CWS Architects

434 Cumberland Avenue
Portland ME 04101-2325

Phone: 207.774.4441
Fax: 207.774.4016

Addendum A-16

Date: November 21, 2007

To: Pizzagalli Construction Company

From: Ben Walter, CWS Architects

Regarding: **Bayside Village** – Portland, Maine

Subject: **Addendum A-16**

Modify the previously issued documents dated September 14, 2007 and any previously issued addenda, if applicable, as follows:

Architectural Items:

1. Replace previously issue specification **Section 08 11 13 STEEL DOORS AND FRAMES** with the attached, revised 11-21-2007.

2. Replace previously issue specification **Section 08 14 00 WOOD DOORS** with the attached, revised 11-21-2007.

3. Replace previously issue specification **Section 08 53 00 TUBULAR PLASTIC WINDOWS** with the attached, revised 11-21-2007.

4. Replace previously issue specification **Section 08 80 00 GLASS AND GLAZING** with the attached, revised 11-21-2007.

End of Addendum A-16

Attachments: (See attached specifications, sketches and drawings listed above, if applicable)

SECTION 08 53 00

TUBULAR PLASTIC WINDOWS

1 PART 1 GENERAL

1.1 SECTION INCLUDES

A. Factory fabricated tubular extruded plastic windows with fixed and operating sash.

B. Glass factory glazed, and framed insect screens.

1.2 APPLICABLE PUBLICATIONS

A. Federal Specifications (Fed. Spec.):

1. L-S-125B Screening, Non-metallic, Insect
2. DD-G-45-1D Glass, Float or Plate, Sheet

B. American Architectural Manufacturers Association (AAMA);

1. AAMA 101 I.S.2-05 Voluntary Specification for Aluminum, PVC, and Wood Windows and Glass Doors
2. Test method for rate of Air Leakage through Exterior windows, Curtain walls and doors (ASTM E283)
3. Test method for Structural Performance of Exterior Windows, Curtain walls and doors (ASTM E330)
4. Test method for Water Penetration of Exterior windows, Curtain walls and doors by Uniform Static Air Pressure Difference (ASTM E547)
5. Specifications for Sealed Insulating Glass Units (ASTM E774) AAMA 1503-98 Voluntary test method for Condensation Resistance of Windows, Doors, and Glazed wall sections
6. AAMA 615-02 Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles
7. NFRC 100-97 Procedure for Determining Fenestration Product U-factors
8. NFRC 200-97 Procedure for Determining Fenestration Product Solar Heat Gain Coefficients
9. NFRC 400-01 Procedure for Determining Fenestration Product Air Leakage

C. AAMA Certification Program for Vinyl Window Manufacturers

1.3 SYSTEM DESCRIPTION

A. Windows: Extruded tubular plastic sections, factory fabricated, insulated vision glass, related flashings, anchorage and attachment devices.

B. Performance Requirements for Windows: Conform to ASTM D-4099 Grade H-R40 (Single Hung), Grade AP-R60 (Awning).

C. NFRC rated.

D. System Design: Performance to provide for expansion and contraction within system components caused by temperature cycling. Design and size members to withstand dead loads caused by pressure and suction of wind.

E. Air Infiltration: Limit air leakage through assembly to 0.15 cfm/min/sq ft (single hung) of sash area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with AAMA 501.

F. Heat Loss: Limit Rate of Heat Loss to a maximum U-value to 0.35.

G. Heat Gain: Limit Solar Heat Gain Coefficient to a maximum of 0.35.

H. Water Leakage: None, when measured in accordance with AAMA/NWWDA 101/I.S.2-97 at 10.5 psf (single hung), 10.5 psf (awning).

I. Uniform Structural Load: No damage at 60 psf (single hung), 90 psf (awning), when measured in accordance with AAMA/NWWDA 101/I.S.2-97.

J. Condensation Resistance Factor: 65 when tested in accordance with AAMA 1502.7.

K. System Internal Drainage: Drain water entering the framing system, to exterior.

L. Thermal Movement: Design sections to permit thermal expansion and contraction of plastic as compared to glass, infill, or perimeter opening construction.

1.4 SUBMITTALS

A. Product Data: Provide component dimensions, anchorage and fasteners, glass, internal drainage details and screens.

B. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work and installation requirements.

C. Certified Test Reports: Submit for air infiltration, water resistance, and uniform loading in accordance with the above referenced specification.

D. Certification of Compliance: Submit certificates that equivalent windows have been successfully tested and meet the requirements specified herein for air infiltration and water penetration.

1.5 WARRANTY

A. Windows shall be fully warranted against any defects in material or workmanship under normal use and service for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.

B. Insulated Glass Units shall be fully warranted against visual obstruction resulting from film formation or moisture collection between the interior glass surface, excluding breakage, for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.

C. Contractor shall provide a written service warranty that clearly spells out how requests for service shall be handled, by whom, under whose responsibility and shall include the time frame for handling these service requests. A labor warranty providing service on the windows shall cover a period of not less than 10 years, and shall be provided in writing. A copy of the product and labor warranty must accompany other applicable warranties and be presented with bid.

2 PART 2 PRODUCTS

2.1 WINDOW UNITS

A. Window Unit Manufacturers:

1. Paradigm Window Solutions, Portland, Maine, or approved equal.

B. Frames: 3-1/4” deep profile.

C. Configuration: Single hung tilt-wash sash.

1. Model: Paradigm Window Solutions “Hybrid Single Hung”, or Equal

D. Configuration: Awning sash.

1. Model: Paradigm Window Solutions “Awning”, or Equal

2.2 FRAME MATERIALS AND ACCESSORIES

A. Extruded PVC components produced from commercial quality virgin PVC (unplasticised polyvinyl chloride), conforms to AAMA 303 from sections in one piece, straight, true and smooth. Provide multi-chambered PVC extruded frames and sash in accordance with the manufacturers standard practice. Make fusion welded frame joints strong enough to develop full strength of members, with an external wall thickness of .070 “. Make interior horizontal top surfaces of both meeting rails flat and in the same plane. Meeting rails have an integral interlock with two lines of pile weatherstrip provided. Upper and lower sash shall have the same glass size. Sash shall have fusion welded mitered corners with an external wall thickness of .070“. Snap in sill insert sloped to provide positive weep system with appropriate slots and slope to provide drainage to the exterior.

B. Fasteners: Stainless steel.

C. Sills: Extruded tubular plastic; sloped for positive wash; extend 1 inch beyond wall face; one piece full width of opening.

D. Insect Screen Frames: Extruded aluminum, of rectangular sections.

E. Screening: FS L-S-125, Type II, Class 2, 18 x 16 fiberglass mesh set into frame and secured. Fit frames with adjustable roller hardware.

F. Weather Stripping, Hung Sash: Minimum of two courses of solid barrier fin-type at crack perimeter with flexible bulb type at bottom sash, configured for flexible fit.

G. Weather Stripping, Awning Sash: Minimum of three points of weatherstripping on all four sides of sash: EPDM covered open cell foam weatherstrip on the sash, Santoprene or equal TPR compression gasket on the frame and a co-extruded flexible PVC fin on the frame.

H. Sealant and Backing Materials: As specified in Section 07 90 00.

I. Anchor Devices: Stainless steel.

J. Grilles: Simulated divided lite on exterior as indicated, white color. Provide simulated double-hung grilles at casement windows.

2.3 GLASS AND GLAZING MATERIALS

A. Glass and Glazing: Glass shall conform to DD-G-451 and not less than “B” quality. Factory glazed ¾” Low-E insulating glass conforming to ASTM-E-774, with TruSeal Duralite IG spacer, manufactured by TruSeal Industries Inc., Cleveland, OH. Glazing shall be integral glazing type system with architectural back bedded glazing tape and designed to maintain a watertight seal between glass and sash frame. Non-standard glass options may have metal box-type spacer with dual seal system.

B. Provide Safety Glazing at all locations required by authorities having jurisdiction or by Chapter 24 GLASS AND GLAZING of IBC 2003, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

C. Safety Glazing Schedule:

1. All Windows located in Stairs No. 1, 2, and 3.

2.4 HARDWARE

A. Single Hung Sash:

1. Balance Mechanism & Operation – lower sash: Provide two 1/2" stainless steel, constant force coil spring balances. Enclose balance springs in rustproof cases, from the top of the bottom sash to the head of the window unit. Balances shall also have an interlocking pivot bar, and provide positive locking of sash location when sash is tilted in for cleaning.

2. Balance Mechanism & Operation – upper sash: Provide two inverted block & tackle spring balances. Balances shall also have an interlocking pivot bar, for integral frame alignment with sash for keeping window frames straight and true during installation. Upper sash to be further secured using removable jamb stop inserts below with integral screen track. Removal of insect screen and stops will allow the top sash to be lowered and tilted in for cleaning. Balance to provide positive locking of sash location when sash is tilted in for cleaning.

3. Locking Device: Provide each window over 32 inches in width with two cam-action sweep sash locks, and windows under 30" in width with one lock . The lower sash shall have one continuous, integral lift rail at the bottom of the sash. Provide two tilt latches in the top of each sash for tilting in sash for cleaning. The tilt latches shall be integrally mortised into the sash top rails for a clean appearance.

4. Hung Sash Tilt Latches: Integrally mortised into sash top rails, both sash.

B. Awning Sash:

1. Operating Hardware: Truth Hardware “EntryGard” Maxim.

2. Sash lock: Truth Hardware “EntryGard” Maxim multipoint locking system.

C. Fasteners: Stainless steel.

2.5 FABRICATION

A. Fabricate framing, mullions and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.

B. Weathering Surfaces: All frame members shall be multi-chambered PVC extrusions utilizing double wall design without the need for reinforcement. Frame corners shall be fusion welded. Sash members shall be multi-chambered PVC extrusions utilizing double wall design at all glazing locations. Horizontal sash members shall be mitered and fusion welded to vertical sash members.

C. Drips and Weep Holes: Provided as required to return water to the outside.

D. Glazing Thickness: Design glazed windows and rabbets suitable for glass thickness specified above.

E. Fasteners: All fasteners are to be stainless steel type, corrosion resistant. Use flathead, cross-recessed type, exposed head screws with standard threads on windows, trim, and accessories. Screw heads shall finish flush with adjoining surfaces. Self-tapping sheet metal screws are not acceptable for material more than 1/16 inch in thickness. All sheetmetal screw fasteners shall penetrate into a screw boss consisting of at least three layers of PVC profile for secure fastening and reduce pull out.

F. Provisions for Glazing: Design sash for outside double-glazing and for securing glass with manufacturer’s standard glazing systems. Provide glazing channels of adequate size and depth to receive and properly support the glass and glazing accessories.

G. Factory Mulls: Factory mulls to be fully reinforced with extruded aluminum I-beam reinforcement of 6005-T5 alloy and assembled utilizing interior and exterior “U” channels and proprietary sealant application patterns. Reinforcement to be further attached to window frames with .080” x 1.375” x 12” stainless steel straps and appropriate stainless steel fasteners.

H. Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.

I. Sill Nose: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. The extrusion shall consist of multiple chambers with a 1 ¾ “extruded nailing fin and 1“ by 3/4“ integral J channel. Exterior wall thickness shall be a minimum of 0.075 “. A color-matched end cap shall be installed at both ends. Optional exterior color finish may be applied to match or complement the exterior color of the window.

J. Form snap in glass stops, closure molds, weather stops, and flashings of extruded PVC for tight fit into window frame section. Form weather stop flange to perimeter of unit.

K. Weatherstripping: Provide for ventilating sections of all windows to insure a weathertight seal meeting the infiltration tests specified herein. Use easily replaceable factory applied weather-stripping of manufacturer’s stock type, as specified above. Use EPDM covered open cell foam weatherstrip for compression contact between the sill and the sash. For sliding surfaces, use silicone treated pile, with a Mylar center fin bonded to a plastic-backing strip.

L. Screens: Provide one insect screen for each operable ventilating unit. Design screens to fit closely around entire perimeter of each ventilator or opening, to be rewirable, easily removable from inside building, and interchangeable for same size ventilators of similar type windows, with no exposed fasteners and latches. Provide all guides, stops, clips, bolts and screws as necessary, for a secure and insect tight attachment to window. Provide continuous extruded aluminum screen frame for screen strength.

1. Screen Frames: Provide same quality and color finish as the window units. Frames shall have extruded sections not less than .375" by 1" by 0.030" thick and shall have removable vinyl splines. Hardware, attachment devices, and accessories shall be manufacturer’s standard and of same quality, material and finish as hardware of window unit.

2. Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening in the spline channel.

3. Screen Finish: Exposed surfaces of aluminum extrusions shall be thoroughly cleaned, primed and given a finish in accordance with AAMA 603.8 with total dry thickness not less than 0.8mil. The finish color shall match the vinyl window.

2.6 FINISHES

A. Exterior Surfaces: White color.

B. Interior Surfaces: White color.

C. Screens: Black color.

3 PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify that rough openings are correctly sized and located. Provide rough openings to Design-Builder before wall openings are framed.

B. Prepare opening to permit correct installation of frame and achieve continuity of air and vapor barrier seal.

3.2 INSTALLATION

A. Method of Installation: Install in strict accordance with the window manufacturer's printed instructions and details, except as specified otherwise herein. Install windows without forcing into prepared window openings. Shim windows as required to center in rough openings. Insulate perimeter of window frame with acceptable approved insulation material, as recommended by window manufacturer. Set windows at proper elevation, location, and reveal; plumb, square, level, and in alignment; and brace, strut, and stay properly to prevent distortion and misalignment. Protect ventilators and operating parts against accumulation of dirt, and building materials by keeping ventilators tightly closed and locked to frame. Bed screws in joints at mullions, contacts of windows with sills, built in fins, and sub-frames in approved sealant. Install windows in a manner that will prevent entrance of water.

B. Anchors and Fasteners: Make ample provision for securing units to each other, and to adjoining construction.

C. Adjustments after Installation: After installation of windows adjust all ventilators and hardware to operate smoothly and to provide weathertight sealing when ventilators are closed and locked. Lubricate hardware and operating parts as necessary.

D. Coordinate attachment and seal of air and water infiltration membrane, flexible flashing and vapor barrier materials. Fill shim spaces at perimeter of assembly with non-expansive foam sealant to maintain continuity of thermal barrier.

E. Install perimeter sealant, backing materials, and installation requirements in accordance with Section 07 90 00.

…END OF SECTION 08 53 00

SECTION 08 14 00

WOOD DOORS

1 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 of this section.

1.2 SECTION INCLUDES

A. Wood doors and frames, non-rated and fire rated.

1.3 SUBMITTALS

A. Shop Drawings: Indicate door elevations.

B. Product Data: Provide data on door construction.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with the following:

1. NWWDA I.S.1.
2. Fire Door Construction: Conform to NFPA 252, UL 10B, UL 1784.
3. Installed Door Assembly: Conform to NFPA 80 for fire rated class as scheduled.

1.5 WARRANTY

A. Section 01001 - Basic Requirements: Provide a five year warranty to include coverage:

1. Interior Doors: Five (5) years.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

2 PART 2 PRODUCTS

2.1 DOOR TYPES

A. Manufacturers:

1. Blount Lumber Co.
2. Brockway Smith Co.
3. Eggers Industries
4. Jeld-Wen Inc.
5. Landquist and Son, Inc.
6. The Maiman Co.
7. Marshfield Door Systems Inc.

8. Millennium Doors.
9. Mohawk Flush Doors Inc.
10. Substitutions: Permitted, subject to compliance with requirements.

B. Interior Doors: 1-3/4 inch solid core construction; as indicated on Door Schedule; Jeld-Wen “Cambridge”, or equal.

C. Bifold Closet Doors: 3/4” thick solid particleboard core construction, melamine face, continuous piano hinges; Landquist and Son “Magiglide”, or equal.

2.2 DOOR CONSTRUCTION

A. Core (Solid, non-rated): NWWDA I.S.1-A-97, PC-5 or PC-7, Type Solid particle board mat-formed, bonded core.

B. Core (Solid, Fire-Rated): NWWDA I.S.1-A-97, FD-5 or FD-7, Type Solid mineral core, bonded.

2.3 DOOR FACING

A. Face Panel: Hardboard, embossed two panel design two sides, smooth, tempered, 1/8 inch (3 mm) thick; ANSI/AHA A-135.4.

B. Face Panel, Bifold Closet Doors: Thermofused melamine, smooth, both sides.

C. Adhesive: NWWDA, Type II - water resistant.

2.4 ACCESSORIES

A. Glass Stops: Wood type: conform to UL requirements.

B. Bifold Door Accessories:
1. Pivot: 14 gage cold rolled steel.
2. Track: 13/16” X 1-1/4” No. 6063T6 extruded aluminum.
3. Track Guides: Delrin.
4. Pivot and Guide Pins: 3” removable compensating pins.
5. Pulls: White nylon coated wire.

2.5 WOOD DOOR FRAMES

B. Interior Door Frames: Solid core doors: Solid Double Rabbeted jamb wood frames suitable for paint finish with BROSCO 8710 casings both sides. Refer to Door Schedule.

C. Interior Door Frames, Fire Rated Doors: 18 gage steel frames with hemmed returns, knocked down for field assembly.

2.6 FABRICATION

A. Fabricate doors with hardware reinforcement blocking in place.

B. Factory machine doors for finish hardware.

C. Factory fit doors for frame opening dimensions identified on shop drawings.

2.7 FINISH

A. Factory finish doors in manufacturer’s standard opaque enamel topcoat over hardboard face panel. Submit samples for finish selection.

B. Seal door top and bottom edge with finish to match door facing.

C. Color as selected by Architect from manufacturer’s complete color line.

3 PART 3 EXECUTION

3.1 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and NWWDA I.S.1 requirements.

B. Coordinate installation of doors with installation of metal frames specified in Section 08 11 13 and hardware specified in Section 08 71 00, glass specified in Section 08 80 00.

C. Adjust door for smooth and balanced door movement.

3.2 INSTALLATION TOLERANCES

A. Conform to NWWDA requirements for fit and clearance tolerances and maximum diagonal distortion.

B. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

…END OF SECTION 08 14 00

SECTION 08 11 13

STEEL DOORS AND FRAMES

1 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 of this section.

1.2 SECTION INCLUDES

A. Steel doors panels and frames; non-rated and fire rated

1.3 SUBMITTALS

A. Shop Drawings: Indicate door and frame elevations, internal reinforcement, cut-outs for glazing, and finishes.

B. Product Data: Indicate door and frame configurations, location of cut-outs for hardware reinforcement.

1.4 QUALITY ASSURANCE

A. Conform to the following:

1. SDI-100 - Standard Steel Doors and Frames.
2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
3. Fire Rated Door Panel and Frame Construction: ASTM E152. NFPA 252. UL 10B. NFPA 80, UL 1784.
4. Handicapped: ICC/ANSI A117.1 - 2003, ADA.

B. Warranty: 10 year warranty against defects in materials and workmanship.

2 PART 2 PRODUCTS

2.1 DOORS AND FRAMES

A. Manufacturers:

1. Amweld Building Products.
2. Brockway Smith Co.
3. Ceco Door Products.
4. Curries Co.
5. Fleming Door Products.
6. Republic Builders Products.
7. Steelcraft Manufacturing
8. Substitutions: Permitted, subject to compliance with requirements.

B. Exterior Frames: 14 gage, galvanized steel, with hemmed return, closed cell polyethylene foam, weather stripping and threshold. Prep to receive electric strikes where scheduled.

C. Interior Frames: 16 gage steel frames with hemmed return.

D. Exterior Doors: (Insulated) 1-3/4" thick, SSI 100 Level 3, Extra Heavy Duty, 16 gage door faces, flush design, galvanized to ASTM A653 G60.

E. Interior Doors: (Fire Rated and Non-fire Rated) 1-3/4" thick, SDI 100 Level 2, Heavy Duty, 18 gage door faces, flush design.

F. Door Core:

1. Exterior Doors: polyurethane foam.
2. Fire Rated Doors: mineral core.

G. Thermal Insulated Door: Total insulation R value of not less than 10.

2.2 ACCESSORIES

A. Lights: Tempered insulating glass at exterior doors, ¼" tempered float glass at interior non-fire rated doors, ¼" wired float glass at interior fire rated doors..

B. Silencers: Resilient rubber fitted into drilled hole.

C. Weatherstripping; Integral compression type at jambs and head, bulb and fin at bottom.

D. Primer: Zinc chromate type.

2.3 FABRICATION - DOORS

A. Astragals for Double Doors (If required): Aluminum, T shaped, specifically for double doors. Provide units with fire rating at fire rated double doors.

B. Fabricate doors with hardware reinforcement welded in place.

C. Attach appropriate label to each fire rated door. DO NOT PAINT OVER LABELS

2.4 FABRICATION - FRAMES

A. Fabricate steel frames knock-down for field assembly for interior installation in drywall partitions; welded frames for exterior doors, double egress doors and installation in masonry walls.

B. Fabricate frames with hardware reinforcement plates welded in place.

C. Prepare frame for silencers and install.

D. Attach appropriate label to each fire rated frame.

2.5 FINISH

A. Steel Sheet: Galvanized to ASTM A525 G60).

B. Primer: Air dried.

3 PART 3 EXECUTION

3.1 INSTALLATION

A. Install doors and frames in accordance with SDI-100.

B. Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.

C. Coordinate with gypsum board wall construction for frame anchor placement.

D. Install door louvers plumb and level.

3.2 TOLERANCES

A. Maximum Diagonal Distortion: 1/8 inch measured with straight edge, corner to corner.

…END OF SECTION 08 11 13

SECTION 08 80 00

GLASS AND GLAZING

1 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 of this section.

1.2 SUMMARY:

A. Extent of glass and glazing work is indicated on drawings and schedules.

B. Types of work in this section include glass and glazing for:

1. Interior borrowed lites, not indicated as "preglazed".
2. Storefront construction.
3. Entrances and other doors, not indicated as "preglazed".

1.3 SYSTEM DESCRIPTION:

A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and 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.

B. Normal thermal movement is defined as that resulting from an ambient temperature range of 120 deg. F (67 deg. C) and from a consequent temperature range within glass and glass framing members of 180 deg. F (100 deg. C).

C. Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, if any, resulting from seal failure, and any other visual evidence of seal failure or performance.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE:

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent

requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

B. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction or by Chapter 24 GLASS AND GLAZING of IBC 2003, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.

C. Fire Resistance Rated Wire Glass: Provide wire glass products that are identical to those tested per ASTM E 163 (UL 9) and are labeled and listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

D. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below:

1. Insulating Glass Certification Council (IGCC).
2. Associated Laboratories, Inc. (ALI).

E. Single Source Responsibility for Glass: To ensure consistent quality of appearance and performance, provide materials produced by a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for each type and class required.

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Protect glass and glazing materials during delivery, storage and handling to 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 including condensation, of temperature changes, of direct exposure to sun, and from other causes.

1.7 PROJECT CONDITIONS:

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

B. Install liquid sealants at ambient and substrate temperatures above 40 deg. F (4.4? C).

1.8 WARRANTY:

A. General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

B. Manufacturer's Special Project Warranty on Insulating Glass: Provide written warranty signed by manufacturer of insulating glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure or hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coatings, if any, and

other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

1. Warranty Period: Manufacturer's standard but not less than 10 years after date of substantial completion.

2 PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:

B. Manufacturers of Clear and Tinted Float Glass:

1. AFG Industries, Inc.
2. Ford Glass Division.
3. Guardian Industries Corp.
4. LOF Glass, Inc.
5. PPG Industries, Inc.
6. Saint-Gobain/Euroglass.

C. Manufacturers of Wire Glass:

1. AFG Industries, Inc.
2. Guardian Industries Corp.
3. Hordis Brothers, Inc.
4. Pilkington Sales (North America) Limited.

D. Manufacturers of Heat-Treated Glass:

1. AFG Industries, Inc.
2. Cardinal IG.
3. Environmental Glass Products.
4. Falconer Glass Industries.
5. Ford Glass Division.
6. Guardian Industries Corp.
7. Hordis Brothers, Inc.
8. LOF Glass, Inc.
9. PPG Industries, Inc.
10. Saint-Gobain/Euroglass.
11. Spectrum Glass Prod. Div., H. H. Robertson Co.
12. Viracon, Inc.

E. Manufacturers of Fire and Impact Rated Glazing:

1. Specialty Architectural & Fire Technology International.
2. Technical Glass Products.

2.2 GLASS PRODUCTS, GENERAL:

A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.

B. Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

C. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.3 PRIMARY GLASS PRODUCTS:

A. Clear Float Glass: Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).

B. Wired Glass: Type I (transparent and wired glass, flat), Class 1 (clear), Quality q8 (glazing); complying with ANSI Z97.1; 1/4" thick; of form and mesh pattern indicated below:

1. Polished Wire Glass: Form 1 (wired, polished both sides), Mesh m2 (square).

2.4 HEAT-TREATED GLASS PRODUCTS:

A. Manufacturing Process: Manufacture heat-treated glass as follows:

B. By vertical (tong-held) or horizontal (roller hearth) process, at manufacturer's option, except provide horizontal process where indicated as "tongless" or "free of tong marks".

C. Uncoated Clear Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below.

1. Kind FT (fully tempered) where indicated.

2.5 FIRE AND IMPACT RATED GLAZING:

A. Clear Glazing Material: ASTM C 1036, Type 1.

1. Impact Rating: Complying with ANSI Z97.1 and CPSC 16CFR1201.
2. Fire Rating: Tested under UL 10b, 60 minutes.

2.6 SEALED INSULATING GLASS UNITS:

A. General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and desiccant.

B. For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of glass products indicated.

C. Provide heat-treated panes of kind and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

1. Performance Classification per ASTM E 774: Class A.
2. Thickness of Each Pane: 1/4".
3. Air Space Thickness: 1/2".
4. Sealing System: Manufacturer's standard.
5. Spacer Material: Manufacturer's standard metal.
6. Desiccant: Manufacturer's standard; either molecular sieve or silica gel or blend of both.
7. Corner Construction: Manufacturer's standard corner construction.

D. Low Emissivity-Coated Insulating Glass Units: Manufacturer's standard units with one pane of glass coated with a durable, neutral-colored, low-emissivity metallic coating, of type and on surface indicated, and complying with the following requirements:

1. Exterior Pane: Clear float glass, coated on second surface.

a. Kind: As indicated.

2. Interior Pane: Clear float glass, uncoated.

a. Kind: As indicated.

E. Performance Characteristics: Visible light transmittance of 63 percent, summer daytime U-value of 0.34, winter nighttime U-value of 0.31, shading coefficient of 0.47 and outdoor reflectance of 11 percent.

2.7 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES:

A. General: Provide products of type indicated and complying with the following requirements:

B. Compatibility: Select glazing sealants and tapes of 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.

C. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.

D. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

1. Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

2.8 GLAZING GASKETS:

A. Dense Elastomeric Compression Seal Gaskets: Molded or extruded gaskets of neoprene or EPDM, complying with ASTM C 864, of profile and hardness required to maintain watertight seal:

2.9 MISCELLANEOUS GLAZING MATERIALS:

A. Compatibility: Provide materials with 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 for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

D. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

E. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

3 PART 3 - EXECUTION

3.1 EXAMINATION:

A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING, GENERAL:

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or 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. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants.

3.4 GLAZING:

A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

B. Provide spacers inside and out, of correct 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 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 compressed thickness of tape.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joint back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

G. Tool exposed surfaces of sealants 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.

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.

I. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.5 PROTECTION AND CLEANING:

A. Protect glass from breakage immediately upon installation. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

D. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

...END OF SECTION 08 80 00