SECTION 08 80 01

INTERIOR GLAZING

PART 1 - GENERAL

- 1.01 DESCRIPTION
 - A. This Section describes the requirements for interior glass and glazing.
 - B. Related Sections:
 - 1. Hollow metal doors and frames are specified in Section 08 11 13.
 - 2. Flush wood doors are specified in Section 08 14 16.
 - 3. Stile and rail wood doors are specified in Section 08 14 33.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide glass and glazing that has been produced, fabricated and installed to withstand impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials and other defects in the work.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- B. Samples: 12-inch square samples of each type of glass specified except for clear single pane units, and 12-inch long samples of each type of sealant or gasket exposed to view.
- C. LEED Submittals:
 - 1. Credit IEQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
 - a. Furnish LEED Online Credit Template listing the adhesives and sealants used in the building and declaring that they meet the specified LEED requirements.
 - b. Required Audit Documentation:
 - Product data sheets and MSDS for each adhesive/sealant used on the interior, with the VOC content in g/L circled and indicating VOC content of each product used.
 - 2) Summary table comparing credit VOC requirements and actual VOC levels for each product.
- D. Warranty.

1.04 QUALITY ASSURANCE

- A. Glazing Standards: Comply with recommendations of the following manufacturer and associations except where more stringent requirements are specified:
 - 1. Glass Association of North America (GANA) "Glazing Manual" and "Sealant Manual".
- B. Safety Glass: Where safety glass is required, provide products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

- C. Fire-Resistive Glazing Products for Door Assemblies: Products identical to those tested in accordance with ASTM E2074, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Fire-Resistive Glazing Products for Window Assemblies: Products identical to those tested in accordance with ASTM E2010, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Glazier Qualifications: Engage an experienced glazier who has completed glazing similar in material, design, and extent to that required for this Project, with a record of successful in-service performance.
- F. Preconstruction Compatibility and Adhesion Testing: Furnish samples of glass, gaskets, glazing accessories, and glass framing members proposed for use in contact with, or proximity of, glazing sealants, to sealant manufacturer for compatibility and adhesion testing in accordance with sealant manufacturer's standard testing methods.
 - 1. Furnish not less than 9 pieces of each type and finish of glass framing and of each type, class, kind, condition, and form of glass for adhesion testing and one sample of substrates (gaskets, setting blocks, and spacers) for compatibility testing.
 - 2. Schedule sufficient time for testing and analysis of results to prevent delay in the progress of the work.
 - 3. Testing is not required when glazing sealant manufacturer can submit required preparation data that is acceptable to the County' s Representative and is based on previous testing of current sealant products for adhesion to and compatibility with submitted glazing materials.

1.05 ENVIRONMENTAL QUALITY ASSURANCE

A. Credit IEQ 4.1: Adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

Architectural Applications	VOC Limit g/L less water	Specialty Applications	VOC Limit g/L less water
Indoor Carpet Adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesive primer for plastic	550
Ceramic tile adhesives	65	Contact adhesive	80
VCT and asphalt adhesives	50	Special purpose contact adhesive	250
Drywall and panel adhesives	50	Structural wood member adhesive	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesive	250
Structural glazing adhesives	100		
Substrate Specific Applications	VOC Limit g/L less water	Sealants	VOC Limit g/L less water
Metal to Metal	30	Architectural	250
Plastic foams	50	Nonmembrane roof	300
Porous material (except wood)	50	Roadway	250
Wood	30	Single-ply roof membrane	450
Fiberglass	80	Other	420
Sealant Primers	VOC Limit (g/L less water)		
Architectural, nonporous	250		
Architectural, porous	775		
Other	750		

1. Adhesives, Sealants and Sealant Primers: Comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits as follows:

- B. Applicable LEED Credits:
 - 1. Credit IEQ 4.1 Low-Emitting Materials Adhesives and Sealants.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials during delivery, storage, and handling; comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture, temperature changes, direct exposure to sun and from other causes.

1.07 PROJECT CONDITIONS

- A. Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when glazing channel substrates are wet.
- B. Install glazing sealants at ambient and substrate temperatures above 40-deg. F.

1.08 WARRANTY

- A. Mirror Glass: Furnish written warranty agreeing to furnish replacement mirrors for those units developing silver spoilage within 15-years from date of Substantial Completion.
- B. This warranty shall be in addition to and not a limitation of other rights the County may have against the Developer Design/Builder under the Contract Documents.

PART 2 - PRODUCTS

2.01 GLASS PRODUCTS

- A. Sizes: Fabricate glass to sizes required for glazing openings, with edge clearances and tolerances complying with recommendations of glass manufacturer. Thickness as specified or recommended by glass manufacturer.
- B. Manufacture heat-treated glass by horizontal (roller hearth) process with roll wave distortion parallel with bottom edge of glass as installed.

2.02 GLASS TYPES

- A. Clear Float Glass: ASTM C1036, Type I, Class 1, Quality q3, 1/4-inch thick.
- B. Clear Tempered Float Glass: ASTM C1048, Condition A, Type I, Class 1, Quality q3, Kind FT; 1/4-inch thick.
- C. Wire Glass: ASTM C1036, Type II, Class 1, Quality q8; complying with ANSI Z97.1; 1/4-inch thick; Form 1, Mesh m1 (diamond).
- D. Clear Fire-Rated (Non-Wire) Safety Glass: O' Keeffe' s Inc./SAFTI FIRST Fire Rated Glazing Solutions "SuperLite C/S and C/SP" or approved equal fire protective and safety rated ceramic glazing tested in accordance with NFPA 80, NFPA 252, NFPA 257, UL 9, UL 10B, UL 10C, UBC-7-2 and UBC-7-4.
 - 1. Thickness: 3/16-inch.
 - 2. Fire Rating: 20-180 minutes, as scheduled.
 - 3. Appearance: Slight amber with some surface irregularity.
 - 4. Impact Safety Resistance: CPSC 16 CRR 1201 Cat. I & II.
 - 5. 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.
 - 6. Glazing materials installed in Hazardous Locations, subject to human impact, shall be certified and permanently labeled as meeting applicable requirements referenced in NFPA 80:
 - a. CPSC 16 CFR 1201, Cat. I & II.
- E. Mirror Glass: ASTM C1036, Type I, Class 1, Quality q1 for units under 25-square feet, Quality q2 for units over 25-square feet, silver coated and electrolytically copper plated, with edges protected with clear vinyl tape or other protective coating applied before installation.
 - 1. Provide stainless steel channel or angle frames with maximum 1/2-inch exposed legs, with No. 4 finish.
 - 2. Mirrors shall be in single piece units for each location.

2.03 ELASTOMERIC GLAZING SEALANTS

- A. General: Comply with recommendations of sealant and glass manufacturer's for selection of glazing sealants with performance characteristics suitable for applications and conditions at time of installation.
 - 1. Compatibility: Select sealants with proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 - 2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants which have performance characteristics suitable for applications and conditions at time of installation.
 - 3. VOC Content: For sealants used inside of the weatherproofing system, comply with requirements specified for LEED Credit EQ 4.1.
 - 4. Colors: Color of exposed sealant as selected by County' s Representative from manufacturer's standards.
- B. Silicone Glazing Sealant: One-part elastomeric silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25, Uses NT, G, A and 0 as applicable; Dow Corning 999, General Electric "SCS 1200", Rhone-Poulenc, Inc. "Rhodorsil 3B", Tremco "Proglaze" or approved equal.

2.04 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100percent, non-staining and non-migrating in contact with nonporous surfaces, with or without spacer rod as recommended by tape and glass manufacturers, packaged in rolls with a release paper backing, complying with AAMA 800.
- B. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, packaged on rolls with release liner protecting adhesive, and complying with AAMA 800 for product 810.5.
- C. Glazing Sealant for Fire-Rated Glass: Metacaulk 990, DAP 1012 or approved equal, listed and approved by UL, Warnock Hersey or other approved testing agency.
- D. Glazing Tape for Fire-Rated Glass: EPDM or other approved flame resistant gasket material approved by testing agency.

2.05 MISCELLANEOUS GLAZING MATERIALS

- A. Compatibility: Provide materials with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Neoprene, EPDM or silicone blocks as required, 80 to 90 Shore A durometer hardness.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement.
- F. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonextruding, nonoutgassing, strips of closed-cell plastic foam of density, site, and shape to control sealant depth and otherwise contribute to produce optimum sealant performance.
- G. Mirror Mastic: Palmer "Mirro-Mastic" or approved equal for securing glass mirrors.

2.06 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

A. Fabricate glass and other glazing products in sizes required to glaze openings, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect work for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; existence of minimum required face or edge clearances; and for effective sealing of joinery. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean glazing channels and other framing members to receive glass. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are to be used.

3.03 GLAZING, GENERAL

- A. Comply with printed recommendations of glass, sealants, gaskets, and other glazing materials manufacturers.
- B. Coordinate with framing system manufacturers for proper glazing channel dimensions to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with acceptable tolerances.
- C. Protect glass from edge damage during handling and installation.
 - 1. Use a rolling block in rotating glass units to prevent damage to corners. Use suction cups to shift glass units within openings; do not raise of drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening.
 - 2. Remove and dispose of glass units with edge damage or other imperfections of a kind that would weaken glass when installed and impair performance and appearance.
- D. Apply primers to joint surfaces where required for sealant adhesion.
- E. Install setting blocks of proper size in sill rabbet, located to comply with referenced glazing standard. Set blocks in thin course of sealant.
- F. Provide spacers inside and out, of size and spacing to preserve required face clearances for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking to comply with requirements of referenced glazing standard except where otherwise required by glass unit manufacturer.
- H. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

3.04 TAPE GLAZING

- A. Position tapes on fixed stops so that when compressed by glass their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously but not in one continuous length. Do not stretch tapes to make them fit opening.
- C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each lite is installed.

- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward center of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.05 SEALANT GLAZING (WET)

- A. Install continuous spacers between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel weep systems until sealants cure. Secure spacers in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass. Install pressurized gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.

3.06 PROTECTION AND CLEANING

- A. Protect glass from breakage. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances. Remove immediately by methods recommended by glass manufacturer.
- C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged during construction, including natural causes, accidents and vandalism.
- D. Wash glass on both faces not more than 4-days prior to date scheduled for inspection for Substantial Completion. Use methods recommended by glass manufacturers.

END OF SECTION