

SECTION 08 41 13

ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Entrance and storefront systems, complete with reinforcing, fasteners, anchors and attachment devices.
 - 2. Aluminum doors complete with hardware.
 - 3. Accessories necessary to complete work.

1.2 REFERENCES

- A. Aluminum Association (AA):
 - 1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
 - 1. 503.1 Test Method for Condensation Resistance of Windows, Doors and Glazed Wall Systems.
 - 2. 605.2-92 Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
 - 3. 607.1 Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
 - 4. 608.1 Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.
 - 5. 701.2 Specifications for Pile Weatherstripping.
 - 6. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.
 - 7. SFM-1 Aluminum Storefront and Entrance Manual.
- C. American National Standards Institute (ANSI):
 - 1. A117.1 Safety Standards for the Handicapped.
- D. American Society for Testing and Materials (ASTM):
 - 1. A36 Structural Steel.
 - 2. B209 Aluminum and Aluminum - Alloy Sheet and Plate.
 - 3. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
 - 4. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
 - 5. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
 - 6. C864 Dense Elastomeric Compression Seal Gaskets, Setting Blocks and Spacers.
 - 7. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.

8. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 9. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- E. Federal Specifications (FS):
1. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.
- F. Steel Structures Painting Council (SSPC):
1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

1.3 SYSTEM REQUIREMENTS

- A. Design Requirements:
1. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage or moisture disposal.
 2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
 3. Provide concealed fastening.
 4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
 5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
 6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
 7. Provide for expansion and contraction without detriment to appearance or performance.
 8. Assemblies shall be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 9. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.
- B. Performance Requirements:
1. Air infiltration: Air leakage through fixed light areas of storefront shall not exceed 0.06 cfm per square foot of surface area when tested in accordance with ASTM E283 at differential static pressure of 6.24 psf.
 2. Water infiltration: No uncontrolled water penetration when tested in accordance with ASTM E 331 at test pressure of 10.0 psf.

- C. Thermal Requirements:
 - 1. Framing systems shall accommodate expansion and contraction movement due to surface temperature differentials of 180 degrees Fahrenheit (82 degrees Celsius) without causing buckling, stress on glass, failure of joint seals, excessive stress on structural elements, reduction of performance, or other detrimental effects.
 - 2. Ensure doors function normally within limits of specified temperature range.
- D. Structural Requirements, as measured in accordance with ANSI/ASTM E330:
 - 1. Wind loads for exterior assemblies:
 - a. Basic loading:
 - 1) 25 psf acting inward.
 - 2) 25 psf acting outward.
 - 2. Deflection: Maximum calculated deflection of any framing member in direction normal to plane of wall when subjected to specified design pressures shall not exceed 1/175 of its clear span.
- E. Testing Requirements: Provide components that have been previously tested by an independent testing laboratory.

1.4 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 00.
- B. Product Data:
 - 1. Submit manufacturer's descriptive literature and product specifications.
 - 2. Include information for factory finishes, hardware, accessories and other required components.
 - 3. Include color charts for finish indicating manufacturer's standard colors available for selection.
- C. Shop Drawings:
 - 1. Submit shop drawings covering fabrication, installation and finish of specified systems.
 - 2. Include following:
 - a. Fully dimensioned plans and elevations with detail coordination keys.
 - b. Locations of exposed fasteners and joints.
 - 3. Provide detailed drawings of:
 - a. Composite members.
 - b. Joint connections for framing systems and for entrance doors.
 - c. Anchorage.
 - d. System reinforcements.
 - e. Expansion and contraction provisions.

- f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.
 - g. Glazing methods and accessories.
 - h. Internal sealant requirements as recommended by sealant manufacturer.
- 4. Schedule of finishes.

D. Samples:

- 1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as standard with manufacturer.
- 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.

E. Test Reports:

- 1. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.

F. Certificates:

- 1. Submit manufacturer's certification stating that systems are in compliance with specified requirements.

G. Qualification Data:

- 1. Submit installer qualifications verifying years of experience.
- 2. Include list of projects having similar scope of work identified by name, location, date, reference name and phone number.

H. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility:

- 1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.

B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.

C. Perform Work in accordance with AAMA SFM-1 and manufacturer's written instructions.

D. Conform to requirements of ANSI A117.1 and local amendments.

1.6 DELIVERY, STORAGE AND HANDLING

A. Comply with requirements of Section 01 60 00.

B. Protect finished surfaces as necessary to prevent damage.

- C. Do not use adhesive papers or sprayed coatings which become firmly bonded when exposed to sun.
- D. Do not leave coating residue on any surfaces.
- E. Replace damaged units.

1.7 WARRANTY

- A. Provide warranties in accordance with Section 01 70 00.
- B. Provide written manufacturer's warranty, executed by company official, warranting against defects in materials and products for 2 years from date of Substantial Completion. Warrant door corner construction for the life of the project.
- C. Provide written installer's warranty, warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components which fail within 2 years from date of Substantial Completion.
 - 1. Warranty shall cover following:
 - a. Complete watertight and airtight system installation within specified tolerances.
 - b. Completed installation will remain free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 - c. System is structurally sound and free from distortion.
 - d. Glass and glazing gaskets will not break or "pop" from frames due to design wind, expansion or contraction movement.
 - e. Glazing sealants and gaskets will remain free from abnormal deterioration or dislocation due to sunlight, weather or oxidation.
- D. Provide a written thermal integrity warranty for 10 years from date of Substantial Completion against thermal barrier system failure resulting from the following:
 - 1. Longitudinal and transverse thermal barrier shrinkage.
 - 2. Thermal barrier cracking.
 - 3. Structural failure of the thermal barrier material.
 - 4. Loss of adhesion or loss of prescribed edge pressure on glazing material resulting in excessive air and water infiltration.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements indicated, provide products by one of the following:
 - 1. United States Aluminum, 200 Singleton Drive, Waxahachie, Texas 75165; (972) 937-9651 (voice); (972) 937-0405 (data).
- B. Substitutions: Submit under provisions of Section 01 60 00.
- C. Acceptable Entrance Doors:
 - 1. Heavy Duty Doors: Series 850 Durafront, with Mid-panel panic device.
- D. Acceptable Storefront Framing Systems:
 - 1. Framing System: Series FT451.

2.2 FRAMING MATERIALS AND ACCESSORIES

- A. Aluminum:
 - 1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.
- B. Internal Reinforcing:
 - 1. ASTM A36 for carbon steel; or ASTM B308 for structural aluminum.
 - 2. Shapes and sizes to suit installation.
 - 3. Shop coat steel components after fabrication with alkyd type zinc chromate primer complying with FS TT-P-645.
- C. Anchorage Devices:
 - 1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
- D. Fasteners:
 - 1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.
 - 2. Do not use exposed fasteners, except where unavoidable for application of hardware.
 - 3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.
 - 4. For concealed locations, provide manufacturer's standard fasteners.
 - 5. Provide nuts or washers of design having means to prevent disengagement; deforming of fastener threads is unacceptable.

- E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.
- F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.
- G. Glazing Gaskets:
 - 1. Compression type design, replaceable, molded or extruded, of neoprene, or ethylene propylene diene monomer (EPDM).
 - 2. Conform to ASTM C509 or C864.
 - 3. Profile and hardness as required to maintain uniform pressure for watertight seal.
 - 4. Provide in manufacturer's standard black color.
- H. Weatherstripping:
 - 1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
 - 2. Provide EPDM or vinyl-blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.
- I. Internal Sealants: Types recommended by sealant manufacturer.
- J. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.
- K. Baffles (at weep holes): Type as recommended by system manufacturer and shown in published installation instructions.

2.3 GLASS AND GLAZING ACCESSORIES

- A. Glass: Refer to Section 08 81 00.
- B. Insulated Metal Panel: Mapes MapesShield Impact and Blast Resistant Panel as manufactured by Mapes Panels, LLC, 2929 Cornhusker Hwy, Lincoln, ND 68504.

2.4 DOOR HARDWARE

- A. Door supplier shall supply the following:
 - 1. Closer, each door
 - 2. Butts, 3 each leaf
 - 3. Weatherstripping
 - 4. Threshold
 - 5. Panic Device, each door
 - 6. Cylinder

2.5 FABRICATION

- A. Coordination of Fabrication:
 - 1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
 - 2. Fabricate units to withstand loads which will be applied when system is in place.
- B. General:
 - 1. Conceal fasteners wherever possible.
 - 2. Reinforce work as necessary for performance requirements and for support to structure.
 - 3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.
 - 4. Comply with Section 08 81 00 for glazing requirements.
- C. Aluminum Framing:
 - 1. Provide members of size, shape and profile indicated, designed to provide for glazing from exterior.
 - 2. Fabricate frame assemblies with joints straight and tight fitting.
 - 3. Reinforce internally with structural members as necessary to support design loads.
 - 4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
 - 5. Seal horizontals and direct moisture accumulation to exterior.
 - 6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.
 - 7. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without being detrimental to appearance or performance.
 - 8. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or infill used in accordance with recommendations of manufacturer and FGMA Glazing Manual.
 - 9. Provide tight fitting, injection molded, plastic water deflectors at all intermediate horizontals.
- D. Entrance Doors:
 - 1. Fabricate with mechanical joints using internal reinforcing plates and shear blocks attached with fasteners and by welding.
 - 2. Provide extruded aluminum glazing stops of beveled and mitered design.
- E. Hardware:
 - 1. Receive hardware supplied in accordance with Section 08710 and install in accordance with requirements of this Section.

2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
3. Comply with hardware manufacturer's templates and instructions.
4. Use concealed fasteners wherever possible.

F. Welding:

1. Comply with recommendations of the American Welding Society.
2. Use recommended electrodes and methods to avoid distortion and discoloration.
3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

G. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

2.6 FINISH

A. Color Anodized:

1. Conforming to AA-M12C22A 44 and AAMA 608.1.
2. Architectural Class I, etched, medium matte, dark bronze colored anodic coating, 0.7 mil minimum thickness.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01 40 00.
- B. Verify dimensions, tolerances and method of attachment with other Work.

3.2 INSTALLATION

A. Erection Tolerances:

1. Limit variations from plumb and level:
 - a. 1/8 inch in 10 feet vertically.
 - b. 1/8 inch in 20 feet horizontally.
2. Limit variations from theoretical locations: 1/4 inch for any member at any location.
3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch from flush surfaces not more than 2 inches apart or out-of-flush by more than 1/4 inch.

- B. Install doors and hardware in accordance with manufacturer's printed instructions.
- C. Set units plumb, level and true to line, without warp or rack of frame.

- D. Anchor securely in place, allowing for required movement, including expansion and contraction.
- E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.
- F. Seal perimeter members as shown on manufacturer's installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer's installation instructions. Use sealants as recommended by sealant manufacturer.
- G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07 92 00.
- H. Glazing: Refer to requirements of Section 08 81 00. Utilize "anti-walk" edge blocking on all vertical edges of glazing.

3.3 ADJUSTING

- A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

3.4 CLEANING

- A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
- B. Clean metal surfaces exercising care to avoid damage.

END OF SECTION

SECTION 08 54 13

FIBERGLASS AWNING WINDOW

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Ultrex® awning window complete with hardware, glazing, weather strip, insect screen, and standard or specified anchors, trim, and attachments.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. E 283: Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors.
 - 2. E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 - 3. E 547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
 - 4. E 774: Specification for Sealed Insulated Glass Units
 - 5. C 1036: Standard Specification for Flat Glass.
- B. American Architectural Manufacturers Association / Window and Door Manufacturers Association (AAMA / WDMA): 101 / I.S.2 / NAFS-02: Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
- C. Window and Door Manufacturers Association (WDMA): 101 / I.S.2 / NAFS-02 WDMA Hallmark Certification Program.
- D. Sealed Insulating Glass Manufacturers Association Canada/ Insulating Glass Certification Council (IGMAC / IGCC).
- E. American Architectural Manufacturers Association (AAMA): AAMA 613-98 Voluntary Performance Requirements and Test Procedures for Organic Coatings on Plastic Profiles.
- F. National Fenestration Rating Council (NFRC): 100-97: Procedure for Determining Fenestration Product Thermal Properties.

1.3 SYSTEM DESCRIPTION

- A. Design and Performance Requirements:
 - 1. Window Units shall be designed to comply with AAMA / WDMA 101 / I.S.2 / NAFS-02.
 - a. Awning: AP-R40 up to a rough opening of 61 inches X 48.50 inches.

- B. Air leakage shall not exceed the following when tested at residential performance criteria of 1.57 psf according to ASTM E 283: 0.30 cfm per square foot of frame.
- C. No water penetration shall occur when units are tested at the following pressure according to ASTM E 547: R40-6 psf.
- D. Window assembly shall withstand the following positive or negative uniform static air pressure difference without damage when tested according to ASTM E 330: R40 - 60 psf.

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings under provisions of Section 01 33 00.
- B. Product Data: Submit catalog data under provisions of Section 01 33 00.
- C. Samples:
 - 1. Submit corner section under provisions of Section 01 33 00.
 - 2. Include glazing system, quality of construction, and specified finish.
- D. Quality Control Submittals: Submit manufacture's certifications indicating compliance with specified performance and design requirements under provisions of Section 01 33 00.

1.5 DELIVERY

- A. Comply with provisions of Section 01 60 00.
- B. Deliver in original packaging and protect from weather.

1.6 STORAGE AND HANDLING

- A. Store window units in an upright position in a clean and dry storage area above ground and protect from weather under provisions of Section 01 66 00.

1.7 WARRANTY

- A. Insulating glass shall be warranted against visible obstruction thru the glass caused by a failure of the insulating glass air seal for a period of twenty (20) years from the date of original purchase.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

- A. Description: Factory assembled Ultrex® Infinity awning windows as manufactured by Infinity Windows & Doors, West Fargo, North Dakota.

- B. Manufacturer's contact person is as follows:
1. Ken Modeen CSI, CDT, LEED AP
Commercial/Architectural Rep
Marvin Windows and Doors
612-720-8118
kenmod@marvin.com
- C. Substitutions: In accordance with Section 01 06 00 – Product Requirements.

2.2 ULTREX® AWNING MATERIALS

- A. Frame: Ultrex®, a fiberglass reinforced pultrusion. Exterior and Interior 0.075 inch thick. Frame thickness: 1-5/16 inches Frame depth: 2-1/4 inches (57mm)
- B. Sash: Ultrex®, a fiberglass reinforced pultrusion. Exterior and Interior 0.075 inch thick. Composite sash thickness: 1-3/8 inches for operating units.
- C. Glazing: Select quality complying with ASTM C 1036. Insulating glass IGCC certified to performance level.
CBA when tested in accordance with ASTM E 774.
1. Glazing method: Insulating glass.
- D. Glass type:
1. LoE² - 272® with Argon gas.
- E. Glazing seal: Silicone bedding on interior; silicone bedding on exterior.
- F. Finish:
1. Exterior: Ultrex®, a fiberglass reinforced pultrusion with co-extruded Acrylic finish. Color: Bronze.
 2. Interior: Ultrex®, a fiberglass reinforced pultrusion with co-extruded Acrylic finish. Color: EverWood™.
- G. Hardware:
1. Lock: Cam lock and stainless steel keeper system.
- H. Operator: Concealed hinges and steel tracks. Factory installed roto-gear operator.
- I. Handle: Die-Cast folding crank handle. Color: Sierra.
- J. Weather Strip:
1. Frame: Unit features and extruded foam bulb/leaf weather strip that runs continuously around the perimeter of the frame, sealing against the interior face of the sash. Color: Beige
- K. Sash: The sash weather strip is an extruded thermoplastic bulb that is placed against the sides, top and bottom of the sash; sealing against the inner perimeter of the frame. Color: Beige

- L. Insect Screens: Factory installed (removable) full screen. Screen cloth 20 x 20 mesh: Charcoal High Transparency Fiberglass. Frame color: EverWood.

2.3 ACCESSORIES AND TRIM

- A. Installation Accessories:
 - 1. Operator unit package of installation hardware consisting of:
 - a. Six #8 x 3" Torx® truss head installation screws
 - b. Six jamb hole plugs
 - c. EverWood™ test strip (EverWood™ only)
 - d. Paint and Stain Instructions (EverWood™ only)
- B. Sill Installation Filler
 - 1. 108" length
- C. Interior Frame, Installation, and Mulling Accessories:
 - 1. Interior frame cover
 - 2. Jamb extension adaptor
 - 3. 5/8" sheetrock receiver
 - 4. Jamb extension material
 - 5. Nailing fin
 - 6. Nailing fin drip cap
 - 7. Nailing fin corner gaskets
 - 8. Exterior mull cover
 - 9. Mulling pin
 - 10. Interior mull clip
 - 11. Interior mull clip cover
 - 12. Mulling bracket
 - 13. Mull tape - one-sided
- D. Exterior Casing:
 - 1. Optional factory or field applied, fiberglass reinforced ABS, (BMC) Brick Mould Casing.
- E. Panning Accessories
 - 1. Fiberglass reinforced ABS:
 - a. Profile; As indicated on drawings.
 - b. Color: Bronze.
- F. Aluminum Extrusions:
 - 1. Profile: Coil panning as indicated on drawings. Finish: High solids polyester. Color: Bronze.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Before installation, verify openings are plumb, square, and of proper dimension as required in Section 01 70 00. Report frame defects or unsuitable conditions to the General Contractor before proceeding.
- B. Acceptance of Conditions: Beginning of installation confirms acceptance of existing conditions.

3.2 INSTALLATION

- A. Comply with Section 01 70 00.
- B. Assemble and install window unit according to manufacturer's instructions and reviewed shop drawings.
- C. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants. Do not use expansive foam sealant.
- D. Install accessory items as required.

3.3 CLEANING

- A. Remove visible labels and adhesive residue from glass according to manufacturer's instructions.
- B. Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 00.

3.4 PROTECTING INSTALLED CONSTRUCTION

- A. Comply with Section 01 70 00.
- B. Protect windows from damage by chemicals, solvents, paint, or other construction operations that may cause damage.

END OF SECTION

SECTION 08 81 00

GLASS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Glass and glazing.

1.2 REFERENCES

- A. FGMA -Glazing Manual.
- B. ASTM C 1036: Standard Specification for Flat Glass.
- C. ASTM C 1048: Standard Specifications for Heat-Treated Flat Glass - Kind HS, Kind HT Coated and Uncoated Glass

1.3 QUALITY ASSURANCE

- A. Conform to Flat Glass Marketing Association (FGMA) Glazing Manual for glazing installation methods.

1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Provide data on glazing sealant. Identify colors available.
- D. Submit sealed glass unit manufacturer's certificate under provisions of Section 01 40 00 indicating units meet or exceed specified requirements.

1.5 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

1.6 WARRANTY

- A. Provide ten year manufacturer's warranty under provisions of Section 01 70 00.

PART 2 PRODUCTS

2.1 ACCEPTABLE GLASS MANUFACTURERS

- A. Viracon, 800 Park Drive, Owatonna, MN 55060.
- B. Other acceptable manufacturers offering equivalent products:
 - 1. Old Castle Glass
- C. Substitutions: Under provisions of Section 01 60 00.

2.2 MATERIALS

- A. Type A – Tempered Insulated Glass Unit:
 - 1. 1 inch thick unit.
 - 2. Outer pane of 1/4 inch Low E Clear Heat Strengthened Glass (Type FG-EHC): Clear heat strengthened glass Type FG-CH, with low emissivity coating on Number 2 surface.
 - 3. Inner pane of 1/4 inch Clear Heat Strengthened Glass (Type FG-CH): ASTM C1048, Kind HS, heat strengthened, Condition A uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
 - 4. Manufactured by Viracon.
- B. Type B – Tempered Laminated Glass:
 - 1. Laminated architectural glass consisting of 2 lites of clear 1/8 inch thick tempered glass meeting ASTM C 1172 Kind LHS with Saflex interlayer by Monsanto; as manufactured by Viracon.

2.3 ACCEPTABLE GLAZING ACCESSORIES MANUFACTURERS

- A. Tremco.
- B. Substitutions: Under provisions of Section 01 60 00.

2.4 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene; 70-90 Shore A durometer hardness; 4 inch long x 3/8 inch wide x 1/4 inch high.
- B. Spacer Shims: Neoprene; 50 Shore A durometer hardness; 3 inch long x 1/4 inch wide x 1/4 inch thick; self adhesive one face.
- C. Glazing Tape: Pre-shimmed Tremco 440 tape.
- D. Sealant: Tremco Dymeric.
- E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.1 INSPECTION

- A. Verify surfaces of glazing channels or recesses are clean, free of obstructions, and ready for work of this Section.
- B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses.
- C. Prime surfaces scheduled to receive sealant.

3.3 EXTERIOR COMBINATION METHOD (TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops, 3/16 inch below sightline. Seal corners by butting tape and dabbing with sealant.
- B. Apply heel bed of sealant along exterior void ensuring full contact with pane.
- C. Place setting blocks at 1/4 points.
- D. Rest glass on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane.
- E. Place glazing tape on glass with tape 1/4 inch below sightline. Install removable stops, spacer strips inserted between glass, and applied stops at 24 inch intervals, 1/4 inch below sightline.
- F. Apply cap bead of sealant along exterior void, to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance.

3.4 CLEANING

- A. After installation, mark pane with an "X" by using plastic tape or removable paste.
- B. Remove glazing materials from finish surfaces.
- C. Remove labels after work is completed.

END OF SECTION