

SECTION 08 71 00**DOOR HARDWARE****PART 1 - GENERAL****1.1 DESCRIPTION**

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

1.2 RELATED WORK

- A. Caulking: Section 07 92 13 JOINT SEALANTS.
- B. Application of Hardware: Section 08 14 13, STILE AND RAIL WOOD DOORS.
- C. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. 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 wood 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. Hinges for wood doors.

1.4 WARRANTY

- A. The Warranty period shall be two years in lieu of one year for all items except as noted below:
 - 1. Locks and latchsets: 5 years.
 - 2. Door hinges: 10 years.

1.5 MAINTENANCE MANUALS

- A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS", furnish maintenance manuals and instructions on all door hardware.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Submit 6 copies of the schedule per Section 01 33 23 plus 2 copies to the VAMC Locksmith (VISN Locksmith if the VAMC does not have a locksmith).
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

Hard-ware Item	Quantity	Size	Reference Publi-cation Type No.	Finish	Mfr. Name and Cata log No.	Key Control Symbols	UL Mark (if fire rated and listed)	ANSI/BHMA Finish Desi-gnat ion

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.

1.7 DELIVERY AND MARKING

- A. 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 VA for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in the VA's office until all other similar items have been installed in project, at which time the VA will deliver items on file to Contractor for installation in predetermined locations on the project.

1.8 PREINSTALLATION MEETING

- A. Convene a preinstallation meeting not less than 30 days before start of installation of door hardware. Require attendance of parties directly affecting work of this section, including Contractor and Installer, Architect, VA, VA Locksmith and Hardware Manufacturer's Representative. Review the following:
 - 1. Inspection of door hardware.
 - 2. Job and surface readiness.
 - 3. Coordination with other work.
 - 4. Protection of hardware surfaces.
 - 5. Substrate surface protection.
 - 6. Installation.
 - 7. Adjusting.
 - 8. Repair.
 - 9. Field quality control.
 - 10. Cleaning.

1.9 INSTRUCTIONS

- A. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified may be used.
- B. Keying: Provide information regarding key system and lock control to VA. Notify VA immediately when and to whom keys or keying information is supplied. Return all such keys to the VA.

1.10 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 Society for Testing and Materials (ASTM):
 - 1. E2180-07 Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) In Polymeric or Hydrophobic Materials
- C. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
 - 1. A156.1-06 Butts and Hinges
 - 2. A156.2-03 Bored and Pre-assembled Locks and Latches
 - 3. A156.4-08 Door Controls (Closers)
 - 4. A156.5-01 Auxiliary Locks and Associated Products

5. A156.6-05 Architectural Door Trim
6. A156.8-05 Door Controls-Overhead Stops and Holders
7. A156.16-08 Auxiliary Hardware
8. A156.17-04 Self-Closing Hinges and Pivots
9. A156.18-06 Materials and Finishes
10. A156.20-06 Strap and Tee Hinges, and Hasps
11. A156.21-09 Thresholds
12. A156.22-05 Door Gasketing and Edge Seal Systems
13. A156.28-07 Master Keying Systems

D. National Fire Protection Association (NFPA):

1. 101-09 Life Safety Code

E. Underwriters Laboratories, Inc. (UL):

1. Building Materials Directory (2008)

PART 2 - PRODUCTS

2.1 BUTT HINGES

- A. ANSI A156.1. Provide only three-knuckle hinges, except five-knuckle where the required hinge type is not available in a three-knuckle version (e.g., some types of swing-clear hinges). The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:
1. Exterior Doors: Type A2112/A5112 for doors 900 mm (3 feet) wide or less and Type A2111/A5111 for doors over 900 mm (3 feet) wide. Hinges for exterior outswing doors shall have non-removable pins. Hinges for exterior doors shall be of stainless steel material.
 2. Interior Doors: Type A8112/A5112 for doors 900 mm (3 feet) wide or less and Type A8111/A5111 for doors over 900 mm (3 feet) wide. Hinges for doors exposed to high humidity areas (toilet rooms, kitchens, janitor rooms, etc.) shall be of stainless steel material.
- B. Provide quantity and size of hinges per door leaf as follows:
1. Doors up to 1210 mm (4 feet) high: 2 hinges.
 2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.
 3. Doors greater than 2260 mm (7 feet 5 inches) high: 4 hinges.
 4. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.
 5. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide, standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
 6. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).

7. Provide heavy-weight hinges where specified.
8. At doors weighing 330 kg (150 lbs.) or more, furnish 127 mm (5 inch) high hinges.

2.2 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 concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.
- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its width. Floor stops, where used, must be installed within 4-inches of the wall face and impact the door within the leading half of its width.
- E. Where drywall partitions occur, use floor stops, Type L02141 or L02161 in office areas, Type L02121 elsewhere.
- F. Provide stop Type L02011, as applicable for exterior doors. At outswing doors where stop can be installed in concrete, provide stop mated to concrete anchor set in 76mm (3-inch) core-drilled hole and filled with quick-setting cement.
- G. Provide appropriate roller bumper for each set of doors (except where closet doors occur) where two doors would interfere with each other in swinging.
- H. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.

2.3 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. Lock cylinders shall have not less than **six pins**. Cylinder shall be removable by special key or tool. Disassembly of lever or lockset shall not be required to remove core from lockset. Provide temporary keying device or construction core to allow opening and closing during construction and prior to the installation of final cores.
- B. In addition to above requirements, locks and latches shall comply with following requirements:
 1. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. All locks and latchsets shall be furnished with

122.55 mm (4-7/8-inch) curved lip strike and wrought box. Provide lever design to match design selected by Architect.

2. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.
3. Privacy locks shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance.

2.4 KEYS

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

Locks/Keys	Quantity
Cylinder locks	5 keys each
Master-keyed sets	5 keys each
Control key	5 keys

2.5 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 required on lower part of doors.
- B. Lever extension manual flush bolts shall only be used at non-fire-rated pairs for rooms only accessed by maintenance personnel.
- C. Face plates for cylindrical strikes shall be rectangular and not less than 25 mm by 63 mm (1 inch by 2-1/2 inches).
- D. Friction-fit cylindrical dustproof strikes with circular face plate may be used only where metal thresholds occur.
- E. Provide extension rods for top bolt where door height exceeds 2184 mm (7 feet 2 inches).

2.6 THRESHOLDS

- A. Conform to ANSI A156.21, mill finish extruded aluminum, except as otherwise specified. In existing construction, thresholds shall be installed in a bed of sealant with 20 stainless steel machine screws and expansion shields. In new construction, embed aluminum anchors coated with epoxy in concrete to secure thresholds. Furnish thresholds for the full width of the openings.
- B. At exterior doors and any interior doors exposed to moisture, provide threshold with non-slip abrasive finish.
- C. Provide with miter returns where threshold extends more than 12 mm (0.5 inch) from frame face.

2.7 WEATHERSTRIPS (FOR EXTERIOR DOORS)

- A. Conform to ANSI A156.22. Air leakage shall not to exceed 0.50 CFM per foot of crack length (0.000774m³/s/m).

2.8 MISCELLANEOUS HARDWARE

- A. Cylinders for Various Partitions and Doors: Key cylinders same as entrance doors of area in which partitions and door occur. Provide cylinders to operate locking devices where specified.
- B. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011 or L03021, depending on frame material, of white or light gray color, on each wood door frame. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors.

2.9 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." For field painting (final coat) of ferrous hardware, see Section 09 91 00, PAINTING.
- B. 626: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:
1. Hinges, exterior doors: 630.
 2. Hinges, interior doors: 626.
 3. Thresholds: Mill finish aluminum.
- D. Anti-microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (Ag⁺). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blockading food and respiration supplies.

2.10 BASE METALS

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

Finish	Base Metal
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, with all hand-operated hardware centered within 864 mm (34 inches) to 1200 mm (48 inches), unless otherwise noted:
- B. Hardware Heights from Finished Floor:
1. Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
 2. Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
 3. Deadlocks centerline of strike 1219 mm (48 inches).
 4. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

3.2 INSTALLATION

- A. 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)

- B. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim and surrounding conditions.

- C. 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

- D. 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 concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of nonferrous metal.
- E. After locks have been installed; show in presence of VA that keys operate their respective locks in accordance with keying requirements. All keys, Master Key level and above shall be sent to the VA for Cemetery 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 FINAL INSPECTION

- A. Installer to provide letter to VA that upon completion, installer has visited the Project and has accomplished the following:
1. Re-adjust hardware.
 2. Evaluate maintenance procedures and recommend changes or additions, and instruct VA personnel.
 3. Identify items that have deteriorated or failed.
 4. Submit written report identifying problems.

3.4 HARDWARE SETS

- A. Following sets of hardware correspond to hardware symbols shown on drawings. Only those hardware sets that are shown on drawings will be required. Disregard hardware sets listed in specifications but not shown on drawings.

HW-1 (2nd Floor Offices + Tool House Storage)

Each Door to Have: NON-RATED

1 Set Hinges	Type and Quantity as Required
1 ADA Lever Latchset w/ Privacy Lock	Schlage AL25S-JUP 613 finish
1 Deadbolt Keyed Cylinder	Schlage BC160P 613 finish
1 Base Stop	Ives 060-F10B
3 Silencers	Ives SR66

HW-2 (1st Floor Restroom)

Each Door to Have: NON-RATED

1 Set Hinges	Type and Quantity as Required
1 ADA Lever Latchset w/ Privacy Lock	Schlage AL25S-JUP 613 finish
1 Keyed Privacy Lock	F13 x Occupancy Indicator
1 Base Stop	Ives 060-F10B
3 Silencers	Ives SR66

HW-3 (1st Floor Break Room)

Each Door to Have: NON-RATED

1 Set Hinges	Type and Quantity as Required
1 ADA Lever Latchset w/ Passage Latch	Schlage AL10S-JUP 613 finish
1 Base Stop	Ives 060-F10B
3 Silencers	Ives SR66

HW-4 (Exterior Doors)

Each Door to Have: NON-RATED

1 Set Hinges	Type and Quantity as Required
1 ADA Interconnected Entrance Lock	Schlage S251PD-JUP 613 finish
1 Base Stop	Ives 060-F10B
3 Silencers	Ives SR66

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