SECTION 08800

GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass.

B. Glazing accessories.

1.02 RELATED REQUIREMENTS

A. Section 07900 - Joint Sealers: Sealant and back-up material.

B. Section 08110 - Steel Doors and Frames: Glazed borrowed lites and windows.

C. Section 08410 - Metal-Framed Storefronts.

1.03 REFERENCE STANDARDS

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

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

C. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

D. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.

E. ASTM C 1036 - Standard Specification for Flat Glass.

F. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

G. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.

H. ASTM C 1193 - Standard Guide for Use of Joint Sealants.

I. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

J. ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.

K. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

L. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.

M. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

N. GANA (GM) - GANA Glazing Manual; Glass Association of North America.

O. GANA (SM) - FGMA Sealant Manual; Glass Association of North America.

P. GANA (LGDG) - Laminated Glazing Reference Manual; Glass Association of North America.

Q. SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units; Sealed Insulating Glass Manufacturers Association.

1.04 SUBMITTALS

A. See Section 01350 - Submittals, for submittal procedures.

B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

C. Samples: Submit two samples 4 x 4 inch in size of glass units.

D. Samples: Submit 4 inch long bead of glazing sealant, color as selected.

E. Certificates: Certify that products meet or exceed specified requirements.

F. Manufacturer's Certificate: Certify that sealed insulated glass meets or exceeds specified requirements.

G. Maintenance Materials: Furnish the following for County of Orange/OC Public Works use in maintenance of project.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, FGMA Sealant Manual, SIGMA TM-3000 Glazing Guidelines, and GANA Laminated Glazing Reference Manual for glazing installation methods.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

B. Laminated Glass: Provide a five (5) year warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.01 GLAZING TYPES

A. Type IG-1 - Sealed Insulating Glass Units: Vision glazing, low-E.
   1. Application(s): All exterior glazing unless otherwise indicated.
   2. Basis of Design: Pilkington North America, Inc.
   3. Outboard Lite: Fully tempered float glass, 1/4 inch thick.
      a. Tint and Coating: Clear Eclipse Advantage Low-E with coated side on #2 surface.
   4. Inboard Lite: Fully tempered float glass, 1/4 inch thick.
      a. Tint and Coating: Clear Energy Advantage Low-E with coated side on #3 surface.
   5. Total Thickness: 1 inch.
   6. Total Visible Light Transmittance: 56 percent, nominal.
   7. Total Solar Heat Gain Coefficient:.53 percent, nominal.
   8. Glazing Method: Gasket glazing.

2.02 EXTERIOR GLAZING ASSEMBLIES

A. Air and Vapor Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier:
   1. In conjunction with vapor retarder and joint sealer materials described in other sections.
   2. To utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
   3. To maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

2.03 GLASS MATERIALS

A. Float Glass Manufacturers:
   1. Pilkington North America Inc: www.pilkington.com.
   2. AGC Flat Glass North America, Inc: www.afgglass.com.
   3. Guardian Industries Corp: www.sunguardglass.com.
   4. Zeledyne: www.versaluxglass.com.
   5. PPG Industries, Inc: www.ppg.com.
   6. Substitutions: Refer to Section 01640 - Substitutions and Product Options.

B. Float Glass: All glazing is to be float glass unless otherwise indicated.
   1. Tinted Types: Color and performance characteristics as indicated.
   2. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

C. Laminated Glass: Float glass laminated in accordance with ASTM C 1172.
   1. Laminated Safety Glass: Comply with 16 CFR 1201 test requirements for Category II.
   2. Plastic Interlayer: 0.060 inch thick, minimum.
   3. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.
   4. Manufacturers:
      a. AGC Flat Glass North America, Inc: www.afgglass.com.
      b. Cardinal Glass Industries: www.cardinalcorp.com.
      c. Viracon, Apogee Enterprises, Inc: www.viracon.com.
      d. Substitutions: Refer to Section 01640 - Substitutions and Product Options.

2.04 SEALED INSULATING GLASS UNITS

A. Manufacturers:
   1. Any of the manufacturers specified for float glass.
   2. Substitutions: Refer to Section 01640 - Substitutions and Product Options.

B. Sealed Insulating Glass Units: Types as indicated above.
   1. Durability: Certified by an independent testing agency to comply with ASTM E 2190.
   2. Edge Spacers: Neoprene as recommended by manufacturer.
   3. Edge Seal: Glass to elastomer.
   4. Edge Seal Color: As recommended by manufacturer for clear glass.
   5. Purge interpane space with dry hermetic air.

2.05 PLASTIC FILMS

A. Distributor/Installer:
   1. Metropolitan West: www.metropolitanwestla.com. Phone: (310) 829-5701.
   2. Substitutions: Refer to Section 01640 - Product Requirements.

B. Plastic Film: Polyester with printed pattern and silicone liner type, 1.5mm thick, visible light transmittance of 95 percent, ultra violet ray transmission 94 percent.

C. Plastic Film pattern: Seascape.

2.06 GLAZING COMPOUNDS

A. Manufacturers:
   1. Bostik Inc: www.bostik-us.com.
   2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
   3. Pecora Corporation: www.pecora.com.
   4. BASF Construction Chemicals-Building Systems: www.chemrex.com.
   5. Substitutions: Refer to Section 01640 - Substitutions and Product Options.

B. Butyl Sealant: Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.

C. Polyurethane Sealant: Single component, chemical curing, non-staining, non-bleeding; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; Shore A Hardness Range 20 to 35; color as selected.

D. Silicone Sealant: Single component; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

2.07 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene or EPDM, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore a durometer hardness; coiled on release paper; black color.
   1. Manufacturers:
      a. Pecora Corporation: www.pecora.com.
      b. Tremco Global Sealants: www.tremcosealants.com.
      c. Substitutions: Refer to Section 01640 - Substitutions and Product Options.

D. Glazing Splines or Gaskets: Resilient polyvinyl chloride extruded shape to suit glazing channel retaining slot; ASTM C 864 Option I;color as selected.

E. Glazing Clips: Manufacturer's standard type.

F. Smoke Removal Unit Targets: Adhesive targets affixed to glass to identify glass units intended for removal for smoke control.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.

E. Install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

A. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

A. Cut glazing tape or spline to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.

B. Place setting blocks at 1/4 points with edge block no more than 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. Trim protruding tape edge.

3.05 INSTALLATION - EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.

B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.

C. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.

E. Install removable stops, with spacer strips inserted between glazing and applied stops, 1/4 inch below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.

F. Fill gap between glazing and stop withsealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.

G. Apply cap bead ofsealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.06 INSTALLATION - EXTERIOR WET METHOD (SEALANT AND SEALANT)

A. Place setting blocks at 1/4 points and install glazing pane or unit.

B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch intervals, 1/4 inch below sight line.

C. Fill gaps between glazing and stops withsealant to depth of bite on glazing, but not more than 3/8 inch below sight line to ensure full contact with glazing and continue the air and vapor seal.

D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.07 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

D. Place glazing tape on free perimeter of glazing in same manner described above.

E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

F. Knife trim protruding tape.

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

A. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 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 24 inch intervals, 1/4 inch below sight line.

E. Fill gaps between pane and applied stop withsealant to depth equal to bite on glazing, to uniform and level line.

F. Trim protruding tape edge.

3.09 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

C. Fit tight to glass perimeter with razor cut edge.

D. Install on glass side as indicated on drawings.

3.10 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

3.11 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

END OF SECTION