SECTION 08100

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes all hollow metal (steel) doors and frames and hollow metal work.

1.02 RELATED SECTIONS

A. Section 04210 - Brick Masonry: Hollow metal work erected in conjunction with the erection of the brick masonry.

B. Section 05400 - Cold Formed Metal Framing: Metal framing for the support of the hollow metal work.

C. Section 06100 - Rough Carpentry: Treated wood blocking required for the rigid installation of the hollow metal work.

D. Section 06200 - Finish Carpentry: Wood casings surrounding metal frames.

E. Section 07920 - Sealants and Caulking: Caulking installed at perimeter of door frames.

F. Section 08210 - Wood Doors: Wood doors installed in hollow metal frames.

G. Section 08710 - Finish Hardware: Preparation of hollow metal work to receive finish hardware items.

H. Section 08800 - Glass and Glazing: Glass and glazing installed in hollow metal work.

I. Section 09900 - Painting: Finish painting of hollow metal work.

1.03 QUALITY ASSURANCE

A. Hardware Locations: The locations of hardware on doors and frames shall be in accordance with the requirements of The National Association of Architectural Metal Manufacturers (NAAMM), The Steel Door Institute (SDI) and the Americans with Disabilities Act (ADA).

B. Manufacturer's Standards: Comply with Steel Door Institute ANSI/SDI 100 (ANSI Publication A250.8-1998), "Recommended Specifications, Standard Steel Doors and Frames".

C. Acceptable manufacturers: The following manufacturers are acceptable for use on this project subject to compliance with project requirements:
   1. Ceco Door Division of Oakbrook Terrace, Illinois.
   2. Amweld Building products, LLC of Garrettsville, Ohio.
   3. Curries Company of Mason City Iowa.
   4. Fenestra Corporation of Erie, Pennsylvania.
   5. Republic Builders Products of McKenzie, Tennessee.
   6. Steelcraft Manufacturing Corporation of Brentwood, Tennessee.

D. Acoustical qualities: Doors shall have a minimum sound transmission classification of 29 as tested under ASTM E-90-61T.

E. Regulatory Approvals
   1. Underwriter Laboratories (U.L.):
      a. All labeled fire doors and frames shall be of a type which has been investigated and tested in accordance with U.L. and shall be constructed to meet Procedure No. R-3791, as listed by Underwriters Laboratories.
      b. Underwriters Laboratories labeled doors and frames shall provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
      c. A physical label shall be affixed to all Underwriters' Laboratories classified fire doors, listed fire door frames and frames as evidence of compliance with procedures of the labeling agencies.
   2. Fire-Rated Door Assemblies: Units that comply with NFPA 80 are identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E 152, and are labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.
   3. Opening assemblies shall meet the requirements of NFPA 105 Hot Smoke Test.

1.04 REFERENCES

A. SDI - Steel Door Institute Publications SDI105 through 128

B. ANSI Publication A250.8-1998 (formerly SDI 100)

C. ANSI Publication A250.4-1994

D. ANSI Publication A250.6-1994

E. ANSI Publication A250.10-1998

F. ANSI/DHI A115 Series Publications

G. ANSI/DHI Publication A115.1G-1994

H. NFPA 80 - Standard for Fire Doors and Windows

1.05 SUBMITTALS

A. Submit copies of shop drawings and door and frame schedules to the Architect in accordance with Section 01340.
   1. The Shop Drawings shall fully describe and locate all items being furnished and shall include large scale details of principal construction features. Indicate glazing requirements and glazing stop details.
   2. Door and frame schedule shall make reference to door numbers and room numbers shown and scheduled on the drawings.
   3. Fabrication shall not commence until the submittals have been approved in writing by the Architect.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Doors shall be received at the job site in the manufacturers original, unopened cartons. All scratches and disfigurements caused in shipping and handling shall be properly cleaned and touched up with a rust-inhibitive primer.

B. Doors shall have all wrappings removed. Doors shall be stored in a dry location, in a vertical position, spaced by blocking to permit air circulation between them.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 569, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
B. Cold-Rolled Steel Sheets: ASTM A 366, Commercial Steel (CS), or ASTM A 620, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

C. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591, Commercial Steel (CS), Class B coating; mill phosphatized; suitable for unexposed applications; stretcher-leveled standard of flatness where used for face sheets.

2.02 SHOP PAINTING

A. Apply a primed finish to all ferrous metal surfaces furnished under this Section. Clean and chemically treat metal surfaces to assure maximum paint adherence. Follow with a dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer on all exposed surfaces. Finished surfaces shall be smooth and free from irregularities and rough spots.

2.03 FLUSH HOLLOW METAL DOORS

A. General: Fabricate steel door units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.

B. All exterior swing-out doors shall have the top and bottoms closed to eliminate moisture penetration. Door tops shall not have holes or openings.

C. Hollow Metal Doors
1. Interior Doors: SDI-100, Grade II, heavy-duty, Model 3, with minimum 18 gauge steel face sheets with a stretcher level degree of flatness.
   a. Flush Door
      (1) Thickness: 1-3/4"
      (2) Seamless design.
   b. Cores: Per ANSI A250.8
      (1) Doors shall be reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and honeycomb core.
2. Exterior Doors: SDI-100, Grade III, extra-heavy-duty, Model 3, with a minimum 16 gauge hot-dipped galvanized (A-60) steel face sheets with a stretcher level degree of flatness.
   a. Flush Door
      (1) Thickness: 1-3/4"
      (2) Seamless design.
   b. Exterior doors shall be fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236 or ASTM C 976 on fully operable door assemblies. Provide thermal-rated assemblies with U-factor of 0.24 or better. Doors shall be mill phosphatized for paint adhesion.

2.04 DOOR FABRICATION

A. Workmanship: The finished work shall be rigid, neat in appearance, and free from defects; form molding members straight and true with joints coped or mitered, well formed and in true alignment. All welded joints on exposed surfaces shall be dressed smooth so they are invisible after finishing.

B. Door Sizes and Clearances: Doors shall be of type, sizes, and design indicated. The clearances for doors shall be 1/8" at jambs and heads and 3/4" at bottom, unless indicated or specified otherwise. Clearances at meeting edges of pairs of doors shall be 1/4".

C. Provisions for Hardware: Mortise, reinforce, drill, and tap doors at factory to receive all mortise-type hardware. Provide reinforcing only for doors to receive surface-applied hardware, except push plates and kick plates; drilling and tapping for surface-applied hardware will be done in the field. Provide metal reinforcing plates for surface-applied hardware as required. The gauges of metal for reinforcing plates shall comply with manufacturer's recommendation for the type of hardware used and the size and thickness of doors, provided that the minimum requirements are as follows:
   1. Hinge Reinforcement: 3/16 Inch
   2. Strike Reinforcement: 11 Gauge
   3. Closers and Bracket Reinforcement: 12 Gauge
   4. Mortise Covers: 26 Gauge
   5. The gauges used shall not be lighter than those required by Commercial Standard CS 242-62.

D. Doors with labels shall carry Underwriters label on the door and on the frame. They shall be constructed to meet Procedure No. R-3791 and R-3821, as listed by Underwriters Laboratories.

E. Glass Moldings and Stops
   1. Where scheduled, doors shall be provided with hollow metal moldings to secure the specified glazing (refer to Section 08800 for glazing).
   2. Fixed moldings shall be welded to the door on the security side. Loose stops with butt corners shall be provided. Stops shall be either snap-on or screwed into place with cadmium or zinc coated countersunk screws.

2.05 HOLLOW METAL FRAMES

A. General: Fabricate steel frame units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Conceal fastenings, unless otherwise indicated.

B. Location and Type: All metal frames for doors shall be formed of steel to sizes and shapes indicated. Frames shall be fabricated with continuously welded corners. Knock-down frames shall not be allowed. Frames shall be furnished with Underwriters Laboratories label, as required, at the place of manufacturer.

C. Type and Gauges of Metal: Metal for frames shall be cold-rolled or hot-rolled, pickled and oiled, steel sheets with clean, smooth surfaces.
   1. Interior Frames of 16 gauge thick steel unless indicated otherwise. Steel frames shall have a stretcher level degree of flatness.
   2. Exterior Frames of 16 gauge thick steel unless indicated otherwise. Exterior frames shall be hot-dipped galvanized (A60) with a stretcher level degree of flatness.
   3. Drywall Frames: Drywall frames shall be the same as flush frames except that frames shall be formed with double return backbends to prevent cutting into drywall surface.

D. Workmanship and Design: The finished work shall be strong and rigid, neat in appearance, and free from defects. Fabricate members straight and true with corner joints well-formed, in true alignment and fastenings concealed where practicable.

E. Forming Corner Joints: Joints for welded-type frames shall be mitered and continuously arc-welded for full depth and width of frame and trim. All contact edges shall be closed tight and all welds on exposed surfaces dressed smooth and flush.

F. Frames shall be drilled to receive three silencers at single door openings.

G. Provision for Hardware: Frames shall be prepared at the factory for the installation of hardware. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware, unless more stringent requirements are indicated. Welding of hinges to frames will not be permitted. Frames shall be mortised, reinforced, drilled, and tapped to templates to receive all mortised hardware. Provide cover boxes in back of all hardware cut-outs. Lock strikes shall be set out and adjusted to provide clearance for silencers.
   1. Provide preparation for rubber silencers on interior room door frames; three per strike jamb at single doors.
   2. Provide concealed metal reinforcements for hardware as required. The gauges of metal for reinforcement shall be in accordance with the manufacturer's recommendations for the type of hardware and the thickness and width of doors to be hung in the frame, provided that the gauges used are not lighter than those required by Commercial Standard CS-242-62. Galvanized for exterior doors.

H. Wall Anchors: Provide metal anchors of shapes and sizes required for the adjoining type of wall construction. Locate anchors on jambs near the top and bottom of each frame and at intermediate points not over 24 inches apart. Galvanized anchors for exterior frames.
   1. Anchor types shall be varied to provide positive fastening to adjacent construction.
   2. Provide UL approved anchors for UL labeled frames. Anchorage of UL label frames shall conform to printed UL test report for door frame manufactured.

I. Floor Anchors: Provide floor clips of not less than 16-gauge steel and fasten to bottom of each jamb member for anchoring frame to floor construction. Clips shall be adjustable and drilled for 3/8" diameter anchor bolts. Reinforcement: Proper reinforcement shall be provided for all hardware where required. Reinforcements, drilling and tapping for mortised applied hardware shall be done at the factory. Surface applied hardware reinforcements shall be installed at the factory, drilling and tapping shall be done in the field by others.

J. Frame Insulation - Exterior Installations: Glass fiber, 2" thickness, 3 pound density, Type 703 as manufactured by Owens-Corning Fiberglas Corporation of Toledo, Ohio.

2.06 FIELD TOUCH-UP MATERIAL

A. Galvanizing Repair Paint: Z.R.C. Cold Galvanizing compound, as manufactured by ZRC Products Company of Quincy, Massachusetts.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prior to installation, all frames must be checked and corrected for rack, twist, and out-of-square.

B. Frames shall be installed plumb, rigid and in true alignment, with all required anchors securely fastened to wall construction so that frames will retain their position and clearance during final partition work. Door silencers shall not be installed until after the frames have received their final coat of paint.

C. All doors shall be set true and plumb, with sufficient clearance for free operation, not to exceed 1/8 inch at jambs and heads and 1/4 inch above finish flooring material at bottom. Lock edges of doors shall be so designed to provide proper operating clearance. Finish hardware will be attached prior to any glazing work.

3.02 ADJUST AND CLEAN

A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of the prime coat and apply touch-up of compatible air drying primer.

END OF SECTION

SECTION 08210

WOOD DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation of all interior wood doors and transoms. Doors shall be preglazed.

B. Provide fire rated doors as required in the drawings.

1.02 RELATED SECTIONS

A. Section 08100 - Hollow Metal Doors and Frames: Installation of wood doors in hollow metal frames.

B. Section 08710 - Finish Hardware: Preparation of doors to receive finish hardware items.

C. Section 09900 - Painting: Field staining of wood doors.

1.03 QUALITY ASSURANCE

A. Acceptable Manufactures: Qualified to affix each door with a label with the manufacturer's name and certification of compliance with the National Wood and Window and Door Association (NWWDA). The following manufacturers are acceptable for use on this project subject to compliance with project requirements:
   1. Flush Wood Doors
      a. Marshfield-Algoma Doors
      b. Eggers Industries of Neenah, WI
      c. Weyerhauser, Inc. of Bridgeville, PA
      d. Substitute manufacturers shall consider the manufacturing standards and performance requirements of the referenced manufacturers as minimum requirements.

B. Manufacturer's Standards - Doors shall comply with the following Standards:
   1. ANSI/NWWD I.S 1, "Series for Flush Wood Doors", published by the National Wood Window and Door Association (NWWDA).
   2. AWI Quality Standards - Section 1300 for Architectural Flush Doors and 1400 for Stile and Rail Door, of "Architectural Woodwork Quality Standards", published by the Architectural Woodwork Institute (AWI).
      a. Grade: Premium for interior and exterior raised panel doors and Custom for interior flush wood doors.
   3. For moisture content, comply with AWI Section 100-S-3.

C. Testing Requirements
   1. Adhesives: NWMA 1.L.1
      a. Waterproof bond test for Type I exterior doors.
      b. Water resistant bond test for Type II interior doors.
      c. Warp: 1.S.1.
      d. Fire Test: Underwriters Laboratories, Incorporated Standard UL 10, Fire Test of Door Assemblies.

D. Allowable tolerances for Fabrication of Doors:
   1. Size: plus or minus 1/16 inch overall dimensions.
   2. Warp: 1/4 inch maximum.
   3. Squareness: Length of diagonal measured on face of door from upper right corner to lower left corner between length of diagonal measured on upper left corner to lower right corner: Maximum difference of 1/4 inch.

1.04 SUBMITTALS

A. Submit the following to the Architect in accordance with Section 01340:
   1. Copies of door schedule indicating opening mark number, wood species, sizes, door types and grade, fire classification, swing, undercuts, door facing, finish and glass and glazing materials.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery
   1. Deliver doors to site after building has reached average prevailing relative humidity of locality.
   2. Deliver in manufacturer's original unopened protective material or container, clearly marked with manufacturer's name, brand name, size, thickness and identifying symbol on covering. Do not remove doors from wrapping until ready to hang.
   3. Seal all four edges of doors when delivered to project site.

B. Storage
   1. Stack flat on 2 x 4 lumber, laid 12 inches from ends and across center.
   2. Under bottom door and over top of stack provide plywood or corrugated cardboard to protect door surface.
   3. Store doors in area where there will be no great variations in heat, dryness, and humidity.

C. Handling: Do not drag doors across one another.

1.06 GUARANTEES

A. Flush Wood Doors – Manufacturer's Standard Lifetime Warranty: Doors shall be guaranteed against veneer delamination or splitting; stile and rail splitting or becoming unglued; cover wrapping (bow, cup or twist), and shall also include the provisions of the "Standard Door Guarantee" of the National Wood Window and Door Association (NWWDA), ANSI/NWWDA I.S.1.

PART 2 - PRODUCTS

2.01 PAINT GRADE FLUSH WOOD DOORS

A. Solid Core Wood Doors: Lumber particleboard core type shall be AWI PC-7 construction, AWI Custom Grade. Facings shall be paint grade, plain sliced veneer without defects.
   1. Doors shall be flush, thickness and sizes shown on Drawings. Stile edge bands shall be thoroughly kiln-dried hardwood. Outer edge bands shall be one piece, matching faces. Rail bands, cross bands and facing shall be laminated to cores with water-resistant adhesive.
   2. Doors shall be fire rated as shown in the plans.

2.02 MISCELLANEOUS

A. Furnish astragals at meeting edge of pairs of wood doors, solid hardwood, meeting specified AWI Grade.
   1. Label: UL or WH label on each door to meet indicated rating.
   2. Permanently identify each door panel with stamp indicating conformance with NWWDA I.S. 6-86 and AWI standards.

2.03 FACTORY PREPARATIONS

A. All doors shall be prefitted and factory machined to receive finish hardware, louvers, glazing, etc. Provide complete with moldings and glass stops required for complete installation. Provide solid wood blocking for attachment of finish hardware items.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that door frames are of type required for door and are installed as required for proper installation of doors.

B. Do not install doors in frames which would hinder the operation of the doors.

3.02 INSTALLATION

A. Fitting and Machining
   1. Doors shall be prefitted and machined in factory to the maximum extent possible.
   2. Fit doors to provide the following clearances:
      a. Maximum of 1/2" from bottom.
      b. Maximum of 1/8" maximum from top
      c. Bevel lock and hinge edges 1/8" in 2".
   3. Machine doors for hardware to clearance tolerances specified.
   4. Cut light openings in door not exceeding maximum sizes as scheduled on the drawings.

B. Installation of Doors
   1. Follow door manufacturer's written instructions for all installation work. Installation methods shall not void the door guarantee.
   2. Clearances
      a. Allow maximum of 1/8" at jamb and head for job fit doors and prefit doors.
      b. Allow maximum of 3/16" over threshold or saddle.
      c. Allow maximum of 1/2" over decorative floor coverings.

3.03 ADJUST AND CLEAN

A. Replace or rehang doors which are hingebound and do not swing or operate freely.

B. Replace doors damaged during installation.

3.04 PROTECTION

A. After installation of doors is complete and all adjustments have been made, install protective bags over each door until the area in which the doors have been install is free of construction. Install protective covering as the door installation progresses throughout the project.

3.05 CLEANUP

A. Upon completion of wood door installations, remove from the site all excess materials, debris and tools and leave doors ready to receive specified finish.

END OF SECTION

SECTION 08305

ACCESS DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes materials and installation of the access doors to permit access to plumbing, mechanical and electrical apparatus, and access to mezzanine area.

1.02 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Treated wood blocking required for the installation of the access doors.

B. Section 09250 - Gypsum Wallboard: Access doors installed in conjunction with the gypsum wallboard systems.

C. Section 09510 - Acoustical Tile Ceiling Systems: Access doors installed in lay-in ceiling systems.

D. Section 09900 - Painting: Field application of finish paint.

E. Division 22 - Plumbing: Access doors required to provide access to mechanical apparatus.

F. Division 23 - Heating, Ventilating and Air Conditioning (HVAC): Access doors required to provide access to HVAC apparatus.

G. Division 26 - Electrical: Access doors required to provide access to electrical apparatus.

1.03 QUALITY ASSURANCE

A. Comply with requirements of regulatory agencies having jurisdiction over this project. Provide Underwriter's Laboratory label on each fire-rated access door.

1.04 SUBMITTALS

A. Submit copies of technical data and shop drawings to the Architect in accordance with Section 01340. Submittals shall show materials, fabrication, and complete installation / anchorage details. Indicate fire ratings and label as applicable.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Store materials on the job site, above ground in a weathertight shelter in a manner to prevent rust and damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Ceiling Access Doors: Flush with ceiling installation. Construct of sheet metal with concealed continuous hinge and self-closing mechanism. Non-Fire-Rated Door and Frame Unit:
   1. Milcor Model 3204, Style ATR, by Milcor, Inc.
   2. NW Series by Nystrom, Inc.
   3. Type RDW by Karp Associates, Inc.

B. Wall Access Panels/Doors where exposed to view:
   1. Nystrom RW recessed access doors. Provide gypsum board infill to match adjacent surfaces. On Mechanical Room side, provide plywood cover screwed to framing, to prevent accidental passage through access panel. See drawings for panel size.
   2. Other manufacturer with approved similar product.

C. Non-Fire-Rated Access Doors, Flush Wall Installation: Construct of sheet metal with concealed continuous hinge, having recessed screwdriver latch, size(s) as shown on Drawings.
   1. Style SR-III, as manufactured by Cesco Products of Minneapolis, Minnesota.
   2. Model WB, as manufactured by J.L. Industries of Bloomington, Minnesota.
   3. Type RDW, as manufactured by Karp Associates, Inc. of Maspeth, New York.
   4. Model NW Series, as manufactured by Nystrom, Inc. of Minneapolis, Minnesota.

D. Fire Rated Sprinkler System Access Door: U.L. B, 1-1/2 Hour rated with automatic closer, U.L. rated anchors for construction in which door will be installed. Provide lockset with knob released, keyed as directed by Owner.

E. Access cover plates for concealed plumbing cleanouts shall be round and similar to Wade #W-8470-R, stainless steel.

PART 3 - EXECUTION

3.01 COORDINATION

A. Coordinate the installation of the access doors with the drywall installations and mechanical and electrical trades requiring access, as detailed on the Drawings.

3.02 INSTALLATION

A. Access doors shall be set into place, leveled, plumbed and anchored to the substrate with the appropriate anchoring devices, as shown on the manufacturer's shop drawings.

B. Locate where required to properly access all concealed devices.

C. Access doors shall be demonstrated to operate freely and without bind. Completed installations shall be left ready for painting; refer to Section 09900.

END OF SECTION

SECTION 08360

OVERHEAD DOORS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Extreme Series High Performance Door System
   1. Aluminum Full View Sectional Overhead Door
   2. Electric door operator and controls
   3. Operating hardware tracks and support

1.02 RELATED SECTIONS

A. Section 04210 - Brick Masonry: Aluminum clad wood units installed in brick masonry.

B. Section 05400 - Cold Formed Metal Framing: Metal framing for support of the windows.

C. Section 06100 - Rough Carpentry: Treated wood blocking required for the window installations.

D. Section 07100 - Waterproofing and Dampproofing: Coordination of the weather barrier installation with the window installations.

E. Section 07600 - Flashing and Sheet Metal: Flashings installed in conjunction with the wood windows.

F. Section 07920 - Sealants and Caulking: Sealing of window perimeters for weathertight installations.

G. Section 09250 - Gypsum Wallboard: Coordination of the gypsum board installation with the window installations, and coordination of the gypsum board sheathing installation with the window installations.

H. Section 09900 - Painting: Protection of the glazed surfaces of the windows during painting operations.

1.03 REFERENCES

A. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

B. ANSI / DASMA 102; American National Standard specifications for sectional overhead type doors

1.04 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations
   2. Installation methods
   3. Operation and maintenance data
   4. Nameplate data and ratings for motors

C. Shop Drawings: Include opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.05 WIND PERFORMANCE REQUIREMENTS

A. Design doors to withstand positive and negative wind loads as calculated in accordance with applicable building code.
   1. Design Wind Load: +25,-25 lb/sf

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of doors specified in this section, with not less than ten years of documented experience.

B. Installer Qualifications: Company specializing in installing the types of products specified in this section, with minimum of five years of documented experience, and approved by the door manufacturer.

1.07 WARRANTY

A. Finish Limited Warranty
   1. Standard Paint: 5 Years
   2. Custom Color Option (Color Blast® Finish): 5 years

B. Parts and Hardware Limited Warranty
   1. Parts and Hardware: 1 Year
   2. Springs: 2 Years or 50,000 cycles

PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer
   1. Clopay Corporation or equal product by other manufacturer approved in advance.

2.02 SECTIONAL OVERHEAD DOORS, Model EX904U

A. EX904U: Aluminum Full View Sectional Door, Polyurethane Insulated, with glazed and unglazed sections.
   1. Panel Sections: 2-1/8 inches thick extruded 6053-T5 aluminum
      a. Rails, Stiles, and unglazed panels: Polyurethane foam injected
      b. Stiles: Double end stiles
   2. Rollers: Long-stem tandem rollers
   3. Astragal: U-shaped flexible PVC in retainer of full-length 0.055 inch rigid PVC
   4. IECC: ASTM E283-12 and ANSI/DASMA 105-2012
      a. U-Factor: 0.86 (with clear insulated glass)
      b. R-Value: 3.8 (with clear insulated glass)
      c. Air Infiltration: 0.15cfm/ft2
   5. Aluminum Finish
      a. Color Blast® (Sherwin Williams® Color Code - High quality durable two-part Polane® paint system)
      b. Color by Architect.
   6. Windows
      a. Glazing thickness: 1/2 inch
      b. Glazing type: Insulated tempered Low E glass
      c. Glazing tint: Bronze
      d. SHGC: 0.63
      e. U-Value: 0.48
      f. See drawings for glazed panel configuration.

7. Weather-stripping: Provide complete perimeter seals. Provide flexible top seal, flexible jamb seal and U-shaped bottom seal.
8. Track: Designed for 2" diameter rollers. Vertical tracks minimum 0.061 inch galvanized steel. Horizontal tracks minimum 0.075 inch galvanized steel.
   a. Provide standard track as indicated.
9. Locking
   a. Provide two inside slide locks with interlock.
10. Spring Counterbalance
   a. Specialized torsion spring counterbalance mechanism sized to weight of the door. Spring to be helically wound, oil tempered, treated with secondary process to increase cycle life and reliability. Spring to be mounted on a solid steel shaft with center coupling.
   b. Cable drum of die cast aluminum with high strength galvanized aircraft cable with minimum 7 to 1 safety factor. Cable to be at minimum 7-19 stranded 3/16 diameter with thimbled loop.
   c. Cable Safety Device: Snubbers to help maintain cable tension.
   d. Spring cycles
      (1) 50,000 cycles on a single shaft

2.03 DOOR OPERATOR

A. Extreme Series Motor Operator
   1. Manufacturer: LiftMaster
   2. Motor design: 1.25 HP
      a. 3-phase, 230V
   3. Operation: Variable speed direct drive
      a. Operator Speed: Travels an average of 24" in the up direction and between 12"-18" in the down direction, depending on door type and drum size. Includes soft start/stop ramps
   4. Motor: Listed by Underwriters Laboratories. Meet UL 325
   5. Wall Controller: Provide separation of low and high voltage wiring and include functionality of 3-button station; set door profile and programming limits, and performs diagnostics
      a. Floor-level programming: Set limits, door profile, operating modes, and select photo entrapment devices via wall controller from standing height
      b. Display: Absolute cycle count, service cycle count, diagnostic messages, and door and operator status via 2-line, text LED display.
      c. Cycle counter: Resettable via wall controller or myQ technology.
      d. Limit setting: Electronic pushbutton via wall controller.
      e. Service cycle count, lifetime cycle count, and remote diagnostics via wall controller or myQ technology.
   6. Manual Hoist: Manual hoist with integral manual operation protection circuit
   7. Cable Tension Monitor: Mitigates door operation when cable slackening occurs
   8. Internet connectivity
      a. Built-in Wi-Fi with myQ technology
      b. Over-the-air updates
   9. Primary monitored entrapment protection
      a. Light Curtain UL 325 approved (standard)

EXECUTION

3.01 EXAMINATION

A. Examine wall and overhead areas, including opening framing and blocking, with installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work in this Section.

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

C. If substrate preparation is the responsibility of another entity, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 08361

FOLDING DOOR SYSTEM

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Equipment and materials required for furnishing four-fold folding door system for truck bays.
   1. This Section includes Four-Fold metal doors with surface mounted tube frames.
   2. Operation of Four-Fold metal doors includes overhead mounted electro-mechanical operators.

1.02 RELATED SECTIONS

A. Section 04210 - Brick Masonry: Aluminum clad wood units installed in brick masonry.

B. Section 05400 - Cold Formed Metal Framing: Metal framing for support of the windows.

C. Section 06100 - Rough Carpentry: Treated wood blocking required for the window installations.

D. Section 07100 - Waterproofing and Dampproofing: Coordination of the weather barrier installation with the window installations.

E. Section 07600 - Flashing and Sheet Metal: Flashings installed in conjunction with the wood windows.

F. Section 07920 - Sealants and Caulking: Sealing of window perimeters for weathertight installations.

G. Section 09250 - Gypsum Wallboard: Coordination of the gypsum board installation with the window installations, and coordination of the gypsum board sheathing installation with the window installations.

H. Section 09900 - Painting: Protection of the glazed surfaces of the windows during painting operations.

1.03 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each type of product specified consisting of manufacturer's technical Product Data and installation instructions for each type of door required, including data substantiating that products comply with requirements.

C. Submittal Drawings showing fabrication and installation of Four-Fold metal doors including plans, elevations, sections, details of components, hardware, operating mechanism, and attachments to the other units of Work. Include wiring diagrams for coordination with electrical trade.

D. Reference list including (5) successful installations of this type of door within the past two (2) years.

1.04 QUALITY ASSURANCE

A. Doors shall be designed to withstand external or internal horizontal wind loads of 120mph (3 second gust) per ASCE 7-16. The maximum allowable deflection shall not exceed 1/120 of the span. Fiber stresses in main members shall be limited to 27,000 pounds per square inch. Steel frames shall be designed in accordance with the AISC "Steel Construction Manual".

B. Door manufacturer shall have at least 10 years' experience in manufacturing door type specified.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store delivered materials and equipment in dry locations with adequate ventilation, free from dust and water, and so as to permit access for inspection and handling.

B. Handle materials carefully to prevent damage.

1.06 WARRANTY

A. The door manufacturer shall provide a written standard limited warranty for material and workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Four-Fold industrial metal doors manufactured by Door Engineering and Manufacturing, 101 Power Dr, Mankato, MN 56001, (800)-959-1352 or equal product by other manufacturer approved in advance.

B. FF300 Series: Glazed

2.02 MATERIALS

A. Steel Tube: ASTM A513 and ASTM A500/A500M

B. Steel Sheets: Steel sheets of commercial quality, complying with ASTM A1008 cold-rolled steel sheet.

C. Hardware: Manufacturer's standard components.

D. Fasteners: Zinc-coated steel.

2.03 FOUR-FOLD DOORS

A. Construction: Door framing shall be minimum 11-gauge structural steel tube with 16-gauge steel sheet on the exterior and interior faces. Sheeting shall be formed on the vertical edges with no visible welds on the interior or exterior panel faces. All frames and framing members shall be true to dimension and square in all directions, and no door shall be bowed, warped, or out of line, in the vertical or horizontal plane of the door opening by more than 1/8 inch in 20 feet. Exposed welds and welds which interfere with the installation of various parts shall be ground smooth and flush.

B. Surface Mounted Tube Frame: Supply pre-hung tube frame system constructed of minimum TS6x4x3/16", designed to anchor to masonry wall construction or weld to steel structure. All hinges, track supports and operator supports shall be factory attached.

C. Factory finish: Door Panels and Tube Frames shall be finished with manufacturer's standard PPG Spectracron epoxy primer and polyurethane top coat. Customer to select from Manufacturer's standard color chart or furnish sample to match.
   1. Operator and operating hardware shall be powder-coated manufacturer's standard gray.

D. Hardware: Hardware shall include guide tracks and brackets, trolleys, center guides, not less than three pairs of jamb and fold hinges per opening, and all bolts, nuts, fasteners, etc. necessary for complete installation and operation.
   1. All hardware, including hinges and trolleys, shall be bolted to the panel for easy removal for service or panel replacement.
   2. Doors up to 16' wide and under 30psf windload shall require no floor mounted supports, guides or tracks.

3. Top tracks shall be adjustable on the end track hangers to allow for adjustment of the door panels in the open position and easily replaceable without removal of the door framing or operators.

E. Hinges: Jamb hinges shall be dual shear and have two thrust bearings and two needle bearings. Fold hinges shall be stainless steel and be dual shear with two thrust bearings. All bearings shall be completely concealed within the hinge barrel and include grease zerks. All hinge pins shall be minimum ¾" diameter hardened steel.

F. Hinge Guards: Provide plastic guards at jamb hinges to prevent access through hinge space.

G. Weatherstripping: Material shall be adjustable and readily replaceable and provide a substantially weather-tight installation. Weatherstripping at center shall be 1/16" EPDM and include no exposed fasteners on the exterior side of the panel. Weatherstripping at sill shall include two 1/16" EPDM sweeps with an aluminum retainer. The retainer shall be attached to the door with adhesive.

H. Perimeter Weatherstripping: Provide full perimeter jamb and head weatherstripping.

I. Vision Panels: Provide 1" insulated, tempered, vision panels of the size, shape and location as noted on the drawings.

2.04 OPERATOR

A. Each Four-Fold door shall be operated by an overhead mounted electro-mechanical drive unit designed for high cycle operation. Operator consists of an electric motor, gear reducer, and rotating drive arm. The door shall be operated with connecting rods attached to the rotating drive arm on the operator and to control arms attached to the jamb door section and to the door lintel. The connecting rods shall be positive drive, keeping the door under firm control at all times. The connecting rods shall be fitted with spherical bearings and control arms shall be equipped with oil impregnated bronze bearings on polished shafts.

B. Operator shall be instantly reversible, open and close rapidly, and start and stop gradually. Operator shall be adjustable to allow door to fully clear the opening. Operator shall automatically lock the door in the closed position. Operator shall be equipped with disengaging mechanism to convert to manual operation.

C. Electric motor shall be of sufficient size to operate doors under normal operating conditions at no more than 75 percent of rated capacity. The motor shall be wound for three phase 208/230/480 VAC, 60 Hertz operation.

D. Electric Controls: Controls shall be furnished by the door manufacturer and shall be complete for each door, and built in accordance with the latest NEMA standards. Incoming electrical shall be: 120VAC single phase.
   1. Control panel assemblies shall be UL listed as per NFPA70.
   2. Controls shall include a programmable logic controller with digital message display. Controller shall include programmable close timers and programmable inputs/outputs.
   3. Controls shall include a variable frequency drive with independent adjustment of the opening and closing speeds.
   4. Enclosures shall be NEMA 4 with disconnect switch.
   5. Pushbuttons (interior) for each door shall have one (1) momentary pressure three-button push-button station marked "OPEN", "CLOSE" and "STOP". Push button enclosure shall be NEMA 4.
   6. Limit switches shall be provided to stop the travel of the door in its fully open or fully closed position.
   7. Safety edges: Provide monitored electric safety edges on leading edge of all doors to reverse door upon contact with obstruction.
   8. Photo eyes: Provide (1) exterior, jamb mounted, light Curtain type photo eyes, NEMA 4 rated. Photo eye shall cover from floor level to 72" above floor.
   9. Presence Sensor: Provide (1) interior, overhead mounted, presence sensor BEA IS40P or equal. Doors over 16' tall shall include LZR-Widescan or equal.
   10. Radio controls: Provide one (1) radio receiver and (1) single button remotes per door. Remotes to open and close doors with single button.
   11. Wiring: Door manufacturer shall supply controls and components only. Electrical contractor shall install controls and furnish and install conduits and wiring for jobsite power and control wiring.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install Four-Fold metal doors in strict accordance with the approved drawings by qualified door erection crews. All door openings shall be completely prepared by the general contractor prior to the installation of the doors. Permanent or temporary electric wiring shall be brought to the door opening before installation is started and shall be completed so as not to delay the inspection test.

B. Doors shall be set plumb, level, and square, and with all parts properly fastened and mounted. All moving parts shall be tested and adjusted and left in good operating condition.

3.02 ADJUSTING AND CLEANING

A. Inspection of the doors and a complete operating test will be made by the installer in the presence of the general contractor or architect as soon as the erection is complete. Any defects noted shall be corrected. After door approval in the above test, the general contractor must assume the responsibility for any damage or rough handling of the doors during construction until the building is turned over to the owner and final inspection is made.

B. Clean surfaces and repaint abraded or damaged finished surfaces to match factory-applied finish.

END OF SECTION

SECTION 08640

ALUMINUM CLAD WOOD WINDOWS AND DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes equipment, labor, and materials required for furnishing and installing pre-assembled, pre-glazed aluminum clad wood windows and doors, including accessories as required for a watertight and weathertight installation.

1.02 RELATED SECTIONS

A. Section 04210 – Brick Masonry: Aluminum clad wood units installed in brick masonry.

B. Section 05400 - Cold Formed Metal Framing: Metal framing for support of the windows.

C. Section 06100 - Rough Carpentry: Treated wood blocking required for the window installations.

D. Section 07100 - Waterproofing and Dampproofing: Coordination of the weather barrier installation with the window installations.

E. Section 07411 - Metal Roof and Wall Panels: Aluminum clad wood units installed in metal panel walls.

F. Section 07464 - Fiber Cement Siding, Trim and Soffits: Aluminum clad wood units installed in fiber cement siding.

G. Section 07600 - Flashing and Sheet Metal: Flashings installed in conjunction with the wood windows.

H. Section 07920 - Sealants and Caulking: Sealing of window perimeters for weathertight installations.

I. Section 08710 - Finish Hardware: Door hardware.

J. Section 09250 - Gypsum Wallboard: Coordination of the gypsum board installation with the window installations, and coordination of the gypsum board sheathing installation with the window installations.

K. Section 09900 - Painting: Protection of the glazed surfaces of the windows during painting operations.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):

B. ASTM E 283--Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.

C. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

D. ASTM E 547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.

E. ASTM E 774: Specification for Sealed Insulating Glass Units.

F. ASTM C 1036: Standard Specification for Flat Glass.

G. American National Standards Institute/National Wood Window and Door Association (ANSI/NWWDA):
   1. ANSI/NWWDA I.S.2 Industry Standard for Wood Windows.
   2. ANSI/NWWDA I.S.4 Industry Standard for Water Repellent Preservative Treatment for Millwork.

H. Sealed Insulating Glass Manufacturers Association/Insulating Glass Certification Council (SIGMA/IGCC).

1.04 QUALITY ASSURANCE

A. Design and Performance Requirements:
   1. Window units shall be designed to comply with ANSI/NWWDA I.S.2-87 Grade 60 or ANSI/NWWDA I.S.2-93 DP40.
   2. Air leakage shall not exceed the following when tested at 1.57 psf according to ASTM E283: 0.10 cfm per linear foot of sash crack for Grade 60; 0.15 cfm per square foot of frame for DP40.
   3. No water penetration when tested at the following pressure according to ASTM E547: 6.24 psf for Grade 60; 6.0 psf for DP40.
   4. Assembly shall withstand a positive or negative uniform static air pressure difference of 60 psf without damage when tested according to ASTM E330.

B. For installation conference requirements, see Section 01200 - Project Meetings.

C. Provide a window meeting the project specifications for installation in the mockup panel. Refer to the drawings and Section 01451.

1.05 FIELD MEASUREMENTS

A. Field verify measurements as required to properly size windows and doors for existing openings.

1.06 SUBMITTALS

A. Submit copies of manufacturer's product data, installation instructions and shop drawings for doors and windows.

B. Shop drawings shall indicate installation details showing all surrounding materials, materials used in door and window fabrication, finish, joinery, glazing and anchorages and anchorage requirements for the substrate(s) involved. Submittals shall be in accordance with Section 01340.

C. 12" x 12" Samples of each type and thickness of glass shall be submitted for approval. Submit manufacturer's certification that materials submitted meet specification requirements.

D. Substitutions: Materials specified herein to be a certain manufacture or brand are used as a standard and materials of other manufacture may be submitted for substitution provided that they meet or exceed quality and performance specified. Submit in accordance with Sections 01340 and 01600.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Window units shall arrive at the job site packed and crated in manufacturer's original cartons.

B. Store windows under cover, on wood runners and in an upright manner that will prevent damage. Labels shall not be removed until final inspection.

C. Store door panels flat on a level surface in a clean and dry storage area. Seal unfinished top and bottom edges of door panels if door panels are stored at the job site more than one (1) week.

D. Condition doors to local average humidity before hanging.

E. Reject defective units. Installation of defective units will not be acceptable.

1.08 WARRANTY

A. Windows and doors shall be warranted to be free from defects in manufacturing, materials, and workmanship for a period of ten (10) years from date of purchase.

B. Replace windows and window components failing to perform during this warranty period at no cost to the Owner. Replacement shall include materials and labor.

C. Replace doors failing to perform during this warranty period at no cost to the Owner. Replacement shall include materials and labor.

D. Insulating glass shall be warranted against visible obstruction through the glass caused by a failure of the insulating glass air seal for a period of twenty (20) years from the date of original purchase.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Acceptable Manufacturers
   1. Marvin Windows and Doors
   2. Sierra Pacific Windows
   3. Anderson Windows
   4. Pella Windows
   5. Other manufacturers subject to compliance with the project requirements

B. Basis of design: Marvin Ultimate Clad windows and doors.

C. Submit substitution requests in accordance with Section 01600.
   1. Exact match to existing windows and doors in Phase 1 is required for shape, profile, operation, etc.

2.02 ALUMINUM CLAD WOOD WINDOWS

A. Description: Aluminum clad wood windows, factory assembled, pre-glazed, operable and fixed designs.
   1. Furnish window units with interior wood trim.
   2. Furnish extruded aluminum brick mold a shown in the drawings.

B. Frame
   1. Interior: Clear pine. Finger jointed material will not be acceptable.
   2. Exterior: Clad with 0.050 inch thick extruded aluminum, prefinished in color as selected by the Architect.
   3. Color: Marvin "Select Clad Colors"
   4. Head: 11/16 inch thick.
   5. Jambs: 1-3/32 composite jambs.
   6. Sills: 1-7/16 inch thick
   7. Frame Width: 5 inches.
   8. Brick Mold: Provide extruded aluminum brick mold, shapes and sizes where shown in drawings. Brick mold shall be factory applied.

C. Sash
   1. Finish
      a. Interior: Clear pine, to be field painted.
      b. Exterior: Clad with 0.050 inch thick extruded aluminum, prefinished in color as selected by Architect.
      c. Composite Sash Thickness: 1-9/16"
      d. Picture Unit and Transom Thickness: 1-7/8" thickness.

2. Glazing: Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 774. Provide 1" insulating, Low E II glass, and frosted insulated glazing where noted in drawings. Provide divided light grid pattern, as shown on drawings.
3. Hardware: Factory installed corrosion-resistant, operating hardware and fasteners.
   a. Sash and Lock Keeper: Surface mounted, open style crescent cam lock, with oil rubbed bronze finish.
   b. Sash Lift: Oil rubbed bronze.
   c. Sash Tilt Lever: Oil rubbed bronze.
   d. Balance System: Block and tackle balance system.
   e. Operating Crank: Oil rubbed bronze

D. Weatherstripping
1. Operating units: Continuous leaf weather strip at head and jamb; dual bulb at check rail, weather strip at bottom rail.
2. Picture Units: Continuous weather strip at perimeter; leaf and bulb weather strip at jamb, bulb weather strip at head and sill.

E. Jamb Extensions: Provide manufacturer's standard jamb extensions as required to accommodate various wall thickness.

F. Installation Brackets: Manufacturer's standard brackets designed to accommodate wall construction at window location.

G. Divided Lite Muntins
1. Interior Bars: 7/8" wide bars, finished to match window interior.
2. Internal Spacer Bars: 7/8" wide bars, finished to match window interior.
3. Exterior Bars: 7/8" wide bars, finished to match window exterior.

H. Structure
1. All internal structure required for the aluminum clad wood windows shall be designed, and provided by the window manufacturer as part of the window system.

2.03 ALUMINUM CLAD WOOD DOORS

A. Description: Aluminum clad wood doors, factory assembled, preglazed.
1. Furnish units with interior wood trim.

B. Construction: Finger jointed, edge glued pine core with wood laminated veneer to the interior and aluminum coated bare wood to the exterior. Aluminum coating shall comply with AAMA 2605-05.

C. Frame Description
1. Finger jointed, edge-glued pine core with vertical grain, Clear Pine interior, with no finger jointing.
   a. Kiln dried to a moisture content no greater than twelve (12) percent at the time of fabrication.
   b. Water repellent, preservative treated in accordance with WDMA I.S.4.
2. Frame width: 4-9/16 inches.
3. Frame thickness: 1-1/16 inches
4. Exterior extruded aluminum clad 0.050 inch thick.
5. Low profile sill. Jambs extended 7/8 inch (22 mm) beyond panel bottom.
6. Steel frame with unequal rabbet minimum 16 gauge, in size compatible with opening size and wall construction.
7. Anchors: Provide anchors compatible with type of wall construction in which door is located.
8. Finish: Field stained interior.
9. Casing: 3" flat aluminum clad casing, or as selected from standard shapes.

D. Panels: Provide raised panels, in configuration indicated on Drawings.
   1. Stiles: finger jointed, edge-glued LVL. Rails: finger jointed, edge-glued pine cores with Pine interior.
      a. Kiln dried to a moisture content no greater than twelve (12) percent at time of fabrication.
      b. Water repellent, preservative treated in accordance with WDMA I.S.4.
   2. Stiles contain laminated veneer lumber (LVL) core, solid wood top and bottom rail, with Pine interior.
   3. Composite Panel Thickness: 2-1/4 inch thickness.
   4. Exterior Extruded Aluminum cladding: 0.055 inch thick.
   5. Top Rail Width: 8-3/8 inch panel.
   6. Stile width: 6 inches (152 mm).
   7. Bottom rail height: 11-3/8 inches (289 mm).
   8. Panel corners glued and fastened with 5/8 x 4 inch fluted hardwood dowels. Removable interior wood glazing stops with clear wood covers; 1-3/4 inch panel - no visible fastener holes (2-1/4 inch panel – nailed on glazing stops).
   9. Finish: Field painted.

E. Glazing
   1. Select quality complying with ASTM C 1036. Comply with 16 CFR 1201 Safety Standard for Architectural Glazing Materials. Tempered insulating glass IGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 774.
   2. Glass Type: Clear, Low E II—Argon Gas; except provide laminated glass, with .030 polyvinyl butyral inner layer where glass may be subjected to human impact.
      a. Glazing Seal: Silicone bedding, exterior.

F. Exterior Finish: Extruded aluminum clad. Fluoropolymer modified acrylic topcoat applied over primer. Meets or exceeds AAMA 2605 requirements.
   1. Color: As selected by Architect from manufacturer's colors.

G. Interior Finish: Treated bare wood for field painting.

H. Hardware
   1. Hinges: 4-1/2" x 4-1/2" square corner ball bearing hinges. Finish: Bronze.
   2. Locking System: As specified in Section 08710.

I. Weatherstripping: Head jamb and side jambs to have two sets of bulb weather strip, locking stiles have pile weather strip maintaining contact with door panels. Provide pile weather stripping at center of paired doors, factory applied.

J. Jamb Extensions
   1. Factory installed (loose), for wall thickness indicated or required.
   2. Finish: Match interior frame wood species and finish.

K. Installation and Hardware Accessories
   1. Factory installed vinyl nailing fin/drip cap.
   2. Installation brackets: Installation Brackets: Manufacturer's standard brackets designed to accommodate wall construction at door location.

L. Aluminum Extrusions
   1. Profile: Brick mould casing; Flat casing; Frame expander; Jamb extender; Mullion cover; Mullion expander as indicated on drawings.
   2. Finish: Fluoropolymer modified acrylic topcoat applied over primer. Meeting or exceeding AAMA 2605 requirements.
   3. Color: As selected by Architect.

M. Divided Lites
   1. Interior Bars: 7/8" wide bars, finished to match window interior.
   2. Internal Spacer Bars: 7/8" wide bars, finished to match window interior.
   3. Exterior Bars: 7/8" wide bars, finished to match window exterior.

N. Structure
   1. All internal structure required for the aluminum clad wood doors shall be designed, and provided by the door manufacturer as part of the door system.

PART 3 - EXECUTION

3.01 GENERAL

A. Comply with applicable requirements the manufacturer and of other Sections of these specifications for the installation of all component parts, including sealants, joint fillers, flashing, insulation, masonry, and other elements of the wall system.

3.02 EXAMINATION

A. Prior to starting door and window installation, check the work for defects that may negatively impact proper performance of this work. Defects shall be corrected prior to starting window installations.

B. Starting work under this section implies acceptance of work of others as being suitable for the proper installation of the work of this Section.

3.03 ALUMINUM CLAD WINDOW INSTALLATION

A. Do not install component parts which are observed to be defective in any way, including warped, bowed, dented, abraded and broken members, and including preglazed damaged glass.

B. Install windows in prepared openings in accordance with manufacturer's printed instructions. Mount window units with screws through the frames, per the manufacturer's instructions; mounting with nailing flanges is not allowed. Windows assemblies shall be properly flashed with material as specified under Section 07600. Apply sealant the full perimeter of the windows; refer to Section 07920 for sealant.

C. Windows shall be installed square, plumb and totally rigid. Remove and replace units which have been damaged during installation or after installation, before date of Substantial Completion.

D. Do not cut, trim or modify component parts during erection in a manner that would damage the strength or finish, or result in a visual imperfection or a failure in performance of the windows and doors.

E. Return component parts that require alteration to the shop for re-fabrication, if possible, or replace with new parts.

F. Adjust operable sash to work freely with hardware functioning properly. Re-adjust at completion of the project if directed.

3.04 ALUMINUM CLAD WOOD DOOR INSTALLATION

A. Assemble and install doors and frames according to manufacturer's instructions and reviewed shop drawings.

B. Install accessory items as required for complete and proper installation of doors.

C. Use finish nails to apply wood trim and moldings.

D. Install doors plumb and level. Adjust door to work freely with hardware functioning properly.

3.05 CLEANUP

A. Remove visible labels and adhesive residue according to manufacturer's instructions.

B. Upon completion of the installations remove excess materials and debris from the job site.

C. Clean glass using compatible cleaning agents that will not harm the glass or sealants.

3.06 PROTECTION

A. Protect installed windows and doors from damage until the date of Substantial Completion.

B. Damaged units shall be repaired or replaced at no cost to the Owner.

END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes all finish hardware and related items.

1.02 RELATED SECTIONS

A. Section 08100 - Hollow Metal Doors and Frames: Preparation of hollow metal work to receive finish hardware items. Installation of finish hardware items.

B. Section 08210 - Wood Doors: Preparation of wood doors to receive finish hardware items (factory preparation). Installation of finish hardware items.

C. Section 08640 - Aluminum Clad Windows and Doors: Preparation of clad wood windows and doors to receive finish hardware.

D. Section 09900 - Painting: Removal of finish hardware items before finishing of doors and frames.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements
   1. All hardware and its installation shall comply with the Handicapped Code having jurisdiction over this project.
   2. Comply with requirements of the Americans with Disabilities Act (ADA) for hardware type, installation methods and mounting heights.

1.04 SUBMITTALS

A. Submittals shall be made in accordance with Section 01340. Copies of technical data, catalog cuts of each piece of hardware to be used and a Contractor prepared hardware schedule shall be submitted to the Architect. Physical samples of hardware items shall be furnished, if requested. The Contractor prepared hardware schedule shall be furnished with reference being made to door numbers and room numbers indicated on the drawings and shall list all manufacturers. Modifications made in hardware schedule after approval shall be made solely to provide the desired operation or functional feature and will be made only after obtaining written approval. Provide a full-time competent hardware consultant available at all times to work with the Architect and Contractor.

1.05 JOB CONDITIONS

A. Protection: Hardware shall arrive at the job site packed in heavy cartons marked to agree with the approved hardware schedule. Prior to installation store material under cover in a manner that will prevent damage and theft.

1.06 KEYING

A. Key and Master Key as directed; coordinate with Owner.

1.07 GUARANTEES

A. Guarantee all materials to be free from defects in materials and workmanship and perform satisfactorily for the use(s) intended for a period of two (2) years from the Date of Substantial Completion.

B. Provided extended guarantees on the following items:
   1. Door Closers: Ten (10) year period.
   2. Exit Devices: Three (3) year period.

C. Hardware items which become defective within this time shall be replaced by the Contractor at no cost to the Owner (materials and installation).

1.08 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Parts Kits: Furnish manufacturers' standard parts kits for locksets, exit devices, and door closers.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Finish hardware shall be Commercial Grade 1. Finish hardware items shall be provided by the Allowance specified under Section 01020, Allowances.

2.02 MATERIALS AND FABRICATION

A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates). Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
   1. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
   2. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
   3. Provide concealed fasteners for hardware units that are exposed when door is closed, except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of adequately fastening the hardware. Coordinate with metal doors and frames where thru-bolts are used as a means of reinforcing the work. Provide sleeves for each thru-bolt or use sex bolt fasteners.

2.03 HARDWARE FINISHES

A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets. Finish shall be oil rubbed bronze (US10B). Coordinate finish of hardware items with cabinet hardware finishes and finishes on Owner's ecclesiastical items.

B. Finishes shall be as shown in the Hardware Headings in the Contractor-Prepared Finish Hardware Schedule.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All hardware will be installed plumb, rigid and in true alignment with doors. There shall be no excess clearance at the heads, jambs or sills. Care shall be taken in supplying the proper fastening device for each item so as to obtain best results.

B. All items shall be installed level, square and in proper alignment and relationship to all adjoining work. Attachment shall be means of appropriate nails, screws bolts and/or anchors or corresponding materials.

C. Set all thresholds in full bed of sealant and anchor with 1/4" machine screws and expansion or lead shields.

D. At points where aluminum comes into contact with steel, prime the steel first with asphalt paint then attach aluminum members.

E. All door silencers will be installed after doors and frames have received final painting. Under no circumstances will door silencers be painted.

F. Location of Hardware: The locations of hardware on door and frames shall be in accordance with the requirements of The National Association of Architectural Metal Manufacturers Association (NAAMM), The Steel Door Institute and the applicable handicapped codes and ordinances.

G. Surface mounted hardware, such as closers, bolts, exit devices, shall be thru-bolted, utilizing bolts, nuts and washers.

3.02 JOB COMPLETION INSTRUCTIONS

A. At the completion of the job, all the hardware, manufacturer's tools, wrenches, instructions and maintenance information, keylist, and key inventory shall be turned over to the Owner for use in maintaining the hardware.

B. Protect all knobs, levers and trim until completion of construction. Deliver all keys, properly labeled, to the Owner.

END OF SECTION

SECTION 08800

GLASS AND GLAZING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Includes, but not limited to the following:
   1. Glass and glazing in hollow metal work.
   2. Door view lites.
   3. Mirrors.
   4. All accessories required for complete installations and weathertight glazing.

1.02 RELATED SECTIONS

A. Section 08100 - Hollow Metal Doors and Frames: View lights installed in steel doors.

B Section 08210 - Wood Doors: View lites installed in wood doors.

C. Section 08640 - Aluminum Clad Windows and Doors: Glazing by window manufacturer.

D. Section 09900 - Painting: Completion of painting operations prior to mirror installations.

1.03 QUALITY ASSURANCE

A. Inspection of Glass Insulating Glass Units During Fabrication: Quality control shall be established for washing, assembly, and packaging stages of production. Units shall be inspected for primary seal continuity, sight-line consistency and foreign material sealed in lite.

B. Glass Quality
   1. Float: ASTM C1036-85, Type I, Class 1, Quality q3.
   2. Tempered: ASTM C1048-85, Kind HT, Type I, Class 1, Quality q3. Fully temper in accordance with ANSI Z97.1-1984.
   3. UL listed as required by the building code for fire rated door and window assemblies.

1.04 SUBMITTALS

A. Submit copies of technical data and shop drawings to the Architect in accordance with Section 01340. Reference shall be made to room names and numbers and schedule numbers shown on the drawings.

B. Two (2) 12"x12" samples of each type and thickness of glass shall be submitted for approval. Submit manufacturer's certification that materials submitted meet specification requirements.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All glass and related materials shall arrive at the job site properly packed and crated and marked to agree with the approved shop drawings and bearing factory labels on each pane. Labels shall not be removed until final inspection.

B. Store material under cover on wood runners on floors in an upright position and in a manner that will prevent damage.

1.06 GUARANTEES

A. Provide manufacturer's standard 10-year warranty protecting insulating glass against failure of seal. Replace glass (material and labor) units failing to perform during this warranty period at no cost to the Owner.

B. Guarantee for Unframed Mirrors: Warrant against silver spoilage for ten (10) year period.

C. Date of warranties shall commence at the Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GLASS AND GLAZING MATERIALS

A. Aluminum Clad Wood Windows and Doors: 1" Insulating glass.
   1. Inboard Lite: 1/4" Thickness, clear tempered.
   2. Outboard Lite: 1/4" Thickness, clear tempered.
   3. Glazing to meet requirements of door manufacturer.
   4. Glazing: Exterior EPDM gasket threaded into the aluminum glazing bead; 1" insulating glass made with mandatory safety glass lites; interior EPDM gasket threaded into the aluminum glazing bead; field-glazed by the entrance door installer.
   5. Provide 3-grid divided light pattern as shown on drawings, and specified in Section 08640.

B. Interior Door View Lites and Sidelites
   1. Glass in Non-Fire-Rated Door View Panels/Wall Assemblies: 1/4" clear tempered.

C. Interior Door and Window Fire Rated Glazing
   1. FireLite or FireLite Plus, as manufacture by Nippon Electric Glass Company, Ltd., and distributed by Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065 phone (800.426.0279) fax (425.396.8300) e-mail sales@fireglass.com, website http://www.fireglass.com
   2. Rating: As required in the drawings.

D. Unframed Mirrors: 1/4" Thick float glass with silvered backing with a film of copper electrolytically deposited directly over the silvered surface. A protective coating of two (2) coats of an approved mirror backing paint shall be applied over the copper backing. Edges of mirrors shall be ground smooth and polished. Provide mirrors with standard edge coating treatment (PPG UC-4401) to protect silvering from chemical attack.

E. Setting Blocks and Edge Cushions
   1. Setting Blocks
      a. Neoprene, EPDM, or silicone; ASTM D1056-78, 85 Shore A durometer hardness.
      b. Width: 1/16" Less than full channel width.
      c. Height: Sufficient height to provide recommended nominal bite and minimum edge clearance.
      d. Length: 0.1" Length per SF glass, but not less than 4" long.
   2. Edge cushions: Neoprene; ASTM D1056-78, 65 Shore A durometer hardness, 3" long minimum.

F. Spacer Shims: Neoprene; ASTM D1056-78, 40-50 durometer hardness.

G. Miscellaneous Accessories
   1. Glazing tape shall be Tremco Polyshim, as manufactured by Tremco of Cleveland, Ohio.
   2. Glazing sealant shall be Spectrem 2, as manufactured by Tremco of Cleveland, Ohio.
   3. Glazing Gaskets for Entrance Doors and Aluminum Curtain Wall Framing Systems: Provided as a component of the framing system. Provide manufacturer's standard EPDM glazing gaskets for specified system.
   4. Exposed Mirror Clips
      a. Top Clip: Knape & Vogt #318, 9/16" wide x 1-1.4" long.
      b. Bottom Clip: Continuous clip at base.

PART 3 - EXECUTION

3.01 GENERAL

A. Watertight and airtight installation of each glass product is required, except changes, wind loading, impact loading (for doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.

B. Protect glass from damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.

3.02 INSTALLATION

A. Install glazing materials in accordance with manufacturer's product data and applicable standards, except where more stringent requirements are specified.

B. Install setting blocks for glazing materials over six (6) square foot area. Install at sill rabbet at quarter points. Size setting blocks in proportion to glass weight; minimum 4" length.

C. Shim lites over 100 united inches, inboard and outboard, on all sides using continuous shims.

D. Interior Channel Glazing: Glaze using polyvinylchloride tape applied to both sides, all stops. Place tape with butted joints. Compress tape approximately 30%. Center glazing material in rabbet. Support glass all around with neoprene setting blocks, with no metal-to-glass or wood-to-glass contact. Draw up glazing beads with equal pressure all around.

E. Tempered Glass: Position bug or hallmark on unit so final position in framed opening occurs consistently in lower right-hand corner of unit, parallel to floor in inconspicuous location.

F. Cutting or altering lites of tempered and/or insulating glass in field is prohibited.

G. Mirrors
   1. Prepare walls with primer; install with adhesive (Palmer Mirro-Mastic) in accordance with manufacturer's product data; allow for vertical air movement behind unit; provide continuous mirror support along bottom edge attaching to wall using toggle bolts spaced at 1'-4" o.c., maximum.
   2. Install plumb and level.
   3. Multiple mirror installation, additional requirements:
      a. Prior to mounting mirrors, examine substrates for out-of-plane surfaces affecting mirror installation. Set mirrors plumb, level, and in straight plane without image interruption at mirror joints.
      b. Provide continuous mirror channel trim at top and exposed mirror edges; attach to wall using toggle bolts spaced at 1'-4" o.c., maximum.

3.03 PROTECTION AND CLEANING

A. After all construction has been completed and prior to Substantial Completion inspection and the possibility of glass breakage has been reduced to a minimum, remove all labels. Wash and polish glass on both faces, removing all paint, smears, and spots. Glass broken or damaged prior to date of Substantial Completion shall be replaced with glass of a like kind and quality at no expense to the Owner.

B. Remove all excess materials and debris from the project site.

END OF SECTION