

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 00 JOINT SEALANTS.
- B. Application of Hardware: // Section 08 14 00, WOOD DOORS // Section 08 11 13, HOLLOW METAL DOORS AND FRAMES // Section 08 17 10, INTEGRATED DOOR ASSEMBLIES // Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS ~~// Section 08 42 33, REVOLVING DOOR ENTRANCES // Section 08 33 00, COILING DOORS AND CRILLES // Section 08 33 13, COILING COUNTER DOORS // Section 08 34 36, DARKROOM DOORS // Section 08 34 53, SECURITY DOORS AND FRAMES // Section 08 34 73, SOUND CONTROL DOOR ASSEMBLIES // Section 08 42 23, INTENSIVE CARE UNIT/CRITICAL CARE UNIT (ICU/CCU) ENTRANCES // Section 08 42 29, AUTOMATIC ENTRANCES // Section 08 71 13, AUTOMATIC DOOR OPERATORS // Section 08 71 13.11, LOW ENERGY DOOR OPERATORS // Section 13 49 00, RADIATION PROTECTION // Section 32 31 33, CHAIN LINK FENCES AND GATES // and Section 32 31 19, DECORATIVE METAL FENCES AND GATES //~~
- C. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Painting: Section 09 91 00, PAINTING.
- E. Card Readers: Section 28 13 11, PHYSICAL ACCESS CONTROL SYSTEMS.
- F. Electrical: Division 26, ELECTRICAL.
- G. 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.

~~SPEC WRITER NOTE: The word "FIRE" must be included as part of the certification on the Underwriters Laboratories label on exit devices to be used on fire doors.~~

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- 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. The following items shall be of the same manufacturer, if possible, except as otherwise specified:
1. Mortise locksets.
 2. Hinges for hollow metal and wood doors.
 3. Surface applied overhead door closers.
 4. Exit devices.
 5. Floor closers.

1.4 WARRANTY

- A. Automatic door operators shall be subject to the terms of FAR Clause 52.24-21, except that the Warranty period shall be two years in lieu of one year for all items except as noted below:
1. Locks, latchsets, and panic hardware: 5 years.
 2. Door closers and continuous 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:

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
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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 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.

1.8 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, 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.

1.9 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 (e.g., "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.	Pomona, CA
Best	Best Access Systems	Indianapolis, IN
Don-Jo	Don-Jo Manufacturing	Sterling, MA
G.E. Security	GE Security, Inc.	Bradentown, FL
Markar	Markar Architectural Products	Pomona, CA
Pemko	Pemko Manufacturing Co.	Ventura, CA
Rixson	Rixson	Franklin Park, IL
Rockwood	Rockwood Manufacturing Co.	Rockwood, PA
Securitron	Securitron Magnalock Corp.	Sparks, NV
Southern Folger	Southern Folger Detention Equipment Co.	San Antonio, TX
Stanley	The Stanley Works	New Britain, CT
Tice	Tice Industries	Portland, OR
Trimco	Triangle Brass Mfg. Co.	Los Angeles, CA
Zero	Zero Weather Stripping Co.	New York, NY

~~SPEC WRITER NOTE: Delete following paragraph if new hospital station, or where existing station is to be rekeyed.~~

- C. Keying: All cylinders shall be keyed into existing ~~_____~~ ~~// Great~~
~~// Grand Master Key System //~~. Provide removable core cylinders that are removable only with a special key or tool without disassembly of ~~lever knob~~ or lockset ~~//~~. Cylinders shall be ~~_// 6 // 7 //~~ pin type. Keying information shall be furnished at a later date by the Resident Engineer.

~~SPEC WRITER NOTE: When the project requires a new keying system, include following paragraph. For projects at existing hospitals use above paragraph.~~

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- D. Keying: A new Great Grandmaster key shall be established for this project. The key system shall be small format (Best size and profile) removable core type as previously described. The key blanks shall be protected by a utility patent with a minimum seven years remaining on the patent from the start of construction, and protected by contract-controlled distribution. The manufacturer shall furnish code pattern listings in both paper and electronic formats so keys may be reproduced by code.; provide electronic format in file type required by project's key control software. The manufacturer shall design the new key system with the capacity to rekey the existing system and also provide for 25 percent expansion capability beyond this requirement. Submit a keying chart for approval showing proposed keying layout and listing expansion capacity.
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.

~~SPEC WRITER NOTE: Contractor shall verify with the station personnel, the location of key identification to be stamped on cylinders.~~

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):
- F883-04.....Padlocks
 - 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):
- A156.1-06.....Butts and Hinges
 - A156.2-03.....Bored and Pre-assembled Locks and Latches
 - A156.3-08.....Exit Devices, Coordinators, and Auto Flush
Bolts
 - A156.4-08.....Door Controls (Closers)
 - A156.5-01.....Auxiliary Locks and Associated Products
 - A156.6-05.....Architectural Door Trim
 - A156.8-05.....Door Controls-Overhead Stops and Holders
 - A156.12-05Interconnected Locks and Latches
 - A156.13-05.....Mortise Locks and Latches Series 1000
 - A156.14-07Sliding and Folding Door Hardware
 - A156.15-06.....Release Devices-Closer Holder, Electromagnetic
and Electromechanical
 - A156.16-08.....Auxiliary Hardware
 - A156.17-04Self-Closing Hinges and Pivots
 - A156.18-06.....Materials and Finishes
 - A156.20-06Strap and Tee Hinges, and Hasps
 - A156.21-09.....Thresholds
 - A156.22-05.....Door Gasketing and Edge Seal Systems
 - A156.23-04.....Electromagnetic Locks
 - A156.24-03.....Delayed Egress Locking Systems
 - A156.25-07Electrified Locking Devices
 - A156.26-06.....Continuous Hinges
 - A156.28-07Master Keying Systems

A156.29-07Exit Locks and Alarms
A156.30-03High Security Cylinders
A156.31-07Electric Strikes and Frame Mounted Actuators
A250.8-03.....Standard Steel Doors and Frames

D. National Fire Protection Association (NFPA):

80-130.....Fire Doors and ~~Other Opening Protectives~~Fire
Windows
101-1209.....Life Safety Code

E. Underwriters Laboratories, Inc. (UL):

Building Materials Directory (2008)

PART 2 - PRODUCTS

~~SPEC WRITER NOTE: Under "Hardware Sets",
schedule special hinges for doors over
1200 mm (4 feet) wide and other special
doors. Also schedule special hinges such
as spring hinges and strap hinges.~~

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 fire-rated 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 (shower rooms, 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.
- C. See Articles "MISCELLANEOUS HARDWARE" and "HARDWARE SETS" for pivots and hinges other than butts specified above and continuous hinges specified below.

2.2 CONTINUOUS HINGES

- A. ANSI/BHMA A156.26, Grade 1-600.
1. Listed under Category N in BHMA's "Certified Product Directory."
- B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete
- C. Continuous, Barrel-Type Hinges: Hinge with knuckles formed around a Teflon-coated 6.35mm (0.25-inch) minimum diameter pin that extends entire length of hinge.
1. Base Metal for Exterior Hinges: Stainless steel.
 2. Base Metal for Interior Hinges: ~~Stainless steel~~~~Steel~~
~~Aluminum~~.
 3. Base Metal for Hinges for Fire-Rated Assemblies: ~~Stainless steel~~
~~Steel~~.
 4. Provide with non-removable pin (hospital tip option) at lockable outswing doors.
 5. Where required to clear adjacent casing, trim, and wall conditions and allow full door swing, provide wide throw hinges of minimum width required.
 6. Provide with manufacturer's cut-outs for separate mortised power transfers and/or mortised automatic door bottoms where they occur.
 7. Where thru-wire power transfers are integral to the hinge, provide hinge with easily removable portion to allow easy access to wiring connections.

8. Where models are specified that provide an integral wrap-around edge guard for the hinge edge of the door, provide manufacturer's adjustable threaded stud and machine screw mechanism to allow the door to be adjusted within the wrap-around edge guard.

2.3 DOOR CLOSING DEVICES

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

2.4 OVERHEAD CLOSERS

- A. Conform to ANSI A156.4, Grade 1.
- 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: Provide multi-size closers, sizes 1 through 6, except where multi-size closer is not available for the required application.
 4. Material of closer body shall be forged or cast.
 5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
 6. Where closers are exposed to the exterior or are mounted in rooms that experience high humidity, provide closer body and arm assembly of stainless steel material.
 7. Closers shall have full size metal cover; plastic covers will not be accepted.
 8. Closers shall have adjustable hydraulic back-check, separate valves for closing and latching speed, adjustable back-check positioning valve, and adjustable delayed action valve.
 9. Provide closers with any accessories required for the mounting application, including (but not limited to) drop plates, special soffit plates, spacers for heavy-duty parallel arm fifth screws, bull-nose or other regular arm brackets, longer or shorter arm assemblies, and special factory templating. Provide special arms, drop plates, and templating as needed to allow mounting at doors with overhead stops and/or holders.

10. Closer arms or backcheck valve shall not be used to stop the door from overswing, except in applications where a separate wall, floor, or overhead stop cannot be used.
11. Provide parallel arm closers with heavy duty rigid arm.
12. Where closers are to be installed on the push side of the door, provide parallel arm type except where conditions require use of top jamb arm.
13. Provide all surface closers with the same body attachment screw pattern for ease of replacement and maintenance.
14. All closers shall have a 1 ½" (38mm) minimum piston diameter.

~~SPEC WRITER NOTE: Discuss with the Medical Center on the desirability of using floor closers and Pivot sets versus other closers types for other than lead lined doors.~~

2.5 FLOOR CLOSERS AND FLOOR PIVOT SETS

- A. Comply with ANSI A156.4. Provide stainless steel floor plates for floor closers and floor pivots, except where metal thresholds occur. Provide cement case for all floor closers. Floor closers specified for fire doors shall comply with Underwriters Laboratories, Inc., requirements for concealed type floor closers for classes of fire doors indicated on drawings. Hold-open mechanism, where required, shall engage when door is opened 105 degrees, except when door swing is limited by building construction or equipment, the hold-open feature shall engage when door is opened approximately 90 degrees. The hold-open mechanism shall be selectable on/off by turning a screw through the floor plate. Floor closers shall have adjustable hydraulic back-check, adjustable close speed, and adjustable latch speed. Provide closers with delayed action where a hold-open mechanism is not required. Floor closers shall be multi-sized. Single acting floor closers shall also have built in dead stop. Where required, provide closers with special cement cases appropriate for shallow deck installation or where concrete joint lines run through the floor blockout. At offset-hung doors installed in deep reveals, provide special closer arm and spindle to allow for installation. Where stone or terrazzo is applied over the floor closer case, provide closer without floor plate and with extended spindle (length as required) and special cover pan (depth as required) to allow closer to be accessed without damaging the material applied over the

closer. Pivots for non-labeled doors shall be cast, forged or extruded brass or bronze.

B. Where floor closer appears in hardware set provide the following as applicable.

1. Double Acting Floor Closers: Type C06012.
2. Single Acting Floor Closer: Type C06021 (center pivoted).
(Intermediate pivot is not required).
3. Single Acting Floor Closers: Type C06041 (offset pivoted).
4. Single Acting Floor Closer for Labeled Fire Doors: Type C06051
(offset pivoted).
5. Single Acting Floor Closers For Lead Lined Doors: Type C06071
(offset pivoted).

SPEC WRITER NOTE: Discuss with VA personnel availability of various types of door holders and closers and recommend the best product that will conform to VA criteria and produce the desired results. Wherever possible, specify wall-mounted magnetic holders instead combination closer-holders.

2.6 COMBINATION CLOSER - HOLDER

- A. Conform to ANSI A156.15; combination closer-holder with built-in electronic release.
- B. Combination closer-holder shall have the following features:
 1. Control door closing and latching sequence by hydraulic action.
 2. Wiring for 24V DC current. Current draw shall not exceed 0.16 amperes.
 3. Combination closer-holder type:
 - a. At doors with 90-110° hold-open point: Single lever arm with slide track closing action, and adjustable hydraulic back-check. Provide tracks with spring-cushion stop assemblies to avoid the necessity of a separate wall or floor stop. Provide with double egress arm where required.
 - b. At doors with over 110° to 175° hold-open point: Single or double lever arm and adjustable hydraulic back-check. Provide with long arms where required for deep frame reveals.
 4. Spring power for closing force shall conform to ANSI A156.4 and have 50% spring power adjustment.
 5. Size closers per manufacturer's printed catalog recommendations.

6. Hold open mechanism shall hold door open between 85 degrees and 175 degrees depending on wall and frame conditions. Mount device to provide maximum door opening permitted by building construction or equipment.
7. Electronic release shall release door when signaled by smoke detector. Smoke detectors shall not be incorporated as an integral part of door holders. Smoke detectors are specified in the ELECTRICAL Section.
8. All closers to have full covers.
9. All closers shall have a 1 ½" minimum piston diameter and an adjustable back check position valve.

2.7 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. 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, except where wall stops cannot be used or where floor stops cannot be installed within 4-inches of the wall.
- L. Where the specified wall or floor stop cannot be used, provide concealed overhead stops (surface-mounted where concealed cannot be used).

2.8 OVERHEAD DOOR STOPS AND HOLDERS

- A. 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. Provide Grade 1 overhead concealed slide type: stop-only at rated doors and security doors, hold-open type with exposed hold-open on/off control at all other doors requiring overhead door stops.

2.9 FLOOR DOOR HOLDERS

- A. Conform to ANSI Standard A156.16. Provide extension strikes for Types L01301 and L01311 holders where necessary.

~~SPEC WRITER NOTES:~~

- ~~1. Use construction removable cores on all new hospital jobs.~~
- ~~2. Because of the different security requirements found in VA facilities, the designer is advised to discuss these issues with appropriate VA personnel prior to the design phase of the project. In addition to patient and employee security, areas requiring security includes medical records, drug storage, biological and animal research, retail sales and agent cashiers. The designer is to explain to VA personnel the different types of security locking systems that are currently available, and make recommendations as to what is the best system to be used for each security problem. Specify pushbutton locks, card-reader-controlled electric locks, or keyed locks per site-specific requirements and the requirements of the VA Physical Security Manual.~~

2.10 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//~~ seven pins~~//~~. Cylinders for all locksets shall be removable core type. ~~//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 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. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core of 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:

~~SPEC WRITER NOTE:~~

- ~~1. Insert manufacturer and lever design below Architect is encouraged to consider modern or traditional designer levers for areas that are in view of the public and patients~~

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 fabricated from cast stainless steel. Provide sectional (lever x rose) lever design matching [~~Schlage 06A~~]. No substitute lever material shall be accepted. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Lock function F02 shall be furnished with emergency tools/keys for emergency entrance. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortise locks. Where mortise locks are installed in high-humidity locations or

where exposed to the exterior on both sides of the opening, provide non-ferrous mortise lock case.

2. 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. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Provide lever design to match design selected by Architect or to match existing lever design. Where two turn pieces are specified for lock F76, turn piece on inside knob shall lock and unlock inside knob, and turn piece on outside knob shall unlock outside knob when inside knob is in the locked position. (This function is intended to allow emergency entry into these rooms without an emergency key or any special tool.)
3. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.
4. Locks on designated doors in Psychiatric (Mental Health) areas shall be paddle type with arrow projection covers and be UL Listed. Provide these locks with paddle in the down position on both sides of the door. Locks shall be fabricated of wrought stainless steel.
5. Privacy locks in non-mental-health patient rooms shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance. Single occupancy patient privacy doors shall typically swing out; where such doors cannot swing out, provide center-pivoted doors with rescue hardware (see HW-2B).

~~SPEC WRITER NOTES:~~

- ~~1. Because of the different security requirements found in VA facilities, the designer is advised to discuss these issues with appropriate VA personnel prior to the design phase of the project. In addition to patient and employee security, areas requiring security includes medical records, drug storage, biological and animal research, retail sales and agent cashiers. The designer is to explain to VA personnel the different types of security locking systems that are currently available, and make recommendations as to what is the best system to be used for each security~~

~~problem. Specify pushbutton locks, card-reader-controlled electric locks, or keyed locks per site specific requirements and the requirements of the VA Physical Security Manual.~~

2.11 PUSH-BUTTON COMBINATION LOCKS

- A. ANSI/BHMA A156.13, Grade 1. Battery operated pushbutton entry.
- B. Construction: Heavy duty mortise lock housing conforming to ANSI/BHMA A156.13, Grade 1. Lever handles and operating components in compliance with the UFAS and the ADA Accessibility Guidelines. Match lever handles of locks and latchsets on adjacent doors.
- C. Special Features: Key override to permit a master keyed security system and a pushbutton security code activated passage feature to allow access without using the entry code.

2.12 ELECTROMAGNETIC LOCKS

~~SPEC WRITER NOTES: Indicate configuration of electromagnetic locks — direct hold or shear type — and mounting in door hardware sets or on Drawings.~~

- A. ANSI/BHMA A156.23; electrically powered, of strength and configuration indicated; with electromagnet attached to frame and armature plate attached to door. Listed under Category E in BHMA's "Certified Product Directory."
 - 1. Type: Full exterior or full interior, as required by application indicated.
 - 2. Strength Ranking: ~~//1500 lbf (6672 N)// //1000 lbf (4448 N)// //500 lbf (2224 N)//~~.
 - 3. Inductive Kickback Peak Voltage: Not more than ~~//53// //0//~~ V.
 - 4. Residual Magnetism: Not more than ~~//4 lbf (18 N)// //0 lbf (0 N)//~~ to separate door from magnet.
- B. Delayed-Egress Locks: BHMA A156.24. ~~//~~Listed under Category G in BHMA's "Certified Product Directory". ~~//~~
 - 1. Means of Egress Doors: Lock releases within 15 seconds after applying a force not more than 15 lbf (67 N) for not more than 3 seconds, as required by NFPA 101.
 - 2. Security Grade: Activated from secure side of door by initiating device.
 - 3. Movement Grade: Activated by door movement as initiating device.

4. The lock housing shall not project more than 4-inches (101mm) from the underside of the frame head stop.

2.13 ELECTRIC STRIKES

- A. ANSI/ BHMA A156.31 Grade 1.
B. General: Use fail-secure electric strikes at fire-rated doors.

2.14 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
Cylinder lock change key blanks	100 each different key way
Master-keyed sets	6 keys each
Grand Master sets	6 keys each
Great Grand Master set	5 keys
Control key	2 keys

- B. Psychiatric keys shall be cut so that first two bittings closest to the key shoulder are shallow to provide greater strength at point of greatest torque.

2.15 KEY CABINET

- A. ANSI Standard A156.5. Provide key cabinet made of cold rolled, 1.2 mm (0.0478 inch) thick furniture steel electro-welded. Doors shall have "no sag" continuous brass-pin piano type hinge and be equipped with chrome plated locking door handles, hook cam and mechanical pushbutton door lock. Key Cabinet and Key Control System shall accommodate all keys for this project plus 25 percent. Provide minimum number of multiple cabinets where a single cabinet of largest size will not accommodate the required number of keys.
- B. Key tags shall consist of two sets: Permanent self-locking and loan key snaphook type with tag colors as follows: Red fiber marker of the permanent self-locking type approximately 32 mm (1-1/4 inch) in diameter engraved with the legend "FILE KEY MUST NOT BE LOANED." Also furnish for each hook a white cloverleaf key marker with snap-hooks engraved with the legend "LOAN KEY."
- C. The manufacturer of the lock cylinders and locks shall attach a key tag to keys of each lock cylinder and shall mark thereon the respective

item number and key change number. Provide each group of keys in a key gathering envelope (supplied by Key Cabinet Manufacturer) in which the lock manufacturer shall include the following information: Item number, key change number and door number. The contractor shall furnish the Key Cabinet Manufacturer the hardware and keying schedules and change keys.

- D. The Key Cabinet Manufacturer shall set up a three-way cross index system, including master keys, listing the keys alphabetically, the hooks numerically and the key changes numerically on different colored index cards. Index cards shall be typewritten and inserted in a durable binder. Attach the keys to the two sets of numbered tags supplied with the cabinet. (The permanent tag and the loan key tag). Instruct the owner in proper use of the system. Install cabinet as directed by the Resident Engineer.

~~SPEC WRITER NOTE: Check height of existing kick-mop plates. Use 200 mm (8 inch) high plates on alteration work to match existing and 125 mm (5 inch) high plates on new work.~~

2.16 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates ~~//~~ and door edging ~~//~~ as specified below:
1. Kick plates, mop plates and armor plates of metal, Type J100 series.
 2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick 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 kick and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
 3. Kick plates and/or mop plates are not required on following door sides:
 - a. Armor plate side of doors;
 - b. Exterior side of exterior doors;
 - c. Closet side of closet doors;

d. Both sides of aluminum entrance doors.

4. Armor plates for doors are listed under Article "Hardware Sets".

Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.

5. Where louver or grille occurs in lower portion of doors, substitute stretcher plate and kick plate in place of armor plate. Size of stretcher plate and kick plate shall be 254 mm (10 inches) high.

6. Provide stainless steel edge guards where so specified at wood doors. Provide mortised type instead of surface type except where door construction and/or ratings will not allow. Provide edge guards of bevel and thickness to match wood door. Provide edge guards with factory cut-outs for door hardware that must be installed through or extend through the edge guard. Provide full-height edge guards except where door rating does not allow; in such cases, provide edge guards to height of bottom of typical lockset armor front. Forward edge guards to wood door manufacturer for factory installation on doors.

2.17 EXIT DEVICES

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have cast satin stainless steel lever handles of design similar to locksets, unless otherwise specified. Provide key cylinders for keyed operating trim and, where specified, cylinder dogging.
- B. Surface vertical rod panics shall only be provided less bottom rod; provide fire pins as required by exit device and door fire labels. Do not provide surface vertical rod panics at exterior doors.
- C. Concealed vertical rod panics shall be provided less bottom rod at interior doors, unless lockable or otherwise specified; provide fire

pins as required by exit device and door fire labels. Where concealed vertical rod panics are specified at exterior doors, provide with both top and bottom rods.

- D. Where removable mullions are specified at pairs with rim panic devices, provide mullion with key-removable feature.
- E. At non-rated openings with panic hardware, provide panic hardware with key cylinder dogging feature.
- F. Exit devices for fire doors shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

2.18 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).

2.19 FLUSH BOLTS (AUTOMATIC)

- A. Conform to ANSI A156.3. Dimension of flush bolts shall conform to ANSI A115. Bolts shall conform to Underwriters Laboratories, Inc., requirements for fire door hardware. Flush bolts shall automatically latch and unlatch. 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).

~~SPEC WRITER NOTE: Review less bottom bolt option for security doors with campus locksmith. Specify auto flush bolts with bottom bolts and dust proof strikes if so requested by campus locksmith.~~

- B. At interior doors, provide auto flush bolts less bottom bolt, unless otherwise specified, except at wood pairs with fire-rating greater than 20 minutes; provide fire pins as required by auto flush bolt and door fire labels.

2.20 DOOR PULLS

- A. Conform to ANSI A156.6. Pull plate 90 mm by 350 mm (3-1/2 inches by 14 inches), unless otherwise specified. Cut plates of door pulls for cylinders, or turn pieces where required.

2.21 PUSH PLATES

- A. Conform to ANSI A156.6. Metal, Type J302, 200 mm (8 inches) wide by 350 mm (14 inches) high. Provide metal Type J300 plates 100 mm (4 inches wide by 350 mm (14 inches) high) where push plates are specified for doors with stiles less than 200 mm (8 inches) wide. Cut plates for cylinders, and turn pieces where required.

2.22 COMBINATION PUSH AND PULL PLATES

- A. Conform to ANSI 156.6. Type J303, stainless steel 3 mm (1/8 inch) thick, 80 mm (3-1/3 inches) wide by 800 mm (16 inches) high), top and bottom edges shall be rounded. Secure plates to wood doors with 38 mm (1-1/2 inch) long No. 12 wood screws. Cut plates for turn pieces, and cylinders where required. Pull shall be mounted down.

2.23 COORDINATORS

- A. 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 exterior pairs of doors where either door will close independently regardless of the position of the other door. 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. Provide bar type coordinators, except where gravity coordinators are required at acoustic pairs. For bar type coordinators, provide filler bars for full width and, as required, brackets for push-side surface mounted closers, overhead stops, and vertical rod panic strikes.

2.24 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 ¼-20 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. For thresholds at elevators entrances see other sections of specifications.
- C. At exterior doors and any interior doors exposed to moisture, provide threshold with non-slip abrasive finish.
- D. Provide with miter returns where threshold extends more than 12 mm (0.5 inch) from frame face.

2.25 AUTOMATIC DOOR BOTTOM SEAL AND RUBBER GASKET FOR LIGHT PROOF OR SOUND CONTROL DOORS

- A. Conform to ANSI A156.22. Provide mortise or under-door type, except where not practical. For mortise automatic door bottoms, provide type specific for door construction (wood or metal).

2.26 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).

2.27 MISCELLANEOUS HARDWARE

- A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Except for fire-rated doors and doors to Temperature Control Cabinets, equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.
- B. Cylinders for Various Partitions and Doors: Key cylinders same as entrance doors of area in which partitions and door occur, ~~//~~except as otherwise specified~~//~~. Provide cylinders to operate locking devices where specified for following partitions and doors:
 - 1. Folding doors and partitions.
 - 2. Wicket door (in roll-up door assemblies).
 - 3. Slide-up doors.
 - 4. Swing-up doors.
 - 5. Fire-rated access doors-Engineer's key set.
 - 6. Doors from corridor to electromagnetic shielded room.
 - 7. Day gate on vault door.
- C. 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 steel or wood door frame, except at fire-rated frames, lead-lined frames and frames for sound-resistant, lightproof and electromagnetically shielded doors. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors. Provide 4 mutes or silencers for frames for each Dutch type door.

Provide 2 mutes for each edge of sliding door which would contact door frame.

2.28 PADLOCKS FOR VARIOUS DOORS, GATES AND HATCHES

- A. ASTM E883, size 50 mm (2 inch) wide chain; furnish extended shackles as required by job conditions. Provide padlocks, with key cylinders, for each door in following areas as noted.
- B. Key padlocks as follows:
 - 1. Constant Temperature ~~//~~ and ~~//~~ Cold ~~//~~ Rooms in Research Departments: Research Laboratory Set.
 - 2. Cold Room in Morgue Department: Autopsy Set.
 - 3. Refrigerators in Canteen Department: Canteen Storage Set.
 - 4. All Refrigerator Rooms in Main Kitchen Department: Kitchen Storage Set.
 - 5. Chain Link Fence Gates for Electrical Substation and other Fenced Buildings or Areas: Engineer's set, except as otherwise specified.
 - 6. Chain Link Fence Gates for Oxygen Storage Buildings: Maintenance supply set.
 - 7. Roof Access and Scuttles: Engineer's set.
 - 8. Hinged Wicket in Post Office Partitions: Post Office set.
- C. Omit padlocks on communicating refrigerator doors.

2.29 THERMOSTATIC TEMPERATURE CONTROL VALVE CABINETS

- A. Where lock is shown, equip each cabinet door (metal) with lock Type E06213, conforming to ANSI A156.5. Key locks in Key Sets approved by Contracting Officer. See mechanical drawings and specifications for location of cabinets.
- B. Cabinet manufacturer shall supply the hinges, bolts and pulls. Ship locks to cabinet manufacturer for installation.

2.30 HINGED WIRE GUARDS (FOR WINDOWS, DOORS AND TRANSOMS) AND WIRE PARTITION DOORS

- A. Butt hinges, type A8133 (special swaging) 100 mm by 90 mm (4 inches by 3-1/2 inches), Finish US2C.
 - 1. 3 hinges for guards over 1060 mm (3-1/2 feet) high.
 - 2. 2 hinges for guards less than 1060 mm (3-1/2 feet) high.
- B. Conform to ANSI A156.5. Lock Type E06081 for guards and Type E06061 for partitions.
 - 1. Keying: Except as noted otherwise, key locks like entrance door or space wherein guards and partitions are located except as otherwise specified.

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2. Key locks for partitions enclosing mechanical and electrical equipment in Engineer's Set. (See detailed drawings for number of locks and butt hinges required for each guard).

2.31 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 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:
1. Hinges --exterior doors: 626 or 630.
 2. Hinges --interior doors: 652 or 630.
 3. Pivots: Match door trim.
 4. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
 5. Thresholds: Mill finish aluminum.
 6. Cover plates for floor hinges and pivots: 630.
 7. Other primed steel hardware: 600.

~~SPEC WRITER NOTE: When hardware is also required for existing buildings, include subparagraph "D".~~

- D. Hardware Finishes for Existing Buildings: U.S. Standard finishes shall match finishes of hardware in (similar) existing spaces ~~except where otherwise specified.~~
- E. Special Finish: Exposed surfaces of hardware for dark bronze anodized aluminum doors shall have oxidized oil rubbed bronze finish (dark bronze) finish on door closers shall closely match doors.
- F. 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.

2.32 BASE METALS

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

Finish	Base Metal
652	Steel

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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 Resident Engineer for approval. //

//A. For new buildings 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. Hospital arm pull 1168 mm (46 inches) to centerline of bottom supporting bracket.
5. Centerline of door pulls to be 1016 mm (40 inches).
6. Push plates and push-pull shall be 1270 mm (50 inches) to top of plate.
7. Push-pull latch to be 1024 mm (40-5/16 inches) to centerline of strike.
8. 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 on side of door inside rooms, inside stairs, and away from corridors ~~//except~~ security bedroom, bathroom and anteroom doors which shall have closer installed parallel arm on exterior side of doors~~//~~. At exterior doors, closers shall be mounted on interior side. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.

~~SPEC WRITER NOTE: Schedule special hinge sizes for special doors and doors over 1200 mm (4 feet) wide under "Hardware Sets". See Article "Miscellaneous" for hinges for hinged wire guards.~~

B. 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)

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

~~SPEC WRITER NOTE: Do not permit reuse of existing hinges unless type and condition of these hinges are verified. Existing non ball bearing hinges shall be replaced with ball bearing type when new door closer is specified for door.~~

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D. 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 Resident 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.

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

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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 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.

- 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 FINAL INSPECTION

- A. Installer to provide letter to VA Resident/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.

3.4 DEMONSTRATION

- A. Demonstrate efficacy of mechanical hardware and electrical, and electronic hardware systems, including adjustment and maintenance procedures, to satisfaction of Resident/Project Engineer and VA Locksmith.

3.5 HARDWARE SETS

~~SPEC WRITER NOTE: FOR HARDWARE SET NUMBERING PHILOSOPHY SEE VA PROGRAM GUIDE PG 18-14 "ROOM FINISHES, DOOR & HARDWARE SCHEDULE".~~

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- 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.

ELECTRIC HARDWARE ABBREVIATIONS LEGEND:

ADO = Automatic Door Operator

EMCH = Electro-Mechanical Closer-Holder

MHO = Magnetic Hold-Open (wall- or floor-mounted)

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SECURITY HARDWARE ABBREVIATIONS LEGEND:

AC = Access Control Device (Card reader, biometric reader, keypad, etc.)
ADO = Automatic Door Operator
DEML = Delayed Egress Magnetic Lock
DEPH = Delayed Egress Panic Exit Device
DPS = Door Position Switch (Door or Alarm Contact)
EL = Electric Lock or Electric Lever Exit Device
PB = Push-button Combination Lock (stand-alone)
RR = Remote Release Button
ELR = Electric Latch Retraction Exit Device
REX = Request-to-Exit Switch in Latching Device Inside Trim

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HW-01 (VA HW-SH-3)

Each [AC, EL, REX, DPS] Door to Have: RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Transfer Hinge	4-WIRE TYPE AS REQUIRED
1 Electrified Lock	F07 (E01-REX, E06) 24VDC
1 Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1 Stop-Arm Closer	C02011/C02021 (PT4D, PT4F, PT4H, PT4G)
1 Threshold	J32300 x 57 MM WIDTH (2-1/4 INCHES)
1 Auto Door Bottom	R0Y346 - HEAVY DUTY
2 Sets Self-Adhesive Seals	R0E154
1 Alarm Contact	1078-G (G.E. SECURITY), OR EQUAL

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.
CARD READER BY DIVISION 28.

HW-02 (VA HW-SH-3)

Each [AC, EL, REX, DPS] Door to Have: RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Transfer Hinge	4-WIRE TYPE AS REQUIRED
1 Electrified Lock	F07 (E01-REX, E06) 24VDC
1 Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Floor Stop	L02121 x 3 FASTENERS
1 Threshold	J32300 x 57 MM WIDTH (2-1/4 INCHES)
1 Auto Door Bottom	R0Y346 - HEAVY DUTY
2 Sets Self-Adhesive Seals	R0E154
1 Alarm Contact	1078-G (G.E. SECURITY), OR EQUAL

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.
CARD READER BY DIVISION 28.

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HW-03 (VA HW-SH-9)

Each [AC, EL, REX, DPS] Pair to Have: RATED/NON-RATED

1	Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1	Electrified Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS X 4-THRUWIRE TRANSFER X IN-HINGE ACCESS PANEL
1	Set Auto Flush Bolts	TYPE 25
1	Dust Proof Strike	L04021
1	Electrified Lock	F07 (E01-REX, E06) 24VDC
1	Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1	Coordinator	TYPE 21A
1	Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2	Closers	C02011/C02021 (PT4D, PT4F, PT4H)
2	Floor Stops	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0E154
2	Alarm Contacts	1078-G (G.E. SECURITY), OR EQUAL

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.
CARD READER BY DIVISION 28.

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HW-04 (VA HW-SH-9)

Each [AC, EL, REX, DPS] Pair to Have: RATED/NON-RATED

1	Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1	Electrified Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS X 4-THRUWIRE TRANSFER X IN-HINGE ACCESS PANEL
1	Set Auto Flush Bolts	TYPE 25
1	Dust Proof Strike	L04021
1	Electrified Lock	F07 (E01-REX, E06) 24VDC
1	Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1	Coordinator	TYPE 21A
1	Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2	Stop Arm Closers	C02011/C02021 (PT4D, PT4F, PT4H, PT4G)
1	Set Self-Adhesive Seals	R0E154
2	Alarm Contacts	1078-G (G.E. SECURITY), OR EQUAL

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.
CARD READER BY DIVISION 28.

HW-05 (VA HW-6)

Each Door to Have: RATED/NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Exit Device	TYPE 1 F01 EXIT ONLY
1	Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0E154

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HW-06 (VA HW-12)

Each Pair to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
2 Exit Device	TYPE 8 F08 LEVER
2 Key Cylinder	TYPE AS REQUIRED
1 Set Meeting Stile Astragals	R3E834
2 Closers	C02011/C02021 (PT4D, PT4F, PT4H)
2 Floor Stops	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

HW-07 (VA HW-5)

Each Door to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Storeroom Lock	F07
1 Stop Arm Closer	C02011/C02021 (PT4D, PT4F, PT4H, PT4G)
1 Kick Plate	J102 (@ STORAGE, EVM, & HAC ROOMS ONLY)
1 Set Self-Adhesive Seals	R0E154

HW-08 (VA HW-11)

Each Pair to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Set Auto Flush Bolts	TYPE 25 LESS BOTTOM BOLT
1 Storeroom Lock	F07
1 Coordinator	TYPE 21A
1 Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2 Stop Arm Closers	C02011/C02021 (PT4D, PT4F, PT4H, PT4G)
2 Kick Plates	J102 (@ STORAGE ROOMS ONLY)
1 Set Self-Adhesive Seals	R0E154

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HW-09 (VA HW-3E)

Each Door to Have:

NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Office Lock	F04
1 Closer	C02051/C02061 (PT4D, PT4H)
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154
1 Coat Hook	L03121

OMIT COAT HOOK WHERE GLASS LITE PREVENTS INSTALLATION.

HW-10 (VA HW-5B)

Each Door to Have:

RATED/NON-RATED

1 Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1 Storeroom Lock	F07
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Armor Plate	J101 x 1.275 MM (0.050 INCH) THICKNESS
1 Edge Guard (@ Wood Doors)	J208M / J211 (VERIFY), CUT: HARDWARE
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

HW-11 (VA HW-6)

Each Door to Have:

RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Exit Device	TYPE 1 F09 LEVER
1 Key Cylinder	TYPE AS REQUIRED
1 Stop Arm Closer	C02011/C02021 (PT4D, PT4F, PT4H, PT4G)
1 Door Sweep	Pemko 18100CNCB, or equal
1 Set Self-Adhesive Seals	R0E154

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HW-12 (VA HW-12C)

Each [MHO] Pair Integrated Double Egress Doors to Have: RATED

ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-13 (HW-3B)

Each Door to Have:

NON-RATED/RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Office Lock	F04
1 Floor Stop	L02121 x 3 FASTENERS
1 Door Viewer	L03221 - 190° (VIEW INTO CORRIDOR)
1 Set Self-Adhesive Seals	R0E154

OMIT VIEWER IF DOOR PROVIDED WITH VISION LITE.

HW-14 (VA HW-4)

Each Door to Have:

NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Classroom Lock	F08
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Floor Stop	L02121 x 3 FASTENERS
3 Silencers	L03011

HW-15 (VA HW-5D)

Each Door to Have:

NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Storeroom Lock	F07
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Kick Plate	J102 (@ STORAGE, EVM, & HAC ROOMS ONLY)
1 Floor Stop (@ Inswing Doors)	L02121 x 3 FASTENERS
1 Wall Stop (@ Outswing Doors)	L52101 CONVEX
3 Silencers	L03011

DOOR HARDWARE
08 71 00 - 36

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HW-16 (VA HW-2D)

Each Door to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Privacy Lock	F02-MOD X OCCUPANCY INDICATOR
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Kick Plate	J102
1 Mop Plate (@ Inswing Doors)	J102
1 Wall Stop	L52101 CONVEX
1 Set Self-Adhesive Seals	R0E154

STONE THRESHOLD BY OTHER TRADES.

HW-17 (VA HW-2B)

Each Door to Have:

NON-RATED

1 Center Pivot Set	C07042
1 Privacy Lock	F02-MOD x THUMBTURN BOTH SIDES X OCCUPANCY INDICATOR
1 Rescue Stop	ES-1 (STANLEY), OR EQUAL
1 Custom Rescue Strike	CUSTOM DOUBLE-LIPPED (TICE), OR EQUAL
1 Kick Plate	J102
1 Mop Plate (@ Inswing Doors)	J102
1 Wall Stop	L52101 CONVEX
1 Set Perimeter Seals	Pemko 45061CNE, or equal

STONE THRESHOLD BY OTHER TRADES.

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HW-18 (VA HW-5B)

Each Door to Have:

RATED

1	Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1	Storeroom Lock	F07
1	Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1	Armor Plate	J101 x 1.275 MM (0.050 INCH) THICKNESS
1	Edge Guard (@ Wood Doors)	J208M / J211 (VERIFY), CUT: HARDWARE
1	Floor Stop	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0E154

DOOR HARDWARE
08 71 00 - 38

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HW-19 (VA HW-1A)

Each Door to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
	X HOSPITAL TIPS @ INSWING DOORS
1 Latchset	F01
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
	x INSTALL OUTSIDE ROOM
1 Kick Plate	J102
1 Mop Plate (@ Inswing Doors)	J102
1 Floor Stop	L02121 x 3 FASTENERS
1 Threshold	J32300 x 57 MM WIDTH (2-1/4 INCHES)
1 Auto Door Bottom	R0Y346 - HEAVY DUTY
1 Set Seals	R3C164

HW-20 (VA HW-5B)

Each Door to Have:

RATED

1 Continuous Hinge	A51031B x INTEGRAL HINGE GUARD CHANNEL
	X ADJUSTA-SCREWS
1 Push Button Lock	Kaba Power Plex 2000 Series, or equal
1 Closer	C02011/C02021 (PT4D, PT4F, PT4H)
1 Armor Plate	J101 x 1.275 MM (0.050 INCH) THICKNESS
1 Edge Guard (@ Wood Doors)	J208M / J211 (VERIFY), CUT: HARDWARE
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

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HW-21 (VA HW-1L)

Each Door to Have:

NON-RATED

1	Continuous Hinge	A51031B
1	Latchset	F01
1	Kick Plate	J102
1	Wall Stop	L52101 CONVEX
1	Threshold	J32300 x 57 MM WIDTH (2-1/4 INCHES)
1	Auto Door Bottom	R0Y346 - HEAVY DUTY
2	Sets Self-Adhesive Seals	R0E154

HW-22 (VA HW-4)

Each Door to Have:

NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Classroom Lock	F08
1	Floor Stop	L02121 x 3 FASTENERS
3	Silencers	L03011

HW-23 (VA HW-10D)

Each Pair to Have:

NON-RATED

	Hinges	QUANTITY & TYPE AS REQUIRED
1	Set Auto Flush Bolts	TYPE 25 LESS BOTTOM BOLT
1	Latchset	F01
1	Coordinator	TYPE 21A
1	Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2	Closers	C02051/C02061 (PT4D, PT4H)
2	Kick Plates	J102
2	Floor Stops	L02121 x 3 FASTENERS
1	Set Self-Adhesive Seals	R0E154

DOOR HARDWARE
08 71 00 - 40

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HW-24 (VA HW-10D)

Each Pair to Have [MHO]:

RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Set Auto Flush Bolts	TYPE 25 LESS BOTTOM BOLT
1 Latchset	F01
1 Coordinator	TYPE 21A
1 Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2 Closers	C02051/C02061 (PT4D, PT4H)
2 Kick Plates	J102
2 Floor Stops	L02121 x 3 FASTENERS
2 Magnetic Holder	C00011 TRI-VOLTAGE
1 Set Self-Adhesive Seals	R0E154

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.

HW-25 (VA HW-R9)

1 Set Sliding Hardware	Hawa Junior 80Z, or equal
1 Set Door Pulls - BTB	Trimco 1741-18" CTC, or equal

HW-26 (VA N/A)

Existing door(s), frame and hardware to remain - No new hardware required

HW-27 (VA HW-R9)

1 Set Sliding Hardware	Hawa Junior 80Z, or equal
1 Set Door Pulls - BTB	Trimco 1741-18" CTC, or equal

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HW-28 (VA HW-10L)

Each Pair to Have:

NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Set Auto Flush Bolts	TYPE 25 LESS BOTTOM BOLT
1 Latchset	F01
1 Coordinator	TYPE 21A
1 Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2 Kick Plates	J102
2 Floor Stops	L02121 x 3 FASTENERS
2 Auto Door Bottom	R0Y346 - HEAVY DUTY
2 Sets Self-Adhesive Seals	R0E154

HW-29 (VA HW-1L)

Each Door to Have:

NON-RATED

1 Continuous Hinge	A51031B
1 Latchset	F01
1 Kick Plate	J102
1 Wall Stop	L52101 CONVEX
1 Threshold	J32300 x 57 MM WIDTH (2-1/4 INCHES)
1 Auto Door Bottom	R0Y346 - HEAVY DUTY
2 Sets Self-Adhesive Seals	R0E154

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HW-30 (SIM. TO VA HW-SH-4B)

Each Door to Have: RATED

<u>1</u>	<u>Continuous Transfer Hinge</u>	<u>A51031B x INTEGRAL HINGE GUARD CHANNEL</u>
		<u>X ADJUSTA-SCREWS x 12-THRUWIRE</u>
		<u>TRANSFER X IN-HINGE ACCESS PANEL</u>
<u>1</u>	<u>Electrified Exit Device</u>	<u>TYPE 1 (E01-REX, E04) F13 LEVER</u>
<u>1</u>	<u>Key Cylinder</u>	<u>TYPE AS REQUIRED</u>
<u>1</u>	<u>Power Supply</u>	<u>TYPE REQUIRED BY PANIC MANUFACTURER</u>
<u>1</u>	<u>Armor Plate</u>	<u>J101 x 1.275 MM (0.050 INCH) THICKNESS</u>
<u>1</u>	<u>Edge Guard (@ Wood Doors)</u>	<u>J208M / J211 (VERIFY), CUT: HARDWARE</u>
<u>1</u>	<u>Stop-Arm Closer</u>	<u>C02011/C02021 (PT4D, PT4F, PT4H, PT4G)</u>
<u>1</u>	<u>Set Self-Adhesive Seals</u>	<u>R0E154</u>

CARD READER AND WIRING BY SECURITY CONTRACTOR

- - - E N D - - -