

## SECTION 08110 - STEEL DOORS AND FRAMES

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT:

- A. The Contractor shall furnish and install all steel doors, frames and related items, complete and operable, including finish hardware and all appurtenant work in accordance with the requirements of the Contract Documents.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Finish Hardware. Section 08710
- B. Glass installation, where applicable to steel doors is specified in Section 08800 entitled, "Glazing".

#### 1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

- A. All work specified herein shall conform to or exceed the requirements of the Building Code and the applicable requirements of the following trade standards to the extent that the provisions of such documents are not in conflict with the requirements of this Section.
  - 1. American National Standards Institute (ANSI).
  - 2. American Society for Testing and Materials (ASTM).
  - 3. National Association of Architectural Metal Manufacturers (NAAMM).
  - 4. Underwriters' Laboratories, Inc. (UL)
  - 5. Manufacturer's published recommendations and specifications.

#### 1.04 CONTRACTOR SUBMITTALS:

- A. Submittals shall be in accordance with the requirements of Section 01300 entitled, "Contractor Submittals". Submittals shall show details of the products, systems and connections to adjoining materials. Schedules showing sizes, types and locations of louvers and glass shall be submitted along with manufacturer's installation instructions. Manufacturer's literature and any certified engineering calculations that may be required elsewhere in this Section shall be submitted. Door jamb depths, trim profile and backbends shall be indicated on shop drawings submitted by the Contractor.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS AND FABRICATION:

- A. Shop Fabrication and Assembly: All steel doors and frames shall be shop fabricated and shop assembled, where possible. Temporary stiffeners, spacers and other accessories necessary to facilitate handling and accurate erection shall be provided. After fabrication, all tool marks and other surface imperfections shall be filled and ground smooth.
- B. Fire Rating and Labeling: Doors and frames indicated or shown as fire-rated shall bear a UL label indicating the type of rating for which certified. Designs and construction of such

products shall have specific UL approval according to current procedures for the specified fire rating shown.

- C. **Materials for Doors and Frames:** All exterior doors and frames except those designated to be aluminum shall be fabricated entirely of galvanized steel. Other doors and frames shall be fabricated from prime quality, commercial grade, cold-rolled steel conforming to ANSI/ASTM A366, Type II or III.
- D. **Priming and Painting:** Doors and frames shall be chemically treated to ensure maximum paint adhesion and shall have all exposed surfaces painted with a rust-inhibitive primer compatible with the coating systems specified under Section 09800 and/or 09900 after fabrication. Prime coat shall be capable of passing a 120-hour salt spray test in accordance with ANSI/ASTM B 117 and a 250-hour humidity test in accordance with ASTM D 1735.
- E. **Hardware:** Doors and frames shall be reinforced and drilled or tapped for fully templated mortised hardware; and shall be reinforced with plates for surface-mounted hardware, meeting ANSI Series A115 requirements. Hardware shall be as specified in Section 08710 entitled, "Finish Hardware", and/or as shown.
- F. **Acceptable Manufacturers:** Steel door, windows and frames shall be as manufactured by Ceo Corporation; Fenestra Corporation; Republic Builders Products Corporation; Trussbuilt, Inc.; Steelcraft; or approved equal.

#### 2.02 METAL FRAMES:

- A. **Pressed Metal Frames:** Pressed steel frames for doors and other openings shall be combination buckled frame and trim of type and sizes as shown. Metal shall not be lighter than 16-gage steel. Frames shall be of the welded unit type.

#### 2.03 FRAME ANCHORS:

- A. **Floor Anchors:** Floor anchors shall be welded inside each door jamb and holes shall be provided for floor anchorage. Minimum thickness of floor anchors shall be 14-gage.
- B. **Anchors for Masonry/Concrete Installations:** Door frames for installation in masonry and/or concrete walls shall be provided with adjustable jamb anchors of the T-strap, stirrups and strap or wire type. The minimum number of anchors provided per door jamb shall be as follows:
  - 1. Frames up to 7-feet 6-inches in height: 3 anchors on hinge side and 3 anchors on opposite side.
- C. **Anchors for Stud Wall Installation:** Door frames for installation in stud positions shall be provided with steel anchors of suitable design, shall be not less than 16-gage thickness and shall be securely welded inside each jamb as follows:
  - 1. Frames up to 7-feet 6-inches in height: 3 anchors on hinge side and 3 anchors on opposite side.
- D. **Anchors to Existing Construction:** Frames to be anchored to previously placed concrete, masonry or structural steel shall be provided with anchors of suitable design to meet job requirements or as shown.

#### 2.04 DUST COVER BOXES AND MORTAR GUARDS:

- A. Dust cover boxes or mortar guards of not less than 24-gage steel shall be provided at all hardware mortises on frames to be set in masonry, concrete or plaster walls.

2.05 SILENCER HOLES:

- A. Appropriate holes for silencers shall be provided in the door frames which are not designated to receive weatherstripping, sound or smoke seals.

2.06 STEEL DOORS:

- A. Design and Construction: Steel doors shall be of hollow metal construction and shall be of full flush design. Face sheets shall be not less than cold-rolled, stretcher-leveled 18-gage steel. All doors shall have flush seamless face sheets. Doors shall be rigid and neat in appearance and shall be free from warpage or buckle. Corner bends shall be true and straight and shall be of not less than the minimum radius for the gage of metal used. The door top and bottom shall be internally reinforced by steel members welded in place. Tops of exterior doors shall be provided with flush weathertight tops.
- B. Door Cores: Doors cores shall be water-resistant urethane with minimum "R" of 11. Fire rated doors shall be mineral core doors.
- C. Glazed Openings: Glazed openings in doors, sizes as shown, shall have mitered metal stops. Glazed openings in fire-rated doors shall meet UL requirements. Glass shall be as specified in Section 08800 entitled, "Glazing".
- D. Double Doors: Double doors shall be provided with a "T" type steel astragal.

PART 3 - EXECUTION

3.01 CONSTRUCTION:

- A. All work shall be in accordance with manufacturer's published recommendations and specifications.
- B. Installation of doors shall be coordinated with appropriate related subcontractors or trades to assure a proper installation. Field conditions and dimensions shall be verified by the Contractor prior to fabrication.

3.02 SHIPPING AND STORAGE:

Doors and frames shall be shipped and stored with temporary stiffeners and spacers in place to prevent distortion. Doors shall be protected from damage including scratches, dents, corrosion and warpage until accepted by the Owner.

3.03 FRAME INSTALLATION:

- A. Frames shall be set plumb and square in a true plane. Steel shims shall be provided and shall be set tight and rigidly attached between frame anchors and structure. All finished metal frames shall be strong and rigid, neat in appearance and square, true and free of defects, warp or buckle.
- B. Corner joints shall have all contact edges tightly closed with all trim faces mitered, welded and finished smooth. The use of gussets will not be permitted.

3.04 DOOR INSTALLATION:

- A. Doors shall be installed only by skilled workers. Doors shall be installed plumb and square and level with the frames securely anchored to the adjoining construction. Doors shall

operate smoothly and shall be free from rattling while in the closed position. The door clearances shall be plus 3/32-inch or minus 1/32-inch and shall not exceed the limits in the manufacturer's printed recommendations.

- B. Doors that become warped more than 1/8-inch out of plane shall be replaced by the Contractor at its own expense.

3.05 FINISH HARDWARE:

- A. All finish hardware shall be installed by skilled workers and in accordance with the hardware manufacturer's standard templates and printed instructions. All hardware shall be properly adjusted for correct function.

END OF SECTION 08110

## SECTION 08350 – INSULATED STEEL SECTIONAL DOORS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. The work of this Section includes upward-acting sectional doors.

#### 1.02 QUALITY ASSURANCE

- A. Manufacturer: Sectional doors shall be manufactured by a firm with a minimum of five years experience in the fabrication and installation of sectional doors. Manufacturers proposed for use, which are not named in these specifications, shall submit evidence of ability to meet performance and fabrication requirements specified, and include a list of five projects of similar design and complexity completed within the past five years.
- B. Installer: Installation of sectional doors shall be performed by the authorized representative of the manufacturer.

#### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturers instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

### PART 2 - PRODUCTS

#### 2.01 INSULATED STEEL SECTIONAL DOORS

- A. Sectional Door Assembly: Insulated steel door assembly with rabbeted meeting rails to form weathertight joints and provide full-width interlocking structural rigidity. Units shall have the following characteristics:
  - 1. Panel Thickness: 2"
  - 2. Exterior Surface: Ribbed.
  - 3. Steel: Minimum 24 gauge galvanized exterior, back cover 26 gauge steel.
  - 4. Center and End Stiles: 16 gauge.
  - 5. Standard Springs; 10,000 cycles. (High cycles.)
  - 6. Insulation Isocyanurate, R-value 11.69
- C. Finish and Color: Factory-applied baked-on polyester or epoxy coating. Color by Owner.
- D. Windload Design: ANSI/NAGDM 102 standards and as required by code.

- E. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
- F. Lock: Interior mounted slide lock. (Five pin tumbler keyed lock.)
- G. Weatherstripping: Flexible PVC on bottom section. (Header seal and jamb weatherstripping.)
- H. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.

Note: Select type of operation

- I. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot or more than 1 foot per second. All electric motor operation and controls should be protected from corrosion.
  - 1. Entrapment Protection: Photoelectric sensors.
  - 2. Operation Controls: Push-button operated control stations with open, close, and stop buttons for surface mounting, for interior location.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Take field dimension and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

#### **3.02 INSTALLATION**

- A. Strictly comply with manufacturers installation instructions and recommendations. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

END SECTION 08350

## SECTION 08360 - ROLL-UP DOORS

### PART 1: GENERAL

#### 1.01 THE REQUIREMENT

- A. The Contractor shall furnish and install all overhead door assemblies and frames and all appurtenant work, complete and operable, including manual and electric drive systems, locking hardware and control systems in accordance with the requirements of the Contract Documents.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Door hardware for overhead doors is specified in Section 08710 entitled, "Finish Hardware".
- B. Architectural Paint Finishes. Section 09900

#### 1.03 REFERENCE SPECIFICATION, CODES AND STANDARDS:

- A. All work specified herein shall conform to or exceed the requirements of the Building Code and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of this Section.
- B. Products and their installation shall be in accordance with the following trade standards as applicable:
  - 1. Federal Specification QQ-SS-775E, Int. Amd. 1
  - 2. National Electric Code (NEC)
  - 3. Aluminum Association System AA-M10C22A42
  - 4. Manufacturer's printed recommendations and Specifications.

#### 1.04 CONTRACTOR SUBMITTALS:

- A. The Contractor shall submit in accordance with the requirements of Section 01300 entitled, "Contractor Submittals", the manufacturer's literature, technical specifications, wiring diagrams, installation instructions and any engineering calculations that may be required elsewhere in this Section. Technical specifications shall certify that the overhead door systems and their structural connections are designed to meet code requirements and loads.
- B. The Contractor shall deliver to the Engineer complete maintenance and operation instructions for the roll-up door assembly in accordance with the Technical Manual Submittal requirements of specification in Section 01300 entitled, "Contractor Submittals".

### PART 2: PRODUCTS

#### 2.01 ROLL-UP DOORS:

- A. General: Roll-up doors shall be of the metal-curtain slat design and shall be chain-operated and shall be weather and dust-resistant.
- B. Doors shall be provided complete with slats, guides, hoods, reduction gears, galvanized hand chain, operating mechanism, motors, controls, wiring, brackets, gears, head, bottom and side weather stripping, hardware and all other items necessary for their installation and operation.

- B. Wind Loading: The doors shall be designed to withstand a windload of 40-lbs. per sq. ft.
- C. Acceptable Manufacturer: Doors shall be as manufactured by Kinnear Corp.; Overhead Door Corp.; Pacific Rolling Door Co.; or equal.
- D. Bottom Bar: The bottom bar shall consist of two (2) angles galvanized and bolted back-to-back on each side of curtain to suit floor profile. A replaceable flexible vinyl or neoprene gasket shall be provided as a weather seal and cushion bumper. A reversing footpiece shall be provided at motor-operated doors unless shown and indicated otherwise.
- E. Guides and Stops: Guides shall consist of a galvanized steel angle assembly of proper size to retain the curtain. Guides shall be provided with weatherstripping. Angle thickness shall be minimum 3/16-inch. Jamb angles shall be anchored to the supporting walls with 3/8-inch bolts spaced at 24-inches on centers and extending above door opening head to support the coil brackets. Removable stops on guides to prevent over-travel of curtain and a continuous bar for holding windlocks, where required, shall be provided.
- F. Barrel Assembly and Balancing Mechanism: The barrel shall be a steel pipe of sufficient diameter and thickness to support the roll-up curtain without distortion of slats and to limit deflection of the barrel to not more than 0.03-inch per foot of span under full load. The barrel shall have a minimum diameter of 4-inches. The spring balance shall consist of one (1) or more helical torsion springs of oil-tempered heat-treated steel to transfer full load to a single steel torsion bar in the barrel. Rotating members shall turn on self-lubricating graphite or grease-sealed ball bearings with adjustment for counterbalance springs accessible from outside barrel. Brackets shall be 5/16-inch thick, cold-rolled steel plate, or equal strength cast iron, attached to the jamb angle guide with 1/2-inch bolts. Brackets shall have a bell-mouth guide groove for the curtain.
- G. Hood: The hood shall be manufactured of 24-gage galvanized steel sheet with bonderized treatment. The hood shall fit over the end brackets. Top and bottom edges of hood shall be rolled and reinforced for stiffness and intermediate supports shall be provided as necessary. The hood baffle shall be of neoprene and sheet metal.
- H. Chain Holder: A chain holder shall be provided on wall with provision for padlocking.
- I. Electric Operator: The electric operator shall be a heavy-duty gear reduced commercial operator. Ground level chain hoist for emergency or hand operation is required. Overhead Door Model RDB+ or equal.
- J. Primer and Priming: Doors shall be shop-primed with primer. The inside working area of the galvanized guides shall not be painted.

### PART 3: EXECUTION

#### 3.01 INSTALLATION:

- A. Installation shall be in accordance with the manufacturer's printed recommendations and instructions.
- B. Doors and frames shall be accurately cut, fitted and installed level, square, plumb and in alignment. Fasteners shall be of sufficient length and shall be sized for loads imposed. Doors and frames shall be provided with accurately made cutouts and shall be reinforced for strength where necessary. Doors shall be adjusted to provide smooth, unbinding operation with all hardware fully operable.

END OF SECTION 08360

## **SECTION 08520-ALUMINUM ARCHITECTURAL WINDOWS**

### **PART 1 – GENERAL**

#### **1.1 SUMMARY**

A. Section Includes:

1. All materials, equipment and labor necessary for the installation of aluminum windows, with factory glazing, anchors, brackets and attachments, in accordance with drawings and as specified herein.

#### **1.2 REFERENCES**

A. Windows shall comply with the requirements of AAMA/NWDA 101/I.S.2-97 (American Architectural Manufacturer's Association).

B. Units to meet performance standards for:

1. ASTM E 283 - Test method for inspection rate of air leakage through exterior windows, curtain walls, and doors under specified pressure differences across the specimen.
2. ASTM E 330 - Test method for structural performance of exterior windows, and doors by uniform static air pressure difference.
3. ASTM E 547 - Test method for water penetration of exterior windows, curtain walls, and doors by cyclic static air pressure difference.

#### **1.3 PERFORMANCE REQUIREMENTS**

A. Testing standards for air infiltration, water penetration and structural performance: AAMA/NWDA 101/I.S.2-97 for type of window unit indicated.

B. Air infiltration: Maximum 0.30 CFM per square foot at inward test pressure of 1.57, ASTM E 283.

C. Water penetration: No water penetration at inward test pressure of 3.75 psf, ASTM E 547.

D. Structural performance: No glass breakage, damage to hardware, permanent deformation at positive and negative test pressure of 37.5 psf, ASTM E 330.

#### **1.4 SUBMITTALS**

A. Product data: Submit manufacturer's product specifications, technical support data, installation and maintenance recommendations and standard details for each type of unit required, including finishing methods, hardware and accessories.

B. Product drawings: For each type of window specified, submit standard assembly and details for lap siding, stucco, CMU, brick veneer and power wall. Include stacking bar details for any mulled windows or configurations.

C. Color samples: Submit samples of each required aluminum finish.

D. Certification: Provide certification by a recognized, independent testing laboratory certifying that each required type of window complies with performance requirement indicated.

**1.5 DELIVERY, STORAGE AND HANDLING**

- A. Comply with manufacturer's instructions for protection of units from damage.
- B. Deliver in manufacturer's protective packaging.

**1.6 QUALIFICATIONS**

- A. Manufacturer: Company specializing in manufacturing of extruded aluminum with a minimum 10 years documented experience.

**1.7 WARRANTY**

- A. Commercial
  - 1. Provide manufacturer's standard warranty which agrees to repair or replace units that fail in workmanship for a period of ten years from the original date of purchase.
  - 2. Warranty includes coverage of materials and labor in full by the manufacturer.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Subject to compliance of materials and requirements listed.
- B. Milgard extruded aluminum windows and sliding glass doors.

**2.2 MATERIALS**

- A. Aluminum: Comply with requirements of AAMA/NWWDA 101/I.S.2-97, 6063-T5 temper for strength, corrosion resistance and application of required finish.
- B. Extrusion frame members are to be 0.060 in thickness for structural wall.

**2.3 GLASS AND GLAZING:**

Provide the manufacturer's standard sealed insulating glazing material that complies with ASTM E 774-88 Class A and is at least 3/4" overall in thickness.

- A. Factory glazed except where field glazing is required due to large window unit dimensions.
- B. Spacer Bar: PPG Intercept(tm) warm-edge stainless steel spacer.
- C. Glazing Stops: Provide screw-applied or snap on glazing stops (beads), coordinated with glass selection and glazing system indicated.

**2.4 HARDWARE:**

Provide the manufacturer's standard hardware fabricated from a corrosive resistant material and of sufficient strength to perform its intended function. For application of exposed hardware, use fasteners that match the finish of the hardware being fastened. All locking hardware must have certified forced entry resistance performance per CMBSO 1-79, CAWM 300/301.

- A. 1110 Horizontal Slider: Automatic, spring loaded adjustable positive lock. Self-lubricating, dual nylon rollers operate on monorail track.
- B. 1510 Vertical Slider: Automatic, spring loaded adjustable positive lock. Concealed block and tackle balancers.
- C. 910, 911 Awning: Cam style locking mechanism. Tension adjustable hinge.
- D. 910, 911 Casement: Cam style locking mechanism. Tension adjustable hinge.
- E. 415 Sliding Glass Door: Flip latch, dual hook locking mechanism with anti-lift device. Adjustable tandem axle stainless steel rollers.

## 2.5 ACCESSORIES

- A. Weatherstripping: All operating sash members shall be double weatherstripped with either fin seal, silicone treated polypropylene or dual durometer vinyl bulb seal.
- B. Insect Screens: Provide insect screens for each operable exterior sash or ventilator. Locate screens on inside or outside of window sash or ventilator, depending on window type. Design windows and hardware to accommodate screens in a tight-fitting removable arrangement with a minimum of exposed fasteners and latches.
- C. Fasteners: Provide aluminum, non-magnetic steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with window members, trim, hardware, anchors and other components of window units. Where fasteners screw-anchor into aluminum frame members less than 0.125" thick, reinforce the interior with aluminum to receive screw threads, or provide standard, non-corrosive, pressed-in, splined grommet nuts.
- D. Anchors, Clips and Window Accessories: Fabricate anchors, clips and window accessories of aluminum or non-magnet stainless steel. Anchors, clips and window accessories fabricated of hot-dip zinc coated steel or iron may be used for concealed work.

## 2.6 FABRICATION

- A. Fabricate frames allowing for minimum clearances and shim spacing around perimeter of assembly, yet enabling installation.
- B. Corners shall be precisely mitered with rigid, mechanically fastened joints. All joints shall be sealed.
- C. Provide drainage holes with moisture pattern to exterior.
- D. Prepare components to receive anchor devices. Provide anchorage items.
- E. Provide integral weather stop flange to perimeter of unit.
- F. Assemble insect screens to fully integrate with window frame. Frames to be manufactured of cambered aluminum and reinforced with rigid plastic corner keys. Screen mesh to fit taut and secure in frame. Door screens are extruded aluminum for strength and durability.
- G. Factory glaze except where field glazing is required due to window unit dimensions.

## 2.7 FINISHES

- A. Bronze or Clear Anodized Exterior Finish: Provide AA-C22-A32 Class II Bronze or AA-C22-A31 Class II Clear finish, minimum 0.4 mils thick, electrolytically deposited color anodized finish.
- B. White Painted Exterior Finish: Provide fabricator's standard shop finish, consisting of no less than three coats, equalling 0.3 mils dry film thickness to AAMA 603.8-92.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

### 3.2 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, accessories and other window components.
- B. Windows shall be factory sized to fit in each framed opening, whether new or created by removing an existing window. Windows will be 1/2" smaller than the framed (rough) opening to allow 1/4" clearance on all sides (tolerance 1/16") for standard wood siding applications.
- C. Windows shall be fabricated to rough opening size with 1/2" deductions automatically made, so that no additional calculations will be required.
- D. Opening panels must be closed and locked during installation. Windows must be installed level, plumb and square with 1/4" clearance on all sides with weep holes at the bottom in a weather tight manner.
- E. Headers must not be nailed. Nail through fin into framing along sides and base. At the head, nails may be placed 1/2" above fin and bent down over fin to allow for header deflection.
- F. Adjust operating sash and hardware to provide tight fit at contact points and weatherstripping. Lubricate hardware and moving parts.

### 3.3 CLEANING

- A. Clean interior and exterior glass surfaces promptly after installation. Take care to avoid damage to protective coatings and finishes.
- B. Clean all exterior aluminum surfaces.
- C. Do not use petroleum distillants to clean windows.

END SECTION 08520

## SECTION 08710 - FINISH HARDWARE

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT:

- A. The Contractor shall furnish and install all finish hardware and appurtenant work, complete and in accordance with the requirements of the Contract Documents.
- B. The Contractor shall provide mounting templates as needed and install all trim, attachments and fastenings specified or required for a proper and complete installation. The work of this Section shall include all hardware that is not specified in other sections.

#### 1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

- A. All work specified herein shall conform to or exceed the requirements of the International Building Code (latest edition) and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of this Section.
  - 1. Hardware Institute (DHI); Recommended Procedure for Processing Hardware Schedules and Templates and Architectural Hardware Scheduling and Format.
  - 2. Federal Specifications.
  - 3. Manufacturer's published recommendations and Specifications.
  - 4. Underwriters' Laboratories, Inc. (UL) requirements and approvals.

#### 1.03 SUBMITTALS:

- A. Submittals shall be in accordance with Section 01300 entitled, "Contractor Submittals."
- B. The Contractor shall submit a complete detailed hardware list and a schedule along with manufacturer's literature and technical data on each item for approval. No hardware shall be delivered until the hardware schedule has been approved by the Engineer. If samples of any hardware items are requested they shall be furnished by the hardware supplier no later than ten (10) days after said request is received.
- C. The hardware schedule submitted by the Contractor shall list the manufacturer's product series numbers. The schedule shall indicate groups, type, manufacturer's name, catalog number, location and finish of each item to be provided, all in accordance with the DHI "Architectural Hardware Scheduling Sequence and Format". The schedule shall also include a complete template list showing template references and data for each item requiring preparation of metal doors and frames.

#### 1.04 PROPRIETARY DESIGNATION:

- A. Manufacturer's product names, numbers and models are given herein for the purpose of indicating the requirements for the type, general construction, material and operation of the specific item.

#### 1.05 PACKING, MARKING AND DELIVERY:

- A. All locks, exit devices, door closers, overhead door holders, hinges, kickplates, pulls and push plates, thresholds and other similar items shall be individually packed in separate, suitable original containers as furnished by the hardware manufacturers. Each container shall be clearly marked with item numbers, article numbers and names corresponding to those listed in the hardware schedule.

## PART 2 - PRODUCTS

### 2.01 GENERAL:

- A. Finish hardware shall be coordinated with all other work requiring builder's hardware or attaching to it. Copies of schedules, templates, etc., shall be furnished in ample time to avoid fabrication and construction delays. Each item of hardware shall be identified according to approved list and schedule. All hardware shall be made to template.
- B. All hardware furnished in connection with doors bearing Underwriters' Labels or where necessary to meet special requirements shall be in strict accordance with conditions established by the authority having jurisdiction and shall be subject to approval of that authority.
- C. Hand of lock shall be as shown. If door hand is changed during construction the Contractor shall make necessary changes at no extra cost to the Owner.
- D. Exit doors shall be openable at all times from the inside without the use of a key or any special knowledge or effort.
- E. For convenience in specifying, model numbers have been taken from the catalogs of the following manufacturers:
  - 1. Hinges: Bommer, Hager, Stanley
  - 2. Locksets: Best Access Systems no substitute
  - 3. Closers: LCN
  - 4. Stops and Trim: Glynn Johnson
  - 5. Weatherstrip and Thresholds: Reese, Renco, Nat. Gaard
- F. The Contractor shall provide the hardware supplier with approved shop drawings from those trades with which hardware must be coordinated. After checking these shop drawings, the Contractor shall promptly supply necessary template information to all concerned as may be required to facilitate the progress of the job. All procedures for template information shall be in accordance with the handbook, "Recommended Procedure for Processing Hardware Schedules and Templates".
- G. Finish of all hardware shall be as shown in Hardware Schedule unless specified otherwise.

### 2.02 KEYING:

- A. All locks and cylinders shall be master keyed to the Owner's requirements as directed by the Engineer.
- B. The Contractor shall furnish six (6) keys per cylinder keying combination. All keys along with four (4) master keys shall be delivered to the Engineer immediately upon installation of the locking cylinders.
- C. The Contractor shall furnish the following accessories for the Best Access Systems
  - a. Best Access Key Combinator AD433-2 (A2 system)

- b. Combining Kit Complete CD431-2 (A2 system)
- c. Letter dies DD502
- d. Number dies DD503

2.03 **FASTENERS:**

- A. The Contractor shall provide all necessary screws, bolts and other fasteners of suitable size and type to secure the hardware into position. The fasteners shall match the hardware in material and finish.
- B. The hardware provided, such as expansion bolts, sex bolts, toggle bolts and other approved anchorages shall be coordinated with the job and to each setting condition.

2.04 **HINGES:**

- A. a minimum of three (3) hinges, or as scheduled, shall be provided for each door leaf up to and including 7-foot in height and an additional hinge shall be added for each 2-foot or fractions thereof of additional door height.
- B. All hinges on exterior doors, except for four-fold industrial doors, shall be full mortise, 4-1/2 inches high, heavy duty, 4-ball bearings, stainless steel, non-removable pins with security studs, similar to Model BB1199, manufactured by Hager, Inc.
- C. All hinges on interior doors shall be full mortise, 4-1/2 inches high, standard weight, 2-ball bearings, steel, non-rising removable pin with button tip and plug, similar to Model BB1279, manufactured by Hager, Inc.

2.05 **OVERHEAD CLOSERS:**

- A. All overhead closers shall be the product of one (1) manufacturer. Closures shall have high strength cast iron cylinder with rectangular covers, adjustable spring power and adjustable back-check, full rack and pinion action, tamper proof, non-critical regulating screws and be UL listed.
- B. Closers shall be coated with a rust prohibiting primer and finish coated in the field to match doors.
- C. All closers shall be provided with hold-open arm. All exterior door closers shall have a cushion type stop arm as well as the hold-open arm feature.
- D. Except at exterior doors, closers shall not be mounted on the corridor or vestibule side of door.
- E. Closers for out-swinging exterior doors shall be top-jamb-mounted and furnished with adapter plates for doors under 7-foot 6-inches in height. If necessary, closers may be mounted on drop brackets on doors above 7-foot 6-inches in height. Closers shall be provided with sex bolts for fastening through doors, frames and transoms.
- F. The Contractor and its hardware supplier shall be responsible to provide the right arm with the closers. Arms shall be parallel with the closed door whenever possible.
- G. Closers shall be LCN, Corbin, Russwin, or approved equal.

2.06 **LOCKSETS AND LATCHSETS:**

- A. Locksets must be cylindrical type with a minimum 3 3/4 inch backset, with a 9/16 inch throw lachbolt.

- B. Provide locksets with Best 7-pin interchangeable core.
- C. Locksets and latchsets must conform to ANSI A156.2, Series 4000, Grade 1 and be UL listed.
- D. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty.
- E. All component parts of locksets shall be the product of one manufacturer, unless otherwise approved by the Engineer.
- F. Function of locksets or latchsets shall be appropriate for doors use.
- G. Levers must be zinc material with a minimum wall thickness of 0.060
- H. Permanent core face must be the same finish as the locksets finish.

2.07 KICKPLATES:

- A. Kickplates shall be stainless steel, 0.050-gage, beveled on three (3) sides and 10-inches high. Width shall be door size less 2-inches. Kickplates shall be Builders Brass Works 37 Series, Quality Manufacturing 48 Series, or equal.

2.08 DOOR STOPS:

- A. Door stops shall be stainless steel and shall be wall or floor bumper type as required in the hardware schedule. Wall bumper stops shall be mounted with the appropriate fastening system for the wall type. Gypsum board wall shall be provided with appropriate wood backing.
- B. Door stops shall be manufactured by Trimco, Builders Brass works or approved equal.

2.09 SILENCERS OR MUTES:

- A. All interior doors shall be provided with rubber silencers, three (3) for each single door and two (2) for each pair of doors. Silencers or mutes shall be GJ 64, Sargent 3446, Corbin 33, or equal.

2.10 THRESHOLDS:

- A. All exterior doors except roll up overhead doors and bifold doors shall receive one interlocking threshold of extruded aluminum with a maximum 5/8-inch rise. Thresholds shall be Pemko 121A with door mounted surface hook 66A or approved equal. Except that the 1-hour fire rated doors shall have a gasketed threshold.
- B. Thresholds shall be installed with sealant to prevent water from seeping underneath.

2.11 WEATHERSTRIPPING:

- A. Weatherstripping or gasketing shall be as manufactured by Pemko Manufacturing Co., Zero Weatherstripping Co., or equal. All weatherstripping or gasketing shall be extruded aluminum with neoprene seal attached with stainless steel sheet metal screws.

PART 3 - EXECUTION

3.01 GENERAL:

- A. All required items of hardware, including cylinders for locks, and all fitting, adjusting, and securing of each item neatly and firmly in place, shall be in perfect working order. Any work less than this shall form a basis for corrective measures.
- B. All finish hardware shall be fitted and dismantled before painting work and shall be reinstalled after finish painting work.

3.02 HARDWARE SCHEDULE:

- A. The hardware schedule is arranged for convenience of locating hardware and does not preclude in any way the requirements that all necessary hardware shall be furnished and properly installed. Hardware not specifically called out shall be similar to that required for similar uses.
- B. The catalog numbers referred to in the hardware schedule are taken from catalogs of the manufacturers. The hardware schedule is shown on the drawings.

3.03 PROTECTIVE TAPE AND COATINGS:

- A. Strippable coating or removable tape protection or other approved means to prevent any damage or staining of hardware during construction shall be used. Such protective measures shall be removed prior to final cleaning for Owner's acceptance of project.

END OF SECTION 08710



## SECTION 08800 - GLAZING

### PART 1 - GENERAL

#### 1.01 THE REQUIREMENT:

- A. The Contractor shall furnish and install all glass, caulking materials and appurtenant items required in accordance with the requirements of the Contract Documents.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Sealants and Caulking. Section 07920
- C. Steel Doors and Frames. Section 08110

#### 1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

- A. All work specified herein shall conform to or exceed the requirements of the Building Code and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of this Section.
- B. Products and their installation shall be in accordance with the following trade standards as applicable:
  - 1. The Glass Manufacturers Specification
  - 2. The Flat Glass Marketing Association
  - 3. "Glazing Manual" and "Glazing Sealing Systems Manual"
  - 4. "Glazing Specifications for Sealed Insulating Glass Units" by the Sealed Insulating Glass Manufacturers Association (SIGMA).

#### 1.04 CONTRACTOR SUBMITTALS:

- A. Manufacturer's technical literature and installation instructions shall be submitted to the Engineer in accordance with Section 01300 entitled, "Contractor Submittals". Samples of glass and glazing panels shall be submitted when requested by the Engineer.

### PART 2 - PRODUCTS

#### 2.01 ACCESSORY MATERIALS:

- A. Sealant: Sealant shall be a one-part silicone rubber conforming to Federal Specifications TT-S-001543A non-sag type as manufactured by General Electric Corp., Dow Chemical Co., or equal. Sealant such as 2-part polysulfides, for view windows shall be as recommended in the publications of the glass manufacturer, sealant manufacturer, gasket manufacturer, and glazer for the intended use.
- B. Channels: Setting channels and/or blocks shall be neoprene, 70-90 Shore "A" durometer hardness chemically compatible with sealant used and recommended in the printed publications of the glass manufacturer.
- C. Glazing Compound: Glazing compound shall be as recommended in the published data of the glass manufacturer for job conditions.

- D. Beads and Sills: Glazing beads and seals shall be black neoprene or vinyl chloride conforming to ASTM D 22287.
- E. Tape: Glazing Tape shall be polymerized butyl, rubber tape coiled on release paper as specified in the printed recommendations of the glazing sealant manufacturer.

## 2.02 GLAZING MATERIALS:

- A. Glass Specifications: Glass shall conform to Federal Specification DD-G-451D and Federal Specifications DD-G-1403B(1) (Tempered glass). Insulating glass shall conform to SGMA 65-7-2.
- B. Glazing Thickness: Thicknesses of glass specified are minimum thicknesses where not otherwise specified in the Building Code. Thicker glass shall be used where required by the Building Code.
- C. Acceptable Manufacturers: Manufacturer's of glass shall be Libby Owens Ford Co. (L.O.F.); PPG Industries, Inc. (PPG); ASG Industries, Inc. (ASG); Combustion Engineering, Inc. (CE); or equal.
- D. Labeling: Glass shall be factory-labeled. Non-labeled glass will be rejected.
- E. Glass Types: All glass shall conform to the following requirements:
  - 1. Type A: Tinted, colored float glass shall be not less than 1/4-inch minimum thickness. The glass color shall be gray. Type A glass shall be PPG, "Solargray"; LOF, "Monolithic Gray"; or equal.
  - 2. Type B: Tinted, colored, tempered float glass shall be heat-treated safety glass 1/4-inch minimum thickness, such as PPG, "Herculite - Solargray"; LOF, "Thermopane - Monolithic Gray"; or equal. The glass color shall be gray.
  - 3. Type C: Clear float glass shall conform to Federal Specification DD-G-451D and shall be not less than 1/4-inch thick. Type C glass shall be PPG, "Pennvernon"; LOF, "Monolithic Annealed Glass"; or equal.
  - 4. Type D: Clear, tempered float glass shall be heat-tempered safety glass conforming to Federal Specification DD-G-1403B(1) and shall be not less than 1/4-inch thick.
  - 5. Type G: Tinted, colored, insulating glass shall be metal-edged units of 1-inch thickness, consisting of an outside lite of 1/4-inch thick, tinted, colored gray float glass; 1/2-inch air space; and 1/4-inch thick, clear float glass inside lite. Provide tempered glass as described above where required by code and where indicated in the drawings.

## PART 3 - EXECUTION

### 3.01 GLAZING APPLICATION SCHEDULE:

- A. Glass types for the various locations shall conform to the schedule as indicated on the drawings.

### 3.02 GENERAL:

- A. Reference Standards: All work shall conform to the recommendations of the Building Code

and glass manufacturer's published Specifications. All glazing shall be done in accordance with applicable referenced standards.

- B. Complete System: Glass and glazing system shall be installed complete with all stops, blocks, channels, beads, sealants and glass to form a complete installed watertight installation.
- C. Pre-Inspection: Areas to receive glass and glazing shall be inspected by the Contractor and all defects shall be reported to the Engineer prior to glazing.

### 3.03 PREPARATION:

- A. Preparation work such as priming and cleaning shall be done with materials and procedures specified in the printed recommendations of the manufacturer. Surfaces shall be dry and free from dust, dirt and film. All priming shall be completed and thoroughly dried before glazing.

### 3.04 INSTALLATION:

- A. Workmanship: Concealed edges of glass shall be clean, straight cut and free from chips and fissures. All glass shall be shop-cut and allowances shall be made. Allow for maximum grip on all edges. Nipping glass on the job will not be allowed. Glass shall be accurately cut to side of opening. Glass shall be set with equal bearing on entire width of pane. Large sheets of glass shall be positioned with setting blocks. Installed glass shall not move or rattle.
- B. Glazing Beads: Glass in glazing beads or channels shall be in accordance with manufacturer's printed installation instructions. Materials shall not be stretched.
- C. Metal Glazing Beads: Where metal glazing beads occur, the glass shall be completely bedded in glazing compound. Metal glazing beads furnished by the manufacturer shall be installed in accordance with manufacturer's printed instructions. Compound shall be trimmed flush to sight line.
- D. Stop Glazing: Glass set with stop glazing shall be set on glazing tape. All voids around perimeter and between glass and stop shall be filled with glazing compound to provide completely watertight installation. Tape and compound shall be trimmed flush to sight line.
- E. Sealant Application: Sealant shall be applied on inside glass surface below glazing bead. The void below vinyl to bottom of glazing reglet shall be filled to maintain weathertight seal.
- F. Safety Markings: Glass, glazing panels and glazing shall be protected by markings or devices which clearly indicate the presence of glass to other workers and material handlers. Taping or marking which would cause a permanent stain on the glass shall not be used. Labels shall remain on glass until final cleaning.
- G. Cleaning and Acceptance: Prior to acceptance of the Work, broken, defective or scratched glass shall be replaced and damaged glazing compound shall be repaired. Glass and glazing shall be left in perfect condition and ready for final cleaning. Windows and glass shall be cleaned within one (1) week of final acceptance of the project.

### 3.05 TESTING:

- A. After installation is complete, all exterior glazing, except for aluminum entrance doors shall be given a leak test by flooding the glazing from bottom to top using 3/4-inch hose with nozzle.

END OF SECTION 08800

