

**SECTION 08800 - GLAZING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 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. Windows.
  - 2. Doors.
- B. Related Sections include the following:
  - 1. Division 8 Section "Steel Doors and Frames."
  - 2. Division 8 Section "Stainless Steel Doors and Frames."
  - 3. Division 8 Section "Fiberglass Doors, Door Frames, and Window Frames."

**1.3 PERFORMANCE REQUIREMENTS**

- A. General: Provide glazing systems capable of withstanding normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of Sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

**1.4 SUBMITTALS**

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples: For the following products, in the form of 12-inch-square Samples for glass and of 12-inch-long Samples for Sealants. Install sealant Samples between two strips of material representative in color of the adjoining framing system.
- C. Samples: For the following products, in the form of 12-inch-square Samples for glass.
  - 1. Polycarbonate Glazing.
- D. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- E. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
- F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.

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- G. Product Test Reports: From a qualified testing agency indicating the following products comply with requirements, based on comprehensive testing of current products:
- H. Warranties: Special warranties specified in this Section.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

**1.7 PROJECT CONDITIONS**

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
  - 1. Do not install liquid glazing Sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

**1.8 WARRANTY**

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

**PART 2 - PRODUCTS****2.1 PRODUCTS AND MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products indicated in schedules at the end of Part 3.

**2.2 POLYCARBONATE SHEET GLAZING**

- A. Polycarbonate Glazing: Polycarbonate sheet coated to resist discoloration and abrasion.
  - 1. Polycarbonate sheet: " 1/4" Lexan MR10 sheet" /GE Plastics or approved equal.

**2.3 CERAMIC FRITTED SPANDREL GLAZING**

- A. Ceramic Fritted Glass: " 1/4" Viracon" or approved equal.

**2.4 INSULATING GLASS**

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- A. Insulating-Glass Units: Preassembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in the Insulating-Glass Schedule at the end of Part 3.
  - 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 lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated.
- B. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated in the Insulating-Glass Schedule at the end of Part 3 are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
- C. Sealing System: Dual seal, with primary and secondary sealants as follows:
  - 1. Manufacturer's standard sealants.
- D. Spacer Specifications: Manufacturer's standard spacer material and construction.
  - 1. Corner Construction: Manufacturer's standard corner construction.

**2.5 ELASTOMERIC GLAZING SEALANTS**

- A. General: Provide products of type indicated, complying with the following requirements:
  - 1. 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.
  - 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 for this characteristic.
- B. Elastomeric Glazing Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied, chemically curing sealant in the Glazing Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.
  - 1. Additional Movement Capability: Where additional movement capability is specified in the Glazing Sealant Schedule, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements in ASTM C 920 for uses indicated.
- C. Glazing Sealant for Fire-Resistive Glazing Products: Identical to product used in test assembly to obtain fire-protection rating.

**2.6 GLAZING TAPES**

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- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; 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; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
  2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tape: Closed-cell, PVC foam tape; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
1. Type 1, for glazing applications in which tape acts as the primary sealant.
  2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

**2.7 GLAZING GASKETS**

- A. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:
1. Neoprene, ASTM C 864.
  2. EPDM, ASTM C 864.
  3. Silicone, ASTM C 1115.
  4. Thermoplastic polyolefin rubber, ASTM C 1115.
  5. Any material indicated above.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below; complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:
1. Neoprene.
  2. EPDM.
  3. Silicone.
  4. Thermoplastic polyolefin rubber.
  5. Any material indicated above.

**2.8 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.

**2.9 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS**

- A. Fabricate glass and other glazing products 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 standard, to comply with system performance requirements.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with indoor and outdoor faces.
- C. Grind smooth and polish exposed glass edges.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine framing glazing, for compliance with the following:
  - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - 2. Minimum required face or edge clearances.
  - 3. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

**3.3 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. 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.
- 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 sealant-substrate testing.

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- 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 edge blocking where indicated or needed to prevent glass lites from moving side-ways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

**3.4 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. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these 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. Do not remove release paper from tape until just before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.
- G. 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.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

**3.5 PROTECTION AND CLEANING**

- 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, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended 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 build-up of dirt, scum, alkaline deposits, or stains; remove as recommended by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents, and vandalism, during construction period.

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- E. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

**3.6 POLYCARBONATE GLAZING SCHEDULE**

- A. Polycarbonate Glazing PG-1: Where glass of this designation is indicated, provide glass lites complying with the following:
1. Products: Available products include the following:
  2. GE Plastics / Lexan MR10.
  3. Applications: Glazing in interior doors and windows in production areas.
  4. Unit Thickness: ¼" doors & windows.

**3.7 CERAMIC FRITTED SPANDREL GLAZING SCHEDULE**

- A. Ceramic Fritted Spandrel Glazing SL-1: Where glass of this designation is indicated, provide glass lites complying with the following:
1. Products: Available Products include the following:
    - a) Pilkington Ceramic Based, "Vircon Spandrel Glass".
  2. Applications: Glazing in architectural precast panels in layed up masonry walls at existing cooler exterior walls.
  3. Unit Thickness: ¼".

**3.8 INSULATING-GLASS SCHEDULE**

- A. Insulating Glass IG-1: Where glass of this designation is indicated, provide uncoated insulating-glass units complying with the following:
1. Products: Available products include the following:
    - a) clear +1/2" airspace+ clear.
  2. Overall Unit Thickness and Thickness of Each Lite: 1" and ¼".
  3. Interspace Content: Argon.
  4. Indoor Lite: Type I (transparent glass, flat), Class 1 (clear) float glass.
    - a) Kind HS (heat strengthened), Condition A (uncoated surfaces).
  5. Outdoor Lite: Type I (transparent glass, flat) float glass.
    - a) Class 1 (clear), float glass
    - b) Kind HS (heat strengthened), Condition A (uncoated surfaces).
  6. Visible Light Transmittance: 79%
  7. Winter Nighttime U-Value: .48.
  8. Shading Coefficient: .81.
  9. Solar Heat Gain Coefficient: .70.

**3.9 GLAZING SEALANT SCHEDULE**

- A. Low-Modulus Nonacid-Curing Silicone Glazing Sealant: Where glazing Sealants of this designation are indicated, provide products complying with the following:

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1. Products: Available products include the following:
  - a) 790; Dow Corning.
  - b) Silpruf; GE Silicones.
  - c) UltraPruf SCS2300; GE Silicones.
  - d) HiFlex 331; NUCO Industries, Inc.
  - e) NuFlex 309; NUCO Industries, Inc.
  - f) VP 275; Ohio Sealants, Inc.
  - g) 864; Pecora Corporation.
  - h) PSI-641; Polymeric Systems, Inc.
  - i) Omniseal; Sonneborn, Div of ChemRex, Inc.
  - j) Spectrem 1; Tremco.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Additional Movement Capability: 50 percent movement in extension and 50 percent movement in compression for a total of 100 percent movement. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Glazing Substrates: M, G, A, and, as applicable to glazing substrates indicated, O.
  - a) Use O Glazing Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel, and wood.
6. Applications: cap and heel sealing of glazing.

END OF SECTION 08800