

SECTION 08 80 00  
GLAZING

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

A. This section specifies the following:

1. Glass.

**1.2 RELATED WORK:**

A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

**1.3 LABELS:**

B. Permanent labels:

1. Locate in corner for each pane.
2. Label in accordance with ANSI Z97.1 and SGCC label requirements.
  - a. Laminated glass or have certificate for panes without permanent label.
3. Fire rated glazing assemblies: Mark in accordance with IBC.

**1.4 PERFORMANCE REQUIREMENTS:**

A. General: Design glazing system consistent with guidance and practices presented in the GANA Glazing Manual, GANA Laminated Glazing Manual, and GANA Sealant Manual, as applicable to project. Installed glazing is to withstand applied loads, thermal stresses, thermal movements, building movements, permitted tolerances, and combinations of these conditions without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; unsafe engagement of the framing system; deflections beyond specified limits; or other defects in construction.

**1.5 SUBMITTALS:**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Sustainable Design Submittals, as described below:
  1. Volatile organic compounds per volume as specified in  
PART 2 - PRODUCTS.
- C. Manufacturer's Certificates:

1. Certificate stating that fire-protection and fire-resistive glazing units meet code requirements for fire-resistance-rated assembly and applicable safety glazing requirements.

D. Manufacturer Warranty.

E. Manufacturer's Literature and Data:

1. Glass, each kind required.

**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.
- D. Protect laminated security glazing units against face and edge damage during entire sequence of fabrication, handling, and delivery to installation location. Provide protective covering on exposed faces of glazing plastics, and mark inside as "INTERIOR FACE" or "PROTECTED FACE":
  1. Treat security glazing as fragile merchandise, and packaged and shipped in export wood cases with width end in upright position and blocked together in a mass. Storage and handling to comply with manufacturer's directions and as required to prevent edge damage or other damage to glazing resulting from effects of moisture, condensation, temperature changes, direct exposure to sun, other environmental conditions, and contact with chemical solvents.
  2. Temporary protections: The glass front and polycarbonate back of glazing are to be temporarily protected with compatible, peelable, heat-resistant film which will be peeled for inspections and re-applied and finally removed after doors and windows are installed at destination. Since many adhesives will attack polycarbonate, the film used on exposed polycarbonate surfaces is to be approved and applied by manufacturer.

3. Edge protection: To cushion and protect glass clad, and polycarbonate edges from contamination or foreign matter, the four (4) edges are to be sealed the depth of glazing with continuous standard-thickness thermoplastic rubber tape. Alternatively, continuous channel shaped extrusion of thermoplastic rubber are to be used, with flanges extending into face sides of glazing.

**1.7 PROJECT CONDITIONS:**

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

**1.8 WARRANTY:**

- A. Construction Warranty: Comply with the FAR clause 52.246-21 "Warranty of Construction".
- B. Manufacturer Warranty: Manufacturer shall warranty their glazing from the date of installation and final acceptance by the Government as follows. Submit manufacturer warranty.
3. Laminated glass units to remain laminated for five (5) 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 Architectural Manufacturers Association (AAMA):  
800.....Test Methods for Sealants  
810.1-77.....Expanded Cellular Glazing Tape
- C. American National Standards Institute (ANSI):  
Z97.1-14.....Safety Glazing Material Used in  
Building - Safety Performance Specifications  
and Methods of Test
- D. American Society of Civil Engineers (ASCE):  
7-10.....Wind Load Provisions
- E. ASTM International (ASTM):  
C542-05(R2011).....Lock-Strip Gaskets  
C716-06.....Installing Lock-Strip Gaskets and Infill  
Glazing Materials  
C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants  
C864-05(R2011).....Dense Elastomeric Compression Seal Gaskets,  
Setting Blocks, and Spacers

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C920-14a.....Elastomeric Joint Sealants

C964-07(R2012).....Standard Guide for Lock-Strip Gasket Glazing

C1036-11(R2012).....Flat Glass

C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated  
and Uncoated Glass.

C1172-14.....Laminated Architectural Flat Glass

C1349-10.....Standard Specification for Architectural Flat  
Glass Clad Polycarbonate

C1376-10.....Pyrolytic and Vacuum Deposition Coatings on  
Flat Glass

D635-10.....Rate of Burning and/or Extent and Time of  
Burning of Self-Supporting Plastic in a  
Horizontal Position

D4802-10.....Poly (Methyl Methacrylate) Acrylic Plastic  
Sheet

E84-14.....Surface Burning Characteristics of Building  
Materials

E119-14.....Standard Test Methods for Fire Test of Building  
Construction and Material

E1300-12a.....Load Resistance of Glass in Buildings

E1886-13a.....Standard Test Method for Performance of  
Exterior Windows, Curtain Walls, Doors, and  
Impact Protective Systems Impacted by  
Missile(s) and Exposed to Cyclic Pressure  
Differentials

E1996-14a.....Standard Specification for Performance of  
Exterior Windows, Curtain Walls, Doors, and  
Impact Protective Systems Impacted by Windborne  
Debris in Hurricanes

E2141-12.....Test Methods for Assessing the Durability of  
Absorptive Electrochromic Coatings on Sealed  
Insulating Glass Units

E2190-10.....Insulating Glass Unit

E2240-06.....Test Method for Assessing the Current-Voltage  
Cycling Stability at 90 Degree C (194 Degree F)

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PROJECT NO. 620-17-204

- of Absorptive Electrochromic Coatings on Sealed  
Insulating Glass Units
- E2241-06.....Test Method for Assessing the Current-Voltage  
Cycling Stability at Room Temperature of  
Absorptive Electrochromic Coatings on Sealed  
Insulating Glass Units
- E2354-10.....Assessing the Durability of Absorptive  
Electrochromic Coatings within Sealed  
Insulating Glass Units
- E2355-10.....Test Method for Measuring the Visible Light  
Transmission Uniformity of an Absorptive  
Electrochromic Coating on a Glazing Surface
- F1233-08.....Standard Test Method for Security Glazing  
Materials and Systems
- F1642-12.....Test Method for Glazing and Glazing Systems  
Subject to Airblast Loadings
- E. Code of Federal Regulations (CFR):
- 16 CFR 1201-10.....Safety Standard for Architectural Glazing  
Materials
- F. Glass Association of North America (GANA):
- 2010 Edition.....GANA Glazing Manual
- 2008 Edition.....GANA Sealant Manual
- 2009 Edition.....GANA Laminated Glazing Reference Manual
- 2010 Edition.....GANA Protective Glazing Reference Manual
- G. International Code Council (ICC):
- IBC.....International Building Code
- H. Insulating Glass Certification Council (IGCC)
- I. Insulating Glass Manufacturer Alliance (IGMA):
- TB-3001-13.....Guidelines for Sloped Glazing
- TM-3000.....North American Glazing Guidelines for Sealed  
Insulating Glass Units for Commercial and  
Residential Use
- J. Intertek Testing Services - Warnock Hersey (ITS-WHI)
- K. National Fire Protection Association (NFPA):
- 80-16.....Fire Doors and Windows
- 252-12.....Fire Tests of Door Assemblies

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

Block Assemblies

L. National Fenestration Rating Council (NFRC)

M. Safety Glazing Certification Council (SGCC) 2012:

Certified Products Directory (Issued Semi-Annually).

N. Underwriters Laboratories, Inc. (UL):

9-08(R2009).....Fire Tests of Window Assemblies

263-14.....Fire Tests of Building Construction and  
Materials

752-11.....Bullet-Resisting Equipment.

O. Unified Facilities Criteria (UFC):

4-010-01-03(R2007).....DOD Minimum Antiterrorism Standards for  
Buildings

P. U.S. Veterans Administration:

Physical Security Design Manual for VA Facilities (VAPSDG); Life Safety  
Protected

Physical Security Design Manual for VA Facilities (VAPSDG); Mission  
Critical Facilities

Architectural Design Manual for VA Facilities (VASDM)

Q. Environmental Protection Agency (EPA):

40 CFR 59(2014).....National Volatile Organic Compound Emission  
Standards for Consumer and Commercial Products

**PART 2 - PRODUCT**

**2.1 GLASS:**

A. Provide minimum thickness stated and as additionally required to meet  
performance requirements.

B. Obtain glass units from single source from single manufacturer for each  
glass type.

**2.2 LAMINATED GLASS:**

A. Laminated Glass: ASTM C1172. Two or more lites of glass bonded with  
polyvinyl butyral, ionomeric polymer, or cast-in-place and cured-  
transparent-resin interlayer complying with interlayer manufacturer's  
written instructions.

B. Interlayer: Use min. 0.75 mm (0.030 inch) thick interlayer for vertical  
glazing unless otherwise indicated in construction documents.

glazing.

### **2.3 FIRE PROTECTION AND FIRE RESISTANCE GLAZING:**

- A. Fire-Resistance-Rated Glazing: Glazing units tested for use in fire wall assemblies, UL, ITS-WHI or equivalent listed and labeled by testing agency in accordance with IBC for fire-resistance ratings of wall assemblies as indicated on construction documents, based upon testing according to NFPA 252 and ASTM E119 or UL 263.
  - 1. Labeling: Permanently label fire-resistance-rated glazing units in accordance with IBC.
  - 2. Safety Glazing: Comply with 16 CFR 1201, Category II.
  - 3. Fire-Resistance-Rated Laminated Glass with Intumescent Interlayers: Units made from multiple lites of uncoated, ultra-clear low-iron float glass, in intumescent interlayers, of thickness and rating scheduled.

## **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 is approved shop drawings.
- B. Review for 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.

### **3.2 PREPARATION:**

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA 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 Glazing Manual, GANA Sealant Manual, IGMA TB-3001, and IGMA TM-3000 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 doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.

F. Laminated Glass:

1. Tape edges to seal interlayer and protect from glazing sealants.

2. Do not use putty or glazing compounds.

G. Fire Protective and Fire Resistance Glass:

1. Wire Glass: Glaze in accordance with NFPA 80.

2. Other fire protective and fire resistant glass: Glaze in accordance with manufacturer's installation instructions and NFPA 80.

**3.4 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.

**3.5 PROTECTION:**

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

**3.6 FIRE-PROTECTIVE AND FIRE-RESISTANCE GLAZING SCHEDULE:**

A. Glass Type FR#: Fire-protection-rated tempered glass.

1. Thickness: 12 mm (0.47 inch).

2. Rating: 20 minutes.



3. Application: Fire-protection-rated door assemblies with openings not over 0.65 sq. m (100 sq. in.).
- B. Fire-protection-rated laminated ceramic glazing.
  1. Thickness: 15.875 mm (0.625 in.)
  2. Rating: 20 minute.
  3. Application: Fire-protection-rated door and window assemblies.

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