

## SECTION 08 71 00

DOOR HARDWARE  
07/06

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM E 283 (1991; R 1999) Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

## BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.1 (2000) Butts and Hinges

BHMA A156.2 (2003) Bored and Preassembled Locks and Latches

BHMA A156.3 (2001) Exit Devices

BHMA A156.4 (2000) Door Controls - Closers

BHMA A156.6 (2005) Architectural Door Trim

BHMA A156.7 (2003) Template Hinge Dimensions

BHMA A156.8 (2000) Door Controls - Overhead Stops and Holders

BHMA A156.13 (2002) Locks & Latches - Mortise (BHMA 621)

BHMA A156.15 (2001) Closer Holder Release Device

BHMA A156.16 (2002) Auxiliary Hardware

BHMA A156.17 (1999) Self Closing Hinges & Pivots

BHMA A156.18 (2003) Materials and Finishes

BHMA A156.21 (2001) Thresholds

BHMA A156.22 (2003) Door Gasketing Systems

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80 (2001) Standard for Fire Doors and Fire Windows

NFPA 101 (2003) Life Safety Code

STEEL DOOR INSTITUTE (SDI)

ANSI A250.8 (1998) SDI-100 Recommended Specifications for Standard Steel Doors and Frames

UNDERWRITERS LABORATORIES (UL)

UL Bld Mat Dir (2003) Building Materials Directory

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-02 Shop Drawings

Hardware schedule; G

SD-03 Product Data

Hardware items; G

SD-08 Manufacturer's Instructions

Installation

SD-10 Operation and Maintenance Data

Hardware Schedule items, Data Package 1

Submit data package in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

Key Bitting

1.3 HARDWARE SCHEDULE

Prepare and submit hardware schedule in the following form:

Hard-ware Item	Quan-tity	Size	Reference Publi-cation Type No.	Finish	Mfr. Name and Catalog No.	Key Con-trol Symbols	UL Mark (If fire rated and listed)	BHMA Finish Designa-tion
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1.4 KEY BITTING CHART REQUIREMENTS

Submit key bitting charts to the Contracting Officer prior to completion of the work. Include:

- a. Complete listing of all keys (AA1, AA2, etc.).
- b. Complete listing of all key cuts (AA1-123456, AA2-123458).

- c. Tabulation showing which key fits which door.
- d. Copy of floor plan showing doors and door numbers.
- e. Listing of 20 percent more key cuts than are presently required in each master system.

## 1.5 QUALITY ASSURANCE

### 1.5.1 Hardware Manufacturers and Modifications

Provide, as far as feasible, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

## 1.6 DELIVERY, STORAGE, AND HANDLING

Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with item number as shown in hardware schedule. Deliver permanent keys to the Contracting Officer's designee, directly. Cores shall be delivered and installed by manufacturer. See para 3.1.3. Deliver construction master keys with the locks.

## PART 2 PRODUCTS

### 2.1 TEMPLATE HARDWARE

Provide hardware to be applied to metal or to prefinished doors manufactured to template. Promptly furnish template information or templates to door and frame manufacturers. Conform to [BHMA A156.7](#) for template hinges. Coordinate hardware items to prevent interference with other hardware.

### 2.2 HARDWARE FOR FIRE DOORS AND EXIT DOORS

Provide all hardware necessary to meet the requirements of [NFPA 80](#) for fire doors and [NFPA 101](#) for exit doors, as well as to other requirements indicated, even if such hardware is not specifically mentioned under paragraph entitled "Hardware Schedule." Provide the label of Underwriters Laboratories, Inc. for such hardware listed in [UL Bld Mat Dir](#) or labeled and listed by another testing laboratory acceptable to the Contracting Officer.

### 2.3 HARDWARE ITEMS

Clearly and permanently mark with the manufacturer's name or trademark, hinges, pivots, locks, latches, exit devices, bolts and closers where the identifying mark will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover.

#### 2.3.1 Hinges

[BHMA A156.1](#), 4-1/2 by 4-1/2 inch unless otherwise indicated. Construct loose pin hinges for exterior doors and reverse-bevel interior doors so that pins will be nonremovable when door is closed. Other antifriction bearing hinges may be provided in lieu of ball-bearing hinges.

### 2.3.2 Pivots

BHMA A156.4.

### 2.3.3 Spring Hinges

BHMA A156.17.

### 2.3.4 Locks and Latches

#### 2.3.4.1 Mortise Locks and Latches

BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2. Install knobs and roses of mortise locks with screwless shanks and no exposed screws.

#### 2.3.4.2 Bored Locks and Latches

BHMA A156.2, Series 4000, Grade 1.

#### 2.3.4.3 Combination Locks

Heavy-duty, mechanical combination lockset with five pushbuttons, standard-sized knobs, 3/4 inch deadlocking latch, 2-3/4 inch backset. Operate the locks by pressing two or more of the buttons in unison or individually in the proper sequence. Inside knob will operate the latch. Provide a keyed cylinder on the interior to permit setting the combination. Provide combination lockset where indicated and in complete conformance to base standard.

#### 2.3.5 Exit Devices

BHMA A156.3, Grade 1. Provide adjustable strikes for rim type and vertical rod devices. Provide open back strikes for pairs of doors with mortise and vertical rod devices. Provide touch bars in lieu of conventional crossbars and arms.

#### 2.3.6 Cylinders and Cores

Provide cylinders for new locks, including locks provided under other sections of this specification. Provide fully compatible cylinders with products of the Best Lock Corporation with interchangeable cores which are removable by a special control key. Factory set the cores with 7 pin tumblers using the A2 system and E keyway. Submit a core code sheet with the cores. Provide master keyed cores in one system for this project. Provide construction interchangeable cores.

#### 2.3.7 Lock Trim

Cast, forged, or heavy wrought construction and commercial plain design.

##### 2.3.7.1 Lever Handles

Provide lever handles in lieu of knobs where indicated in paragraph entitled "Hardware Schedule". Conform to the minimum requirements of BHMA A156.13 for mortise locks of lever handles for exit devices. Provide lever handle locks with a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when force in excess of that specified in BHMA A156.13 is applied to the lever handle. Provide

lever handles return to within 1/2 inch of the door face.

#### 2.3.7.2 Texture

Conform to the minimum requirements of BHMA A156.13 for mortise locks or lever handles for exit devices. Provide lever handle locks with a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when force in excess of that specified in BHMA A156.13 is applied to the lever handle. Provide lever handles return to within 1/2 inch of the face.

#### 2.3.8 Keys

Furnish seven change keys for each interchangeable core. Stamp each key with appropriate key control symbol and "U.S. property - Do not duplicate." Do not place room numbers on keys.

#### 2.3.9 Closers

BHMA A156.4, Series C02000, Grade 1, with PT 4C. Provide with brackets, arms, mounting devices, fasteners, full size covers, and other features necessary for the particular application. Size closers in accordance with manufacturer's recommendations, or provide multi-size closers, Sizes 1 through 6, and list sizes in the Hardware Schedule. Provide manufacturer's 10 year warranty.

##### 2.3.9.1 Identification Marking

Engrave each closer with manufacturer's name or trademark, date of manufacture, and manufacturer's size designation located to be visible after installation.

#### 2.3.10 Overhead Holders

BHMA A156.8.

#### 2.3.11 Closer Holder-Release Devices

BHMA A156.15.

#### 2.3.12 Door Protection Plates

BHMA A156.6.

##### 2.3.12.1 Sizes of Kick Plates

2 inch less than door width for single doors; one inch less than door width for pairs of doors. Provide 10 inch kick plates for flush doors.

#### 2.3.13 Door Stops and Silencers

BHMA A156.16. Silencers Type L03011. Provide three silencers for each single door, two for each pair.

#### 2.3.14 Thresholds

BHMA A156.21. Use J35100, with vinyl or silicone rubber insert in face of stop, for exterior doors opening out, unless specified otherwise.

### 2.3.15 Weather Stripping Gasketing

**BHMA A156.22.** Provide the type and function designation where specified in paragraph entitled "Hardware Schedule". Provide a set to include head and jamb seals. Air leakage of weather stripped doors not to exceed 1.25 cubic feet per minute of air per square foot of door area when tested in accordance with **ASTM E 283**. Provide weather stripping with one of the following:

#### 2.3.15.1 Extruded Aluminum Retainers

Extruded aluminum retainers not less than 0.050 inch wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Provide clear (natural) anodized aluminum.

#### 2.3.15.2 Interlocking Type

Zinc or bronze not less than 0.018 inch thick.

#### 2.3.15.3 Spring Tension Type

Spring bronze or stainless steel not less than 0.008 inch thick.

### 2.3.16 Rain Drips

Extruded aluminum, not less than 0.08 inch thick, clear anodized. Set drips in sealant and fasten with stainless steel screws.

#### 2.3.16.1 Door Rain Drips

Approximately 1-1/2 inch high by 5/8 inch projection. Align bottom with bottom edge of door.

#### 2.3.16.2 Overhead Rain Drips

Approximately 1-1/2 inch high by 2-1/2 inch projection, with length equal to overall width of door frame. Align bottom with door frame rabbet.

### 2.3.17 Special Tools

Provide special tools, such as spanner and socket wrenches and dogging keys, required to service and adjust hardware items.

## 2.4 FASTENERS

Provide fasteners of proper type, quality, size, quantity, and finish with hardware. Provide stainless steel or nonferrous metal fasteners that are exposed to weather. Provide fasteners of type necessary to accomplish a permanent installation.

## 2.5 FINISHES

**BHMA A156.18.** Provide hardware in BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except finish for surface door closers, and except BHMA 652 finish (satin chromium plated) for steel hinges. Provide hinges for exterior doors in stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Furnish exit devices in BHMA 626 finish in lieu of

BHMA 630 finish . Match exposed parts of concealed closers to lock and door trim. Match hardware finish for aluminum doors to the doors.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Install hardware in accordance with manufacturers' printed installation instructions. Fasten hardware to wood surfaces with full-threaded wood screws or sheet metal screws. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

##### 3.1.1 Weather Stripping Installation

Handle and install weather stripping to prevent damage. Provide full contact, weather-tight seals. Operate doors without binding.

##### 3.1.1.1 Stop-Applied Weather Stripping

Fasten in place with color-matched sheet metal screws not more than 9 inch on center after doors and frames have been finish painted.

##### 3.1.1.2 Interlocking Type Weather Stripping

Provide interlocking, self-adjusting type on heads and jambs and flexible hook type at sills. Nail weather stripping to door one inch on center and to heads and jambs at 4 inch on center

##### 3.1.1.3 Spring Tension Type Weather Stripping

Provide spring tension type on heads and jambs. Provide bronze nails with bronze, stainless steel nails with stainless steel. Space nails not more than 1-1/2 inch on center.

##### 3.1.2 Threshold Installation

Extend thresholds the full width of the opening and notch end for jamb stops. Set thresholds in a full bed of sealant and anchor to floor with cadmium-plated, countersunk, steel screws.

##### 3.1.3 Cylinders and Cores

Contractor shall provide construction cores for the duration of project. A certified and bonded mechanical lock technician from the lock manufacture shall deliver, install and test the permanent cores and locking mechanisms for proper function and installation. If a lock is deemed improperly installed or defective, the tech will make note, alert the prime contractor, and remedy the problem. The tech shall then personally deliver the keys to Contracting Officer's designee.

#### 3.2 FIRE DOORS AND EXIT DOORS

Install hardware in accordance with NFPA 80 for fire doors, NFPA 101 for exit doors.

### 3.3 HARDWARE LOCATIONS

ANSI A250.8, unless indicated or specified otherwise.

- a. Kick and Armor Plates: Push side of single-acting doors. Both sides of double-acting doors.

### 3.4 FIELD QUALITY CONTROL

After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that testing can be witnessed by the Contracting Officer. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate respective locks, and give keys to the Contracting Officer. Correct, repair, and finish, as directed, errors in cutting and fitting and damage to adjoining work.

### 3.5 HARDWARE SETS

Provide hardware sets and key schedules as indicated and scheduled on drawings.

-- End of Section --