SECTION 08 12 16

ALUMINUM DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aluminum doors and frames.
   2. Aluminum frames.
   3. Aluminum borrowed lite frames.

B. Related Sections:
   1. Section 06 10 00 - Rough Carpentry.
   2. Section 08 14 16 - Flush Wood Doors.
   3. Section 08 71 00 - Door Hardware.
   4. Section 08 80 00 - Glazing.
   5. Section 09 29 00 - Gypsum Board.

1.2 REFERENCES

A. Publications listed herein are part of this specification to the extent referenced.

B. American Architectural Manufacturers Association:
   1. FGIA/AAMA 2603, 2604, 2605 Voluntary Specification for High -Performance Organic Coatings.

C. American Society for Testing and Materials:
   1. ASTM B221 Specification for Aluminum -Alloy Extruded Bars, Wire, Shapes and Tubes.

D. The Aluminum Association:
   1. AA ASD -1 Aluminum Standards and Data.

E. National Fire Protection Association:
   1. NFPA 80 Standard for Fire Doors and Windows.
   2. NFPA 101 Life Safety Code.

F. Underwriters Laboratory, Inc.
   1. UL Standard 10C Positive Pressure Fire Tests of Door Assemblies.
   2. UL Standard 63 Fire Door Frames.
   3. UL Standard 752 Bullet-Resisting Equipment.
   4. UL Building Materials Directory.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s literature describing products to be provided. Include construction details, material descriptions, profiles, **[fire-resistance ratings,] [ballistic ratings,]** and finishes.

B. Shop Drawings:
   1. Submit shop drawings showing elevation of frames, profile, design construction details, methods of assembling sections, hardware locations, dimensions, anchorage and fastening methods, wall opening construction and finish requirements.
      a. Indicate location of each frame in Project by opening number corresponding to Plans and Opening Schedule.
      b. Include Frame and Door Schedules.

C. Samples: Submit four 12 inch long samples of frames showing selected finishes, corner joint, hinge reinforcement and anchors.

D. Sustainability Submittals:
   1. Environmental Product Declaration(EPD): Submit EPD showing compliance declaration.
   2. LEED MR Credits, Recycled Content: Submit product data indicating post-consumer and pre-consumer recycled content.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage experienced Installer who has completed installations of aluminum frames similar in design and extent to those required for project and whose work has resulted in construction with record of successful in-service performance.

B. Manufacturer's Qualifications: Provide aluminum framing systems produced by firm experienced in manufacturing systems that are similar to those indicated for this project and that have record of successful in -service performance.

C. Single Source Responsibility: Obtain aluminum framing systems from one source and from single manufacturer.

D. Design Criteria: Drawings indicate the size, profile, and dimensional requirements of aluminum frames required and are based on specific types and models indicated.

E. Regulatory Requirements, Fire Rated Openings:
   1. Conform to NFPA 80 for rating indicated.
   2. Provide door and frame assemblies labeled by Underwriter's Laboratory, or any other testing laboratory approved by the local code authorities, to meet the hourly fire rating noted.
   3. Conform to IBC requirements for positive pressure.

1.5 DELIVERY, STORAGE AND HANDLING

A. Pre-cut, boxed per opening, palletized per floor; kitted trim and doorstops, hardware clip kits, BOM paperwork tagged and included per box.

B. Packing, Shipping, Handling and Unloading:
   1. Deliver materials in original unopened packaging with labels intact.
   2. Handle frames in a manner to prevent damage to finishes.
   3. Inspect all product upon arrival and before installation. Repair or replace any damaged pieces before installation.
   4. Store frames in a secure, environmentally protected area.

1.6 WARRANTY

2 YEAR WARRANTY IS STANDARD. 5 OR 10 YEAR WARRANTY IS AVAILABLE FOR AN ADDITIONAL COST.

A. Warranty against defects in manufacturing of materials for a period of 2 **[5] [10]** years from the date of Substantial Completion.

B. Warranty framing finish against defects, including cracking, flaking, blistering, peeling and excessive fading, chalking and non-uniformity in color for a period of 5 years.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Aluminum Doors and Frames:
   1. Avalon International Aluminum, LLC, successor to Dual Lock Partition Systems, Custom Components Inc, and Alumax aluminum framing product lines.
   2. Email: quotes@avalon.solutions. Web: www.avalonint.com.

2.2 MATERIALS

A. Extruded Aluminum:
   1. Standard alloys shall conform to ASTM B221; 6063 T5 alloy and as otherwise required to assure compliance with dimensional tolerances and maintain color uniformity.
      a. Recycled Content, Billets: Minimum 69.7 percent total recycled content (50.5 percent pre-consumer, 19.2 percent post-consumer), as published in Avalon's current product literature; submit the supplier's Environmental Product Declaration with product data.
   2. Thickness: 0.062 inch minimum.
   3. Finish: [Thermal-setting powder coating] [Class I clear anodized] [Class II clear anodized].

2.3 ALUMINUM FRAMES

EAGLE SERIES IS ALSO AVAILABLE AS A DEMOUNTABLE SYSTEM WITH THE SAME CHARACTERISTICS AND PERFORMANCE CRITERIA.

A. Products: Avalon - Eagle Series **[Demountable]** System:
   1. Rating: **[Non-Rated] [20 minute] [45 minute]**.
   2. Face Profiles Size: **[1-1/2 inch] [2 inch] [4 inch] [6 inch].**
   3. Wall Size (throat = wall size + 1/8 inch): **[2-1/4 inch] [3-1/2 inch] [3-3/4 inch] [4-1/4 inch] [4-7/8 inch] [5 inch] [5-1/8 inch] [5-1/4 inch] [5-1/2 inch] [6-1/8 inch] [7-1/4 inch] [7-7/8 inch] [8-1/2 inch].**
   4. Custom frame and glazing throat sizes of 3-1/2 inch up to 16-1/2 inch.
   5. Glass Thickness: 1/4 inch up to 2-1/2 inch.

SELECT ONE OF THE FOLLOWING STC RATINGS TO INFORM THE GLASS TYPE REQUIREMENTS.

   6. STC Rating – Standard Eagle frames:
      a. **[STC 31: 1/4 inch tempered glass.]**
      b. **[STC 35: 1/4 inch laminated glass.]**
      c. **[STC 36: [1/2 inch tempered glass] [3/8 inch laminated glass].]**
      d. **[STC 38: 1/2 inch laminated glass.]**
      e. **[STC 39: 9/16 inch laminated.]**
      f. **[STC 40: 5/8 inch laminated.]**
      g. **[STC 41: 3/4 inch laminated.]**
      h. **[STC 42: [1 inch insulated glass] [1/4 inch laminated glass and 3/16 inch tempered glass].]**

B. Product: Eagle Frame Rated Sidelight:
   1. Standard Wall Size: **[2-1/4 inch] [3-1/2 inch] [3-3/4 inch] [4-1/4 inch] [4-7/8 inch] [5 inch] [5-1/8 inch] [5-1/4 inch] [5-1/2 inch] [6-1/8 inch] [7-1/4 inch] [7-7/8 inch] [8-1/2 inch]**.
   2. Custom Wall Size: Eagle Universal Frame. Wall sizes up to 16-1/2 inch.

C. Product: Phoenix Fire Rated Frame:
   1. Rating: **[20 minute] [45 minute] [60 minute] [90 minute**].
   2. Engineered to meet or exceed ASTM E-152, UL 10C, NFPA 252, XAFM43.7, UBC 43.2, and CAN4 S-104.
   3. Flush Casing: **[1-1/2 inch] [2 inch]**; extended lip strike not permitted.
   4. Throats of frames to be nominal wall thickness plus a 1/8 inch.
   5. Provide labeled frames for openings requiring fire protection ratings as indicated on Drawings.
   6. Frames: Constructed as tested and listed by Warnock Hersey Laboratories and/or Smith-Emery Laboratories as applicable. Other nationally recognized testing agencies with periodic factory inspection service may be approved subject to acceptance by the authority having jurisdiction.
   7. Should any frame indicated to be fire rated not qualify for appropriate labeling because of its design, hardware, or any other reason, notify Architect before fabrication.

D. Product: Flush Glide:
   1. Eagle Series Flush Glider Frame: Cased opening with wall aligned door sidelight track assembly with soft close/ open hardware and guides.
      a. Aluminum Frame Profiles: **[1-1/2 inch] [2 inch]**.
      b. Wall Thickness: **[4-7/8 inch] [5-1/2 inch]**.

E. Product: Avalon –Slider:
   1. Eagle Series Barn Door Slider Frame: Cased opening with wall or frame mounted track assembly and soft close/ open hardware and floor guide.
   2. Eagle Series Bi-Pass Door Frame: Cased opening with either a split head track bi-pass track assembly or head face mounted track assembly and soft close/open hardware and guides.
   3. Eagle Series Pocket Door Frame: Cased opening with interior wall mounted track assembly and soft close/ open hardware and guides

TACITUS SYSTEM IS ALSO AVAILABLE AS A DEMOUNTABLE SYSTEM WITH THE SAME CHARACTERISTICS AND PERFORMANCE CRITERIA.

F. Product: Avalon – Tacitus **[Demountable]** System:
1. Dual Glazed Aluminum Framing System.
2. Face Profile Size: **[1-1/2 inch] [2 inch]**.

STC RATINGS ABOVE 42 ARE DOUBLE GLAZED WITH 3-1/2 INCHES OR MORE OF AIRSPACE.

3. Glass Thickness:
   a. **[STC 45: 1/4 inch laminated glass and 3/16 inch tempered glass.]**
   b. **[STC 48: 1/4 inch laminated and 3/16 inch laminated.]**
   c. **[STC 49: 1/2 inch laminated glass and 1/4 inch laminated glass.]**
   d. **[STC 53: 9/16 inch laminated and 5/8 inch laminated.]**

THE FOLLOWING 2 OPTIONS MUST HAVE A WALL THICKNESS OF 8-1/2 INCHES.

   e. **[STC 56: 1/2 inch laminated and 9/16 inch laminated.]**
   f. **[STC 59: 9/16 inch laminated and 5/8 inch laminated.]**
4. Wall Size (throat = wall size + 1/8 inch): [4-7/8 inch, STC 53 tested] [5-1/2 inch, STC 55 preliminary pending third-party test] [8-1/2 inch, STC 56 and 59 preliminary pending third-party test].

G. Product: Avalon Eagle Stealth Frame:
1. Concealed jamb.
2. Wall Thickness: 4-7/8 inch.

PRODUCT HAS BEEN TESTED IN-HOUSE AND PASSED LEVEL 7 HIGH-LEVEL BALLISTIC PROTECTION TESTING (AR-15 AND OTHER MILITARY STYLE ASSAULT RIFLES). CONTACT MANUFACTURER FOR TESTING REPORTS IF LEVEL 7 IS REQUIRED.

H. Product: Security Doors and Frames:
1. Ballistic Rated: UL752 UL Level 3 (.44 magnum SWC) – Multi-shot Ballistic Test: Passed.
2. Aluminum Thickness: 0.062 inch nominal, increase to 0.130 inch at anchorage.
3. Profile: **[1-1/2 inch] [2 inch]**.
4. Custom Wall Size: Wall sizes up to 16-1/2 inch.
5. Glazing Frames: Snap-in type stops with manufacturer's standard neoprene gaskets.
6. Glass Thickness: 8 mm glass + 0.76 mm Laminate + 8 mm glass.

I. Product: Demountable System 214 Series Frames:
1. Glazing: **[Center] [Flush]**.
2. Profile: **[1-1/2 inch] [2 inch]**.

J. Product: Demountable System Mimus System Frames:
1. Profile: 1 inch.
2. Width: 4 inch.
3. Dual glazed windows.
   a. STC 50: 9/16 inch laminated glass and 5/8 inch laminated glass.
4. Door Thickness: 2-1/4 inch.

K. Glass and Glazing Materials: Comply with requirements of "Glazing" Article of these specifications.

2.4 INTERIOR ALUMINUM DOORS

A. Stiles: **[Narrow (2-1/2 inch)] [Medium (4 inch)] [Wide Stiles (5-1/2 inch)]**.

B. Bottom Rail: **[Full 10 inch Bottom Rail, not including stop] [10-1/2 inch bottom rail with stop] [Custom]**.

C. Door Thickness:
1. **[Single Glazed: 1-3/4 inch.]**
2. **[Dual Glazed: 2-1/4 inch, STC 45.]**

D. Hardware: Coordinate with Section 08 71 00 – Door Hardware and the following:
1. Swinging Doors: Prep for hinges and hardware.
2. Slider Doors: Prep for 2 each hanging brackets for slider rollers.

COORDINATE THE FOLLOWING WITH SYSTEM REQUIREMENTS.

2.5 GLAZING

A. Comply with requirements of Section 08 80 00 – Glazing.

B. Glazing Type: **[Single-glazing] [Double-glazing] [Fire rated glazing] [Ballistic rated]**.
   1. Tempered.
   2. Laminated.
   3. Ballistic Rated.

C. Setting Location: **[Offset glazing] [Center glazing]**.

D. Thickness: **[1/4 inch] [1 inch] [2-1/2 inch]**.

2.6 FASTENERS AND ACCESSORIES

A. Fasteners
   1. Provide fasteners of aluminum, non-magnetic stainless steel, zinc plated steel, or other material warranted by the manufacturer to be non-corrosive and compatible with aluminum components, hardware, anchors and other components.
   2. Reinforcement: Where fasteners screw-anchor into aluminum members less than 0.125 inches thick, reinforce interior with aluminum or non-magnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.
   3. Exposed Fasteners: Do not use exposed fasteners except for application of hardware. For application of hardware, use Phillips flat-head machine screws that match the finish of member or hardware being fastened.

B. Door silencers provided in continuous nylon backed wool pile seals.

C. Extruded Neoprene glazing gasket provided in sizes to match glass size.

2.7 FABRICATION

A. Frames and Glazing:
   1. Knock-down units consisting of separate header, strike and hinge jambs with snap-on casing, fabricated to sizes indicated on Drawings.
   2. Increase thickness of main frame members to 0.130 inch minimum at frame and hinge anchorage.
   3. Supply frames with a notch at top of jamb and corner brackets to provide for correct alignment with header and add strength to joint.
   4. Provide stops with a continuous nylon backed wool pile sound and light seal around perimeter.
   5. Finish Work strong and rigid, neat in appearance, square, true and free of defects, warp, or buckle. Ensure members are clean cut, straight and of uniform profile throughout their lengths.
   6. Provide glazing frames with snap-in type stops with manufacturer's standard neoprene gaskets. Glass installed adjacent to metal without intervening gasket shall not be allowed. Door jambs with integral glazing shall have reinforcement channel. Intermediate mullions shall maintain 1-1/2 inch profile.
   7. Continuity: Maintain accurate relation of planes and angles with hairline fit of contacting members.
   8. Uniformity of Metal Finish: Abutting extruded aluminum members shall not have an integral color or texture variation greater than half the range indicated in the approved Sample.
   9. Fasteners: Exposed fasteners not permitted.

B. Glass and Glazing Materials: Comply with requirements of "Glazing" Article of these specifications.

2.8 FINISHES

A. Shop Applied Finish:
   1. Remove die markings prior to finishing operations. Perform this work in addition to finish specified. Scratches, abrasions, dents and similar defects are not acceptable.

B. Thermal -Setting Powder Coatings:
   1. Shop applied finish with a thermal -setting powder coating applied in compliance with AAMA 2605 and containing 100 percent fluorinated ethylene vinyl ether (FEVE) resin.
   2. Minimum dry film thickness of 1.8 mil applied over a seven-stage aluminum pre-treatment.

C. Clear Anodic Coating:

1. Comply with AAMA 611, architectural clear anodic coating: [AA-M12C22A41, Class I, 0.7 mil minimum] [AA-M12C22A31, Class II, 0.4 mil minimum].

PART 3 - EXECUTION

A. Frames:
   1. Install pressure fit type frames after partition is in place.
   2. Prior to installation rough openings shall be checked and corrected for size, squareness, alignment and plumbness.
   3. Slip header and jambs into rough opening, allowing header to rest on jambs. Align to scheduled opening width and height, achieving equal wall capture at both jambs.
   4. Check level of header and squareness and plumb of jambs. Measure width at each hinge location.
   5. Attach flat corner angles at faces of head. Anchor jambs and header in legs of frame at top and bottom of jambs and at approximately 15 inch on center.
   6. Install mitered trims by snapping over receiver tabs and lightly tapping with a rubber mallet.
   7. Furnish additional anchors per manufacturer's recommendations.

B. Install doors accurately in frames maintaining specified clearances. Install hardware in accordance with manufacturer's written instructions and associated templates. Refer to Section 08 71 00 for hardware installation requirements.

C. Tolerances:
   1. Squareness: + 1/16 inch.
      a. Measured on a line 90 degrees from one jamb, at upper corner of frame at other jamb.
   2. Alignment: + 1/16 inch.
      a. Measured on jambs on a horizontal line parallel to plane of wall.
   3. Twist: + 1/16 inch.
      a. Measured at face corners of jambs on parallel line.
   4. Plumbness: + 1/16 inch.
      a. Measured on the jamb at floor.

3.2 ADJUSTING AND CLEANING

A. Final Adjustments:
   1. Check and re-adjust operating finish hardware, just prior to final inspection and after painting hinges.
   2. Remove and replace defective work.
   3. Adjust hardware for smooth and balanced door movement.

B. Clean the completed system, inside and out, promptly after installation, exercising care to avoid damage to coatings.

C. Clean glass surfaces after installation complying with requirements contained in the "Glazing" Sections for cleaning and maintenance. Remove excess glazing and sealant compounds, dirt and other substances from aluminum surfaces.

D. Door opening assemblies shall be cleaned with general, non-abrasive cleaners suitable for painted surfaces. Wipe the surfaces with a soft, dry cloth.

3.3 PROTECTION

A. Institute protective measures required throughout remainder of construction period to ensure that aluminum frames will be without damage or deterioration, other than normal wear at time of acceptance.

END OF SECTION