SECTION 08 81 00
GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. This 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. Exterior aluminum storefront and entrance doors.
   2. Interior storefront framing and aluminum doors.
   3. Interior wood doors and sidelights.
   4. Exterior hollow metal frames.
   5. Interior hollow metal frames.

1.02 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads without failure, including glass breakage attributable to defects in manufacturing, fabrication or installation, failure of sealants or gaskets to remain watertight and airtight, and deterioration of glazing materials.

B. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:
   1. For insulating-glass units, properties are based on units 1-inch thick for overall unit and for each light 6.0 mm thick and a nominal 1/2-inch-wide interspace.
   2. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:
      a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.
      b. Solar Heat Gain Coefficient: NFRC 200.
      c. Solar Optical Properties: NFRC 300.

1.03 SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. Samples: 12-inch-square, for insulating glass units, to confirm product and construction.

1.04 QUALITY ASSURANCE

A. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201.

B. 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 "Glazing Manual."

2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units."

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component light of units with appropriate certification label of the Insulating Glass Certification Council.

1.05 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form, made out to Owner and signed by coated-glass manufacturer agreeing to replace coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.
1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GLASS PRODUCTS

A. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3; of class indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed.
2. Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where needed to resist thermal stresses induced by differential shading of individual glass, in locations as recommended by the glass manufacturer.
3. For uncoated glass, comply with requirements for Condition A.
4. For coated vision glass, comply with requirements for Condition C (other uncoated glass).
5. Provide Kind FT (fully tempered) glass in place of annealed where safety glass is indicated.

C. Sputter-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide or -nitride coating deposited by vacuum deposition process after manufacture and heat treatment (if any), and complying with other requirements specified.

D. Pyrolytic-Coated Float Glass: ASTM C 1376, float glass with metallic-oxide coating applied by pyrolytic deposition process during initial manufacture, and complying with other requirements specified.

2.02 INSULATING-GLASS UNITS

A. Insulating-Glass Units, General: Factory-assembled units consisting of sealed lights of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA.
   1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lights and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
   2. Overall Unit Thickness and Thickness of Each Light: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lights at unit's edge.
   3. Sealing System: Dual seal; PIB primary seal, silicone secondary seal.
   4. Spacer Specifications: Aluminum with mill or clear anodic finish. Manufacturer's standard corner construction.

B. Clear, Low-E Insulating-Glass Units: For use in exterior windows, entrances and storefronts:
   1. Overall Unit Thickness: 1 inch.
   2. Interspace Content: Air or argon, as standard with manufacturer.
   3. Outdoor Light: Class 1 (clear), 6 mm.
   4. Low-E coating on second surface.
   5. Indoor Light: Class 1 (clear), 6 mm.
   6. Performance: Equal to PPG Solarban 60 or Viracon VE-85.
      a. Visible light transmittance: 76%
      b. Solar transmittance: 48%
      c. U-V transmittance: 28%
      d. Winter Nighttime U-value: 0.31 Btu/hour x sq. ft x deg. F.
      e. Summer Daytime U-value: 0.32 Btu/hour x sq. ft x deg. F.
      f. Solar Heat Gain Coefficient: 0.57 maximum.
      g. Shading Coefficient: 0.64
      h. Outdoor visible reflectance: No more than 11% outside nor 12% inside.

C. Interior Monolithic Glass: Clear, fully-tempered.

2.03 GLAZING SEALANTS

A. Compatibility: Select 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.

B. 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.

C. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.04 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 either of the products indicated below:
1. AAMA 804.3 tape, where indicated.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

2.05 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lights in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. False Muntins: Extruded aluminum or extruded, rigid PVC; color matching the aluminum storefront framing.

2.06 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

B. Interior Glazing: Furnish fully-tempered safety glass for all interior glazing.

PART 3 - EXECUTION

3.01 GLAZING

A. General: 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.
1. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
2. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and recycle or dispose of the material legally. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

3. 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.
4. Provide spacers for glass lights where length plus width is larger than 50 inches.
5. Provide edge blocking where indicated or needed to prevent glass lights from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

B. Tape Glazing: Position tapes against stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
1. Butt tapes at joints; do not lap. Seal joints in tapes with compatible sealant approved by tape manufacturer.
2. Center glass lights in openings on setting blocks and install loose stops so that tape presses firmly against the glass on both sides and provides an air-tight seal.

3.02 CLEANING AND PROTECTION

A. Clean glass after installation. Remove non-permanent labels.

B. Protect exterior glass from impact damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface.

C. Protect glass from contact with contaminating substances resulting from subsequent construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, etched, or damaged in any other way during the construction period.

END OF SECTION 08 81 00