

**SECTION 08 80 00**  
**GLAZING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies glass, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items. Glass to match recently installed 5th Floor exterior glass. Also includes security glazing, glazing film, and repairs to existing glazing.

**1.2 RELATED SECTIONS**

- A. Integral Blinds: Section 12 21 11 - BETWEEN GLASS BLINDS.

**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 Resident Engineer.

- 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. Fire rated glass.
3. Security glazing assemblies:
  - a. Identify each security glazing permanently with glazing manufacturer's name, date of manufacture, product number, and DOS Code number inconspicuously located in lower corner on protective side and visible after glazing is framed.
  - b. The "attack (threat) side" shall be identified in bold lettering on each side of glazing with removable 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 code.
2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.
3. Test in accordance with ASTM E 330.
4. Thicknesses listed are minimums. 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. Certificates stating that wire glass, meets requirements for safety glazing material as specified in ANSI Z97.1.
2. Certificate on shading coefficient.
3. Certificate on "R" value when value is specified.
4. Certificate that glass provided under this Section matches that used on the previously completed, 5<sup>th</sup> floor project.
5. Certificate test reports confirming compliance's with specified security rating.

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. Security glazing material.

E. Samples:

1. Size: 150 mm by 150 mm (6 inches by 6 inches).
2. Tinted glass.
3. Glazing film.

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.

- G. Mock Up: Provide mock up of glazing repair. Repair one window indicating successive steps used in complete repair process.

#### **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**

- A. Pre-Installation Conference: Convene one week prior to ordering glass of this Section. Confirm glass for this Project matches recently completed 5<sup>th</sup> floor project.
- B. Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

#### **1.8 WARRANTY**

- C. 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 National Standards Institute (ANSI):
  - Z97.1-04 .....Safety Glazing Material Used in Building -  
Safety Performance Specifications and Methods  
of Test.
- C. American Society for Testing and Materials (ASTM):
  - C542-05 .....Lock-Strip Gaskets.
  - C716-06 .....Installing Lock-Strip Gaskets and Infill  
Glazing Materials.

C864-05 .....Dense Elastomeric Compression Seal Gaskets,  
Setting Blocks, and Spacers.

C920-05 .....Elastomeric Joint Sealants.

C1036-06 .....Flat Glass.

C1048-04 .....Heat-Treated Flat Glass-Kind HS, Kind FT Coated  
and Uncoated Glass.

E774-97 .....Sealed Insulating Glass Units

D. National Fenestration Rating Council (NFRC):  
Certified Products Directory (Latest Edition).

E. Safety Glazing Certification Council (SGCC):  
Certified Products Directory (Issued Semi-Annually).

F. Underwriters Laboratories, Inc. (UL):

## **PART 2 - PRODUCT**

### **2.1 GLASS**

A. Use thickness stated unless specified otherwise in assemblies.

### **2.2 WIRE GLASS**

A. General: Fire protective, safety rated, wired glass tested in  
accordance with NFPA 80, NFPA 252, NFPA 257, UL 9, UL 10B and UL 10C.

B. Heavy duty surface applied 7 mil safety film free of noticeable  
irregularities.

C. Diamond pattern.

D. Thickness: 5/16 inch.

E. Safety Rating: CPSC 16 CFR 1201 Cat. I and II.

F. Labeling: Each piece of fire-rated glazing material shall be labeled  
with a permanent logo including name of product, manufacturer, testing  
laboratory, fire rating period and safety glazing standards.

G. Accessories: Listed fire rated closed-cell foam tape, listed fire rated  
ceramic glazing tape, 100% silicone caulking and glazing manufacturer's  
recommended fire glaze.

### **2.3 HEAT-TREATED GLASS**

A. Clear Heat Strengthened Glass:

1. ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.

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

B. Clear Tempered Glass:

1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.

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

3. Provide textured glass at side lites at offices and alcove doors in  
non-rated locations.

## **2.4 COATED GLASS**

### **A. Low-E Tinted Heat Strengthened Glass:**

1. ASTM C1048, Kind HS, Condition A, 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).

## **2.5 INSULATING GLASS UNITS**

### **A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space.**

### **B. Assemble units using glass types specified:**

### **C. Sealed Edge Units (SEU):**

1. Conform to ASTM E774, Class C performance requirements.
2. Air Space not less than 13 mm (½ inch) wide.
3. U-value: 0.28/0.26 maximum.
4. Shading Coefficient: 0.17 maximum
5. Visible Light: 15%.

### **D. SEU Glass:**

1. Exterior pane: Bronze tinted, low-e coated, heat strengthened, glass 6 mm (1/4 inch) thick; PPG "Solarcool Bronze (Surface #2)" or approved substitution.
2. Interior pane: Clear, uncoated, annealed, glass 6 mm (1/4 inch) thick; PPG "Solarban 70 XL," (Surface #3) or approved substitution.

## **2.6 GLAZING FILM**

### **A. Frosted/Crystal: High performance, polyester film, translucent, non-reflective type with a decorative embossed or printed matte surface; distortion-free adhesive system; scratch resistant; manufactured with a silicone liner.**

1. Total Nominal Thickness: 2.0 mil.
2. UV Transmission: 1%.
3. Visible Light Transmission: 29%.
4. Infrared Transmission: 41%.

## **2.7 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:**

1. Channel shape; having 6 mm (1/4 inch) internal depth.

2. Shore a hardness of 80 to 90 Durometer.
3. Block lengths: 50 mm (two inches) except 100 to 150 mm (four to six inches) for insulating glass.
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: One to 25 to 76 mm (one to three inches).
4. Shore a hardness of 40 to 50 Durometer.

D. Sealing Tapes:

1. Semi-solid polymeric based 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.

E. Glazing Gaskets: ASTM C864:

1. Firm dense wedge shape for locking in sash.
2. Soft, closed cell with locking key for sash key.
3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.

F. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.

G. Glazing Sealants: ASTM C920, silicone neutral cure; one-component, room temperature vulcanizing:

1. Type S.
2. Class 50
3. Grade NS.
4. Use NT, G, A, and O.
5. Shore A hardness of 35 Durometer.
6. Color as selected by Resident Engineer.

H. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.

1. Channel shape; flanges may terminate above the glazing channel or flush with the top of the channel.
2. Designed for dry glazing.

- a. Color:
  - 3. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.
  - 4. 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.
- I. Smoke Removal Unit Targets: Adhesive targets affixed to glass to identify glass units intended for removal for smoke control. Comply with requirements of local Fire Department.
- J. Bond breaker tape: Provide tape to prevent adhesion to joint fillers or joint surfaces and to allow sealant movement; 1/4" x 1/4".

### **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. Remove existing glazing beads and gasketing.
- 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. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.
- 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.
- G. Fire Resistant Glass:
  - 1. Wire glass: Glaze in accordance with NFPA 80. Field cutting or tampering is strictly prohibited.
  - 2. Other fire resistant glass: Glaze in accordance with UL design requirements.
- H. Security Glazing Material:
  - 1. Glaze as recommended by manufacturer, using glazing material which will permit expansion and contraction of the security glazing material in the frame.
  - 2. The polycarbonate surface shall not be cleaned by scraping, razor blade, squeegee, or use of highly alkaline cleaner. At no time shall polycarbonate material be exposed to chemical solvents (benzene, gasoline, acetone, paint thinners) or aromatic hydrocarbons (toluene or xylene), nor shall any of these solvents or fumes be used or present in confined areas. Due care shall be exercised (paint formula, ventilation, protection of polycarbonate) when painting becomes necessary to interiors of rooms of hardline glazed units; exposure to chemical solvents could result in irreparable damage to security glazings (delaminations, distortions, cracks, severe stress crazing, air bubbles).



### **3.4 INSTALLATION - DRY METHOD (TAPE AND GASKET SPLINE GLAZING)**

- A. Cut glazing tape or spline to length; install on glazing pane. Seal corners by butting and sealing junctions with butyl sealant.
- 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 fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Trim protruding tape edge.

### **3.5 GLAZING FILM**

- A. Verify glass is not cracked, chipped, broken, or damaged. Do not begin installation until substrates have been properly prepared.
- B. Clean surfaces thoroughly prior to installation. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install in accordance with manufacturer's instructions. Installation must be accomplished by a recognized professional installer approved by film manufacturer. Completed work must meet IWFA visual acceptance standard. Verify the direction of obscurity for directional films prior to installation. Install without bubbles, ripples, drips, dirt, cuts, tears or gaps between film and frame. Clean newly installed film and window frames after installation. Clean up cleaning solutions, run-off cleaning water and adhesive mounting solutions.
- D. Protect installed products until completion of project. Where installed film could be damaged by subsequent construction provide tape warning strips or barricades to prevent contact.

### **3.6 REPAIRING EXISTING GLAZING**

- A. Cut existing exterior gasketing perpendicular to existing glazing to provide a neat, straight line.
- B. Clean existing glass and aluminum surfaces. Mask glass and aluminum areas not to receive sealant.
- C. Apply bond breaker tape at intersection of existing glass and aluminum frame.
- D. Apply glazing sealant to bond breaker tape, overlapping onto glass and aluminum surfaces by 1/4" minimum.

- E. Before skimming or curing begins, tool sealant. Provide smooth, uniform sealant finish. Eliminate air pockets and ensure complete contact onto glass and aluminum. Do not use water, soap, or alcohol to facilitate tooling.
- F. Complete horizontal joints before vertical joints. Lap vertical sealant over horizontal joints.
- G. Remove masking tape and excess sealant.

### **3.7 REPLACEMENT AND CLEANING**

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by Resident Engineer.
- 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.

### **3.8 PROTECTION**

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

### **3.9 GLAZING SCHEDULE**

- A. Fire Resistant Glass:
  - 1. Install clear fire rated glass in interior fire rated or labeled doors and windows.
  - 2. Use Fire Resistant Glass without wire mesh in locations as indicated on Drawings.
- B. Tempered Glass:
  - 1. Install in full and half glazed doors unless indicated otherwise.
  - 2. Install in storefront, windows, and door sidelights adjacent to doors.
  - 3. Use clear tempered glass on interior side lights and doors unless otherwise indicated or specified.
- C. Tinted Glass: Exterior pane of dual glazed windows.
- D. Insulating Glass: Install SEU tinted glass in windows, storefronts, curtain walls.

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