

SECTION 08980
GLAZED WOOD CURTAIN WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Division 1 - GENERAL REQUIREMENTS, and other applicable specification sections in the Project Manual apply to the work specified in this Section.

1.2 SUMMARY

- A. **Scope:** Provide design and engineering, labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and installation for glazed wood curtain walls as required for the complete performance of the work, and as shown on the Drawings and as herein specified.
- B. **Section Includes:** The work specified in this Section includes, but shall not be limited to, the following:
1. Glazed wood exterior wall framing systems.
 2. Reinforcement for curtain wall.
 3. Metal spandrel panels and other non-glass panels.
 4. Glazing gaskets.
 5. Column covers, soffits, sills, copings, trim, and similar border and filler items.
 6. Anchors, shims, fasteners, inserts, accessories, and support brackets as well as structural steel framing not shown on the Structural Drawings.
 7. Insulation and firestopping within the curtain wall system.
 8. Flashings and weeps.

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. The edition/revision of the referenced publications shall be the latest date as of the date of the Contract Documents, unless otherwise specified.
- C. **American Architectural Manufacturers Association (AAMA):**
1. AAMA 501.2, "Methods of Test for Exterior Walls - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage."
 2. AAMA 611, "Voluntary Specifications for Anodized Architectural Aluminum (Revised)."
 3. AAMA 2603, "Voluntary Specification, Performance Requirements, and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels."
 4. AAMA 2605, "Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels."
- D. **ASTM (ASTM):**
1. ASTM A 36, "Standard Specification for Structural Steel."
 2. ASTM A 123, "Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."

3. ASTM A 666, "Standard Specification for Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar."
4. ASTM B 209, "Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate."
5. ASTM B 221, "Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes."
6. ASTM E 90, "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions."
7. ASTM E 283, "Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen."
8. ASTM E 330, "Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."
9. ASTM E 331, "Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."

E. **Code of Federal Regulation (CFR):**

1. 16 CFR Part 260, "Guides for the Use of Environmental Marketing Claims."

F. **Forest Stewardship Council (FSC):**

1. FSC 1.2, "Principles and Criteria."

G. **National Association of Architectural Metal Manufacturers (NAAMM):**

1. NAAMM MFM, "Metal Finishes Manual."

H. **Southern Building Code Congress International, Inc. (SBCCI):**

1. SBCCI SBC, "Standard Building Code."
2. SBCCI SSTD 12-97, "Test Standard for Determining Impact Resistance From Windborne Debris."

I. **SSPC: The Society for Protective Coatings (SSPC):**

1. SSPC Paint 20, "Paint Specification No. 20 Zinc-Rich Primers (Type I, 'Inorganic', and Type II, 'Organic')."

1.4 SYSTEM DESCRIPTION

- A. **General:** Provide glazed wood curtain wall system that complies with performance characteristics specified, as demonstrated by testing the manufacturer's corresponding stock assemblies according to test methods indicated.
1. Units shall conform to specified AAMA standards and the following, whichever are the most stringent.
 2. Provide certified test results.
- B. **Designer Requirements:** Engage and pay for the services of an engineer to design the glazed wood curtain wall system and components and the connections for attaching them to the building structure.
- C. **Design Requirements:**
1. **Exterior:** Provide glazed wood curtain wall system and framing to withstand maximum inward and outward wind pressures as indicated on the Drawings or, if not indicated, as required by local authorities having jurisdiction.
 2. **Design Factor of Safety:** Design, fabricate, and install structural components of the glazed wood curtain wall system, including, but not limited to, framing members, glazing stops or gaskets, weldments, connections, and adhesives and sealants used as adhesives, with a factor of safety not less than 1.5, such that failure of any structural component shall not occur

- at less than 1.5 times the maximum design wind pressure. Failure shall be defined as breakage, component disengagement, or permanent distortion or deflection.
3. **Deflections and Thermal Movements:** For required wind pressures, building deflections, construction shrinkage movements, and other loadings and erection tolerances, primary members shall be sized for deflection limitations and temperature variations as follows; fabricate, assemble, and erect the work to maintain these limitations:
 - a. **Normal-to-Wall Deflection:**
 - 1) Not to exceed $1/175$ of clear span for spans lengths of 13'-6" or less and $1/240+1/4$ " for all others. Restrict deflection to $3/4$ " maximum for individual glazing lites.
 - b. **Parallel-to-Wall Deflection:** Not to exceed 75 percent of glass edge clearance. Restrict deflection to $L/360$ or $1/8$ " maximum. Restrict deflection to $1/16$ " maximum above doors and/or windows. It shall be permitted to increase the deflection to $1/8$ " if the door operation is not affected.
 - c. **Design Calculations:** Base calculations for such deflections upon the combination of maximum direct loadings, building deflections, thermal stresses, and erection tolerances. Do not permit any permanent deflection in members in the glazed aluminum curtain wall system in excess of 0.1 percent of their clear span.
 4. **Sound Transmission:** Provide minimum sound transmission class (STC) rating of [____], when tested in accordance with ASTM E 90.
 5. **Gutter System:** System design shall include the use of integral, full depth guttering, at head and spandrel conditions to control entering moisture due to leakage or condensation from curtain wall system or exterior wall systems by other trades. Moisture shall be collected and harmlessly weeped to the exterior without endangering or wetting adjacent building systems or materials.
 6. **Other Requirements:**
 - a. Glass, metal panels, sealants, interior trim, and similar components shall not be assumed to contribute to framing member strength, stiffness, or lateral stability.
 - b. Joints within system shall be designed to incorporate sealant and bond breaker in a captive joint to reduce or eliminate shear forces on sealant.
 - c. Provide thermal expansion and contraction movement capability, resulting from not less than an ambient temperature range of 120 °F, which may cause a curtain wall material temperature range of 180 °F.
 7. **Glazing:** Provide for reglazing as follows:
 - a. **Vision Lights:** From the exterior.
 - b. **Spandrel Lights:** From the exterior without cutting framing members.
 8. **Structural Movement:** Structural movement such as creep, shortening, and live load deflections as well as thermal expansion and contraction, shall be accommodated through the use of two-piece horizontal gasket framing members if sealant joints as detailed are unable to handle movement within manufacturer's limitations.
 9. **Weeps:** Weeps shall be furnished and installed with reticulated foam baffles of appropriate pores per inch (PPI).
 10. **Copings and Covers:** Metal copings and heating unit convector covers shall be designed to resist a point load of 250 pounds without permanent deformation or disengagement of anchors or seals.
- D. **Performance Requirements:** In addition to the requirements specified herein comply with provisions specified in Section 08900 - EXTERIOR WALL PERFORMANCE REQUIREMENTS.
- E. **Performance Requirements:**
1. **Water and Air Leakage:** Design, fabricate, assemble, and erect the glazed wood curtain wall system, to be permanently free of significant leakage of both water and air. Significant leakage shall be defined as follows, based on a differential test pressure amounting to 20 percent of specified strength performance pressure required, with operable windows, doors or joints (if any) sealed to prevent crack leakage:

- a. **Significant Air Leakage:** More than 0.060 cfm per square foot (projected area of module), determined by ASTM E 283.
 - 1) At differential static pressure of 1.57 psf.
 - 2) At differential static pressure of 6.24 psf.
- b. **Significant Water Leakage:** Any uncontrolled penetration of water, determined by ASTM E 331; at test pressure equal to 10 percent of positive wind pressure design but not less than 12 psf.
2. **Structural Performance:** Test in accordance with ASTM E 330; with no glass breakage or permanent damage to fasteners, anchors, hardware, or actuating mechanisms.
 - a. **Normal-to-Wall Deflection:**
 - 1) Not to exceed 1/175 of clear span for spans lengths of 13'-6" or less and 1/240+1/4" for all others. Restrict deflection to 3/4" maximum for individual glazing lites.
 - b. **Parallel-to-Wall Deflection:** Not to exceed 75 percent of glass edge clearance. Restrict deflection to L/360 or 1/8" maximum. Restrict deflection to 1/16" maximum above doors and/or windows. It shall be permitted to increase the deflection to 1/8" if the door operation is not affected.
 - c. **Assembly Deflection:** Deflection of the entire assembly, including, but not limited to, glass, shall not exceed 1-1/2 inches.

F. **Hurricane Design Requirements:**

1. Components shall be designed, tested, fabricated, and constructed to comply with the South Florida Building Code, 1996 Broward County Edition, effective date of October, 1996.
2. Components shall be designed, tested, fabricated, and constructed to comply with SBCCI SBC and SBCCI SSTD 12-97.
3. The work shall, when erected, meet or exceed the local hurricane design requirements, as demonstrated by engineering calculations, testing of mock-ups, or shall have received prior product approval as may be required or requested by local authorities having jurisdiction.

1.5 **SUBMITTALS**

- A. **General:** See Section 01300 - SUBMITTALS.
- B. **Proposal Drawings:** Prior to Award of Contract for this portion of the work submit complete details indicating proposed systems for each typical portion of the work. Include complete test reports for consideration by the Architect where acceptance to waive testing as delineated in Section 08900 - EXTERIOR WALL PERFORMANCE REQUIREMENTS is to be proposed.
- C. **Product Data:** Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Product data shall include, but shall not be limited to, the following:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- D. **Material List:** Submit a material list with technical data documenting the location and primary function, quality, and performance of each material component to be used in the work.
- E. **Shop Drawings:** Submit shop drawings for each product and accessory required. Include information not fully detailed in manufacturer's standard product data, including, but not limited to, wall elevations and detail sections of every typical composite member.
 1. Show anchors, joint system, expansion provisions, finishes, and other components not included in manufacturer's product data.
 2. Include glazing details.
 3. Details shall be at a scale of 6 inches equals 1 foot, minimum.

4. Key details to plans and elevations.
- F. **Samples:**
1. Submit samples for initial color selection. Submit samples of each specified finish. Submit samples in form of manufacturer's color charts showing full range of colors and finishes available. Where finishes involve normal color variations, include samples showing the full, range of variations expected.
 2. Submit samples for verification purposes. Submit four samples of each finish, minimum 6 inches square, representing actual product, color, and patterns. Where color and texture variations are to be expected, include two or more units in each sample to show the range of such variations.
- G. **Quality Control Submittals:**
1. **Design Data:** Submit design calculations for the glazed wood curtain wall system and the connections for attaching them to the structure. Show that maximum stresses and deflections do not exceed specified performance requirements under full design loading. The design data shall be signed and sealed by the professional engineer. Only the loading on the structure at the connections will be reviewed.
 2. **Qualification Data:** Submit qualification data for firms and persons specified in Quality Assurance Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names of architects and owners, and other information specified.
 3. **Test Reports:** Submit two copies each, plus the number the Contractor wants returned, of tests. Submit test reports indicating compliance of systems with requirements of these Specifications.
 - a. Submit reports of testing required per Section 08900 - EXTERIOR WALL PERFORMANCE REQUIREMENTS.
 - b. Submit a report of inspections of connections and welds.
 - c. Submit a report indicating compliance with coatings test program indicated in this Section.
 4. **Certificates:**
 - a. Submit designer's certification that they:
 - 1) Are a structural engineer registered in the State where the Project is located. Include registration number.
 - 2) Are the designer of the glazed wood curtain wall system and the connections for attaching them to the structure.
 - 3) Have coordinated the design of the glazed wood curtain wall system and the connections for attaching them to the structure with the design of the structure.
 - 4) Have visited the site and that to the best of their information, knowledge, and belief the glazed wood curtain wall system has been installed in accordance with their design.
 - b. Submit manufacturer's certification that the Installer is approved.
- H. **LEED Submittals:** Submittals that are required to comply with requirements for LEED certification include, but shall not be limited to, the following:
1. **Recycled Content Materials:** Provide documentation on the minimum weighted average of post-consumer and/or post-industrial recycled content of the materials, and what type of recycled content is present in the material. For a product to be considered for LEED credit, it must contain a minimum weighted average of 20 percent post-consumer recycled content or a minimum of 40 percent post-industrial recycled content. For assemblies, such as concrete, provide the minimum weighted average of recycled content material for each of the components making up the assembly (i.e., fly ash, recycled steel in reinforcement, recycled aggregate, etc.).
 2. **Certified Wood:** Provide documentation confirming what quantity, if any, of wood-based materials are certified in accordance with the Forest Stewardship Council Guidelines for wood products.

- I. **Statement of Manufacturer's Review:** Submit statement of manufacturer's review, signed by the Contractor, the Installer, and the manufacturer, stating that the Drawings and Specifications, the shop drawings, and the product data have been reviewed by the manufacturer, and that they are in agreement that the selected materials, systems, and details are proper and adequate for the application shown, including, but not limited to, compatibility with adjacent materials and systems.
- J. **Statement of Application:** Submit statement of application, in form stipulated by the Architect, signed by the Contractor and the Installer, stating that the work was provided in compliance with the Contract Documents and that the installation was proper for the conditions of application and use.
- K. **Operation and Maintenance Manuals:** Furnish complete operation and maintenance manuals describing the materials, devices, and procedures to be followed in operating, cleaning, and maintaining the work. Include manufacturer's brochures and parts lists describing the actual materials used in the work, including, but not limited to, metal alloys, finishes, glass, sealants, and other major components. Assemble operation and maintenance manuals for component parts into single binders identified for each system.

1.6 QUALITY ASSURANCE

- A. **Qualifications:**
 - 1. **Manufacturer Qualifications:** Manufacturer shall be a firm engaged in the manufacture of glazed wood curtain walls of types and sizes required, and whose products have been in satisfactory use in similar service for a minimum of five years.
 - 2. **Installer Qualifications:** Installer shall be a firm that shall have a minimum of five years of successful installation experience with projects utilizing glazed wood curtain walls similar in type and scope to that required for this Project, and shall be approved by the manufacturer.
 - 3. **Engineer Qualifications:** The engineer shall be a professional engineer legally authorized to practice in the jurisdiction where the Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of products similar to this Project in material, design, and extent, and that have a record of successful in-service performance.
 - 4. **Welder Qualifications:** Qualify welding processes and welding operators in accordance with American Welding Society (AWS) standard qualification procedures. Operators shall carry proof of qualification on their persons.
- B. **Regulatory Requirements:** Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
- C. **Mock-Ups:** Prior to installation of the work, fabricate and erect mock-ups for each type of finish and application required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution. Build mock-ups to comply with the following requirements, using materials indicated for final unit of work.
 - 1. Locate mock-ups on site in location and of size indicated or, if not indicated, as directed by the Architect.
 - 2. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
 - 3. Obtain the Architect's acceptance of mock-ups before start of final unit of work.
 - 4. Retain and maintain mock-ups during construction in undisturbed condition as a standard for judging completed unit of work.
 - a. When directed, demolish and remove mock-ups from the Project site.
 - b. Accepted mock-ups in undisturbed condition at time of Substantial Completion may become part of completed unit of work.

- D. **Test Mock-Up:** Prior to fabricating glazed wood curtain wall system, provide components for the test mock-up and the visual mock-up, as described in Section 08900 - EXTERIOR WALL PERFORMANCE REQUIREMENTS.
- E. **Pre-Installation Conference:** Conduct pre-installation conference in accordance with Section 01200 - PROJECT MEETINGS. Prior to commencing the installation, meet at the Project site to review the material selections, installation procedures, and coordination with other trades. Mock-ups shall be reviewed during the pre-installation conference. Pre-installation conference shall include, but shall not be limited to, the Contractor, the Installer, manufacturer's representatives, and any trade that requires coordination with the work. Date and time of the pre-installation conference shall be acceptable to the Owner and the Architect.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fabricated units and component parts of glazed wood curtain wall system to the Project site completely identified in accordance with erection diagrams. Store in dry protected location off ground in accordance with manufacturer's instructions. Protect from damage, including, but not limited to, from weather and construction activities.

1.8 PROJECT CONDITIONS

- A. **Environmental Requirements:** Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. **Field Measurements:** Take field measurements prior to fabrication of the work and preparation of shop drawings, to ensure proper fitting of the work. Show recorded measurements on final shop drawings. Notify the Owner and the Architect, in writing, of any dimensions found which are not within specified dimensions and tolerances in the Contract Documents, prior to proceeding with the fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the work.

1.9 WARRANTY

- A. **General:** See Section 01770 - CLOSEOUT PROCEDURES.
- B. **Special Warranty:**
 - 1. The Contractor shall warrant the work of this Section and the sections listed below to be in accordance with the Contract Documents and free from faults and defects in materials and workmanship for a period of five years.
 - a. Section 07900 - JOINT SEALERS.
 - b. Section 08400 - ENTRANCES AND STOREFRONTS.
 - c. Section 08800 - GLAZING.
 - d. Section 10210 - METAL WALL LOUVERS (where installed in conjunction with the curtain wall).
 - 2. This special warranty shall extend the one year period of limitations contained in the General Conditions. The special warranty shall be countersigned by the Installer and the manufacturer.
 - 3. Upon notification of defects, within the warranty period, make necessary repairs or replacement at the convenience of the Owner. Such defects are hereby defined to include, but shall not be limited to, any evidence of early deterioration, weathering, or aging; uncontrolled water penetration or air infiltration; glass breakage; deterioration of finishes; failure of operating parts to function properly; and any other evidence of deterioration or failure to comply with requirements of the Contract Documents.

- C. **Special Finish Warranty:** Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish within the specified warranty period and agreeing to repair finish or replace work that shows evidence of finish deterioration. Deterioration of finish includes, but shall not be limited to, color fade, chalking, cracking, peeling, and loss of film integrity.
1. **Warranty Period:** Warranty period shall be [] years from date of Substantial Completion.
- D. **Additional Owner Rights:** The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Basis of Design:** Products specified are those as manufactured by Solar Innovations, Inc.. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent.

2.2 MATERIALS

A. **General:**

1. **LEED Requirements:**

- a. **Recycled Content Materials:** Provide building materials with recycled content such that post-consumer recycled content constitutes a minimum of [five percent] [10 percent] of the cost of materials used for the Project or such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of [10 percent] [20 percent] of the cost of materials used for the Project.
 - 1) The cost of post-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
 - 2) The cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
 - 3) Do not include mechanical and electrical components in the calculation.
 - 4) Recycled content of materials shall be defined according to the 16 CFR Part 260.7 (e).
- b. **Certified Wood:** Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2. Wood-based materials include, but shall not be limited to, materials made from made wood, engineered wood products, or wood-based panel products.

B. **Aluminum:**

1. **Extrusions and Shapes:** ASTM B 221, Alloy 6063-T5, in 0.125 inch minimum thickness.
 - a. **Major Sections:** 0.125 inch.
 - b. **Molding, Trim, and Glass Stops:** 0.062 inch.
2. **Sheet:** ASTM B 209, Alloy 5005-H16 in the following minimum thickness:
 - a. **Formed Members and Flat Panels:** B&S 12 gage.
 - b. **Formed Stops and Laminated Panels:** B&S 18 gage.

- C. **Stainless Steel:**
 - 1. **Sheet and Plate:** ASTM A 666, Type 304.
- D. **Steel Plates, Shapes, and Bars:** ASTM A 36, galvanized in accordance with ASTM A 123.
 - 1. If galvanizing is not compatible with alloy of component parts, apply heavy coating of epoxy paint where necessary to prevent galvanic action with dissimilar materials.
- E. **Fasteners and Anchors:** Provide manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
 - 1. Provide type alloy and temper as required for proper strength.
 - 2. Conceal fasteners and anchors unless otherwise indicated.
 - 3. Where exposed fasteners are permitted by the Architect, match the finish of exposed screw heads to the finish of adjacent surfaces.
 - 4. Use oval-head countersunk Phillips-head screws.
 - 5. Do not use self-tapping sheet metal screws.
- F. **Inserts:** Provide galvanized steel or cast iron inserts of suitable design and adequate strength for condition of use.
- G. **Galvanizing Repair Paint:** Provide high zinc dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with SSPC Paint 20.
- H. **Steel Support Structure:** See Section 05120 - STRUCTURAL STEEL.
- I. **Steel Support Structure:** See Section 05500 - METAL FABRICATIONS.
- J. **Ornamental Metal Trim:** See Section 05700 - ORNAMENTAL METAL.
- K. **Wood Support Structure:** See Section 06105 - MISCELLANEOUS CARPENTRY.
- L. **Millwork and Trim:** See Section 06200 - FINISH CARPENTRY.
- M. **Flashing:** See Section 07600 - FLASHING AND SHEET METAL.
- N. **Sealants:** See Section 07900 - JOINT SEALERS.
- O. **Wood Windows:** See Section 08550 - WOOD WINDOWS.

2.3 GLAZED WOOD CURTAIN WALL

- A. **Glazing System:**
 - 1. **Application:** Glazed curtain wall assembly.
 - 2. **Application:** Entrance/storefront assembly.
 - 3. **Application:** Interior wall partition assembly.
 - 4. **Application:** Skylight/sloped glazing assembly.
 - 5. **Application:** Greenhouse/Conservatory assembly.
 - 6. **System:** "SI 5200 W Wood Integrated Façade System", Solar Innovations, Inc.
 - a. **System Width:** [2; 2.5; 3] inches
- B. **Glazed Wood Curtain Wall Components:**
 - 1. **Timber:**
 - a. **Exterior Timber Species:** [_____].
 - b. **Interior Timber Species:** [_____].

- c. **Frame Width:** [2; 2.5; 3] inches.
- d. **Frame Depth:** Designed to meet design pressure requirements of the Project.
 - 1) **Preferred frame depth:** [____] inches
- 2. **Timber Finish:**
 - a. **Wood Finish:** Factory-applied white wash primer.
 - b. **Wood Stain Finish:** Factory-applied multi-step finish of primer, stain, and clear satin finish topcoat. Provide color as selected by the Architect from the manufacturer's full line.
 - c. **Wood Clear Finish:** Factory-applied multi-step clear satin finish top coats over natural wood.
 - d. **Wood Opaque Finish:** Factory-applied primer and opaque finish. Provide color as selected by the Architect from the manufacturer's full line.
- 3. **Profiles:**
 - a. **Exterior:** Aluminum pressure plate profile
- 4. **Gaskets:**
 - a. **Interior Gasket:** Standard EPDM gasket.
 - b. **Exterior Gasket:** Standard EPDM gasket.
- 5. **Glass:** See Section 08800 - GLAZING.
- 6. **Cover:**
 - a. **Cover Dimensions:** [2; 2.5; 3] inch wide by [____] inch deep.
 - b. **Cover Material:** [Wood; Aluminum]
- 7. **Hardware:**
 - a. **Timber Connectors:** Hideaway connectors attached with special nail-screws fixed through the base profile with extended aluminum transom base profile.
 - b. **Fasteners:** Pan head tapping screws.
 - c. **Fasteners:** Pan head tapping screws sealing washers.
 - d. **Fasteners:** Flat fillister head screws with sealing washers.
 - e. **Length:** As indicated on the Drawings.

2.4 FABRICATION

- A. **Workmanship:** Carefully fit and match work with continuity of line and design. Rigidly secure members with hairline joints, unless otherwise indicated. Reinforce members and joints with steel plates, bars, rods, or angles for rigidity and strength as needed to fulfill performance requirements. Complete the welding, cutting, drilling, and fitting of joints prior to the application of finishes. Fit and assemble work in the shop insofar as practicable. Mark and disassemble units which are too large for shipment to the Project site, retaining units in sizes as large as possible for shipment and erection.
- B. **Glazing:** Fabricate framing for exterior glazing at spandrels and interior glazing at other openings.
- C. **Weeps and Flashings:** Fabricate the system so as not to require additional weeps or flashing beyond that which is integral to the system.
- D. **Splice Plates:** Fabricate with full internal splice plates which have been designed to prevent water infiltration during anticipated thermal movement.
- E. **Welding:** Welding shall be in accordance with the recommendations of the manufacturer of material being welded and the referenced standards. Use methods which prevent distortion and discoloration of exposed faces. Grind exposed welds smooth, using clean equipment and materials free of iron or iron compounds. Remove arises from cut edges. Complete the welding, cutting, drilling, and fitting prior to the application of finishes.
- F. **Protective Coating:** Either paint the contact surface of dissimilar materials, including, but not limited to, metal in contact with masonry or concrete, with a heavy coating of epoxy paint, or provide

other separation as recommended by the manufacturer. Paint steel clip angles and other ferrous metal parts which will be concealed, with epoxy paint.

- G. **Fasteners:** Conceal fasteners unless otherwise indicated. For exterior systems use fasteners for joints which cannot be welded.
- H. **Dissimilar Materials:** Separate dissimilar materials with a heavy coating of epoxy paint or other suitable permanent separation as required to prevent galvanic action.

2.5 FINISHES

- A. **General:** Comply with NAAMM MFM for recommendations relative to application and designation of finishes.
 - 1. Remove die markings, scratches, abrasions, dents, and other blemishes before applying finish.
 - 2. Protect mechanical finishes on exposed surfaces from damage by applying a strippable temporary protective covering prior to shipment.
- B. **Aluminum Finishes:** Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
 - 1. **Class I Clear Anodized Finish:** AA-M12-C22-A41 (Mechanical Finish: as fabricated, non-specular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, clear film thicker than 0.7 mil) complying with AAMA 611.
 - a. **Lacquer Coating:** Clear methacrylate lacquer as recommended by finisher. Coat exposed surfaces of anodized finish with two coats of lacquer, shop-applied and baked on, minimum 0.5 mil dry film thickness.
 - 2. **Class I Color Anodized Finish:** AA-M21-C22-A42/A44 (Mechanical Finish: as fabricated, non-specular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, film thicker than 0.7 mil with integral color or electrolytically deposited color) complying with AAMA 611.
 - a. **Color:** Light bronze.
 - b. **Color:** Medium bronze.
 - c. **Color:** Dark bronze.
 - d. **Color:** Black.
 - e. **Color:** Match the Architect's sample.
 - f. **Color:** As selected by the Architect from within full range of industry colors and color density range.
 - g. **Lacquer Coating:** Clear methacrylate lacquer as recommended by finisher. Coat exposed surfaces of anodized finish with two coats of lacquer, shop-applied and baked on, minimum 0.5 mil dry film thickness.
 - 3. **Thermal Acrylic Enamel Finish:** AA-C12-C42-R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.
 - a. **Organic Coating:** Thermosetting modified acrylic enamel primer and topcoat system complying with AAMA 2603, except with a minimum dry film thickness of 1.5 mils, medium gloss.
 - b. **Color:** Match the Architect's sample.
 - c. **Color:** As selected by the Architect from manufacturer's standard choices for color.
 - 4. **High Performance Organic Coating:** AA-C12-C42-R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Prepare,

pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.

- a. **Standard Two-Coat Polyvinylidene Fluoride (PVDF) Finish Coating:** Manufacturer's standard thermocured system, complying with AAMA 2605, composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight, as produced by Arkema, Inc. ("Kynar 500") or by Solvay Solexis, Inc. ("Hylar 5000"). Provide minimum 1.2 mil total dry film thickness.
 - b. **Special Three-Coat Polyvinylidene Fluoride (PVDF) Finish Coating:** Manufacturer's standard three-coat thermocured system, complying with AAMA 2605, composed of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent PVDF resin by weight, as produced by Arkema, Inc. ("Kynar 500") or by Solvay Solexis, Inc. ("Hylar 5000").
 - 1) **Color and Gloss:** Match the Architect's sample.
 - 2) **Color and Gloss:** As selected by the Architect from manufacturer's standard choices for color and gloss.
 - 3) **PVDF Touch-Up Finish:** PVDF finish coating, containing fluoropolymer resin and formulated for air-drying at ambient temperature. Provide for field touch-up and furnish in color to match shop-applied finishes.
- C. **Stainless Steel Finishes:** Finish designations prefixed by AISI conform with the system established by the American Iron and Steel Institute for designating finishes for stainless steel sheet.
1. **General:**
 - a. Remove or blend tool and die marks and stretch lines into finish.
 - b. Grind and polish surfaces to produce uniform, directional-textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
 2. **Bright, Directional Polish:** Match AISI No. 4 finish.
 3. **Mirrorlike Reflective, Non-Directional Polish:** Match AISI No. 8 finish.
 4. **Cleaning:** When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Verification of Conditions:** Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.2 INSTALLATION

- A. **General:** Installation shall be in accordance with the manufacturer's specifications and recommendations. Set sill members in a bed of sealant. Support on shims and secure in place by bolting to clip angles and similar supports anchored to the structure. Use only the types of equipment, wedges, spaces, shims, and other items during installation which will not corrode, stain, or mar the finish surfaces. Set units plumb, level and true-to-line, without warp or rack of frames, doors, or panels. Anchor securely in place.

- B. **Fitting:** Cut and trim component parts during installation only with the approval of the manufacturer and in accordance with his recommendations. Restore finishes completely. Remove and replace members where cutting and trimming has impaired strength or appearance. Do not cut reinforcing members.
- C. **Welding:** Weld in accordance with the recommendations of the manufacturer of material being welded and the referenced standards. Use only methods which prevent distortion and discoloration of exposed faces. Grind exposed welds smooth, using clean equipment and materials free of iron or iron compounds. Restore finish of component parts after welding and grinding.
- D. **Protective Coating:** Either paint the contact surface of dissimilar materials, including, but not limited to, metal in contact with masonry or concrete, with a heavy coating of epoxy paint, or provide other separation as recommended by the manufacturer. Paint steel clip angles, and other ferrous metal parts which will be concealed, using epoxy paint.
- E. **Damaged Components:** Do not erect members which are warped, bowed, deformed, or otherwise damaged or defaced to such extent as to impair strength or appearance. Remove and replace members which have been damaged.
- F. **Erection Tolerances:**
 - 1. **Variations From Plumb to Indicated Angle:** $\pm 1/8$ inch maximum variation in story height or 10 foot run, non-cumulative.
 - 2. **Variations From Level of Indicated Slope:** $\pm 1/8$ inch maximum variation in any column-to-column space or 20 foot run, non-cumulative.
 - 3. **Variations From Position in Plan or Elevations:** Variations from theoretical calculated position as located in plan or elevation in relation to established floor lines, column lines, and other fixed elements of the structure, including, but not limited to, variations from plumb, level, straight, and member size, shall be as follows:
 - a. $1/4$ inch maximum variation in any column-to-column space, or floor-to-floor height, or 20 feet.
 - b. $3/8$ inch maximum total variation at any location.
 - 4. **Offsets in End-to-End or Edge-to-Edge Alignment of Consecutive Members:** $1/16$ inch maximum offset in any alignment.
 - 5. **Variations From Position at the Hypotenuse:** Variation from theoretical calculated position at the hypotenuse of any rectangular bay between mullions in story height shall be as follows:
 - a. $1/4$ inch maximum variation in any 10 foot length of hypotenuse, non-cumulative.
 - b. $3/8$ inch maximum total variation in any hypotenuse.

3.3 FIELD QUALITY CONTROL

- A. **General:** See Section 01410 - TESTING LABORATORY SERVICES.
 - 1. See Section 08900 - EXTERIOR WALL PERFORMANCE REQUIREMENTS.
- B. **Water Leakage Test:** Upon completion, test the wall for water leakage in accordance with AAMA 501.2. Notify the Architect at least seven days in advance of testing.

3.4 ADJUSTING AND CLEANING

- A. **Touch-Up Painting:** Immediately after installation, touch-up scratched, nicked, abraded, chipped, or otherwise damaged areas of the finish so as to be unnoticeable. Performance of touch-up shall be in all ways equal to that of the factory finish.
- B. **Cleaning:** Wash to remove mortar, plaster, sprayed fire-resistive material, and any other deleterious material from finished surfaces immediately. Cleaning and protective methods shall be

carefully selected, applied, and maintained so that finishes shall not become uneven or otherwise impaired as a result of unequal exposure to light and weathering conditions.

- C. **Protective Coatings or Coverings:** Temporary coatings and coverings may be furnished at manufacturer's or the Contractor's option to protect the work during shipment and construction. Such protection shall avoid development of non-uniformity in finishes, shall not impart a residue which would adversely affect the adhesion of sealants, nor cause other deleterious effects in the work. Temporarily remove such protection when requested by the Architect for inspection of finishes, and completely remove protection when no longer required.

3.5 DEMONSTRATION

- A. **Maintenance Instructions:** Instruct the Owner's personnel who will be responsible for window washing after the time of final acceptance. Demonstrate and train the Owner's personnel, for a period of not less than two working days, in the proper methods of cleaning and maintaining the entire glazed wood curtain wall system.

3.6 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to the Installer, that shall ensure that the glazed wood curtain walls shall be without damage at time of Substantial Completion.

END OF SECTION