SECTION 081216 - ALUMINUM FRAMES

GENERAL

SUMMARY

Provide the requirements of this Section in accordance with requirements of the Contract Documents

Section Includes:

Interior aluminum doors, door frames, and glazing frames.

COORDINATION

Coordinate anchorage installation for aluminum frames. Furnish setting drawings, templates, and directions for installing anchorages, including anchor bolts and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PREINSTALLATION MEETINGS

Preinstallation Conference: Conduct conference at Project site.

ACTION SUBMITTALS

Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, [**fire-resistance rating,**]and finishes.
Submit evidence that the proposed door and frame assemblies meet the requirements of the Florida Building Code and have been tested and approved by the Florida Building Commission and the Miami-Dade County Protocols.

Sustainable Design Submittals:

Product Data: For sealants, indicating VOC content.
Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.
Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
Environmental Product Declaration (EPD): For each product.
Environmental Product Declaration: For each product.
Health Product Declaration: For each product.
Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.
Building Product Disclosure and Optimization - Sourcing of Raw Materials:

Leadership Extraction Practices

Extended Producer Responsibility (EPR): Submit documentation indicating that manufacturers have a take back or recycling program for the product purchased.
Recycled Content: For products having recycled content, indicate percentages by weight of post-consumer and pre-consumer recycled content.

Include statement indicating costs for each product having recycled content.

Sourcing of Raw Materials: For products that are required to comply with requirements for regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material.

Include statement indicating distance to Project, cost for each regional material and the fraction by weight that is considered regional.

Indoor Environmental Quality, Low Emitting Materials: Building Products must be tested and compliant with the California Department of Public-Health (CDPH) Standard Method V1.1-2010, using the applicable exposure scenario.

Adhesives and Sealants: For wet applied on-site products, submit printed statement showing compliance with the applicable chemical content requirements of SCAQMD Rule 1168, effective July 1, 2005 and rule amendment date of January 7, 2005.
Alternative tests for VOC above include ASTM D2369-10; ISO 11890 part 1; ASTM D6886-03; or ISO 11890-2
Methylene Chloride and perchloroethylene may not be added to paints, coating, adhesive or sealants.

Shop Drawings: For aluminum [**doors and**] frames:

Include elevations, sections, and installation details for each wall-opening condition.
Include details for each frame type, including dimensioned profiles and metal thicknesses.
Include locations of reinforcements and preparations for hardware.
Details of each different opening condition.
Include details of anchorages, joints, field splices, connections, and accessories.
Include details of moldings, removable stops, and glazing.

Coordination Drawings: Drawings of each opening, including door and frame, drawn to scale and coordinating door hardware. Show elevations of each door design type, indicating dimensions, locations of door hardware, and preparations for power, signal, and electrified control systems.

Samples: For each exposed product and for each color and texture specified, [**in manufacturer's standard sizes**] [**6 inches (150 mm) square in size**] <**Insert dimensions**>.

Samples for Initial Selection: For each type of exposed factory-applied color finish.

Include Samples of seals, gaskets, and accessories involving color selection.

Samples for Verification: For each type of the following products:

Framing Member and Finish: 12 inches (300 mm) long. Include trim.
Corner Fabrication and Finish: 12-by-12-inch- (300-by-300-mm-) long, full-size window corner, including full-size sections of extrusions with factory-applied color finish.
Door Finish: Manufacturer's standard-size unit, but not less than [**3 inches (75 mm) square**] <**Insert dimensions**>.

Product Schedule: For aluminum [**doors and**] frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings Coordinate with final door hardware schedule and glazing.

INFORMATIONAL SUBMITTALS

Informational Sustainable Design Submittals:

Building Product Disclosure and Optimization - Environmental Product Declarations

Submit product specific type III EPDs or Industry wide (generic) EPDs, USGBC approved program declaration or products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope.

Building Product Disclosure and Optimization - Sourcing of Raw Materials:

Raw Material Sources and Extraction Reporting: Submit Raw materials supplier corporate Sustainability Reports (CSRs); documenting responsible extraction; including extraction locations, long term ecologically responsible land use, commitment to reducing environmental harms from

extraction and manufacturing processes, and a commitment to meeting applicable standards or programs that address responsible sourcing criteria

Submit manufacturers' self-declared reports
Submit third party verified corporate sustainability reports (CSR) using one of the following frameworks"

Global Reporting Initiative (GRI) Sustainability Report
Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
UN Global Compact
ISO 26000
USGBC approved program.

Building Product Disclosure and Optimization - Material Ingredients

Material Ingredient Optimization: Submit at least one of the following:

GreenScreen V1.2 Benchmark: Third party report prepared by a licensed GreenScreen List Translator, or a full GreenScreen Assessment.
Cradle to Cradle: Manufacturer's published literature for the product bearing the Cradle to Cradle logo, with gold or platinum certification.
International Alternative Compliance Path - REACH Optimization
Declare: Manufacturer's completed Product Declaration Form
Other programs approved by USGBC

Product Manufacturer Supply Chain Optimization: Submit documentation from manufacturers for products that go beyond material ingredient optimization as follows:

Are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99% (by weight) of the ingredients used to make the building product or building material, and
Are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:

Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
Processes are in place to implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients
Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain
Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain.

Qualification Data: For door manufacturer, door installer, and door inspector.

Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

Product Test Reports: For each type of [**fire-rated door and frame assembly**] [**fire-rated borrowed-lite assembly**] for tests performed by a qualified testing agency indicating compliance with performance requirements.

Oversize Construction Certification: For assemblies required to be fire-rated and exceeding limitations of labeled assemblies.

Field quality control reports.

CLOSEOUT SUBMITTALS

Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

Maintenance Data: For aluminum [**doors and**] frames to include in maintenance manuals.

QUALITY ASSURANCE

Installer Qualifications: An employer of workers trained and approved by manufacturer.

Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:

Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

Egress Door Inspector Qualifications: Inspector for field quality control inspections of egress door assemblies shall meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

Build mockup of each type of aluminum frame[**and door**] in typical wall area as shown on Drawings.
Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

DELIVERY, STORAGE, AND HANDLING

Deliver aluminum doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic coverings.

Provide additional protection to prevent damage to factory-finished units.
Store aluminum doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PROJECT CONDITIONS

Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.

Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating aluminum frames without field measurements.
Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

WARRANTY

Special Warranty: [**Manufacturer**] [**and**] [**installer**] agrees to repair or replace components of aluminum frames that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures, including, but not limited to, excessive deflection.
Deterioration of metals[**and metal finishes**].

Failure of operating components.
Warranty Period: [**Two**] [**Five**] [**10**] <**Insert number**> years from date of Substantial Completion.

Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

Deterioration includes, but is not limited to, the following:

Color fading more than 5 Delta E units when tested according to ASTM D2244.
Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
Cracking, checking, peeling, or failure of paint to adhere to bare metal.

Warranty Period: [**Five**] [**10**] [**20**] <**Insert number**> years from date of Substantial Completion.

Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

Deterioration includes, but is not limited to, the following:

Color fading more than 5 Delta E units when tested according to ASTM D 2244.
Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
Cracking, peeling, or chipping.

Warranty Period: [**Five**] [**10**] <**Insert number**> years from date of Substantial Completion

PRODUCTS

MANUFACTURERS

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Avalon International Aluminum, Inc.; a WBE Company.
Frameworks, Inc.; an ASSA ABLOY Group company.
HMI.
Modulex Products, Inc.
RACO Interior Products, Inc.
Versatrac Frames; a division of American Door Products Inc.
Wilson Partitions; a division of Acradia, Inc.

Source Limitations: Obtain aluminum frames[**and frame-manufacturer's doors**] from single source from single manufacturer.

PERFORMANCE REQUIREMENTS

Fire-Rated Frames: Frames for fire-rated door assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to [**NFPA 252**] [**or**] [**UL 10C**].

Oversize Fire-Rated Frames: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that frames comply with standard construction requirements for tested and labeled fire-rated frames except for size.
Frames for Smoke- and Draft-Control Assemblies: Tested according to UL 1784 and installed in compliance with NFPA 105.

Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (0.9 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa).

INTERIOR ALUMINUM DOORS, DOOR FRAMES, AND GLAZING FRAMES

Recycled Content of Aluminum Components: Postconsumer recycled content plus one-half of preconsumer recycled content not less than [**25**] [**50**] <**Insert value**> percent.

Aluminum Framing: ASTM B221 (ASTM B221M), with alloy and temper required to suit structural and finish requirements, and not less than 0.062 inch (1.6 mm) thick.

Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers.

Glazing Frames: Extruded aluminum, for [**indicated**] <**Insert dimension**> glass thickness.

Door Tracks: Extruded aluminum where exposed, sized to enclose sliding-door hardware, and in finish [**matching frame and trim finish**] <**Insert requirement**>.

Trim: Extruded aluminum, not less than 0.062 inch (1.6 mm) thick; removable, snap-in [**casing trim**] [**glazing stops**] [**and**] [**door stops**], without exposed fasteners.

Trim Style: <Insert description or manufacturer's designation>.

Doors:

As specified in [Section 081416 "Flush Wood Doors."] [Section 081816.13 "Sliding Aluminum-Framed Glass Doors."] [Section 084113 "Aluminum-Framed Entrances and Storefronts."] [Section 084213 "Aluminum-Framed Entrances."] <Insert requirement>.
Manufacturer's standard, factory-assembled, 1-3/4-inch- (45-mm-) thick, aluminum-framed door construction.

Door Operation: [Pocket] [Sliding] [Swinging] <Insert requirement>.
Stiles: [Narrow] [Medium] [Wide] [**3-3/4 inches (95 mm)**] <Insert requirement>.
Rails: [**3-3/4-inch (95-mm)**] [**6-inch (152-mm)**] <Insert dimension> top rail and [**6-inch (152-mm)**] [**9-1/2-inch (241-mm)**] <Insert dimension> bottom rail.

Door Finish: [Match frame and trim finish] [Clear-anodized aluminum] [Color-anodized aluminum] [Factory-applied, baked-enamel or powder-coat finish] [High-performance organic finish] <Insert requirement>.

Color: [As indicated by manufacturer's designations] [Match Architect's sample] [Light bronze] [Medium bronze] [Dark bronze] [Black] <Insert color>.

Frame and Trim Finish: [Clear-anodized aluminum] [Color-anodized aluminum] [Factory-applied, baked-enamel or powder-coat finish] [High-performance organic finish] <Insert requirement>.

Color: [As indicated by manufacturer's designations] [Match Architect's sample] [Light bronze] [Medium bronze] [Dark bronze] [Black] <Insert color>.

ACCESSORIES

Fasteners: Aluminum, nonmagnetic, stainless steel or other noncorrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.

Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals in [**black**] <**Insert color**> color.

Smoke Seals: Intumescent strip or fire-rated gaskets in [**black**] <**Insert color**>.

Glazing Gaskets: Manufacturer's standard extruded or molded rubber or plastic, to accommodate glazing thickness indicated; in [**black**] <**Insert color**>.

Glazing: As specified in Division 08 [Section "Glazing."] [Section 088400 "Plastic Glazing."]

Door Hardware: [As specified in Section 087100 "Door Hardware."] <Insert requirement.>

Polyamide Epoxy Coating: Two-part, high-build, fast curing epoxy.

Solids: 83 percent +/- 2 percent by weight.
VOC: <100 g/L.

FABRICATION

General: Fabricate aluminum frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with sharp arrises. Where practical, fit and assemble units in manufacturer's plant.

To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

Provide concealed corner reinforcements and alignment clips for accurately fitted hairline joints at butted and mitered connections.

Factory prepare aluminum frames to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in [**Section 087100 "Door Hardware."**] [**Section 087111 "Door Hardware (Descriptive Specification).**]

Locate hardware cutouts and reinforcements as required by fire-rated label for assembly.

Fabricate frames for glazing with removable stops to allow glazing replacement without dismantling frame.

Locate removable stops on the inside of spaces accessed by keyed doors.

Fabricate components to allow secure installation without exposed fasteners.

GENERAL FINISH REQUIREMENTS

Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

ALUMINUM FINISHES

Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.

Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 and containing not less than [**50**] [**70**] percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Verify that wall thickness does not exceed standard tolerances allowed by throat size of indicated aluminum frame.

Proceed with installation only after unsatisfactory conditions have been corrected.

INSTALLATION

Install aluminum frames plumb, rigid, properly aligned, and securely fastened in place; according to manufacturer's written instructions.

At fire-protection-rated openings, install fire-rated frames according to NFPA 80[**and NFPA 105**].

Metal Protection:

Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with polyamide epoxy coating.

Install frame components in the longest possible lengths with no piece less than 48 inches (1220 mm); components [**72 inches (1830 mm)**] [**96 inches (2450 mm)**] <**Insert dimension**> or shorter shall be one piece.

Fasten to suspended ceiling grid on maximum [**48-inch (1220-mm)**] <**Insert number**> centers, using sheet metal screws or other fasteners approved by frame manufacturer.
Use concealed installation clips to produce tightly fitted and aligned splices and connections.
Secure clips to extruded main-frame components and not to snap-in or trim members.
Do not leave screws or other fasteners exposed to view when installation is complete.

Glass: Install glass according to [Section 088000 "Glazing" and] [Section 088113 "Decorative Glass Glazing" and] [Section 088400 "Plastic Glazing" and] aluminum-frame manufacturer's written instructions.

Doors: Install doors aligned with frames to produce smooth operation and tight fit at contact points and fitted with required hardware.

Door Hardware: Install according to [Section 087100 "Door Hardware" and] [Section 087111 "Door Hardware (Descriptive Specification)" and] aluminum-frame manufacturer's written instructions.

Erection Tolerances:

Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
Alignment:

Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

ADJUSTING

Inspect installation, correct misalignments, and tighten loose connections.

Doors: Adjust doors to operate smoothly and easily, without binding or warping. Adjust hardware to function smoothly, and lubricate as recommended by manufacturer.

Clean exposed frame surfaces promptly after installation, using cleaning methods recommended in writing by frame manufacturer and according to AAMA 609 & 610.

Touch Up: Repair marred frame surfaces to blend inconspicuously with adjacent unrepaired surface[**so touchup is not visible from a distance of 48 inches (1220 mm)**] as viewed by Architect. Remove and replace frames with damaged finish that cannot be satisfactorily repaired.

END OF SECTION