

SECTION 08 71 00
DOOR HARDWARE

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 00 JOINT SEALANTS.
- B. Application of Hardware: Section 08 14 00, WOOD DOORS, Section 08 11 13, HOLLOW METAL DOORS AND FRAMES; Section 08 71 13.11, LOW ENERGY DOOR OPERATORS.
- C. Painting: Section 09 91 00, PAINTING.
- D. Card Readers: Section 28 13 11, PHYSICAL ACCESS CONTROL SYSTEMS.
- E. Electrical: Division 26, ELECTRICAL.
- F. Fire Detection: Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 GENERAL

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Provide rated door hardware assemblies where required by most current version of the International Building Code (IBC).
- C. Hardware for Labeled Fire Doors and Exit Doors: Conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Provide hardware listed by UL, except where heavier materials, large size, or better grades are specified herein under paragraph HARDWARE SETS. In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements.
- D. Hardware for application on metal and 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.
- E. Like hardware items shall be obtained from one source from a single manufacturer.

1.4 MAINTENANCE MANUALS

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

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1.5 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.

1.6 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 Project Engineer for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in Project Engineer's office until all other similar items have been installed in project, at which time the Project

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Engineer will deliver items on file to Contractor for installation in predetermined locations on the project.

1.7 PREINSTALLATION MEETING

- A. Convene a pre installation meeting not less than 30 days before start of installation of door hardware. Require attendance as directed by Project Engineer of parties directly affecting work of this section, including Contractor and Installer, Architect, Project Engineer and VA Locksmith, Hardware Consultant, 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.

1.8 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):
- F883-04 Padlocks
- C. 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
- A156.13-05..... Mortise Locks and Latches Series 1000
- A156.15-06..... Release Devices-Closer Holder, Electromagnetic
and Electromechanical
- A156.16-02..... Auxiliary Hardware
- A156.18-06..... Materials and Finishes

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A156.22-05.....Door Gasketing and Edge Seal Systems

D. National Fire Protection Association (NFPA):

80-10Fire Doors and Fire Windows

101-09Life Safety Code

E. Underwriters Laboratories, Inc. (UL):

Building Materials Directory (2007)

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Where Basis of Design Manufacturer is indicated, provide either the basis or design product or products of the Basis of Design manufacturer or approved comparable products from another qualified manufacturer.

2.2 BUTT HINGES

A. Basis of Design Manufacturer: The Hager Companies.

B. 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 A8112 for doors 900 mm (3 feet) wide or less and Type A8111 for doors over 900 mm (3 feet) wide.

2. Labeled Wood Fire Doors: Type 8411 or Type 8412; these hinges shall be through bolted to door with hex nuts and bolts.

C. Use swing clear hinges on all entrance doors to patient rooms, both 4E and 5E. Total of 34 openings (17 on 4E, 17 on 5E).

2.3 OVERHEAD CLOSERS

A. Basis of Design products: 4040/4110 series; LCN Division, Ingersoll-Rand Company.

B. Closers shall conform to the following:

1. The closer shall have minimum 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 body shall be forged 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 metal cove.

7. Closers shall have adjustable hydraulic back-check, separate valves for closing and latching speed.

8. Closer coordinators: Coordinate closer hold open voltage requirements with fire alarm control system.

2.4 DOOR STOPS

- A. Basis for Design Manufacturer: Glynn-Johnson Door Controls, Ingersoll-Rand Company
- B. Conform to ANSI A156.16.
- C. 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.
- D. Substitute floor stops (Type L02141 or L02161 as appropriate, when wall bumpers would not provide an effective door stop.
- E. Where drywall partitions occur, use floor stops, Type L02141 or L02161.
- F. Provide stop Type L02011, as applicable for exterior doors.
- G. Omit stops where floor mounted door holders are required and where automatic operated doors occur.
- H. Provide appropriate roller bumper for each set of doors (except where closet doors occur) where two doors would interfere with each other in swinging.
- I. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.
- J. Provide overhead surface applied stop Type C02541, ANSI A156.8 on patient toilet doors in bedrooms where toilet door could come in contact with the bedroom door.
- K. Provide door stops on doors where combination closer magnetic holders are specified.

2.5 OVERHEAD DOOR HOLDERS

- A. Basis for Design Manufacturer: Glynn-Johnson Door controls, Ingersoll-Rand Company.
- B. 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 110 degree opening, unless limited by building construction or equipment.

2.6 LOCKS AND LATCHES

- A. Keying: All cylinder cores and keys shall be Best Lock and will be provided by Owner. Locks to be provided with cylinder shell to accept 7-pin Best Core.
- B. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all locks in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw. Provide temporary keying device or construction core to allow opening and closing during construction and prior to the installation of final cores.
- C. Mortise Lock and Latch Sets:
1. Basis of Design Products: 8800 series with Carmel CRR lever and rose trim; Yale Security Inc.
 2. Conform to ANSI/BHMA A156.13. Mortise locksets shall be fabricated from wrought stainless steel. No substitute lever material shall be accepted. All locks and latch sets 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. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortised locks.
 3. Lock Function Legend:

Latches	8801
Storerooms:	8805
Offices:	8807
Toilet Rooms (privacy):	8802
Deadbolts:	8814-2
Doors other than above:	8808
 4. Provide schedule of lock functions to Project Engineer prior to ordering locks.

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D. Hospital Latches:

1. Basis of Design Products: HL-6; Glynn-Johnson Door Controls, Ingersoll-Rand Company.

E. Pushbutton Locks:

1. Basis of Design Products: Simplex L1000 x MKDCYL; Kaba Ilco Corp.

2.7 EXIT DEVICES

- A. Basis of Design Products: 9827; Von Duprin Inc.
- B. All devices shall have deadlocking feature. All labeled fire doors shall have fire-rated type devices.
- C. Except on fire-rated doors, wherever closers are provided on doors equipped with exit devices, equip the units with keyed dogging device to hold the push bar down and the latch bolt in the open position.

2.8 KICK PLATES

- A. Conform to ANSI Standard A156.6.
- B. Kick Plates shall be 200 mm (8 Inches) high. On push side of doors where jamb stop extends to floor, make combination kick-mop plates 38mm (1-1/2inches) less than width of door, except pairs of doors which shall have plates 25mm (1 inch) less than width of each door. Extend all other kick plates to within 6 mm (1/4) inch) of each edge of doors. Kick plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
- C. Base metal: Stainless steel, 0.050" (U.S. 18 gauge).
- D. Fasteners: Provide Manufacturer's standard exposed fasteners for door trim units (kick plates, edge trim, viewers, knockers, mail drops and similar units); either machine screws or self-tapping screws.

2.9 FLUSH BOLTS

- A. Basis of Design Manufacturer: Glynn-Johnson Door Controls, Ingersoll-Rand Company.
- B. Conform to ANSI A156.16. Dimension of flush bolts shall conform to ANSI A115. Bolts shall conform to Underwriters Laboratories, Inc. requirements for fire door hardware. Furnish dustproof strikes conforming to ANSI A156.16 for bottom flushbolt. Face plates for dustproof strike shall be rectangular and not less than 38 mm by 90 mm (1-1/2 by 3-1/2 inches). 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.

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

2.10. ELECTRIC STRIKES AND KEYPADS

- A. Coordinate electric strike requirements with access control system and lock type.
- B. Electric Strike: Basis of Design Product: RCI 4114; Rutherford controls International
- C. Key pads: Basis of Design Product: RCI 9291i, Rutherford Controls International.

2.11 MISCELLANEOUS ITEMS

- A. Conform to ANSI A156.6, J403.
 - 1. Basis of Design Product: 17N; The Hager Companies.
- B. Roller Latches: BHMA E19101
 - 1. Basis of Design Product: GH32; Glynn-Johnson Door controls, Ingersoll-Rand Company.
- C. Wall Magnets:
 - 1. Basis of Design Product; SEM 7850; LCN.
- D. Sweeps: conform to ANSI A156.22. Air leakage shall not exceed 0.50 CFM per foot of crack length (0.000774m³/s/m).

2.12 FINISHES

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below.
- B. 626 or 630: All exposed surfaces of hardware, 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.

2.13 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. For existing buildings locate hardware on doors at heights to match existing hardware. The Contractor shall visit the site, verify location of existing hardware and submit locations to VA Project Engineer for approval.

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 with hex nuts and bolts; the 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, have closer installed parallel arm on exterior side of doors.
 3. 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) (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 and surrounding conditions.

E. Where new hinges are specified for new doors in existing frames or existing doors in new frames, sizes of new hinges shall match sizes of existing hinges; or, contractor may reuse existing hinges provided hinges are restored to satisfactory operating condition as approved by Project Engineer. Existing hinges shall not be reused on door openings having new doors and new frames. Coordinate preparation for hinge cut-outs and screw-hole locations on doors and frames.

F. 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

G. 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.

H. After locks have been installed; show in presence of Project 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 Project Engineer for her 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 Project Engineer 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.

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3.4 HARDWARE SETS

- A. Following sets of hardware correspond to hardware symbols shown on drawings.

HW-1

BUTTS-SWING CLEAR HINGES 8121 PATIENT ROOMS
HOSPITAL LATCH
STOP
KICK PLATE

HW-2

BUTTS-SWING CLEAR HINGES 8121 BARIATRIC
HOSPITAL LATCH
AUTO FLUSH BOLT
2 STOPS
2 KICKPLATE
ASTRAGAL BY DOOR MFGR.

HW-3

BUTTS	PATIENT ROOM TOILETS
LATCH	SHOULD BE PASSAGE
2 COAT HOOKS	
STOP	
NO LOCK	

HW-4

BUTTS	NURSE SERVER
2 LATCH	
2 WALL STOPS	

HW-5

BUTTS	OFFICE
LOCK OFFICE	
STOPS	

HW-6

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HW-7

BUTTS	PUBLIC TOILETS/STAFF TOILETS
PRIVACY	
2 COAT HOOKS	
STOP	
KICK PLATE	
VACANT/OCCUPIED INDICATOR	

HW-8

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HW-9

BUTTS	CLEAN UTILITY/SOILED UTILITY
PUSHBUTTON LOCK	BREAK ROOM
CLOSER	NOURISHMENT
STOP	
KICK PLATE	

HW-9A

BUTTS
PUSHBUTTON LOCK
2 LATCHES
2 CLOSERS
2 STOPS
2 KICK PLATES

HW-10

BUTTS	MED ROOM
OVERRIDE LOCK STORE ROOM	MED CART STORAGE
CLOSER	
KICK PLATE	
ELECTRIC STRIKE	
CARD ACCESS SYSTEM	

HW-11

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HW-12

Operation: From outside, keypad operates electric strike and auto opener; from inside push to exit.

BUTTS	EQUIPMENT STORAGE
LOCK STORE ROOM	
AUTOMATIC OPENER	
STOP	
KICK PLATE	
ELECTRIC STRIKE	
KEYPAD	
POWER SUPPLY	

HW-13

BUTTS	CORRIDOR
2 EXIT DEVICES	
2 CLOSERS	
2 WALL MAGNETS	
2 KICK PLATES	
ASTRAGAL BY DOOR MFGR	

HW-14

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HW-15

BUTTS	HOUSEKEEPING
LOCK STORE ROOM	ELECTRICAL CLOSET
STOP	

HW-16

BUTTS	CORRIDOR
2 EXIT DEVICES	
2 CLOSERS	
2 WALL MAGNETS	
2 KICK PLATES	

HW-17

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