

SECTION 08800
GLASS AND GLAZING

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work in this section.

1.2 DESCRIPTION OF WORK:

- A. Furnish all labor, materials and equipment necessary to complete all glass and glazing work as indicated on the drawings and specified herein.

1.3 REFERENCES:

- A. ASCE-7-98 – Minimum Design Loads for Buildings and other Structures.
- B. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Used in Buildings.
- C. ASTM C-162 – Standard Terminology of Glass and Glass Products.
- D. ASTM C864 – Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
- E. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
- F. ASTM C1036 – Standard Specification for Flat Glass.
- G. ASTM C1048 – Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
- H. ASTM C1172 – Standard Specification for Laminated Architectural Safety Glass.
- I. ASTM C1349 - Standard Specification for Architectural Flat Glass Clad Polycarbonate
- J. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- K. ASTM E152 – Methods for Fire Test of Door Assemblies.
- L. ASTM E283 – Standard Test Method For Rate of Air leakage Through Exterior Windows, Curtain Walls and Doors.
- M. ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- N. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes.
- O. ASTM E2025 - Standard Test Method for Evaluating Fenestration Components and Assemblies for Resistance to Impact Energies.
- P. FGMA - Glazing Manual.
- Q. FGMA - Sealant Manual.
- R. Laminators Safety Glass Association - Standards Manual.
- S. Florida Building Code.
- T. CPSC 16 CFR 1201 Safety Standards for Architectural Glazing Materials.
- U. NFPA 80 – Fire Doors and Windows.
- V. NFPA 252 – Fire Test of Doors Assemblies.
- W. NFPA 257 – Fire Test of Window Assemblies

1.4 LABELS:

- A. Glass shall bear labels indicating the manufacturer, type and thickness. Do not remove labels until inspected and approved.
- B. All safety glass shall at least a temporary (permanent is preferred) label indicating manufacturer, type, thickness, and compliance with CPSC 16 CFR 1201 or ANSI Z97.1.
- C. If temporary label, label is to remain on glass until Florida Tech Inspection is complete, then removed and turned into the Florida Tech Facilities Management Department.

1.5 GLASS BREAKAGE:

- A. The glazing subcontractor shall be responsible for all glass broken, scratched, damaged or defective and shall replace same at his expense.

1.6 SUBMITTALS:

- A. Manufacturer's Data:
 - 1. Submit two-copies of manufacturer's specifications, and installation instruction for each type of glass, glazing sealant and compound, gasket and associated miscellaneous material required.
 - 2. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.
 - 3. Show by transmittal that the Glazer distributed one copy of each recommendation and instruction.
 - 4. If Safety glass, provide two copies of manufacturer certification of the glass meeting the requirements of CPSC 16 CFR 1201.
- B. Samples: Submit two-samples 12" x 12" in size illustrating glass coloration.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with FGMA Glazing Manual, FGMA Sealant Manual, SIGMA and Laminators Safety Glass Association - Standards Manual for glazing installation methods.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

1.8 WARRANTY

- A. Provide a ten - year warranty to include coverage for sealed glass units from seal failure.
- B. Provide a ten - year warranty to include coverage for delamination of laminated glass and replacement.

PART 2 PRODUCTS

2.1 GENERAL:

- A. Tempered Glass: Glass to be heat-strengthened by Manufacturer's standard process (after cutting to final size), to achieve a flexural strength of four times normal glass strength; provide temp glass where required by code, generally 4' horizontally from doors and within 18" of floor to comply with Federal Specification DD-6-1403, or as scheduled.

2.2 GLASS TYPES

- A. Interior Window Glazing: Hollow Metal frames
 - 1. Tempered Glass: ASTM C1048, Kind FT fully tempered, Condition A uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select; conforming to ANSI Z97.1.
 - 2. Wired Glass:
 - a. Can be used only in fire rated assemblies,
 - b. Shall meet the safety glazing requirements of CPSC 16 CFR 1201, and
 - c. Have the proper fire rating for the assembly (see plans for assembly fire ratings).
 - 3. Fire rated Glass.
- B. Exterior Window Glazing: Aluminum Frames
 - 1. Impact rated as required by Florida Building Code Product Approval System with colored tint as selected by the Architect with a minimum 0.44 shading coefficient at building exterior.
- C. Exterior Door Glazing: Hollow Metal Doors and Frames
 - 1. Impact rated as required by Florida Building Code Product Approval System.
- D. Miscellaneous Glazing in Interior Doors:
 - 1. ¼" clear, tempered glass.
 - 2. Wire glass or fire rated glass where label door is required by schedule or code.
- E. One-way Reflective Glass: Laminated from 2 pieces of Type I, Class 1, Quality q3, laminated together with a clear 0.030" thick polyvinyl butyl interlayer, total ⅜" thick, coated on the No. 2 face with a hard, adherent film of chromium or other approved coating of equal durability. Glass shall transmit not more than 14% of total incident visible light and shall reflect from the front surface of the coating not less than 33% of the total incident visible light.
- F. Glazing in Millwork: ¼" clear, tempered glass.
- G. Provide and install glass mirrors as indicated on plans, minimum thickness of ¼" tempered or laminated safety glass and labeled as such.

2.3 GLAZING SEALANTS/COMPOUNDS

- A. General: Provide materials as recommended by the manufacturer for the required application and condition of installation in each case. Provide only compounds that are proven to be fully compatible with surfaces contacted.

2.4 MISCELLANEOUS GLAZING MATERIALS

- A. Setting Blocks: Neoprene, 70-90 Durometer hardness, with proven compatibility with sealants used.
- B. Spacers: Neoprene, 40-50 Durometer hardness, with proven compatibility with sealants used.
- C. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

2.5 OTHER MATERIALS

- A. Provide other materials not specifically described but required for a complete and proper installation.

PART 3 EXECUTION

3.1 INSTALLATION OF GLASS

- A. General Requirements:

1. Comply with combined printed recommendations of glass manufacturers, of manufacturer of sealants, gaskets and glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.
 2. Where a combination of sealing materials is required for glazing in the same frame, the manufacturer must certify that all glazing materials furnished are compatible with each other.
 3. Where setting blocks and spacer shims are required to be set into a glazing compound or sealant, they may be buttered with the compound or sealant, placed in position and allowed to set firmly prior to installation of glass.
- B. Sash and Frame Preparation and Acceptance
1. Inspect all sash, frames and surrounds to be glazed under this section and notify the Contractor of any defects, improper materials or workmanship of other conditions that will affect the satisfactory installation of glass. Do not proceed with glazing until such conditions have been corrected. Absence of notification, or the beginning of glazing, will indicate acceptance of all previously placed related work executed by other trades.
 2. Other trades will execute the following work; but before starting glazing work, the glazier shall verify compliance with the requirements listed.
 - a. That sash and frames are firmly anchored in proper position, plumb and square within 1/8" nominal dimensions on approved shop drawings.
 - b. That the rivet, screw, bolt or nail heads, welding fillets and other projections are removed from glazing rabbets to provide the specified clearances.
 - c. That all corners and fabrication intersections are sealed and sash and frames are weather-tight.
 - d. That rabbets at seals weep to outside and all rabbets are of sufficient depth and width to receive the glass and provide the required overlap of the glass.
 - e. That all sealing surfaces of steel sash and frames are primer painted.
- C. Preparation of Glass and Rabbets: Clean the sealing surfaces of glass and the sealing surfaces of rabbets and stop beads before applying any glazing compound or gaskets. Use only the approved solvents and cleaning agents recommended by the compound manufacturer.
- D. Positioning Glass: Center in glazing rabbet to maintain specified clearances at perimeter on all four sides. Maintain centered position of glass in rabbet and provide the required sealer thickness (1/8" maximum) on both sides of glass. Whenever glass dimensions are larger than 50 united inches, provide setting blocks at the sill and spacer shims on all four sides; locate setting blocks one-quarter way in from each end of glass.
- E. Stop Bead Glazing - Using Putty and/or Elastic Glazing Compound: Except where other materials or methods are specified hereinafter, use putty for bedding glass in hollow metal frames.
1. Apply ample back putty or compound to rabbet so that it will ooze out when pressing glass into position and completely cover glass in rabbet. Place setting blocks and spacer shims as required. Press glass into position.
 2. Secure glass in place by the application of stop beads. Bed stop beads against glass and bottom of rabbet with compound and/or putty, leaving proper thickness between glass and stop beads. Secure stop beads in place with suitable fastenings. Strip surplus compound or putty from both sides of glass and tool to provide clean sight lines.
- F. Glazing - Using Glazing Gaskets
1. Glass stops with glazing gaskets shall be used for securing glass in frames of all storefront type entrance doors and in such other locations as indicated on the drawings.
 2. Glazing gaskets without stops shall be used for glazing glass in all storefront type sash and frames, except where otherwise indicated on the drawings. Glazing of storefront type sash and frames using glazing gaskets without stops shall be done in strict accordance with the

manufacturer's directions. Provide and place setting blocks as required. Gaskets shall be of the proper size for the thickness of glass being used. After glazing, seal gaskets to glass continuously with a clear elastic and watertight sealant similar to G.E. Silicon Sealant. Seal gaskets to glass on exterior face only.

3.2 Replacement and Cleaning:

- A. Upon completion of work all glass shall be free from cracks and other defects. Any defective or broken glass that may appear before acceptance or within the one-year warranty period shall be removed and replaced with new glass without additional cost to the Owner; excepting glass which is broken by a specific cause relating to building occupancy not relating to this contract. Upon completion of the work and just prior to occupancy of the building, all glass shall be thoroughly washed and cleaned.

END OF SECTION