SECTION 081116 – MONUMENTAL STILE AND RAIL DOORS

ALL LIBRARIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior monumental stile and rail doors.
2. Interior monumental stile and rail doors.

B. Related Sections:

1. Section 087100 "Door Hardware" for requirements of hardware not listed in this section.
2. Section 088000 "Glazing" for glazing to be installed in stile and rail doors.

1.3 REFERENCES

A. ASTM B 209 – Aluminum and Aluminum-Alloy Sheets and Plates.

B. ASTM B 221 – Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

C. ASTM D 6670-01 – Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products.

D. ASTM E 84 – Surface Burning Characteristics of Building Materials.

E. ASTM E 283 – Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

F. ASTM E 330 – Structural Performances of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

G. ASTM E 331 – Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

H. ASTM E 1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differences.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

B. Air Infiltration: For a single door, test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 psf. Door shall not exceed 0.01 cfm per square foot.

C. Uniform Structural Load: For a single door, test specimen shall be tested in accordance with ASTM E330. Plus or minus 67.5 pounds per square foot.

D. Water Resistance: For a single door, test specimen shall be tested in accordance with ASTM E 331 at a pressure differential of 3.75 psf. No leakage.

E. Large Missile Impact: Single impact. Pass.

F. Indoor air quality testing per ASTM D 6670-01: GREENGUARD Environmental Institute Certified including GREENGUARD for Children and Schools Certification.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include details of construction and glazing.
2. Include factory finishing specifications.

B. Shop Drawings: For stile and rail doors. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking), hardware schedule, glazing and finish**.**

C. Samples:

1. Doors: Submit manufacturer's sample of doors showing stiles, rails, framing, hardware, glazing, and finish.
2. Color: Submit samples of colors of doors and frames.

D. Manufacturer's Project References: Submit list of successfully completed projects including project name and location, name of Architect, and type and quantity of doors manufactured.

E. Warranty: Submit manufacturer's standard warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For manufacturer's maintenance and cleaning instructions for doors, including maintenance and operating instructions for hardware in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years' successful experience.
2. Door and frame components from the same manufacturer.
3. Evidence of a compliant documented quality management system.

B. Source Limitations: Obtain stile and rail doors from single manufacturer.

C. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying opening door mark and manufacturer.

B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instruction.

C. Handling: Protect materials and finish from damage during handling and installation.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg. F (16 and 32 deg. C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

1.10 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.

1. Warranty Period: Ten (10) years starting on date of shipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use only materials that comply with referenced standards and other requirements specified.

B. Aluminum Members:

1. Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes: ASTM B 221.
2. Sheet and Plate: ASTM B 209.
3. Wall Thickness: 0.125 inch.
4. Alloy and Temper: As required by manufacturer for strength, corrosion resistance, application of required finish, and control of color.

C. Fasteners:

1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
2. Compatibility: Compatible with items to be fastened.
3. Exposed Fasteners: Oval Phillips head screws with finish matching items to be fastened.

2.2 EXTERIOR MONUMENTAL STILE AND RAIL DOORS

A. Exterior Monumental Stile and Rail Doors: Custom exterior doors complying with reference standards, performance requirements, and with other requirements specified.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Model SL-14 medium stile monumental stile and rail door by Special-Lite Inc., or comparable product by one of the following:

   a. Special-Lite, Inc., P.O. Box 6, Decatur, Michigan 49045. Toll Free: (800) 821-6531. Phone: (269) 423-7068. Fax: (800) 423-7610. Web Site: www.special-lite.com. E-Mail: info@special-lite.com.

2. Panel Designs: Indicated by Drawings. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
3. Door Opening Size: As indicated on the Drawings.
4. Door Thickness: 1-3/4 inches.
5. Grade: Custom.
6. Stiles and Rails:

   a. Material: Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes, 0.125-inch minimum wall thickness, 1-piece.

      1) Anodized Aluminum: Smooth.

   b. Stile Width: 3-1/2 inches.
   c. Rail Width:

      1) Top: 6-1/2 inches.
      2) Bottom: 10 inches.

   d. Glass stop to be integral to the stiles and rails on the exterior. No snap or applied stops allowed.

7. Corners:

   a. True mortise and tenon joints.
   b. Full-width 3/8-inch diameter galvanized steel tie rods secured with locking hex nuts.

8. Welding of Joints: Not permitted.
9. Glazing:

   a. As specified in Section 088000 ”Glazing”.
   b. Thickness: 1-inch glass.

2.3 INTERIOR MONUMENTAL STILE AND RAIL DOORS

A. Interior Stile and Rail Wood Doors: Stock interior doors complying with reference standards, performance requirements, and with other requirements specified.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Model SL-14 medium stile monumental stile and rail door by Special-Lite Inc., or comparable product by one of the following:

   a. Special-Lite, Inc., P.O. Box 6, Decatur, Michigan 49045. Toll Free: (800) 821-6531. Phone: (269) 423-7068. Fax: (800) 423-7610. Web Site: www.special-lite.com. E-Mail: info@special-lite.com.

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3. Door Opening Size: As indicated on the Drawings.
4. Door Thickness: 1-3/4 inches.
5. Grade: Custom.
6. Stiles and Rails:

   a. Material: Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes, 0.125-inch minimum wall thickness, 1-piece.

      1) Anodized Aluminum: Smooth.

   b. Stile Width: 3-1/2 inches.
   c. Rail Width:

      1) Top: 6-1/2 inches.
      2) Bottom: 10 inches.

   d. Glass stop to be integral to the stiles and rails on the exterior. No snap or applied stops allowed.

7. Corners:

a. True mortise and tenon joints.
b. Full-width 3/8-inch diameter galvanized steel tie rods secured with locking hex nuts.

8. Welding of Joints: Not permitted.
9. Glazing:

a. As specified in Section 088000 ”Glazing”.
b. Thickness: 1/4-inch glass.

2.4 DOOR HARDWARE

A. General: Provide door hardware and door hardware sets indicated in door and frame schedule for each entrance door to comply with requirements in this Section.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products complying with BHMA standard referenced.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
3. Opening-Force Requirements:

a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.
c. Factory install hardware.

B. Continuous-Gear Hinges: Manufacturer's standard with stainless-steel bearings between knuckles, fabricated to full height of door and frame.

C. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.

D. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.

E. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

F. Cylinders: As specified in Section 087100 "Door Hardware."

G. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

H. Operating Trim: BHMA A156.6.

I. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to meet field conditions and requirements for opening force.

J. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.

K. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

L. Silencers: BHMA A156.16, Grade 1.

M. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (13 mm).

N. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

O. Finish: Custom, as indicated on the Drawings.

2.5 STILE AND RAIL DOOR FABRICATION

A. Sizes and Profiles: Required sizes for doors and frame units and profile requirements shall be as indicated on the Drawings.

B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.

C. Assembly:

1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
2. Remove burrs from cut edges.

D. Welding: Welding of doors or frames is not acceptable.

E. Fit:

1. Maintain continuity of line and accurate relation of planes and angles.
2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

2.6 ALUMINUM DOOR FRAMING SYSTEMS

A. Tubular Framing:

1. Size and Type: As indicated on the Drawings.
2. Materials: Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T6 alloy recovered from industrial processes, 0.125-inch minimum wall thickness.
3. Applied Door Stops: 0.625-inch high, with screws and weatherstripping. Door stop shall incorporate pressure gasketing for weathering seal. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head.
4. Frame Members: Box type with four (4) enclosed sides. Open-back framing is not acceptable.

5. Caulking: Caulk joints before assembling frame members.
6. Joints:
   a. Secure joints with fasteners.
   b. Provide hairline butt joint appearance.

7. Field Fabrication: Field fabrication of framing using stick material is not acceptable.
8. Applied Stops: For side, transom, and borrowed lites and panels. Applied stops shall incorporate pressure gasketing for weathering seal. Reinforce with solid bar stock fill for frame hardware attachments.
9. Hardware:

   a. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and hardware schedule.
   b. Factory install hardware.

10. Anchors:

    a. Anchors appropriate for wall conditions to anchor framing to wall materials
    b. Door jamb and header mounting holes shall be spaced no more than 24 inches apart.
    c. Secure head and sill members of transom, side lites, and similar conditions.

11. Side Lites:

    a. Factory preassemble side lites to greatest extent possible.
    b. Mark frame assemblies according to location.

2.7 GLAZING

A. Factory Glazing: ¼-inch glass and 1-inch glass insulating units.

B. Glazing: As specified in Section 088000 "Glazing".

C. Design glazing system for the replacement of glass.

D. Manufacturer's standard flush glazing system of recessed channels and captive glazing gaskets or applied stops as indicated on the Drawings.

E. Allow for thermal expansion on exterior units.

2.8 ALUMINUM FINISHES

A. Anodized Finish: Class I finish, 0.7 mils thick.

1. Painted: Custom color, match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and substrates, with Installer present, for suitable conditions where monumental stile and rail doors will be installed.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

3.3 INSTALLATION

A. Install doors in accordance with manufacturer's instructions.

B. Install doors plumb, level, square, true to line, and without warp or rack.

C. Anchor frames securely in place.

1. Clearances: Provide 1/8 inch (3 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch (6 mm) from bottom of door to top of threshold.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

E. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by Architect.

F. Set thresholds in bed of mastic and backseal.

G. Install exterior doors to be weathertight in closed position.

H. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

I. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

3.5 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

3.6 CLEANING

A. Clean doors promptly after installation in accordance with manufacturer's instructions.

B. Do not use harsh cleaning materials or methods that would damage finish.

3.7 PROTECTION

A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 081433