SECTION 08 44 00

GLAZED ALUMINUM FRAMING SYSTEMS

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\*\* NOTE TO SPECIFIER \*\* AluminTechno JLLC; architectural aluminum systems.  
This section is based on the products of AluminTechno JLLC, which is located at:2255 Button Gwinnett Dr., Suite 130Atlanta, GA 30340Tel: 646-789-1827 (US Rep)Email: [request info (avramenko@alutech-group.com)](https://arcat.com/rfi?action=email&company=AluminTechno%252BJLLC&message=RE%253A%2520Spec%2520Question%2520(08900alu)%253A%2520&coid=50809&spec=08900alu&rep=&fax=)  
Web: <http://alumintechno.com/>   
 [ [Click Here](https://arcat.com/company/alumintechno-jllc-50809) ] for additional information.  
AluminTechno JLLC is an aluminum extrusions manufacturing enterprise with powder coating and anodizing lines and is a part of ALUTECH Group of Companies.  
Our high-performance modern enterprise is equipped with machinery produced by the leading manufacturers from the USA, Germany and Italy. Production process and manufacturing equipment have no analogs among European countries. The complete production cycle is being performed at AluminTechno plant: from primary aluminum casting works to production of aluminum profiles and further coating. The main manufacturing components are modern foundry complexes, high-performance extrusion lines, advanced coating and anodizing manufacturing shops.  
Currently AluminTechno JLLC produces a wide range of aluminum extrusions (more than 1.000 different configurations) used in construction, motor production, furniture and consumer goods, automotive industries, electric-power industry. Enterprise's annual output is 45.000 tons. AluminTechno JLLC has certified its quality control management system in accordance with the requirements of International Standard ISO 9001:2009 in TuV CERT system.  
Finish quality of aluminum extrusion produced by AluminTechno JLLC is proved by three international certificates: QUALICOAT, SEASIDE and QUALANOD. AluminTechno JLLC is the only aluminum architectural system manufacturer on the territory of Eastern Europe holding all three certificates.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Extruded aluminum curtainwall.
    2. Extruded aluminum doors and windows.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant; add others as required.

* + 1. Section 07 26 23 - Below-Grade Gas Retarders .
    2. Section 07 84 13 - Penetration Firestopping.
    3. Section 07 91 23 - Backer Rods.
    4. Section 08 44 23 - Structural Sealant Glazed Curtain Wall.
    5. Section 08 42 29 - Automatic Entrances.
    6. Section 08 43 29 - Sliding Storefronts.
    7. Section 08 51 13 - Aluminum Windows.
    8. Section 08 71 53 - Security Door Hardware.
    9. Section 08 83 13 - Mirrored Glass Glazing.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Aluminum Association (AA):
       1. AA-M12C22A41 - Nonspecular as fabricated, medium matte, class I clear amodizing.
       2. AA-M12C22A31 - Nonspecular as fabricated, medium matte, class I clear anodizing.
       3. AA-M12C22A42/A44 - Nonspecular as fabricated, medium matte, class 1 integral color/electrolytically deposited color anodizing.
       4. AA-M12C22A32/A34 - Nonspecular as fabricated, medium matte, class II integral color/ electrolytically deposited color anodizing.
    2. American Architectural Manufacturers Association (AAMA):
       1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
       2. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.
       3. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
       4. AAMA 501.4 - Recommended Static Test Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drifts.
       5. AAMA 501.5 - Test Method for Thermal Cycling of Exterior Walls.
       6. AAMA 501.6 - Recommended Dynamic Test Method for Determining the Seismic Drift Causing Glass Fallout from A Wall System.
       7. AAMA 501.7 - Recommended Static Test Method for Evaluating Windows, Window Wall, Curtain Wall and Storefront Systems Subjected to Vertical Inter-Story Movements.
       8. AAMA 701/702 - Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals.
       9. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
       10. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
       11. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
       12. AAMA TIR A11 - Maximum Allowable Deflection of Framing Systems for Building Cladding Components at Design Wind Loads.
    3. American Society of Civil Engineers (ASCE):
       1. ASCE/SEI 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
    4. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
       1. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
    5. ASTM International (ASTM):
       1. ASTM A 36 - Standard Specification for Carbon Structural Steel.
       2. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
       3. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
       4. ASTM A 1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
       5. ASTM A 1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
       6. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
       7. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
       8. ASTM B 308 - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
       9. ASTM B 429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
       10. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
       11. ASTM C 1184 - Standard Specification for Structural Silicone Sealants.
       12. ASTM C 1401 - Standard Guide for Structural Sealant Glazing.
       13. ASTM D 2000 - Standard Classification System for Rubber Products in Automotive Applications.
       14. ASTM D 2287 - Standard Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.
       15. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
       16. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
       17. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
       18. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
       19. ASTM E 783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
       20. ASTM E 1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
       21. ASTM E 1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation.
       22. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
       23. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
       24. ASTM E 1998 - Standard Guide for Assessing Depressurization-Induced Backdrafting and Spillage from Vented Combustion Appliances.
       25. ASTM F 1642/GSA TS01 - Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings.
    6. Builders Hardware Manufacturers Association (BHMA):
       1. BHMA A 156.1 - American National Standard for Butts and Hinges.
       2. BHMA A 156.3 - American National Standard for Exit Devices.
       3. BHMA A 156.4 - American National Standard for Door Controls-Closers.
       4. BHMA A 156.5 - American National Standard for Cylinders and Input Devices for Locks.
       5. BHMA A 156.6 - American National Standard for Architectural Door Trim.
       6. BHMA A 156.8 - American National Standard for Door Control - Overhead Stops and Holders.
       7. BHMA A 156.16 - American National standard for Auxiliary Hardware.
       8. BHMA A 156.21 - American National standard for Thresholds.
    7. Glass Association of North America (GANA).
    8. International building code (IBC).
    9. National Fenestration Rating Council (NFRC):
       1. NFRC 100 - Procedure for Determining Fenestration Product U-Factors.
       2. NFRC 500 - Procedure for Determining Fenestration Product Condensation Resistance Values.
    10. National Fire Protection Association (NFPA):
        1. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
    11. Society of Protective Coatings (SSPC).
    12. Structural Engineering Institute (SEI).
    13. United States General Services Administration (GSA).
    14. Underwriters Laboratories (UL):
        1. UL 305 - UL Standard for Safety Panic Hardware.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Product testing reports.
        4. Installation methods.
        5. Maintenance data.
     3. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
        1. Include coordinated dimensions for equipment and furnishings specified in other Sections.
           1. Moisture draining provisions.
           2. Expansion and contraction provisions.
           3. Flashing.

\*\* NOTE TO SPECIFIER \*\* Delete if Contractor is not responsible for design services.

* + 1. Delegated Design Submittal: Shop drawings complying with performance requirements and design criteria. Signed and sealed by professional Engineer licensed in Project location.
    2. Verification Samples: For each finish product specified, two samples, representing actual product, color, and finish.
    3. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
    4. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment, cleaning and maintenance.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Five years or more experience in manufacture of laboratory casework and equipment of type specified.
     2. Installer: Five years or more experience with installation of similar products, and acceptable to the manufacturer.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of fabrication techniques and application workmanship.
       1. Install in areas designated by Architect.
       2. Do not proceed with remaining work until installation is approved by Architect.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in the manufacturer's unopened packaging until ready for installation.
     2. Protect finished surfaces from soiling or damage during handling and installation.
  2. PROJECT CONDITIONS
     1. 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 recommended limits.
  3. WARRANTY
     1. Manufacturer's Warranty: Provide manufacturer's standard limited warranty for against breakage, corrosion, and delamination under normal conditions.
        1. Warranty Duration: \_\_\_\_\_\_.

1. PRODUCTS
   1. MANUFACTURER
      1. Acceptable Manufacturer: AluminTechno JLLC, which is located at: 2255 Button Gwinnett Dr. Suite 130; Atlanta, GA 30340; ASD Tel: 646-789-1827; US Rep.; Email: [request info](http://admin.arcat.com/users.pl?action=UserEmail&company=AluminTechno+JLLC&coid=50809&rep=&fax=&message=RE:%2520Spec%2520Question%2520(08900alu):%2520%2520&mf=); Web: <http://alumintechno.com>
      2. Acceptable Manufacturer: Belarus Address: AluminTechno JLLC, which is located at: 12 Selitskogo St.; Minsk, Belarus 220075; ASD Tel: 646-789-1827; Email: [request info](http://admin.arcat.com/users.pl?action=UserEmail&company=AluminTechno+JLLC&coid=50809&rep=&fax=&message=RE:%2520Spec%2520Question%2520(08900alu):%2520%2520&mf=); Web: <http://alumintechno.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. ALUMINUM FRAMED CURTAIN WALL SYSTEMS
     1. Basis of Design: ALT F50 Curtain Wall system as manufactured by and supplied by AluminTechno JLLC.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. ALUMINUM FRAMED DOOR AND WINDOW SYSTEMS
     1. Basis of Design: ALT W62 Curtain Wall system as manufactured by and supplied by AluminTechno JLLC.
  2. PERFORMANCE REQUIREMENTS

\*\* NOTE TO SPECIFIER \*\* Delete paragraph below if Contractor is not required to assume responsibility for design.

* + 1. Delegated Design: Engage a qualified professional engineer licensed in location of Project, for design of glazed curtain wall.
    2. Comply with performance requirements specified, determined by testing of systems representative of Project without failure. Withstand supporting structure movements including, but not limited to, story drift, twist, column shortening, long-term creep, and distributed and concentrated load deflections.
    3. Structural Loads:
       1. Wind Loads: As indicated on Drawings.
       2. Other Design Loads: As indicated on Drawings.
    4. Deflection of Framing Due to Design Wind Pressure:

\*\* NOTE TO SPECIFIER \*\* Delete three of the following four deflection paragraphs.

* + - 1. Deflection Normal to Wall Plane per IBC Requirements: From edge of glass perpendicular in direction to glass plane; 1/175 of glass edge length for each glazing lite, or amount that restricts edge deflection of glazing lites to 3/4 in (19.1 mm), whichever is less.
      2. Deflection Normal to Wall Plane per AAMA TIR-A11:
         1. Spans up to 13 ft 6 in (4.1 m): Limited to 1/175 of clear span.
         2. Spans Greater than 13 ft 6 in (4.1 m): Limited to 1/240 of clear span plus 1/4 in (6.35 mm).
         3. Limited to an amount restricting edge deflection of individual glazing lites to 3/4 in (19.1 mm), whichever is less.
      3. Deflection Normal to Wall Plane: \_\_\_\_\_\_.
      4. Deflection Normal to Wall Plane: As indicated on the Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete deflection parallel to glazing plane option not required.

* + - 1. Deflection Parallel to Glazing Plane: 1/360 of clear span or 1/8 in (3.2 mm), whichever is smaller.
      2. Deflection Parallel to Glazing Plane per GANA Glazing Manual: Not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 in (3.2 mm).
         1. Operable Units: 1/16 in (1.6 mm) minimum clearance between framing members and operable units.
      3. Cantilever Deflection for Framing Members Overhanging an Anchor Point:
         1. Perpendicular to Plane of Wall:

Spans less than 11 ft 8-1/4 in (3.6 m): 1/175 times span.

Spans greater than 11 ft 8-1/4 in (3.6 m): 1/240 of clear span plus 1/4 in (6.35 mm).

* + 1. Structural Performance per ASTM E 330:
       1. Test at positive and negative wind-load design pressure. No deflection beyond specified limits.
       2. Tested at 150 percent of positive and negative wind-load design pressures. No failure of materials, no structural distress, and no deformation of framing members beyond 0.2 percent of spans.
    2. Air Infiltration per ASTM E 283: Fixed framing and glass area per ASHRAE 90.1:
       1. Maximum air leakage: 0.06 cu ft per min per sq ft (0.30 L per s per sq. m).
          1. Static-air-pressure differential: 1.57 lbf per sq ft (75 Pa) equivalent to windspeed of 25 miles per hr (40 km per hr).
          2. Static-air-pressure differential: 6.24 lbf per sq. ft. (300 Pa) equivalent to windspeed of 50 miles per hr (80 km per hr).

\*\* NOTE TO SPECIFIER \*\* Applies to aluminum framed door and window systems. Delete if not required or specified in a different section.

* + - 1. Entrance Doors:
         1. Maximum air leakage for Single Door: 0.5 cu ft per min per sq ft (2.54 L per s per sq. m).

Static-air-pressure differential: 1.57 lbf per sq ft (75 Pa) equivalent to windspeed of 25 miles per hr (40 km per hr).

* + - * 1. Maximum air leakage for Door Pairs: 1.0 cu ft per min per sq ft (5.08 L per s per sq. m).

Static-air-pressure differential: 1.57 lbf per sq ft (75 Pa) equivalent to windspeed of 25 miles per hr (40 km per hr).

* + 1. Water Penetration under Static Pressure per ASTM E 331: None.

\*\* NOTE TO SPECIFIER \*\* Delete the two of three options below not required.

* + - 1. Tested at static-air-pressure differential of 20 percent of positive wind-load design pressure but not less than 6.24 lbf per sq ft (300 Pa).
      2. Tested at static-air-pressure differential of 20 percent of positive wind-load design pressure but not less than 10 lbf per sq ft (480 Pa).
      3. Tested at static-air-pressure differential of 20 percent of positive wind-load design pressure but not less than 15 lbf per sq ft (720 Pa).
    1. Water Penetration under Dynamic Pressure per AAMA 501.1: None.

\*\* NOTE TO SPECIFIER \*\* Delete the two of three options below not required.

* + - 1. Tested at dynamic pressure equal to 20 percent of positive wind-load design pressure but not less than 6.24 lbf per sq ft (300 Pa).
      2. Tested at dynamic pressure equal to 20 percent of positive wind-load design pressure but not less than 10 lbf per sq ft (480 Pa).
      3. Tested at dynamic pressure equal to 20 percent of positive wind-load design pressure but not less than15 lbf per sq ft (720 Pa).
      4. Water Leakage per AAMA 501.1: No uncontrolled water penetration or water appearing on normally exposed interior surfaces except due to condensation. Does not apply to water controlled by flashing and gutters, or water drained to exterior.

\*\* NOTE TO SPECIFIER \*\* Delete interstory drift paragraph if not required by Project.

* + 1. Interstory Drift: Test Performance according to AAMA 501.4: Pass. Accommodate design displacement of adjacent stories indicated.

\*\* NOTE TO SPECIFIER \*\* Delete design displacement option not required.

* + 1. Design Displacement: \_\_\_\_\_\_.
    2. Design Displacement: As indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete seismic performance paragraph below if not required.

* + 1. Seismic Performance per ASCE/SEI 7: Pass.
       1. Seismic Drift Causing Glass Fallout per AAMA 501.6: Pass.
       2. Vertical Interstory Movement per AAMA 501.7: Pass
    2. Energy Performance: Certify and label energy performance per NFRC:
       1. Thermal Transmittance (U-factor) per NFRC 100: Fixed glazing and framing areas.

\*\* NOTE TO SPECIFIER \*\* Delete u-factor options not required.

* + - * 1. U-factor: 0.45 Btu per sq ft x h x degrees F (2.55 W per sq m x degrees K) maximum.
        2. U-factor: 0.57 Btu per sq ft x h x degrees F (3.23 W per sq m x degrees K) maximum.
        3. U-factor: 0.69 Btu per sq ft x h x degrees F (3.92 W per sq m x degrees K) maximum.

\*\* NOTE TO SPECIFIER \*\* Delete solar heat gain coefficient options not required.

* + - 1. Solar Heat Gain Coefficient per NFRC 100: Fixed glazing and framing areas: 0.35.
      2. Solar Heat Gain Coefficient per NFRC 100: Fixed glazing and framing areas: 0.40.
      3. Solar Heat Gain Coefficient per NFRC 100: Fixed glazing and framing areas: 0.45.

\*\* NOTE TO SPECIFIER \*\* Delete condensation resistance rating options not required.

* + - 1. NFRC 500 Condensation Resistance Rating: Fixed glazing and framing areas: 15.
      2. NFRC 500 Condensation Resistance Rating: Fixed glazing and framing areas: 25.
      3. NFRC 500 Condensation Resistance Rating: Fixed glazing and framing areas: 35.
      4. NFRC 500 Condensation Resistance Rating: Fixed glazing and framing areas: 45.

\*\* NOTE TO SPECIFIER \*\* Delete noise reduction paragraph below if not required.

* + 1. Noise Reduction per ASTM E 90: Ratings per ASTM E 1332:
       1. Outdoor-Indoor Transmission Class: Minimum 26.
       2. Outdoor-Indoor Transmission Class: Minimum 30.
       3. Outdoor-Indoor Transmission Class: Minimum 34.

\*\* NOTE TO SPECIFIER \*\* Delete blast resistance paragraph for curtain wall required to be explosion resistant.

* + 1. Blast Resistance per ASTM F 1642:

\*\* NOTE TO SPECIFIER \*\* Delete hazard rating options not required.

* + - 1. Hazard Rating: No break.
      2. Hazard Rating: No hazard.
      3. Hazard Rating: Minimal hazard.
      4. Hazard Rating: Very low hazard.
      5. Hazard Rating: Low hazard.
      6. Hazard Rating: High hazard.

\*\* NOTE TO SPECIFIER \*\* Delete performance condition options not required.

* + - 1. Performance Condition per GSA-TS01: 1.
      2. Performance Condition per GSA-TS01: 2.
      3. Performance Condition per GSA-TS01: 3a.
      4. Performance Condition per GSA-TS01: 3b.
      5. Performance Condition per GSA-TS01: 4.
      6. Performance Condition per GSA-TS01: 5.

\*\* NOTE TO SPECIFIER \*\* Delete windborne-debris impact resistance paragraph if note required by Project.

* + 1. Windborne-Debris Impact Resistance per ASTM E 1886 and ASTM E1996:

\*\* NOTE TO SPECIFIER \*\* Delete wind zone options not required.

* + - 1. Wind Zone 1: Pass.
      2. Wind Zone 2: Pass.
      3. Wind Zone 3: Pass.
      4. Wind Zone 4: Pass.
      5. Large Missile Test: Glazed openings less than 30 ft (9.1 m) of grade.
      6. Small Missile Test: Glazed openings greater than 30 ft (9.1 m) above grade.
    1. Thermal Movements:
       1. Temperature Change; Ambient: 120 degrees F (67 degrees C).
       2. Temperature Change; Material Surfaces: 180 degrees F (100 degrees C).

\*\* NOTE TO SPECIFIER \*\* Delete if thermal cycling testing is not required for the Project.

* + - 1. Thermal Cycling per AAMA 501.5: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance.
         1. Exterior Ambient Air Temperature Range: 0 degrees F (minus 18 degrees C) to exterior ambient air temperature producing exterior metal surface temperature of 180 degrees F (82 degrees C).

\*\* NOTE TO SPECIFIER \*\* Delete structural sealant joint paragraphs if there is no two sided structural glazing in the Project. Delete paragraph below if dead load support by structural sealant is not acceptable.

* + 1. Structural Sealant Joints: Designed to carry gravity loads of glazing.
    2. Structural Sealant Joints: Designed to produce tensile or shear stress of less than 20 lbs per sq in (138 kPa).

\*\* NOTE TO SPECIFIER \*\* Delete structural sealant paragraph if there is no two sided structural glazing in the Project.

* + 1. Structural Sealant: Withstand without failing adhesively or cohesively the tensile and shear stresses imposed by structural sealant glazed curtain walls. Preconstruction Compatibility Testing: Cohesive failure prior to adhesive failure.
       1. Adhesive Failure: Sealant separates cleanly from substrate.
       2. Cohesive Failure: Sealant ruptures internally but does not separate from each substrate. Sealant to substrate bond exceeds sealant's internal strength.
  1. FRAMING
     1. Framing Members: Manufacturer's extruded or formed aluminum framing members of thickness required and reinforced as required to support imposed loads.
        1. Construction: Thermally broken.

\*\* NOTE TO SPECIFIER \*\* Delete glazing system option not required.

* + - 1. Glazing System: Retained mechanically with gaskets on four sides.
      2. Glazing System: Retained mechanically with gaskets on two sides and structural sealant on two sides.
      3. Glazing Plane: Front.

\*\* NOTE TO SPECIFIER \*\* Delete finish options not required.

* + - 1. Finish: Clear anodized.
      2. Finish: Color anodized.
      3. Finish: Baked enamel or powder coat.
      4. Finish: High performance organic.
      5. Fabrication Method: Factory and or field fabricated system.

Applies to aluminum framed curtain wall. Delete if not required.

* + 1. Pressure Caps:
       1. Aluminum components that mechanically retain glazing.
       2. Include snap on aluminum trim that conceals fasteners.

Applies to aluminum framed door and window systems. Delete if not required.

* + 1. Backer Plates: continuous plate backing for framing abutting adjacent construction.
    2. Brackets and Reinforcements: High strength aluminum with nonstaining, nonferrous shims for aligning system components.
    3. Materials:
       1. Aluminum: Alloy and temper recommended by manufacturer.
          1. Sheet and Plate: ASTM B 209.
          2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
          3. Extruded Structural Pipe and Tubes: ASTM B 429.
          4. Structural Profiles: ASTM B 308.

\*\* NOTE TO SPECIFIER \*\* Delete steel reinforcement paragraph if not required.

* + - 1. Steel Reinforcement: Corrosion resistant zinc primer per SSPC-PS Guide No. 12.00. Prepare surfaces according to SSPC-SP COM, and applicable SSPC standard.
         1. Structural Shapes, Plates, and Bars: ASTM A 36.
         2. Cold Rolled Sheet and Strip: ASTM A 1008.
         3. Hot Rolled Sheet and Strip: ASTM A 1011.
  1. SUN SHADING:
     1. SunShades: Attach to curtain wall with outriggers.
        1. Number of Louvers per Unit: \_\_\_\_\_\_.
        2. Louvers: Planar.
        3. Louvers: Arched.
        4. Louvers: Airfoil.
        5. Louvers: \_\_\_\_\_\_.
        6. Louvers: As detailed on the Drawings.
           1. Orientation: \_\_\_\_\_\_.
           2. Projection (in / mm): \_\_\_\_\_\_.
           3. Projection: As detailed on the Drawings.
           4. Width: (in / mm): \_\_\_\_\_\_.
           5. Width: As detailed on the Drawings.
           6. Mounting Angle: \_\_\_\_\_\_.
           7. Mounting Angle: As detailed on the Drawings.
           8. Finish: Match curtainwall.

\*\* NOTE TO SPECIFIER \*\* This article applies to extruded aluminum door and window systems. Delete if not required or specified in another section.

* 1. ENTRANCE DOOR SYSTEMS
     1. Fabrication and Construction:
        1. Secure corners using reinforcing brackets or concealed tie rods.

\*\* NOTE TO SPECIFIER \*\* Delete overall thickness paragraph options not required.

* + - 1. Overall Thickness: 1-3/4 in (44.5 mm).
         1. Extruded Tubular Rail and Stiles: 0.125 in (3.2 mm) thick.
      2. Overall Thickness: 2 in (50.8 mm).
         1. Extruded Tubular Rail and Stiles: 0.188 in (4.8 m-) thick.
      3. Overall Thickness: 2 to 2-1/4 in (50.8 to 57.2 mm).
         1. Extruded Tubular Rail and Stiles: 0.125 in (3.2 mm) thick.
      4. Overall Thickness (in / mm): \_\_\_\_\_\_.
         1. Extruded Tubular Rail and Stiles (in / mm): \_\_\_\_\_\_.
      5. Overall Thickness (in / mm): As indicated on the Drawings.
         1. Extruded Tubular Rail and Stiles (in / mm): As indicated on the Drawings.
      6. Thermal Broken Construction: Interconnecting plastic extrusions separating Exterior and interior aluminum members.

\*\* NOTE TO SPECIFIER \*\* Delete stile width options not required.

* + - 1. Stile Width: 2-1/8 in (54 mm); narrow.
      2. Stile Width: 3-1/2 in (89 mm); medium.
      3. Stile Width: 5 in (127 mm); wide.
      4. Stile Width (in / mm): \_\_\_\_\_\_.
      5. Stile Width: As indicated on the Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete glazing stops and gasketing options not required.

* + - 1. Aluminum Extruded Glazing Stops and Elastomeric Gasketing: Beveled.
      2. Aluminum Extruded Glazing Stops and Elastomeric Gasketing: Square.
      3. Aluminum Extruded Glazing Stops and Elastomeric Gasketing: \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete one of the two following paragraphs.

* + - 1. Glazing Stops and Gasketing are removable.
      2. Glazing Stops and Gasketing are nonremovable.

\*\* NOTE TO SPECIFIER \*\* Delete one of the two door hardware paragraphs.

* + 1. Door Hardware: Specified in Section 08 71 53 - Security Door Hardware.
    2. Door Hardware:
       1. Door Latch Force; Egress: 15 lbf (67 N) maximum.
       2. Door Opening Force; Egress: 30 lbf (133 N) maximum.
       3. Door Opening Force; Interior: 5 lbf (22.2 N).

\*\* NOTE TO SPECIFIER \*\* Delete door hardware set options not required. The third option would be used to define the quality level of the hardware if specific hardware items are not included as part of the construction documents.

* + - 1. Door Hardware Sets: Listed in door hardware schedule on the Drawings.
      2. Door Hardware Sets: Listed in door hardware sets schedule at the end of this section.
      3. Door Hardware Sets: Complying to BHMA standards, and requirements for description, quality, and function.
         1. Pivot Hinges per: BHMA A156.4: Grade 1.
         2. Butt Hinges per BHMA A156.1: Grade 1. Nonremovable Pins.

Exterior Hinges: Stainless steel.

Three per Door: Up to 87 in (2210 mm) door height.

Four per Door: 87 to 120 in (2210 to 3048 mm) door height.

* + - * 1. Continuous Gear Hinges: Manufacturer's standard.
        2. Mortise Locks per BHMA A156.5: Grade 1.
        3. Flush Bolts; Manual per BHMA A156.16: Grade 1.
        4. Flush Bolts; Automatic and Self Latching per BHMA A156.3: Grade 1.
        5. Exit Devices; Panic per BHMA A156.3: Grade 1. Listed and labeled based on testing per UL 305.
        6. Cylinders per BHMA A156.5: Grade 1.

No master key system.

Master Key System: Keys inscribed with ID number.

* + - * 1. Strikes: With black plastic dust box for each latch or lock bolt.
        2. Operating Trim per BHMA A156.6.
        3. Removable Aluminum Mullions per BHMA A156.3.

\*\* NOTE TO SPECIFIER \*\* Applies to panic exit devices. Delete if not required.

Listed and labeled per UL 305 by agency acceptable to authorities having jurisdiction.

* + - * 1. Closers per BHMA A156.4: Grade 1.
        2. Concealed Overhead Holders per BHMA A156.8: Grade 1.
        3. Surface Mounted Holders per BHMA A156.16: Grade 1.
        4. Door Stops per BHMA A156.16: Grade 1.

\*\* NOTE TO SPECIFIER \*\* Delete weather stripping options not required.

* + - * 1. Weather Stripping: Manufacturer's standard.
        2. Weather Stripping: ASTM D 2000, molded neoprene. Compression style
        3. Weather Stripping: ASTM D 2287, molded PVC. Compression style.
        4. Weather Stripping: AAMA 701/702, wool, polypropylene, nylon pile with non-fabric backing.
        5. Weather Sweeps: Manufacturer's standard.
        6. Silencers per BHMA A156.16: Grade 1.
        7. Thresholds per BHMA A156.21.
        8. Finger Guards: Manufacturer's standard.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. SPANDREL INSULATED PANELS
     1. Comply with the appropriate section in Division 7 for insulated metal wall panels.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. VENTING WINDOWS
     1. Comply with the appropriate section in Division 8 for aluminum windows.
  2. GLAZING
     1. Glazing: Specified in Section 08 83 13 - Mirrored Glass Glazing0 - Glazing.
     2. Glazing Components:

\*\* NOTE TO SPECIFIER \*\* Delete glazing gasket paragraph not required.

* + - 1. Glazing Gaskets: Corner sealed pressure glazing system. Resilient elastomeric materials, setting blocks, and shims.
      2. Glazing Gaskets: Specified in Section 08 83 13 - Mirrored Glass Glazing0 - Glazing.

\*\* NOTE TO SPECIFIER \*\* Delete glazing sealant paragraph not required.

* + - 1. Glazing Sealants: Specified in Section 08 83 13 - Mirrored Glass Glazing0 - Glazing.
      2. Glazing Sealants: Use manufacturer recommended sealants.
      3. Structural Glazing Sealants per ASTM C1401 and ASTM C 1184: Silicone based compatible with system components. Approved by sealant manufacturer for use in curtainwall installations.
         1. Color: Black.
         2. Color: Gray.
         3. Color: \_\_\_\_\_\_.
         4. Color: As selected by Architect from manufacturer's selection.

\*\* NOTE TO SPECIFIER \*\* Delete if structural sealant is also a weatherseal sealant.

* + - 1. Weatherseal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O. Silicone based sealants compatible with structural sealant and other components it contacts. Recommended by Manufacturer.
         1. Color: Match structural sealant.
  1. ACCESSORIES
     1. Fasteners and Accessories: Manufacturer's standard.
        1. Corrosion resistant, and compatible with adjacent materials.
        2. Self locking devices not subject loosening due to thermal or structural movements.
     2. Anchors: Adjustable 1 in (25 mm) minimum three way. Finish: recommended by manufacturer.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Concrete and Masonry Inserts: Per ASTM A 123 or ASTM A 153 requirements.
    1. Concealed Flashing: Corrosion resistant, nonstaining, nonbleeding flashing recommended by manufacturer.
    2. Cold applied asphalt mastic, non-asbestos per SSPC Paint 12.
       1. Coating: 30 mil (0.762 mm).
  1. FABRICATION

\*\* NOTE TO SPECIFIER \*\* Delete welding paragraph not required.

* + 1. Welding to be limited to concealed locations. Descale or grind away spatter and oxides.
    2. Fabrication and Assembly Characteristics:
       1. Profiles: Straight with no defects or deformations.
       2. Joints: Accurately fitted; coped or mitered.
       3. Glazing Isolation from Framing: Physical and thermal
       4. Framing and glazing accommodation of thermal and mechanical movement.
    3. Glazing Field Replacement Provisions: Exterior and interior.
    4. Hardware, connectors, and anchors concealed from view.

\*\* NOTE TO SPECIFIER \*\* delete if curved curtain wall is not required.

* + - 1. Components curved to indicated radii.

\*\* NOTE TO SPECIFIER \*\* Delete water mitigation paragraph not required.

* + 1. Water Mitigation: Internal guttering system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.
    2. Water Mitigation: Pressure equalized system or double barrier design with primary air and vapor barrier at interior side of glazed aluminum curtain wall and secondary seal weeped and vented to exterior.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph if not required.

* + 1. Aluminum Extruded Curtainwall: Fabricate and assemble per manufacturer's standard methods.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph if not required.

* + 1. Aluminum Extruded Doors and Windows: Fabricate and assemble per manufacturer's standard methods.
       1. Reinforce as required to meet loading requirements.
          1. Weather strip exterior doors.
          2. Provide stops and silencers for interior doors.
  1. ALUMINUM FINISHES

\*\* NOTE TO SPECIFIER \*\* Delete finish paragraphs not required.

* + 1. Clear Anodic Finish: Per AAMA 611.

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.

* + - 1. AA-M12C22A41, Class I, 0.0007 in (0.018 mm) minimum.
      2. AA-M12C22A31, Class II, 0.0004 in (0.010 mm) minimum.
    1. Color Anodic Finish: Per AAMA 611.

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.

* + - 1. AA-M12C22A42/A44, Class I, 0.0007 in (0.018 mm) minimum.
      2. AA-M12C22A32/A34, Class II, 0.0004 in (0.010 mm) minimum.

\*\* NOTE TO SPECIFIER \*\* Delete color options not required.

* + - 1. Color: \_\_\_\_\_\_.
      2. Color: Match sample from Architect's.
      3. Color: As determined by the Architect from Manufacturer's selection.
    1. Baked Enamel or Powder Coat Finish per AAMA 2603:
       1. Dry Film Thickness of 1.5 mils (0.04 mm) minimum.

\*\* NOTE TO SPECIFIER \*\* Delete color options not required.

* + - 1. Color and Gloss: \_\_\_\_\_\_.
      2. Color and Gloss: Match sample from Architect.
      3. Color and Gloss: As selected by Architect from manufacturer's selection.
    1. High Performance Organic Finish:

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.

* + - 1. Two coat fluoropolymer per AAMA 2604.
      2. Two coat fluoropolymer per AAMA 2605.

\*\* NOTE TO SPECIFIER \*\* Delete resin option not required.

* + - 1. PVDF or FEVE Resin: 50 percent by weight in color coat.
      2. PVDF or FEVE Resin: 70 percent by weight in color coat.

\*\* NOTE TO SPECIFIER \*\* Delete color options not required.

* + - 1. Color and Gloss: \_\_\_\_\_\_.
      2. Color and Gloss: Match sample from Architect.
      3. Color and Gloss: As selected by Architect from manufacturer's selection.
    1. High Performance Organic Finish:

\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.

* + - 1. Three coat fluoropolymer per AAMA 2605.
      2. Four coat fluoropolymer per AAMA 2605.

\*\* NOTE TO SPECIFIER \*\* Delete resin option not required.

* + - 1. PVDF or FEVE Resin: 50 percent by weight in color coat and clear top coat.
      2. PVDF or FEVE Resin: 70 percent by weight in color coat and clear top coat.

\*\* NOTE TO SPECIFIER \*\* Delete color options not required.

* + - 1. Color and Gloss: \_\_\_\_\_\_.
      2. Color and Gloss: Match sample from Architect.
      3. Color and Gloss: As selected by Architect from manufacturer's selection.

1. EXECUTION
   1. EXAMINATION
      1. Examine areas for requirements compliance, dimensions and other criteria that could affect installation. Report discrepancies to the Architect.
      2. Do not begin installation until substrates have been properly prepared.
      3. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with approved submittals, manufacturer's instructions and the following:
         1. Install framing and other items rigid, straight, plumb, and level, with items laid out as shown on shop drawings.
         2. Be sure items are properly isolated to prevent corrosion or galvanic action.
         3. Clearance at vertical edges of doors shall be uniform top to bottom.
         4. Verify moisture properly drains from systems.
         5. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
         6. Finished surfaces shall be cleaned after installation and be left free of imperfections.
   4. PROTECTION
      1. Take protective measures to prevent exposure to other construction activity.
      2. Protect installed products until completion of project.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. FIELD QUALITY CONTROL
     1. Field Tests: Architect shall select areas to be tested as soon as a representative portion of the project has been installed, glazed, caulked and cured. Conduct tests with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies must be corrected by the Contractor or Manufacturer.
        1. Testing per AAMA 503: Performed by qualified independent testing agency.
           1. Air Infiltration Tests: Per ASTM E 783.
           2. Water Infiltration Tests: Per ASTM E 1105.
           3. Water Spray Testing per AAMA 501.2: Test prior to starting interior finishing.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph if not required.

* + - * 1. Perform Texting at 10, 35, and 75 percent completion.
  1. CLEANING
     1. Clean surfaces to remove soiling, stains, dust, and dirt using materials acceptable to manufacturer.
     2. Touch up, repair or replace damaged products and defective work, as directed by Architect.
     3. Leave installation area clean, free of residue and debris resulting from work of this Section.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required. Otherwise add schedule of door hardware sets.

* 1. DOOR HARDWARE SETS SCHEDULE
     1. Designate the manufacturer products and design, grade, function, finish, size, of door hardware.

END OF SECTION