

## **SECTION 08100 - FIBERGLASS DOORS AND FRAMES**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General Conditions, Amendments to General Conditions, Supplementary Conditions and Sections in Division 1 of the Specifications apply to work of this Section.

#### **1.2 DESCRIPTION**

- A. This section applies to fiberglass reinforced plastic (FRP) doors, frames, or approved equal.

#### **1.3 SUBMITTALS**

- A. Shop Drawings shall provide pertinent dimensions, hardware locations, transom and lite sizes, louver locations and dimensions, and door elevations. Mortises for hardware must be molded in at the factory as the door is built. Mortises shall not be routed or cut out of the stile structure or the jambs.

#### **1.4 PRODUCT HANDLING**

- A. All materials shall be delivered to the site in sealed, undamaged containers fully identified with the manufacturer's name, project number, the tag location, the door type, color and weight. The doors and frames must be shipped in wood crates with wood perimeters. Store materials in original cartons, on edge in such a way to prevent falling or damage to face, corners or edges.

### **PART 2 - PRODUCTS**

#### **2.1 DOORS**

- A. Door shall be made of fiberglass reinforced plastic (FRP) using resins tailored to a specific corrosive environment (stated by the purchaser at the time the order is placed) and have a fiberglass content of 25% by weight. The doors shall be flush construction, having no seams or cracks. All mortises shall be molded in at the factory. The doors shall be 1-3/4" thick with a 15mil (plus or minus 3 mil) color gelcoat and have an R-factor of 12. Secondary painting over pultrusions to achieve color is not acceptable.
- B. 20 Minute labeled fiberglass door required where called for on plans and schedules.
- C. **STILES AND RAILS**
  - 1. Shall be constructed starting from the outside toward the inside of a 15-20 mil gel coat of the color specified followed by a matrix of at least three layers of 1.5 ounce per square foot of fiberglass mat. The stile and rail shall be molded in one continuous piece to a U-shaped configuration and to the exact dimensions of the door (patented). In this manner there will be no miter joints or disparate materials used to form the one-piece stile and rail. Pultrusions will not be acceptable for stiles and rails as (1) the color gel coat is not an integral part of the structure ( it must of necessity be applied as paint when the structure is assembled), and (2) mortises must be cut into the pultrusions, thus weakening by removing as much as

two-thirds of its thickness and (3) the practice of mitered joints in pultrusions leaves access areas for penetration of contaminants to the inside of the door.

D. DOOR PLATES

1. Shall be molded in one continuous piece, starting with a 15-20 mil gel coat of the color specified, integrally molded with at least two layers of 1.5 ounce per square foot fiberglass mat and layer of 16 ounce per square yard unidirectional glass roving.

E. REINFORCEMENT

1. Adequate reinforcing and compression members shall be used to accommodate surface hinges, closers, locksets, kickplates, or push or pull plates. When engineering considerations dictate, mild steel is buried in the fiberglass matrix to provide enhanced screw holding power. In no case should screws be used into fiberglass matrix to provide holding for hinges, locks or closers or any structured attachment.
2. Thru-bolting is recommended for attachment of hinges, and closers in as much as the strength of thru-bolting is five to six times as great as edge attaching with screws. When thru-bolting is to occur, a compression member is to be located which will provide memory and resistance to the torquing of thru-bolts.
3. All voids between the door plates shall be completely filled with the equivalent of 4-6 pounds expanded polyurethane foam, having a flame spread of 25 or less per ASTM E-84. A phenolic-coated kraft honeycomb may be substituted for urethane foam where engineering requirements dictate.

F. FLAME SPREAD

1. All reinforcing resins shall contain a halogenated additive or coreactant plus Antimony Trioxide to achieve a flame spread of 25 or less per ASTM E-84 and shall be self-extinguishing per ASTM D-635.

G. COLOR:

1. The color of the door or frame shall be integrally molded as the part is made.
2. The color is to be as selected by the Architect. White and grey and tan are standard colors.
3. The deposit of 15-20 mils of gel coat is the equivalent of 50 to 60 coats of paint applied by spray.

2.2 FRAMES

- A. Frames shall be similar to the doors in construction and materials except the frames shall be solid fiberglass. The stop and frame will be molded all in one piece. The frame shall be integrally gelcoated to the customer's color when molded. Mortises will be molded in. It is not permitted to rout in mortises or remove any material from the head or jambs, to provide mortises.
- B. Reinforcement for mounting hinges, closers, etc., shall be of mild steel plates strategically located and buried in the resin-glass matrix so they will not be exposed to the elements.
- C. The jamb shall be flat on the backside (against the openings) and uniform in thickness so as to provide a solid, uniform surface against the wall opening. No wood blocks or spacers are permitted.
- D. 20 Minute labeled fiberglass door frame required where indicated on plans and schedules.

2.3 HARDWARE

- A. See section 08710 for hardware

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be in strict compliance with manufacturer's written instructions using non-corrosive materials and methods.

3.2 GUARANTEE

- A. Door Company shall unconditionally guarantee its registered doors for ten years against failure due to corrosion from the specific environment named at the time of purchase.

END OF SECTION 08100

## **SECTION 08111 - STANDARD STEEL DOORS AND FRAMES**

### **PART 1 - GENERAL:**

#### **1.1 SUMMARY:**

- A. Work in this section includes:
  - 1. Hollow Metal Doors
  - 2. Hollow Metal Frames
  
- B. Related work includes:
  - 1. Flush wood doors (section 08211)
  - 2. Glazing (section 08800)
  - 3. Joint sealers (section 07900)

1.2 **SUBMITTALS:** With manufacturer's standard details and specifications for steel doors and frames, submit shop drawings showing application to project, as required.

1.3 **STANDARDS:** In addition to other specified requirements, comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" ANSI/SDI-100.

### **PART 2 - PRODUCTS**

#### **2.2 MANUFACTURER:** One of the following:

- A. Ceco Corp.
- B. Curries
- C. Steelcraft Manufacturing Co.

#### **2.2 MATERIALS**

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized. Use where exposed to weather.
- D. Supports and Anchors: Fabricate of not less than 18-gage sheet steel; galvanized where used with galvanized frames.
- E. Shop Applied Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints complying with ANSI A224.1.
- F. Fire-Rated Assemblies: Provide units that display appropriate UL or FM labels for fire-rating indicated.

- G. Fabrication: Fabricate units to be rigid, neat in appearance, and free from defects, warp or buckle. Weld exposed joints continuously, grind, dress, and make smooth, flush and invisible.
- H. Prepare steel doors and frames to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping, complying with ANSI A 115 "Specifications for Door and Frame Preparation for Hardware." Note continuous hinges.
- I. Doors: SDI grades and models specified below or as indicated on drawings or schedules:
  - 1. Interior Doors: ANSI/SDI-100, Grade II, Model II, 18-gage cold-rolled steel faces.
  - 2. Exterior Doors: ANSI/SDI-100, Grade III, extra heavy-duty, Model 4, minimum 16-gage galvanized steel faces in compliance with SDI 112.
- J. Frames: Comply with ANSI/SDI-100, of the types and styles indicated, for materials quality, metal gages, and construction details.
  - 1. Provide standard hollow metal frames for doors, transoms, sidelights, borrowed lights, and other openings as indicated.
  - 2. Fabricate frames with mitered, coped, or welded corners.
  - 3. Prepare frames to receive 3 silencers on strike jambs of single-door frames and on heads of double-door frames.
  - 4. Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of hardware cutouts where installed in concrete, masonry or plaster openings.
  - 5. Protect inside faces of frames in plaster or masonry wall construction which are placed with anti-freeze additives, using high-build fibered asphalt emulsion coating.
  - 6. Form exterior frames from 16-gage galvanized steel.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

Install hollow-metal units in accordance with manufacturer's instructions and final shop drawings (if any). Fit doors to frames and floors with clearances specified in ANSI/SDI-100.

- A. Install frames in accordance with SDI 105.
- B. Doors and frames shall be installed plumb, true and in alignment with each other. Frames shall be securely anchored, filled solid with grout and completely rigid in walls.
- C. Install fire-rated units in accordance with NFPA Std. No. 80.
- D. Finish hardware is specified in another Division 8 section.

END OF SECTION 08111

## **SECTION 08120 - ALUMINUM DOORS AND FRAMES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Glazed aluminum swinging doors.
  - 2. Aluminum door frames and sidelights.
  - 3. Aluminum window frames.
- B. Products Installed but Not Furnished under This Section:
  - 1. Mortise lock cylinders: Furnished elsewhere in Division 8, but installed in this section.
- C. Related work includes:
  - 1. Glazing (08800)
  - 2. Joint Sealants (07900)

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. Exterior Assemblies: Design to comply with the performance criteria listed below.
- B. Air Infiltration:
  - 1. Single doors: Not more than 0.6 cfm per linear foot of crack.
  - 2. Doors: Measure at 1.56 psf.
- C. Condensation Resistance:
  - 1. Door frames: Not less than 60.
- D. Thermal Transmittance (U-Value):
  - 1. Door frames: Not more than 0.58.

#### **1.3 SUBMITTALS**

- A. Product Data: Manufacturer's material specifications, drawings of standard components, and installation recommendations.
- B. Shop Drawings: Show elevations, field measurements, composite members, reinforcement, anchorages, expansion provisions, hardware mounting, and glazing.
- C. Samples for Verification of Anodized Finishes: For each type and color of anodized finish, submit 12-inch-long sections of extrusions and formed sections and 6-inch-square sheets. Submit at least 2 pieces for each color showing full range of color variation.

#### **1.4 QUALITY ASSURANCE**

- A. Standard for Air Infiltration Testing: ASTM E 283; report result as cubic feet per minute per unit of measurement indicated, at pressure differential indicated.
- B. Standard for Condensation Resistance Testing: AAMA 1503.1; report result as CRF.
- C. Standard for Thermal Transmission Testing: AAMA 1503.1; report result as U-value (Btu per hour per square foot per degree F).

- D. Design Criteria: The drawings indicate the size, profile, and dimensional requirements of aluminum entrance and storefront work required and are based on the specific types and models indicated. Aluminum entrance and storefront by other manufacturers may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.
  - 1. Exterior Entrance Door Frame and Sidelight: Kawneer Trifab II 451; insulating glass glazed.
  - 2. Aluminum window frame: Kawneer Trifab II 451; Insulating glass glazed.

## 1.5 PROJECT CONDITIONS

- A. Take field measurements as required for correct fit.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Aluminum Doors and Frames:
  - 1. Provide products complying with requirements of the contract documents and made by one of the following or and approved equal:
    - a. Kawneer Company, Inc.
    - b. PPG Industries, Inc.
    - c. Tubelite Architectural Products Division/Indal, Ltd.
    - d. United States Aluminum Corporation.

### 2.2 FRAMING SYSTEMS

- A. Aluminum Door and Window Frames: Extruded tube or channel frames with either mechanical or welded joints.
  - 1. Finish:
    - a. Class I color anodized finish.
      - 1. Color: To be selected from manufacturers standard colors.

### 2.3 SWINGING DOORS

- A. Stile and Rail Doors: Glazed doors with tubular extruded aluminum frame members.
  - 1. Frame joints: Either concealed mechanically fastened, using tie rods or j-bolts and reinforcing plates; or welded.
  - 2. Thickness: 1-3/4 inches.
  - 3. Stile width: 3-1/2 inches nominal.
  - 4. Full glazed, with no intermediate mullions.
  - 5. Glazing stops: Snap-on extruded aluminum, designed to allow replacement of glazing without disassembly of frame. Provide nonremovable exterior stops.
  - 6. Glaze doors in factory.
  - 7. Finish:
    - a. Class I color anodized finish.
      - (1). Color: To be selected from manufacturers standard colors.
- B. Weatherstripping:
  - 1. At fixed stops: Replaceable, compression type molded gaskets of neoprene or EPDM rubber complying with ASTM C 864 or of polyvinyl chloride complying with ASTM D 2287.
  - 2. At other edges: Replaceable woven polypropylene, wool, or nylon pile, with aluminum or nylon fabric backing, complying with AAMA 701.

3. At door bottom: Adjustable molded EPDM or vinyl sweep, continuously contacting threshold; concealed mounting.
  4. Provide weatherstripping on all exterior doors.
- C. Silencers: Neoprene bumpers.
1. Provide on all interior doors.
- D. Hardware for Aluminum Doors: Provide all hardware as required for proper operation, in accordance with the schedule located at the end of this section.
1. Finish: Match doors.
- E. Mortise Lock Cylinders: Furnished elsewhere in Division 8.
- F. Thresholds: Extruded aluminum thresholds in mill finish, complete with anchors and clips. Verify type and size with field conditions prior to ordering.

## 2.4 MATERIALS - GENERAL

- A. Aluminum Members: ASTM B 221 for extrusions, ASTM B 209 for sheet/plate; alloy and temper recommended by the manufacturer for the strength required, for corrosion resistance, and for the finish required.
1. Class I color anodized finish: AA-M12C22A42/A44 (non-specular, as-fabricated mechanical finish; medium matte etched chemical finish; integral or electrolytically deposited color, architectural Class I anodic coating minimum 0.7 mil thick).
- B. Fasteners: Compatible with aluminum; aluminum, nonmagnetic stainless steel, or other non-corrosive, non-corrodible material.
1. Do not use exposed fasteners.
- C. Concealed Flashing: Fully annealed, soft stainless steel, 26 gage minimum; or extruded aluminum, 0.032 inch minimum.
- D. Miscellaneous Concealed Metal Members: High-strength aluminum or nonmagnetic stainless steel; hot-dip galvanized steel complying with ASTM A 123 may be used for members which are not exposed to weather or abrasion.
- E. Concrete Inserts: Cast iron, malleable iron, or steel hot-dip galvanized in accordance with ASTM A 123.
- F. Dissimilar Metal Coating: Cold-applied asphalt mastic, or other nonconductive, non-absorptive material.
- G. Glass and Glazing Accessories: Provide products specified elsewhere in Division 8.
- a. Use 1" insulated glass as specified in section 08800 at all locations
- H. Joint Sealers: Provide products specified in Division 7.

## 2.5 FABRICATION

- A. Framing System: Pre-cut and perform all finishing in factory or shop.
1. When it is necessary to begin fabrication without actual field measurements, provide adequate fabrication tolerances for correct fit.
  2. Fit joints tightly with adjacent members in correct relationship.

3. Select members for fabrication so that adjacent anodized extruded aluminum members do not have color or texture variation greater than half of the range indicated in the submitted samples.
- B. Doors: Factory-fabricate doors and factory-install all hardware except surface-mounted items.
  1. Perform fabrication required for hardware before finishing.
- C. Welding: Perform welding before finishing; use methods which do not discolor metal; grind exposed welds flush; match original finish.
- D. Reinforcing: Provide as required to comply with performance requirements for rigidity and to support hardware; isolate dissimilar metals as specified in "Installation."
- E. Avoid damage to finishes.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Examine structures; report conditions in writing which will adversely affect installation.

#### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's recommendations and instructions.
- B. Install plumb and level, square and true, in correct location; support adequately and securely anchor.
- C. Separate aluminum exposed to weather from dissimilar metals; coat dissimilar metals that are in drainage cavities using one of the materials specified. Aluminum, stainless steel, zinc, cadmium, and small areas of white bronze are not considered dissimilar from each other.
- D. Coat all metals that come into contact with masonry, concrete, and treated wood, using one of the materials specified.
- E. Install surface-mounted hardware in accordance with hardware manufacturer's instructions.
- F. Install glass using methods specified elsewhere in Division 8. Factory install to greatest extent possible.
- G. Set threshold units level and accurately in seal strip of butyl rubber sealant or polyisobutylene mastic sealant. Cope and align with frames and doors, and at proper elevation for door operation. Shim, if necessary, for full continuous support of threshold at each edge and intermediate legs, if any. Use non-corrosive shims of metal or plastic, set in adhesive or otherwise anchored against dislocation from impact or traffic upon threshold.

#### 3.3 ADJUST AND CLEAN

- A. Adjust each operable unit for correct function and smooth, free operation and so doors close tightly.
- B. Clean exterior and interior soon after installation of glass, taking care to avoid damage to finishes.

C. Clean glass surfaces as specified elsewhere.

3.4 SWINGING DOOR HARDWARE SCHEDULE

A. See Hardware Allowance in Section 01020.

END OF SECTION 08120

## **SECTION 08211 - FLUSH WOOD DOORS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. Section includes:
  - 1. Wood Doors
  
- B. Related work
  - 1. Standard steel doors and frames (08111)
  - 2. Door (08710)
  - 3. Painting (09900)

#### **1.2 QUALITY STANDARDS: Comply with NWWDA I.S.1 and AWI "Architectural Woodwork Quality Standards".**

- A. Comply with WIC "Manual of Millwork" for requirements in the door grade comparable to AWI grade indicated and exceeding those in other referenced standards.

#### **1.3 SUBMITTALS: In addition to product data, submit the following:**

- A. Shop Drawings indicating location, size, face material, and finishes of each door required.
- B. Samples 1-0" square, of each type of core construction, face material and finish required.

### **PART 2 - PRODUCTS:**

#### **2.1 MANUFACTURERS: Subject to compliance with requirements, provide wood doors by one of the following:**

- A. Algoma Hardwoods, Inc.
- B. Mohawk Plush Doors, Inc.
- C. Weyerhaeuser Company

#### **2.2 GENERAL WOOD DOOR PRODUCT REQUIREMENTS: Provide doors with same exposed surface material on both faces of each door, unless otherwise indicated.**

#### **2.3 INTERIOR SOLID CORE DOORS FOR TRANSPARENT FINISH: As follows:**

- A. Faces: Birch, plain sliced
- B. AWI Grade: Premium.
- C. Construction: PC-5 (Particleboard core, 5-ply).

#### **2.4 INTERIOR FIRE-RATED SOLID CORE DOORS: Labeled and listed for rating indicated, by testing and inspection agency acceptable to authorities having jurisdiction, complying with the following requirements:**

- A. Faces and AWI Grade: Match faces of non-rated doors in same area of building, unless otherwise indicated.
- B. Edge Construction: Solid hardwood, no finger joints, matching edge.

- C. Pairs: Furnished formed steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.
    - 1. Provide fire-rated pairs with fire-retardant stiles which are labeled and listed for kinds of applications indicated without formed steel edges and astragals.
  - D. Wood Beads for Light Openings in Fire Doors: Manufacturer's standard fire-rated wood-veneer beads matching veneer species of door faces.
- 2.5 Fabricate flush wood doors to produce doors complying with following requirements:
- A. In sizes indicated for job-site Fitting.
  - B. Factory-prefit and premachine doors to fit frame opening sizes indicated and complying with AWI prefitting tolerances.
  - C. Metal Astragals: Premachine astragals and formed steel edges for hardware where required for pairs of fire-rated doors.
  - D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of doors required.
    - 1. Light Openings: Trim openings with moldings of material and profile indicated.
- 2.6 Shop seal faces and edges of doors for field-applied transparent finish with stain.

#### PART 3 - INSTALLATION

- 3.1 Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.
  - A. Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.
- 3.2 Align and fit door in frames with uniform clearances and bevels. Machine doors for hardware. Seal cut surfaces after fitting and machining.
- 3.3 Prefit Doors: Fit to frames for uniform clearance at each edge.

END OF SECTION 08211

## **SECTION 08336 - OVERHEAD COILING DOORS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Overhead coiling doors.
  - 2. Overhead coiling shutter.
- B. Related Documents:
  - 1. Division 0 – Bidding and General Conditions, Division 1 – General Requirements, all applicable provisions in the technical specification sections of Division 2 through 16 and applicable drawings apply to this section.
- C. Related Sections:
  - 1. Rough Carpentry, Division 8.
  - 2. Door Hardware, Division 8.
  - 3. Paint and Coatings, Division 9.
  - 4. Metal Doors and Frames, Division 8.
  - 5. Alternates, Division 0.

#### **1.2 SUBMITTALS**

- A. Product Data: Written technical information and installation instructions for each coiling door type, which demonstrate that products comply with contract documents.
- B. Shop Drawings: Include only information on materials, details, and installation instructions not already described in manufacturer's product data.
- C. Contract closeout submittals:
  - 1. Manufacturer's standard operating instructions and maintenance data.

#### **1.3 QUALITY ASSURANCE**

- A. Provide one manufacturer's coiling door assembly, complete with operating accessories and installation hardware.
- B. Installer Qualifications: Manufacturer's authorized installer for the type of unit specified.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Coiling Door and shutter:
  - 1. Provide products complying with requirements of the contract documents and made by one of the following or an approved equal:
    - a. Overhead Door Corporation
    - b. Cornell Iron Works, Inc.
    - c. Atlas Roll-Lite Door Corporation

## 2.2 MATERIALS

- A. Iron Castings: ASTM A 48.

## 2.3 MANUFACTURED UNITS

### A. Overhead Coiling Door:

1. Curtain:
  - a. Material: Galvanize steel painted (pre-finished)
  - b. Gage: 24 min.
  - c. Slat profile: Manufacturer's standard flat-faced slat. Similar to Overhead Door Corp., F-2651; fully foamed in place and insulated.
  - d. Finish: Rust-inhibitive roll coating process including bonderized baked-on prime paint - .2 mils thick, and .6 mil baked on polyester top coat; color to be selected from standard colors. Base bid on Dark Bronze preliminary color selection.
2. Guides:
  - a. Material: Stainless steel.
  - b. Finish: Same as curtain.
3. Provide manufacturer's standard integral jamb and sill trim.
4. Hood:
  - a. Material: Aluminum
  - b. Finish: Match curtain finish.
5. Operator: Provide chain hoist and chain keeper locks.
6. Locking device: Slide bolt with thumb turn.
7. Door and components to meet 90 MPH wind loads.
8. Provide weatherseals.
9. Door shall be similar to Overhead Door Corporation 616 series, insulated, or equal as stated in 2.1A.

- B. Electric motor operator, bench mounted, ½ HP similar to overhead door model RDB with push button switch inside.

### C. Coiling Shutter (Insultated)

1. Curtain:
  - a. Material: Galvanized steel painted.
  - b. Gage: 22.
  - c. Slat profile: Manufacturer's standard flat-faced slat.
  - d. Finish: Base bid to be dark bronze preliminary color selection.
2. Guides:
  - a. Material: Stainless steel.
  - b. Finish: Same as curtain.
3. Provide manufacturer's standard integral jamb and sill trim.
4. Hood:
  - a. Material: Aluminum
  - b. Finish: Match curtain finish.
5. Operator: Manual push-up with lift handle.
6. Locking device: Slide bolt with thumb turn.
7. All components to meet 90 MPH wind loads.
8. Provide weatherseals.
9. Door shall be similar to Roll-A-Way Shutter w/insulated polymer composite curtain or equal by Overhead Door or approved equal.

## 2.4 COMPONENTS

- A. End Locks (doors): Galvanized iron castings, ASTM A 48; fasten to each end of curtain at about 24 inches on center to resist lateral force.
- B. Bottom Bar:
  - 1. Bottom bar, overhead coiling doors: Tubular bar; match curtain finish.
    - a. Bottom seal: Replaceable vinyl or neoprene bumper.
- C. Curtain Guides (doors):
  - 1. Construct door guides from steel angles of a size and in configuration necessary to support curtain loads.
- D. Counterbalance Mechanism:
  - 1. Adjustable steel helical torsion spring, on a steel shaft.
  - 2. Provide lubricated bearings for operational parts.
  - 3. Spring barrel: Structural quality steel pipe, sized to support curtain and limit barrel deflection to 0.03 inch per span foot maximum, when curtain is fully loaded.
  - 4. Counterbalance: Structural quality carbon steel welded or seamless pipe, sized to support curtain weight and movement, and limit barrel deflection to maximum 0.03 inch per span foot when fully loaded.
  - 5. Spring balance: Heat-strengthened steel helical torsion springs; sized to counterbalance curtain weight.
  - 6. Counterbalance shaft: Case-hardened steel; designed to retain spring ends and resist torsional forces.
  - 7. Brackets: Gray cast iron, ASTM A 48, or cold-rolled steel plate. Furnish with flared guide end for curtain.
- E. Hood:
  - 1. Enclose curtain coil and counterbalance mechanism with sheet metal hood.
  - 2. Between-jamb mounted units: Cover ends of counterbalance mechanism projecting beyond the wall face.
  - 3. Intermediate support brackets: Furnish as required for deflection-free installation.
  - 4. Hood material: Fabricate from type, thickness and finish indicated.
- F. Manual Operators Coiling Shutter:
  - 1. Manual push operation:
    - a. Overhead curtain, lift-up operation force: 25 pounds, maximum.
    - b. Design operating mechanism to allow curtain operation to stop and start at any curtain position.
    - c. Where indicated, furnish lift handle and slide bolt lock on inside of bottom bar.
- G. Electrical Motor Operator: in overhead coiling door.
  - 1. Bench mounted, ½ HP, similar to overhead door model RDB.

## 2.5 FABRICATION

- A. Door Curtain:
  - 1. Interlocking slats continuous for entire door width.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine openings to receive coiling doors.
- B. Correct substrate conditions which could prohibit proper installation or operation before starting installation work.

### 3.2 INSTALLATION

- A. Comply with manufacturer's directions and approved submittal information.

### 3.3 ADJUSTING

- A. Test and adjust doors to operate easily and be weather sealed when closed.

### 3.4 CLEANING

- A. Clean door assembly surfaces, removing dust, dirt, and grease before final acceptance.

### 3.5 PROTECTION

- A. After installation and before final acceptance, protect coiling door assembly surfaces from scratches, dents, and other damage.
- B. Replace parts damaged during construction before final acceptance.

END OF SECTION 08336

## **SECTION 08710 - DOOR HARDWARE**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. See Allowances Section 01020
- C. Definition
  - 1. "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door hardware. For any door not shown to receive hardware, provide hardware as shown for a similar opening. If there is no similar opening, provide three (3) butt hinges, one (1) mortise lockset, one (1) door closer, one (1) kickplate, and one (1) door stop per leaf.
- D. Submittals: Submit through Contractor required product data, final hardware schedule, separate keying schedule, and samples as specified in this Section, unless otherwise indicated.
- E. Construction Schedule: Inform Contractor promptly of estimated times and dates that will be required to process submittals, to furnish templates, to deliver hardware, and to perform other work associated with furnishing door hardware for purposes of including this data in construction schedule. Comply with this schedule.
- F. Coordination and Templates: Assist Contractor as required to coordinate hardware with other work in respect to both fabrication and installation. Furnish Contractor with templates and deliver hardware to proper locations.
- G. Product Handling: Package, identify, deliver, and inventory door hardware specified in this Section.
- H. Discrepancies: Based on requirements indicated in Contract Documents in effect at time of door hardware selection, furnish types, finishes, and quantities of door hardware, including fasteners, and Owner's maintenance tools required to comply with requirements and as needed to install and maintain hardware. Furnish or replace any items of door hardware resulting from shortages and incorrect items at no cost to the Owner or Contractor. Obtain signed receipts from Contractor for all delivered materials.
- I. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM types and sizes of doors required and complies with requirements of door and door frame labels.
  - 1. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors UL or FM labels indicating "fire door to be equipped with fire exit hardware") provide UL or FM label on exit devices indicating "fire exit hardware."

2. Provide hardware as required to meet label requirements whether scheduled or not.

## 1.2 CONTRACTOR'S RESPONSIBILITIES SHALL BE AS FOLLOWS:

- A. Submittals: Coordinate and process submittals for door hardware in same manner as submittals for other work.
- B. Construction Schedule: Cooperate with door hardware supplier in establishing schedules dates for submittals and delivery of templates and door hardware. Incorporate in construction schedule the times and dates related to furnishing hardware by door hardware supplier.
- C. Coordination: Coordinate door hardware with other Work. Furnish Hardware supplier or manufacturer with shop drawings of other work where required or requested. Verify completeness and suitability of hardware with supplier.
- D. Product Handling: Provide secure lock-up for hardware delivered to the site. Inventory hardware jointly with representative of hardware supplier and issue signed receipts for all delivered materials.
- E. Installation Information: The general types and approximate quantities of hardware required for this Project are indicated at the end of this Section in order to establish Contractor's costs for installation and other work not included in allowance.

## 1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification section.
  1. Product data including manufacturer's technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
  2. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  3. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
    4. Type, style, function, size, and finish of each hardware item.
    5. Name and manufacturer of each item.
    6. Fastenings and other pertinent information.
    7. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
    8. Explanation of all abbreviations, symbols, and codes contained in schedule.
    9. Mounting locations for hardware.
    10. Door and frame sizes and materials.
    11. Keying information.
- B. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.

- C. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawing of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

#### 1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.
- B. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

#### 1.5 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representative of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

#### 1.6 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.

## PART 2 - PRODUCTS

2.1 The following types of hardware will be used generally, but are not restricted to same:

- A. Hardware Schedule:
  - A. ABH
  - B. Glynn Johnson
  - C. Hager Hinge
  - D. Markar
  - E. McKinney
  - F. National Guard
  - G. Rockwood
  - H. Sargent

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
- B. "Recommended Locations for Builders Hardware for Standard Steel doors and Frames" by the Door and Hardware Institute.
- C. "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors".
- D. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- E. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- G. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers".
- H. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

### 3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
- D. Six-Month Adjustment: Approximately six month after the date of Substantial Completion, the Installer, accompanied by representatives of the manufacturers of latchsets and locksets and of door control devices, and of other major hardware suppliers, shall return to the Project to perform the following work:
  - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
  - 2. Consult with and instruct Owners personnel in recommended additions to the maintenance procedures.
  - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
  - 4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

### 3.3 KEYING

- A. Provide grand master and master keying into the Rockingham County keying system. Provide 4 keys to each door, 4 master keys and 4 grand master keys.

END OF SECTION 08710

## **SECTION 08800 - GLAZING**

### PART 1 -General

#### 1.1 Summary

- A. Work included in this section includes:
  - 1. All glass as shown on drawings
- B. Work related includes:
  - 1. Fiberglass doors (Section 08100)
  - 2. Aluminum doors and frames (Section 08120)
  - 3. Steel doors and frames (Section 08111)

#### 1.2 Standards

- A. Install glazing with dry glazing system.
- B. Glazing Standard: Comply with FGMA "Glazing Manual" and "Sealant Manual".
- C. Safety Glazing Standard: Comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.
- D. Fire Resistance Rated Wire Glass: Provide UL-labeled and listed products, identical with those tested per ASTM E 163 (UL 9).
- E. Insulating Glass Certification Program: Provide insulating glass units complying with requirements indicated which are permanently marked with certification label of the following inspecting and testing agency:
  - 1. Insulating Glass Certification Council.
- F. Preconstruction Sealant-Substrate Tests: Submit glass and glazing substrate materials to manufacturer of glazing sealants for testing to determine if primers are required and for sealant compatibility.

#### 1.3 Submittals: Submit shop drawings on dry glazing systems with physical sample 6" long.

- A. Comply with requirements of section 01340.
- B. See 2.1 for manufacturers.

### PART 2 - Products

#### 2.1 Acceptable Manufacturers:

- A. LOF, Libby-Owens-Ford Co.
- B. PPG Industries, Inc.
- C. CE, Combustion Engineering, Inc.
- D. Guardian Industries

## 2.2 Glazing schedule:

- A. Float Glass:
  - 1. Shall be 1/4" thick, clear float glass.
  - 2. Float glass shall meet the requirements of Federal Specification DD-G-451D.
  - 3. Glass to be tempered where shown on drawings.
- B. Insulated Glass: Low E glass
  - 1. 1" insulated glass shall be 2 pieces of clear 1/4" glass separated by air space. 5/8" insulated glass shall be two pieces of clear 3/6" thick glass separated by a desiccant and hermetically sealed with a structural sealant.
  - 2. Insulating glass shall be assembled by the glass manufacturer.
  - 3. Insulated glass shall meet the requirements of Federal Specification DD-G-451D.
  - 4. Glass to be tempered where noted on drawings.
- C. Laminated Glass
  - 1. Shall be clear laminated glass, 1/4" thick with clear vinyl interlayer.
  - 2. Laminated glass shall meet the requirements of Federal Specification DD-G-451d, 1977; American National Standards Institute (ANSI) Z97.1, 1975; and Consumer Product Safety Commission 16 CFR-1201.
- D. Tempered Glass
  - 1. Provide tempered glass where required by code.

## 2.3 Glazing System

- A. Windows - glazing system shall be dry glazing as recommended by window manufacturer. Submit shop drawings and sample of proposed system per section 01340.
- B. Fixed glass in Hollow Metal Frames and Doors shall be wet glazed with silicone sealant, color to match finish. Submit shop drawings and sample of proposed system per section 01340.

## 2.4 Setting Blocks

- A. Neoprene or EPDM with a Shore A durometer hardness of 85, 0.1" per sq. ft. of glass supported, or min. of 4" in length. Lead blocks may only be used for single float glass.

## PART 3 - Execution

### 3.1 Fabrication

- A. Clearance between glass face and frame:
  - 1. 3/16" glass = 1/9" min.
  - 2. 1/4" glass = 1/8" min.
  - 3. 5/8" insulated - 1/8" min.
- B. Clearance between glass edge and frame:
  - 1. 3/16" glass = 3/16" min.
  - 2. 1/4" glass = 1/4" min.
  - 3. 5/8" insulated = 1/8" min.

- C. Bite (Outer edge of glass to inner edge of frame):
  - 1. 3/16" glass = 5/16" min.
  - 2. 1/4" glass = 3/8" min.
  - 3. 5/8" insulated = 1/2" min.

### 3.2 Installation

- A. Meter frame shall not be in contact with installed glass.
- B. Setting blocks: Lites larger than 6 sq. ft., and all glass thicker than 1/8", shall be installed on 2 setting blocks at the bottom quarter points.
- C. Edge Blocks: In dry glazing systems, one 3" neoprene edge block shall be installed in each jamb, allowing 1/8" space between edge block and glass edge.
- D. Watershed: Glass shall be installed in frames with sealant forming a 1/16" watershed, both sides.
- E. Glass shall be installed clean, free of chips, cracks, scratches, blemishes, oil, dirt, stains or visible waves or distortions.
- F. All glass shall be cleaned immediately prior to final inspection.

### 3.3 Performance

- A. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 F degrees without causing detrimental effects to system or components.
- B. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with the requirements of the N. C. Building Code, and as measured in accordance with ANSI/ASTM E330.
- C. Limit air infiltration through assembly of 0.06 cu. ft./min./sq. ft. of assembly surface area, measured at a reference differential pressure across assembly of 0.3 inches water gage, measured in accordance with ANSI/ASTM E283.
- D. System to accommodate, without damage to system or components, or deterioration of perimeter seal: movement within system; movement between system and perimeter framing components; dynamic loading and release of loads; and deflection of structural support framing.
- E. Maintain continuous air and vapor barrier throughout assembly primarily in line with inside pane of glass.
- F. Maintain: Vapor seal with Interior Atmospheric Pressure of One Inch (25 mm) sp, 72 degrees F (22 degrees C), 40 percent RH: no failure.

END OF SECTION 08800