

SECTION 08 80 00
GLAZING

PART 1 - GENERAL**1.1 DESCRIPTION**

This section specifies glass, plastic, related glazing materials and accessories. Glazing products specified apply to factory glazed items.

1.2 RELATED WORK

- A. Factory glazed by manufacturer in following units:
 - 1. Section 08 51 13, ALUMINUM WINDOWS (Double Glazed).
- B. Sustainable Design: Section 01 81 11

1.3 LABELS

- A. Temporary labels:
 - 1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.
 - 2. Label in accordance with NFRC (National Fenestration Rating Council) label requirements.
 - 3. Temporary labels shall remain intact until glass is approved by COR.
- B. Permanent labels:
 - 1. Locate in corner for each pane.
 - 2. Label in accordance with ANSI Z97.1 and SGCC (Safety Glass Certification Council) label requirements.
 - a. Tempered glass.
 - b. Laminated glass or have certificate for panes without permanent label.

1.4 PERFORMANCE REQUIREMENTS

- A. Building Enclosure Vapor Retarder and Air Barrier:
 - 1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
 - 2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.
- B. Glass Thickness:
 - 1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with ASCE 7 or local code.
 - 2. Test in accordance with ASTM E 1300.
 - 3. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Certificates:
 - 1. Certificate on shading coefficient.
 - 2. Certificate on "R" value when value is specified.
 - 3. Certificate on "U" value when value is specified.
- C. Warranty: Submit written guaranty, conforming to General Condition requirements, and to "Warranty of Construction" Article in this Section.
- D. Manufacturer's Literature and Data:
 - 1. Glass, each kind required.
 - 2. Insulating glass units.
 - 3. Elastic compound for metal sash glazing.
 - 4. Glazing cushion.
 - 5. Sealing compound.
 - 6. Metal glazing panels
 - 7. Laminated glass
- E. Samples:
 - 1. Size: 150 mm by 150 mm (6 inches by 6 inches).
 - 2. Color samples for selection by VA for the metal glazing panels.
 - 3. One factory finished metal glazing panel.
 - 4. Color samples for selection by VA of colored interlayer for laminated glass.
 - 5. Upon selection of color, a sample (6 inches by 6 inches) of laminated glass.
 - 6. Color samples for selection by VA of spandrel glass.
 - 7. Upon selection of color, a sample (6 inches by 6 inches) of spandrel glass.
- F. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.

- B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.
- C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

1.7 PROJECT CONDITIONS

Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

1.8 WARRANTY

- A. Warranty: Conform to terms of "Warranty of Construction", FAR clause 52.246-21, except extend warranty period for the following:
 - 1. Insulating glass units to remain sealed for 10 years.

1.9 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - C542-05.....Lock-Strip Gaskets
 - C716-06.....Installing Lock-Strip Gaskets and Infill
Glazing Materials.
 - C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants
 - C864-05.....Dense Elastomeric Compression Seal Gaskets,
Setting Blocks, and Spacers
 - C920-11.....Elastomeric Joint Sealants
 - C964-07.....Standard Guide for Lock-Strip Gasket Glazing
 - C1036-06.....Flat Glass
 - C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated
and Uncoated Glass.
 - C1376-10.....Pyrolytic and Vacuum Deposition Coatings on
Flat Glass
 - E119-10.....Standard Test Methods for Fire Test of Building
Construction and Material
 - E2190-10.....Insulating Glass Unit
- C. Code of Federal Regulations (CFR):
 - 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; 2010
- D. National Fire Protection Association (NFPA):

257-12.....Standard on Fire Test for Window and Glass
Block Assemblies

E. National Fenestration Rating Council (NFRC)

F. Unified Facilities Criteria (UFC):

4-010-01-2012.....DOD Minimum Antiterrorism Standards for
Buildings

G. Glass Association of North America (GANA):

Glazing Manual (Latest Edition)

Sealant Manual (2009)

H. American Society of Civil Engineers (ASCE):

ASCE 7-10.....Wind Load Provisions

PART 2 - PRODUCT

2.1 GLASS

A. Use thickness stated unless specified otherwise in assemblies.

B. Clear Glass:

1. ASTM C1036, Type I, Class 1, Quality q3.

2. Thickness, 6 mm (1/4 inch).

2.2 COATED GLASS

A. Low-E Glass:

1. ASTM C1036, Type I, Class 1, Quality q3 with low emissivity
pyrolytic coating having an E of 0.15.

2. Apply coating to second surface of insulating glass units.

3. Thickness, 6 mm (1/4 inch).

B. Opaque Glass:

1. ASTM C1036, Type I, Class 1, Quality q3 with low cure baked acrylic
opaque glass coating.

2. Apply coating to third surface of insulating glass units.

3. Thickness, 6 mm (1/4 inch).

C. Spandrel Glass:

1. ASTM C1036, Type I, Class 1, Quality q3 with an elastomeric silicone
paint spandrel coating.

2. Apply coating to third surface of insulating glass units.

3. Thickness, 6 mm (1/4 inch).

4. Coating shall transmit no light and no vision.

2.3 LAMINATED GLASS

A. Two or more lites of glass bonded with an interlayer material for use
in building glazing units.

- B. Laminated glass shall be Arch Deco Glass Sumiglass® or approved equal.
- C. Colored interlayer shall be Arch Deco Rice Paper, or approved equal, with color and texture as selected by COR.

2.4 INSULATING GLASS UNITS

- A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space and comply with ASTM E2190.
- B. Assemble units using glass types specified:
- C. Sealed Edge Units (SEU):
 - 1. Insulating Glass Unit Makeup
 - a. Outboard Lite
 - 1. Glass type: Clear glass
 - 2. Glass Tint: Low-E
 - 3. Nominal Thickness: 6 mm (1/4 inch)
 - 4. Glass Strength: Annealed
 - 5. Coating Orientation: Surface #2
 - b. Spacer
 - 1. Nominal Thickness: 1/2 inch
 - 2. Gas Fill: Air
 - c. Inboard Lite
 - 1. Glass Type: Clear Glass, Opaque Glass, Spandrel Glass, or decorative Laminated Glass as indicated in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Glass Tint: N/A
 - 3. Nominal Thickness: 6mm (1/4 inch)
 - 4. Glass Strength: Annealed
 - 5. Coating Orientation: As specified.
 - 2. Performance Characteristics (Center of Glass - Clear Units Only)
 - a. Visible Transmittance: 70%
 - b. Visible Reflectance: 11%
 - c. Winter U-factor (U-value): 0.29
 - d. Shading Coefficient (SC): 0.44
 - e. Solar heat Gain Coefficient (SHGC): 0.38
 - 3. Glass shall be annealed, heat strengthened or tempered as required by codes, or as required to meet thermal stress and wind loads.
 - 4. Glass heat-treated by horizontal (roller hearth) process with inherent roller wave distortion parallel to the bottom edge of the glass as installed when specified.

2.5 METAL GLAZING PANELS

- A. Laminated metal faced panels consisting of the following:
1. Exterior Face: 28-guage sheet steel with smooth ceramic porcelain finish.
 2. Core: High-density polyethylene (HDPE).
 3. Interior Face: Aluminum with embossed finish and baked polyester paint complying with AAMA 603.9-92.
 4. Panel Size: As shown.
 5. Minimum Panel Substrate Thickness: 4 mm.
 6. Exterior and Interior Colors: As selected by COR from Manufacturer's full line of available colors.

2.6 GLAZING ACCESSORIES

- A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.
- B. Setting Blocks: ASTM C864: Window Manufacturer's standard.
- C. Glazing Gaskets: ASTM C864:
1. Firm dense wedge shape for locking in sash.
 2. Flanges may terminate above the glazing-beads or terminate flush with top of beads.
- D. Glazing Sealants: ASTM C920, silicone neutral cure:
1. Type S.
 2. Class 25
 3. Grade NS.
 4. Shore A hardness of 25 to 30 Durometer.
- E. Color:
1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.
 2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black, gray, or neutral color as approved by COR.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.
- B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

3.2 PREPARATION

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.
- B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.
- C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.
- D. Verify that components used are compatible.
- E. Clean and dry glazing surfaces.
- F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.3 INSTALLATION - GENERAL

- A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.
- B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.
- C. Set glazing without bending, twisting, or forcing of units.
- D. Do not allow glass to rest on or contact any framing member.
- E. Glaze operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.
- F. Insulating Glass Units:
 1. Glaze in compliance with glass manufacturer's written instructions.
 2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.
 3. Do not use putty or glazing compounds.

4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.

3.4 INSTALLATION - DRY METHOD (GASKET SPLINE GLAZING)

- A. Cut glazing spline to length; install on glazing pane. Seal corners by butting and sealing junctions with butyl sealant.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- C. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- D. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

3.5 INSTALLATION - WET METHOD (SEALANT AND SEALANT)

- A. Place setting blocks at 1/3 points and install glazing pane or unit.
- B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- C. Fill gaps between glazing and stops with specified silicon sealant to depth of bite on glazing, but not more than 9 mm (3/8 inch) below sight line to ensure full contact with glazing and continue the air and vapor seal.
- D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 REPLACEMENT AND CLEANING

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by COR.
- B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.
- C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.7 PROTECTION

Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3.8 GLAZING SCHEDULE

- A. Insulating Glass:
 1. Install SEU clear glass in windows, interior pane of dual glazed windows.

2. Install SEU clear coated glass in exterior pane of dual glazed windows.

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