See Curtainwall 084413
      - 4) Non-thermal interior Vestibule framing when vestibule is over 10' high: See Curtainwall 084413

B. Storefront Framing Systems:

1. Description

- a. YHS 50 TU & YHS 50 FS: Center set, exterior flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery. Continuous and wept sill flashing.
- b. YES 45 FI: Center rabbet, exterior flush glazed; jambs and vertical mullions continuous; head, sill, intermediate horizontal attached by screw spline joinery

2. Components:

- a. YHS 50 TU & YHS 50 FS: Manufacturer's standard extruded aluminum mullions, entrance doors, framing, and indicated shapes, perimeter anchor fillers and steel reinforcing as required.
- b. YES 45 FI: Manufacturer's standard extruded aluminum expansion mullions, 0-15 degree hinged mullions, 90 degree corner posts, flexible corner posts, three way corner post, 93-170 degree flexible corner posts, entrance door framing, and indicated shapes.

3. Glazing: Manufacturer's standard glazing stops with EPDM glazing gaskets to prevent water infiltration at the exterior and Dow Corning® 995 Structural Silicone Sealant with fixed stops at the interior.

4. Thermal Barrier (YHS-50 TU): Provide continuous thermal barrier by means of a poured and debridged pocket consisting of a two-part, chemically curing high density polyurethane which is bonded to the aluminum by YKK Thermo-Bond Plus®. Systems employing nonstructural thermal barriers are not acceptable

2.02 MATERIALS

A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.

B. Aluminum Sheet:

1. Anodized Finish: ASTM B 209 (ASTM B 209M), 5005-H14 Aluminum Alloy, 0.050" (1.27 mm) minimum thickness.
2. Painted Finish: ASTM B 209 (ASTM B 209M), 3003-H14 Aluminum Alloy, 0.080" (1.95 mm) minimum thickness.

2.03 ACCESSORIES

A. Manufacturer's Standard Accessories:

1. Fasteners: Zinc plated steel concealed fasteners; Hardened aluminum alloys or AISI 300 series stainless steel exposed fasteners.
2. Glazing: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; Glazing gaskets in accordance with ASTM C 864.
3. 0.050 Aluminum Sill Flashing End Dams featuring 3 point attachment.

2.04 RELATED MATERIALS (Specified In Other Sections)

A. Glass: Refer to Section 088000 Glazing for glass materials.

2.05 FABRICATION

A. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.

1. Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.

2. Welding: Conceal welds on aluminum members in accordance with AWS recommendations or methods recommended by manufacturer. Members showing welding bloom or discoloration on finish or material distortion will be rejected.

## 2.06 FINISHES AND COLORS

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

## PART 3 EXECUTION

### 3.01 MANUFACTURER'S INSTRUCTIONS / RECOMMENDATIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, installation instructions, and product carton instructions. The latest installation instructions are available at [www.ykkap.com](http://www.ykkap.com).

### 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.

1. Verify location of preset anchors, perimeter fasteners, and block-outs are in accordance with shop drawings.

### 3.03 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

1. Aluminum Surface Protection: Protect aluminum surfaces from contact with lime, mortar, cement, acids, and other harmful contaminants.

### 3.04 INSTALLATION

- A. General: Install manufacturer's system in accordance with shop drawings, and within specified tolerances.

1. Shim and brace aluminum system before anchoring to structure.
2. Provide sill flashing at exterior storefront systems. Extend extruded flashing continuous with slice joints; set in continuous beads of sealant.
3. Verify storefront system allows water entering system to be collected in gutters and wept to exterior. Verify metal joints are sealed in accordance with the manufacturer's instructions.
4. Seal metal to metal storefront system joints using sealant recommended by system manufacturer.

### 3.05 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Upon request, provide manufacturer's field service consisting of site visit for inspection of product installation in accordance with manufacturer's instructions.

- B. Field Test: Conduct field test to determine water tightness of storefront system. Conduct test in accordance with AAMA 501.2.

### 3.06 ADJUSTING AND CLEANING

- A. Adjusting: Adjust swing doors for operation in accordance with manufacturer's recommendations.

- B. Cleaning: The General Contractor shall clean installed products in accordance with manufacturer's instructions prior to owner's acceptance, and remove construction debris from project site. Legally dispose of debris.
- C. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

END OF SECTION 084113

## SECTION 088000 - GLAZING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:
  - 1. Doors.
  - 2. Storefront framing.
  - 3. Glazed entrances.
  - 4. Silvered flat laminated glass mirrors for observation mirror used in office window opening.

#### 1.2 SUBMITTALS

- A. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.
- B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings. Provide specifications for each type of glass showing compliance to Quality Assurance, Warranty, Color, Strength, Thermal and Optical Performance.

#### 1.3 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
  - 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Safety Glazing Products: For laminated mirrors, provide products complying with testing requirements in 16 CFR 1201 for Category II materials.
- D. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- E. Testing: Glazed storefront systems shall be tested following the test load sequence and test load duration in TAS 202

#### 1.4 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
  - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

- C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
  - 1. Warranty Period: 10 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
  - 1. For monolithic-glass lites, properties are based on units with lites of thickness indicated.
  - 2. For laminated-glass lites, properties are based on products of construction indicated.
  - 3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
  - 4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
  - 5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
  - 6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

### 2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.
  - 1. Design Wind Pressures: As indicated on Structural Drawings.
  - 2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
- C. Windborne-Debris-Impact Resistance: Exterior glazing shall comply with basic-protection testing requirements in ASTM E 1996 for Wind Zone 3 when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on Project and shall be installed in same manner as glazing indicated for use on Project.
  - 1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

### 2.3 GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.
- C. Silicone-Coated Spandrel Glass: ASTM C 1048, Condition C, Type I, Quality-Q3.

## 2.4 LAMINATED GLASS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Guardian Industries Corp.
  - 2. AFG Industries, Inc.
  - 3. Pilkington North America
  - 4. PPG Industries, Inc.
  - 5. Dupont – Sentryglas (basis-of-design)
  - 6. Solutia – Vanceva Storm Composite
  - 7. Approved Equal.
  
- B. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
  - 1. Construction: Laminated glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written recommendations.
  - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
  - 3. Interlayer Color: Clear unless otherwise indicated.
  
- C. Windborne-Debris-Impact-Resistant Laminated Glass: Comply with requirements specified above for laminated glass except laminate glass with one of the following to comply with interlayer manufacturer's written instructions:
  - 1. Polyvinyl butyral interlayer.
  - 2. Polyvinyl butyral interlayers reinforced with polyethylene terephthalate film.
  - 3. Ionomeric polymer interlayer.
  - 4. Cast-in-place and cured-transparent-resin interlayer.
  - 5. Cast-in-place and cured-transparent-resin interlayer reinforced with polyethylene terephthalate film.
  
- D. Laminated Mirrors: Office window Glazing; ASTM C 1172, Kind LM; Pilkington Mirropane transparent mirror.

## 2.5 INSULATING GLASS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Guardian Industries Corp.
  - 2. AFG Industries, Inc.
  - 3. Pilkington North America
  - 4. PPG Industries, Inc.
  - 5. Approved Equal.
  
- B. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.
  - 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
  - 2. Spacer: Manufacturer's standard spacer material and construction.
  - 3. Desiccant: Molecular sieve or silica gel, or a blend of both

## 2.6 GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
  - 1. EPDM complying with ASTM C 864.
  - 2. Silicone complying with ASTM C 1115.
  - 3. Thermoplastic polyolefin rubber complying with ASTM C 1115.
  
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned EPDM silicone or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
  - 1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

## 2.7 GLAZING SEALANTS

- A. General:
  - 1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. Colors of Exposed Glazing Sealants: As selected by Owner from manufacturer's full range.
- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
  - 1. Applications: Provide @ exterior.
- C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use NT.
  - 1. Applications: Provide @ interior.

## 2.8 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
  - 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  - 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

## 2.9 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

## 2.10 MONOLITHIC-GLASS TYPES

- A. Glass Type **GL-1**: Clear fully tempered float glass; where indicated.
  - 1. Thickness: 6.0 mm (1/4").
  - 2. Safety glazing required
  - 3. Provide safety glazing labeling.
- B. Glass Type **GL-3**: Low-e-coated, Clear laminated vision glass with two plies of heat strengthened float glass; where indicated.
  - 1. Basis of Design Product: Pilkington; Solar E.
  - 2. Overall Unit Thickness: 19/32".
  - 3. Laminated glass with two plies of clear heat strengthened float glass.
    - a. Pilkington Solar E heat strengthened float glass- thickness: 0.25".
    - b. Interlayer thickness Clear PVB: 0.090".
    - c. Heat strengthened float glass – thickness: 0.25"

4. Low-e Coating: #2 surface.
5. Visible Light Transmittance: 65 percent minimum.
6. Winter Nighttime U-Factor: 0.93 maximum.
7. Summer Daytime U-Factor: 0.85 maximum.
8. Solar Heat Gain Coefficient: 0.66 maximum.
9. Safety glazing required.
10. Provide safety glazing labeling.
11. Fallout Resistance: Passes fallout resistance test in ASTM C 1048 for an assembly of glass and adhered reinforcing material.

C. Glass Type **GL-S**: Silicone coated, clear laminated spandrel glass with two plies of heat strengthened float glass.; where indicated

1. Basis of Design Product: ICD High Performance Coatings; Opaci-Coat 300 Silicone Spandrel.
2. Coating Color: Dark Gray as selected by Owner from manufacturer's full range of gray colors.
3. Minimum Thickness of Each Ply: 6 mm.
4. Interlayer Thickness: 0.090" (2.29 mm).
5. Coating Location: Fourth surface.
6. Safety glazing required.
7. Provide safety glazing labeling.
8. Fallout Resistance: Passes fallout resistance test in ASTM C 1048 for an assembly of glass and adhered reinforcing material.

D. Glass Type **GL-M**: Laminated Mirror Glass; where indicated

1. Basis of Design Product: Pilkington Mirropane transparent.
2. Overall Unit Thickness: 1/4".

## 2.11 INSULATING-GLASS TYPES

A. Glass Type **GL-2**: Low-e-coated, clear insulating laminated glass; where indicated.

1. Basis of Design Product: Guardian Industries Corp.; SunGuard SNX 62/27.
2. Overall Unit Thickness: 1-5/16" (32 mm).
3. Minimum Thickness of Outdoor Lite: 6 mm.
4. Outdoor Lite: Clear fully tempered float glass.
5. Interspace Content: Air.
6. Indoor Lite: Laminated glass with two plies of clear heat strengthened float glass.
  - a. Minimum thickness of each glass ply: 6 mm.
  - b. Interlayer thickness: 0.090" (2.29 mm).
7. Low-e Coating: Sputtered on second surface.
8. Visible Light Transmittance: 59 percent minimum.
9. Winter Nighttime U-Factor: 0.28 maximum.
10. Summer Daytime U-Factor: 0.26 maximum.
11. Solar Heat Gain Coefficient: 0.26 maximum.
12. Safety glazing required.
13. Provide safety glazing labeling.

## PART 3 - EXECUTION

### 3.1 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

### 3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

### 3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

### 3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION 088000