

PART I - GENERAL

1.01 GENERAL

The Drawings, Instructions to Bidders, Form of Proposal, General Conditions, Supplementary General Conditions and Division 1 are included herein and govern work under this section.

1.02 DESCRIPTION OF WORK

- A. Definitions: "Glass" includes prime glass, processed glass, and fabricated glass products. "Glazing" includes glass installation and materials used to install glass.
- B. Included, but not necessarily limited to, are the following:
 - 1. Plate glass
 - 2. Tempered glass
 - 3. Insulating glass
 - 4. Laminated glass
 - 5. Glazing of windows, doors, transoms, side lights, and all other glazed openings as indicated.

1.03 MANUFACTURERS

- A. Prime Glass Manufacturer: One of the following for each type of glass:
 - 1. Viracon Architectural Glass
 - 2. ASG Industries, Inc.
 - 3. Pilkington Glass Company
 - 4. PPG Industries, Inc.

1.04 SUBMITTALS

- A. Samples: Furnish duplicate samples, for approval, of the various types of glass specified herein. Samples shall be 12" x 12" and shall include an assembled 12" x 12" insulating glass sample. Samples of other glazing materials shall be submitted in duplicate if requested by Architect.
- B. Approved samples shall become the standard for comparison for all installed work.
- C. Shop Drawings: Submit shop drawings and descriptive literature for all products for use. Shop drawings shall include full scale glazing details of window wall. Shop drawings shall be submitted in accordance with Division 1.

1.05 JOB CONDITIONS

Pre-installation: Meet with Glazier and other trades affected by glass installation, prior to beginning of installation. Do not perform work under adverse weather or job conditions. Install liquid sealants when temperatures are within lower or middle third of temperature range by manufacturer.

1.06 PRODUCT WARRANTY

Warranty on Hermetic Seals: Provide insulating glass manufacturer's written warranty, agreeing to, within specified period, furnish FOB project site, replacement units for insulating glass units which have defective hermetic seals (excluding that due to glass breakage); defined to include intrusion of moisture or dirt, internal condensation at temperatures above -20 degrees F (-31 degrees C), deterioration of internal glass coatings, and other visual evidence of seal failure or performance failure, provided manufacturer's instructions for handling, installation, protection and maintenance have been adhered to during warranty period.

PART II - PRODUCTS

2.01 GLASS PRODUCTS

- A. Polished Plate Glass: All polished plate glass shall be 1/4" thick, unless otherwise indicated, glazing quality. Equal quality float glass will be acceptable. "U" factor for glass shall be 1.13 or better.
- B. Tempered Plate Glass:
1. Tempered plate glass shall be heat tempered of sizes indicated. Thickness shall be 1/4" unless otherwise indicated or unless a thicker glass is recommended by manufacturer for size of opening in which used.
 2. Tempered glass shall be "Tuf-Flex" as manufactured by Pilkington Glass Co. or equal product of PPG Industries or ASG Industries. Glass shall conform to federal Specification DD-G-1403B. "U" factor for glass shall be 1.13 or better.
 3. Provide one way tempered glass at door type G.
- C. Laminated Glass: Provide laminated glass with Saflex inter-layer as manufactured by Solutia Company or approved equal, glass shall be 1/4" thick.
- D. Insulating Glass:
1. Insulating glass shall be DualPane as manufactured by Viracon Architectural Glass or equal product of Pilkington Glass or PPG Industries.
 2. Where indicated "1" insulating glass", provide the following: Units shall consist of 1/4" tinted polished plate glass outer pane, a 1/2" air space and a 1/4" polished plate glass inner pane.
 3. Where indicated "1" laminated insulating glass", provide the following: Units shall consist of 1/4" laminated tinted outer pane, a 1/2" air space and a 1/4" tinted [color] laminated glass inner pane.
 4. Tinted color to be
 - 1-3/16" VE1-2M #4 Lami Ins HS/HS/HS Vanceva 0181
 - 3/16" (5 mm) Clear HS
 - .015 (0.38 mm) Clear PVB
 - .015 (0.38 mm) (1) Red 78% PVB 807800
 - .015 (0.38 mm) (8) Yellow 86% PVB 818600
 - .015 (0.38 mm) (1) Red 78% PVB 807800
 - 3/16" (5 mm) Clear HS
 - VE-2M #4
 - 1/2" (13.2 mm) airspace - black
 - 1/4" (6 mm) Clear HS

5. Panes shall be hermetically sealed with a metal to glass bond and separated with a dehydrated air space.
6. Separators between glass panes shall be hot dipped galvanized with welded corners. Glass to be metal shall be sealed with a primary seal of polyisobutalene and two-part polysulphide for the secondary seal. Unit shall be bonded with a continuous metal band and sealed with a two-part polysulphide between metal and glass. "U" factor for glass assembly shall be 0.69 or better. Shading coefficient shall be at least 0.54. Separator to be black finish.

2.02 GLAZING TYPES

- A. Doors:
 1. Refer to door types on drawing for locations of all glazing types. All doors to have laminated glass.
- B. Windows:
 1. All exterior windows shall be glazed with 1" insulating glass unless indicated otherwise under the respective sections for metal, aluminum, PVC or wood windows.
 2. Provide 1" laminated insulating glass in all exterior windows and sidelights located adjacent to each side of exterior doors.
 3. Provide 1" laminated insulating glass in all exterior windows where glass is within 18" of the floor.
 4. Provide 1/4" laminated glass in all interior window openings, sidelites adjacent to doors and/or within 18" of the floor.

2.03 GLAZING SEALANTS AND COMPONENTS

- A. General: Provide color of exposed sealant/compound as selected by Architect from manufacturer's standard colors. Comply with manufacturer's recommendation for selection of hardness, depending upon the location of each application, conditions at the time of installation, and performance requirements as indicated. Select materials, and variations or modifications, carefully for compatibility with surfaces contacted in the installation.
- B. Silicone Glazing Compound: Silicone sealant 1200 as manufactured by general Electric Company or equal product of Dow Corning shall be used to set all joints as shown on drawings. Color shall be as selected by Architect from stock.
- C. Elastomeric Glazing Compound:
 1. All channel glazing shall be with a one part, 100% liquid polymer, acrylic base sealant. Product shall be "Mono-Lasto-Metric" as manufactured by the Tremco Manufacturing Company or equal product of Pecora, Inc. or Toch Brothers, and shall be used in strict conformance with manufacturer's instructions. Color as selected by Architect.
 2. Primers shall be used if and as recommended by manufacturer.
- D. Elastomeric Glazing Compound:
 1. Elastic glazing compound shall be oleo-resinous, knife consistency sealant, for use on non-porous surfaces under compression. It shall be non-corrosive on metal.
 2. Color shall be approximately the same as adjacent surfaces and shall be approved by Architect.

3. This compound shall be as manufactured by Tremco Manufacturing Company, Pecora Incorporated, or Presstite Division of Martin Marietta Corp.
4. All elastic glazing compound shall be formulated from selected processed oils and pigments which will remain plastic and resilient over a long period of time. Comply with latest revision of the Aluminum Window Manufacturer's Association.

2.04 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
- B. Glazing Tape:
 1. Glazing tape shall be a polyisobutylene-butyl base with an integral shim equal to Tremco 440 Shimmed Tape, as manufactured by the Tremco Manufacturing Company. Tape and elastomeric sealing compound shall be by same manufacturer.
 2. Verify thickness of tape required by glazing a sample window on the job. Sample shall be inspected and approved by Architect before proceeding with glazing work.
- C. Spacer Shims and Setting Blocks:
 1. All spacer shims shall be of 40 to 50 durometer neoprene.
 2. All setting blocks shall be lead or 80 durometer neoprene as recommended by glass manufacturer based on weight of glass.
 3. All spacer shims and setting blocks shall be at least 1/4" thick by 3" long by width of recess.

PART III - EXECUTION

3.01 STANDARDS AND PERFORMANCE

- A. Watertight and airtight installation of each glass product is required, except as otherwise shown. Each installation must withstand normal temperature changes, wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and air tight, deterioration of glazing materials and other defects in the work.
- B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.
- C. Labels: Deliver all glass on the job carefully paper packed and protected, each pane bearing manufacturer's identifying label, giving name, quality and grade of glass.
- D. Glazing channel dimensions as shown are intended to provide for necessary bite on glass, minimum edge clearance, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.
- E. Comply with combined recommendations and technical reports by manufacturers of glass and glazing products as used in each glazing channel, and with recommendations of Flat Glass Marketing Association "Glazing Manual", except where more stringent requirements are indicated.

- F. Install insulating glass units to comply with recommendations by Sealed Insulating Glass Manufacturers Association, except as otherwise specifically indicated or recommended by glass and sealant manufacturers.

3.02 PREPARATION FOR GLAZING

- A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove lacquer from metal surfaces where elastomeric sealants are used.
- B. Remove all coatings in glazing rebate area with a solvent that will not etch or mar surface of metal, recommended by manufacturer of glazing compound.
- C. All surfaces to be glazed shall be free of moisture.
- D. Avoid glazing at temperature below 40 degrees F. If glazing schedule requires work during cold periods, warm the glass and rabbeted surfaces to avoid condensation.
- E. Remove manufacturer's instruction tags from windows.
- F. Cover metal surfaces liable to be damaged by smear of sealing compound with tape. Remove tape after glazing.
- G. Prepare all glazing compounds in strict accordance with manufacturer's instructions. Compounds shall not be cut or thinned.
- H. Apply primer or sealant to joint surfaces where recommended by sealant manufacturer.

3.03 GLAZING

- A. Install setting blocks of proper size in sill rabbet, located 1/4th of glass width from each corner. Set blocks in thin course of heel-bead compound, if any.
- B. Provide spacers inside and out, of proper size and spacing, for glass sizes larger than 50 united inches, except where gaskets or preshimmed tapes are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compresses thickness of tape.
- C. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
- D. Voids and Filler Rods: Prevent exudation of sealant or compound by reforming voids or installing filler rods in channel at heel of jamb and head (do not leave voids in sill channels), except as otherwise indicated and depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.
- E. Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

- F. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.
- G. Clean and trim excess glazing materials from glass and stops or frames promptly after installation, and eliminate stains and discolorations.
- H. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel bead.
- I. Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will no pull away from corners and result in voids or leaks in glazing system.

3.04 CURE, PROTECTION AND CLEANING

- A. Protect exterior glass from breakage immediately upon installation, by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces. Cure sealants for high early strength and durability.
- B. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- C. Wash and polish glass on both faces not more than four (4) days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Comply with glass product manufacturer's recommendations for final cleaning.

- - - END OF SECTION - - -