

SECTION 087111 - DOOR HARDWARE (DESCRIPTIVE SPECIFICATION)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
- B. Related Requirements:
 - 1. Section 084113 "Aluminum-Framed Entrances and Storefronts" for entrance door hardware, and for doors requiring hardware specified in this section.

1.3 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

- a. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design".
 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

2.3 SCHEDULED DOOR HARDWARE

- A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.
 1. Door hardware is scheduled in Part 3.

2.4 CENTER-HUNG AND OFFSET PIVOTS

- A. Center-Hung and Offset Pivots: BHMA A156.4.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Accurate Lock & Hardware Co.
 - b. Allegion plc.

- c. Architectural Builders Hardware Mfg., Inc.
- d. DORMA USA, Inc.
- e. Hager Companies.
- f. INOX by Unison Hardware, Inc.
- g. Rixson Specialty Door Controls; an ASSA ABLOY Group company.

B. Center-Hung Pivot Sets: Grade 1.

- 1. Top Pivots: Walking-beam type with retractable pin and oil-impregnated bronze bearing; mortised into door and frame.
- 2. Bottom Pivots: Surface floor mounted, and mortised into door.
 - a. Bearing: Thrust ball or needle.
 - 1) Base Metal: Stainless steel.

C. Offset Pivot Sets: Grade 1.

- 1. Offset: 3/4 inch (19 mm).
- 2. Top Pivot: Full-mortise mounting; walking-beam type with retractable pin and oil-impregnated bronze bearing.
 - a. Knuckle: Standard.
 - 1) Bottom Pivot: Surface floor mounted, and mortised into door; with thrust ball or needle bearing.
 - 2) Base Metal: Stainless steel.

2.5 OPERATING TRIM

- A. Operating trim for storefront doors and entrances shall be provided by manufacturer as part of complete system. Operating trim shall be similar to hardware listed below.
- B. Operating Trim: BHMA A156.6; aluminum or stainless steel unless otherwise indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Burns Manufacturing Incorporated.
 - c. Don-Jo Mfg., Inc.
 - d. Forms+Surfaces.
 - e. Hager Companies.
 - f. Hiawatha, Inc; a division of the Activar Construction Products Group.
 - g. INOX by Unison Hardware, Inc.
 - h. Rockwood Manufacturing Company; an ASSA ABLOY Group company.

- i. Trimco.
- C. Offset Door Pulls: 1-inch constant-diameter pull for storefront doors.
 - 1. Mounting: Surface applied with concealed fasteners, through bolted with oval-head machine screws and countersunk washers, or back to back with threaded sleeves.
 - 2. Offset: 2 inches.
 - 3. Minimum Clearance: 2-1/4 inches from face of door.
 - 4. Overall Length: 9 inches.
- D. Single Push Bar: Horizontal-bar type for storefront doors.
 - 1. Mounting: Surface applied with concealed fasteners or through bolted with oval-head machine screws and countersunk washers.
 - 2. Shape and Size: 1-inch constant-diameter round bar.
 - 3. Minimum Clearance: 1-1/2 inches from face of door.

2.6 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
- B. Closers shall not be seen on the public side or hallway side of the door. The appropriate drop plate or mounting plates will be used as conditions dictate.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allegion plc.
 - b. Corbin Russwin, Inc.; an ASSA ABLOY Group company.
 - c. DORMA USA, Inc.
 - d. Hager Companies.
 - e. Norton Door Controls; an ASSA ABLOY Group company.
 - f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - g. SARGENT Manufacturing Company; ASSA ABLOY.
 - h. Yale Security Inc; an ASSA ABLOY Group company.
- C. Surface Closer with Cover: Grade 1; Modern type with mechanism enclosed in cover.
 - 1. Mounting: Hinge side; parallel arm where required.
 - 2. Type: Regular arm with dead stop where required.
 - 3. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.
 - 4. Cover Material: Aluminum or molded plastic.

5. Closing Power Adjustment: At least 35 percent more than minimum tested value.

2.7 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hager Companies.
 - b. M-D Building Products, Inc.
 - c. National Guard Products, Inc.
 - d. Pemko Manufacturing Co.
 - e. Reese Enterprises, Inc.
 - f. Sealeze.
 - g. Zero International, Inc.
- B. Door Sweeps: Neoprene, vinyl, polyurethane, or silicone gasket material held in place by flat housing or flange; surface mounted to face of door with screws.
 1. Housing or Flange Material: Aluminum or stainless steel.

2.8 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hager Companies.
 - b. M-D Building Products, Inc.
 - c. National Guard Products, Inc.
 - d. Pemko Manufacturing Co.
 - e. Reese Enterprises, Inc.
 - f. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - g. Sealeze.
 - h. Zero International, Inc.
- B. Saddle Thresholds:
 1. Type: Smooth or fluted top, barrier free.
 2. Base Metal: Aluminum or stainless steel.

2.9 FABRICATION

- A. **Manufacturer's Nameplate:** Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. **Base Metals:** Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. **Fasteners:** Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
 - 1. **Concealed Fasteners:** For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2.10 FINISHES

- A. Provide finishes complying with BHMA A156.18. Unless otherwise noted, provide stainless steel (630) or satin chrome (626) finish.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. **Appearance of Finished Work:** Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- D. Door Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.4 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SCHEDULE

Hardware Set for New Pair of Vestibule Doors

Top and Bottom Pivots
Offset Door Pulls and Push Bars
Door Closers with Dead Stops
Threshold
Perimeter Gasketing (Door Sweeps)

END OF SECTION 087111