

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies the following:
 - 1. Glass.
 - 2. Glazing materials and accessories for both factory and field glazed assemblies.

1.2 RELATED WORK:

- A. Factory glazed by manufacturer in following units:
 - 1. Section 08 11 13, HOLLOW METAL DOORS AND FRAMES.

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 label requirements.
 - 3. Temporary labels are to remain intact until glass is approved by Contracting Officer Representative (COR).
- B. Permanent labels:
 - 1. Locate in corner for each pane.
 - 2. Label in accordance with ANSI Z97.1 and SGCC label requirements.
 - a. Tempered glass.

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. Manufacturer's Certificates:

1. Certificate stating that units meet code requirements for applicable safety glazing requirements.

C. Manufacturer Warranty.

D. 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.

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. Submit manufacturer warranty.

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
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

F. Code of Federal Regulations (CFR):

16 CFR 1201-10.....Safety Standard for Architectural Glazing
Materials

G. 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

H. International Code Council (ICC):

IBC.....International Building Code

I. Intertek Testing Services - Warnock Hersey (ITS-WHI)

J. 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

K. National Fenestration Rating Council (NFRC)

L. Safety Glazing Certification Council (SGCC) 2012:

Certified Products Directory (Issued Semi-Annually).

M. 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.

N. Unified Facilities Criteria (UFC):

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

O. 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)

P. 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.
 - 1. Provide minimum 6 mm (1/4 inch) thick glass units unless otherwise indicated.
- B. Obtain glass units from single source from single manufacturer for each glass type.
- C. Clear Glass:
 - 1. ASTM C1036, Type I, Class 1, Quality q3

2.2 HEAT-TREATED GLASS:

- A. Roller Wave Limits for Heat-Treated Glass: Orient all roller wave distortion parallel to bottom surface of glazing, and provide units complying with the following limitations:
 - 1. Measurement Parallel to Line: Maximum peak to valley 0.203 mm (0.008 inch).
 - 2. Measurement Perpendicular to Line: Maximum 0.0254 mm (0.001 inch).
 - 3. Bow/Warp: Maximum 50 percent of bow and warp allowed by ASTM C1048.
- B. Clear Heat Strengthened Glass:
 - 1. ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.
- C. Clear Tempered Glass:
 - 1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.

2.12 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 are to have a finish that will not corrode or stain while in service. Fire rated glazing to be installed with glazing accessories in accordance with the manufacturer's installation instructions.
- B. Setting Blocks: ASTM C864:
 - 1. Silicone type.
 - 2. Channel shape; having 6 mm (1/4 inch) internal depth.
 - 3. Shore A hardness of 80 to 90 Durometer.
 - 4. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.
 - 5. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.

C. Spacers: ASTM C864:

1. Channel shape having a 6 mm (1/4 inch) internal depth.
2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.
3. Lengths: 25 to 76 mm (1 to 3 inches).
4. Shore A hardness of 40 to 50 Durometer.

D. Glazing Tapes:

1. Semi-solid polymeric based closed cell material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.
2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.
3. Complying with AAMA 800 for the following types:
 - a. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - b. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

E. Glazing Sealants: ASTM C920, silicone neutral cure:

1. Type S.
2. Class 25 or 50 as recommended by manufacturer for application.
3. Grade NS.
4. Shore A hardness of 25 to 30 Durometer.

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.

3.4 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT):

- A. Cut glazing tape to length and install against permanent stops, projecting 1.6 mm (1/16 inch) above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- D. Install removable stops, spacer shims inserted between glazing and applied stops at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- E. Fill gaps between pane and applied stop with sealant to depth equal to bite on glazing, to uniform and level line. Sealant type is to be compatible with glazing tape.
- F. Trim protruding tape edge.

3.5 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.

3.14 PROTECTION:

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

3.15 MONOLITHIC GLASS SCHEDULE:

- A. Glass Type SG# Clear fully tempered float glass.
 - 1. Unit Thickness: 6 mm (0.23 inch.
 - 2. Safety glazing label required.

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