

**SECTION 08 71 00  
DOOR HARDWARE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Door hardware and related items necessary for complete installation and operation of doors.

**1.2 RELATED WORK**

- A. Caulking: Section 07 92 00 JOINT SEALANTS.
- B. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Painting: Section 09 91 00, PAINTING.

**1.3 GENERAL**

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Hardware for application on metal doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- C. The following items shall be of the same manufacturer, if possible, except as otherwise specified:
  - 1. Mortise locksets.
  - 2. Hinges for hollow metal doors.
  - 3. Surface applied overhead door closers.
  - 4. Exit devices.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

| Hardware Item | Quantity | Size | Reference Publication Type No. | Finish | Mfr. Name and Catalog No. | Key Control Symbols | UL Mark (if fire rated and listed) | ANSI/BHMA Finish Designation |
|---------------|----------|------|--------------------------------|--------|---------------------------|---------------------|------------------------------------|------------------------------|
|               |          |      |                                |        |                           |                     |                                    |                              |
|               |          |      |                                |        |                           |                     |                                    |                              |
|               |          |      |                                |        |                           |                     |                                    |                              |

- C. Samples and Manufacturers' Literature:

1. Samples: All hardware items (proposed for the project) that have not been previously approved by Builders Hardware Manufacturers Association shall be submitted for approval. Tag and mark all items with manufacturer's name, catalog number and project number.
  2. Samples are not required for hardware listed in the specifications by manufacturer's catalog number, if the contractor proposes to use the manufacturer's product specified.
- D. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

**1.5 DELIVERY AND MARKING**

Deliver items of hardware to job site in their original containers, complete with necessary appurtenances including screws, keys, and instructions. Tag one of each different item of hardware and deliver to Resident Engineer for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in Resident Engineer's office until all other similar items have been installed in project, at which time the Resident Engineer will deliver items on file to Contractor for installation in predetermined locations on the project.

**1.6 INSTRUCTIONS**

- A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mutes, thresholds and the like specified herein, hardware requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters "HW" followed by a number. Each number designates a set of hardware items applicable to a door type.
- B. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified may be used. Manufacturers whose products are specified are identified by abbreviations as follows:

|            |                     |              |
|------------|---------------------|--------------|
| Adams-Rite | Adams Rite Mfg. Co. | Glendale, CA |
|------------|---------------------|--------------|

|               |                            |                  |
|---------------|----------------------------|------------------|
| Glynn Johnson | Glynn Johnson Co.          | Chicago, IL      |
| LCN           | LCN Closers                | Princeton, IL    |
| Firemark      | Rixon-Firemark Co.         | Chicago, IL      |
| Hager         | Hager Hinge Company        | Saint Louis, MO  |
| Stanley       | The Stanley Works          | New Britain, CT  |
| Trimco        | Triangle Brass Mfg. Co.    | Los Angeles, CA  |
| Unican        | Simplex Security Systems   | Collinsville, CT |
| Von Duprin    | Von Duprin Hardware Co.    | Indianapolis, IN |
| Zero          | Zero Weather Stripping Co. | New York, NY     |

- C. Keying: All cylinders shall be keyed into existing Key System. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Keying information shall be furnished at a later date by the Resident Engineer.
- D. Keying: The key system shall be removable core type as previously described. Submit a keying chart for approval showing proposed keying layout.
1. Keying information will be furnished to the Contractor by the Resident Engineer.
  2. Supply information regarding key control of cylinder locks to manufacturers of equipment having cylinder type locks. Notify Resident Engineer immediately when and to whom keys or keying information is supplied. Return all such keys to the Resident Engineer.

#### 1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.
- B. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
- A156.1-00.....Butts and Hinges
  - A156.4-00.....Door Controls (Closers)
  - A156.6-05.....Architectural Door Trim
  - A156.8-05.....Door Controls-Overhead Stops and Holders
  - A156.13-05.....Mortise Locks and Latches Series 1000

A156.16-02.....American National Standard for Auxiliary  
Hardware

A156.18-00.....Materials and Finishes

A156.21-06.....Thresholds

A250.8-03.....Standard Steel Doors and Frames

C. Underwriters Laboratories, Inc. (UL):

Building Materials Directory (2007)

## **PART 2 - PRODUCTS**

### **2.1 BUTT HINGES**

A. ANSI A156.1. The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:

1. Interior Doors: Type 8112 for doors 900 mm (3 feet) wide or less and Type A8111 for doors over 900 mm (3 feet) wide.

### **2.2 DOOR CLOSING DEVICES**

Closing devices shall be products of one manufacturer for each type specified.

### **2.3 OVERHEAD CLOSERS**

A. Conform to ANSI A156.4, Grade 1.

B. Closers shall conform to the following:

1. The closer shall have 50 percent adjustable closing force over minimum value for that closer and have adjustable hydraulic back check effective between 60 degrees and 85 degrees of door opening.
2. Where specified, closer shall have hold-open feature.
3. Size Requirements: Size closers in accordance with manufacturer's recommendations or provide multi-size closers, sizes 1 through 6.
4. Material of closer shall be forged or cast iron or cast aluminum.
5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
6. Closers shall have full size cover.
7. Closers shall have adjustable hydraulic back-check and separate valves for closing and latching speed.

### **2.4 DOOR STOPS**

A. Conform to ANSI A156.16.

B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For masonry construction, use lead expansion shields for mounting door stops.

## 2.5 OVERHEAD DOOR HOLDERS

Conform to ANSI Standard A156.8. Overhead holders shall be of sizes recommended by holder manufacturer for each width of door. Set overhead holders for 170 degree opening, unless limited by building construction or equipment.

## 2.6 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Cylinders for all locksets shall be removable core type. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset.
- B. In addition to above requirements, locks and latches shall comply with following requirements:
1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. All locksets and latchsets, except on designated doors in Psychiatric (Mental Health) areas, shall have lever handles similar to Falcon S-lever Design. Lever handle shall be fabricated from wrought stainless steel. No substitute lever design or material shall be accepted. All locks and latchsets shall be furnished with curved lip strike and wrought box. Lock function F02 shall be furnished with key plates similar to Russwin's No. A70. Furnish armored fronts for all mortise locks.

## 2.7 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish keys in quantities as follows:

| Locks/Keys     | Quantity    |
|----------------|-------------|
| Cylinder locks | 2 keys each |

## 2.8 ARMOR PLATES, COMBINATION KICK-MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates as specified below:
1. Kick-mop plates and armor plates plastic or metal, Type J100 series, color as required.
  2. Provide kick-mop plates for both sides of each door, except where noted as not required. Kick-mop plates shall be 200 mm (8 inches)

high. On push side of doors where jamb stop extends to floor, make combination kick-mop plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other combination kick-mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.

#### **2.9 FLUSH BOLTS (LEVER EXTENSION)**

- A. Conform to ANSI A156.16. Flush bolts shall be Type L24081 unless otherwise specified. Furnish proper dustproof strikes conforming to ANSI A156.16, for flush bolts in floors.
- B. Face plates for cylindrical strikes shall be rectangular and not less than 25 mm by 63 mm (1 inch by 2-1/2 inches).

#### **2.10 COORDINATORS**

Conform to ANSI A156.16. Coordinators, when specified for fire doors, shall comply with Underwriters Laboratories, Inc., requirements for fire door hardware. Coordinator may be omitted on interior pairs of non-labeled open where open back strike is used. Open back strike shall not be used on labeled doors. Paint coordinators to match door frames, unless coordinators are plated.

#### **2.11 MISCELLANEOUS HARDWARE**

- A. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011, light gray color, on each steel door frame. Furnish 3 mutes for single doors and 2 mutes for each pair of doors.

#### **2.12 FINISHES**

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes."
- B. 626 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:
  - 1. Hinges --interior doors: 652.
  - 2. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
- D. Hardware Finishes for Existing Buildings: U.S. Standard finishes shall match finishes of hardware in (similar) existing spaces except where otherwise specified.

**2.13 BASE METALS**

Apply specified U.S. Standard finishes on different base metals as following:

| <b>Finish</b> | <b>Base Metal</b> |
|---------------|-------------------|
| 652           | Steel             |
| 626           | Brass or bronze   |
| 630           | Stainless steel   |

**PART 3 - EXECUTION****3.1 HARDWARE HEIGHTS**

- A. Locate hardware on doors at heights specified below unless otherwise noted:
- B. Hardware Heights from Finished Floor:
  - 1. Locksets and latch sets centerline of strike 1000 mm (40-5/16 inches).
  - 2. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

**3.2 INSTALLATION**

- A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted regular arm. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.
- B. Substitute parallel arm or top jamb mounting for regular arm mounting where the following conditions occur:
  - 1. Where door swing, in full open position, would be limited to less than 90 degrees due to partition construction and closer location.
  - 2. Where door to room opens outward into corridor, doors which shall have closer installed parallel arm on exterior side of doors.
  - 3. Where exterior doors open outward.
  - 4. On doors equipped with roller latch.

## C. Hinge Size Requirements:

| Door Thickness                                 | Door Width  | Hinge Height          |
|--|---|-----------------------|
| 45 mm (1-3/4 inch)                             | 900 mm (3 feet) and less                                | 113 mm (4-1/2 inches) |
| 45 mm (1-3/4 inch)                             | Over 900 mm (3 feet) but not more than 1200 mm (4 feet) | 125 mm (5 inches)     |
| 35 mm (1-3/8 inch)<br>(hollow core wood doors) | Not over 1200 mm (4 feet)                               | 113 mm (4-1/2 inches) |

D. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim.

## E. Hinges Required Per Door:

|  |         |
|--|---------|
| Doors 1500 mm (5 ft) or less in height                               | 2 butts |
| Doors over 1500 mm (5 ft) high and not over 2280 mm (7 ft 6 in) high | 3 butts |
| Doors over 2280 mm (7 feet 6 inches) high                            | 4 butts |
| Dutch type doors   | 4 butts |
| Doors with spring hinges 1370 mm (4 feet 6 inches) high or less      | 2 butts |
| Doors with spring hinges over 1370 mm (4 feet 6 inches)              | 3 butts |

F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to solid masonry. Fiber or rawl plugs and adhesives are not permitted.

G. After locks have been installed; show in presence of Resident Engineer that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the Resident Engineer for his records.) Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

**3.3 HARDWARE SETS**

Following sets of hardware correspond to hardware symbols shown on drawings. Where hardware set for a single door is specified for a pair of doors; equip each leaf of such pair of doors with set noted. Only

those hardware sets that are shown on drawings will be required.  
 Disregard hardware sets listed in specifications but not shown on  
 drawings.

| <b>HARDWARE SETS</b>   |  |
|--|--|
| <u>HW 42</u><br>Butts as required<br>Lock F87 or 161 W-4<br>Closer C02011<br>Holder C22511 | <u>HW 60</u><br>Butts as required<br>2 Flush bolts<br>Lock F07<br>2 Closers C02011<br>Coordinators |

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