

**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, and Section 08 71 13.11, LOW ENERGY DOOR OPERATORS
- 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.
- 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

- 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., "SET #") 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:

ST	The Stanley Works	New Britain, CT
BE	Best Access Systems	Indianapolis, IN
CK	K.N. Crowder Mfg. Inc.	Burlington, Ont.
G.E. Security	GE Security, Inc.	Bradentown, FL
NA	National Guard Products, Inc.	Memphis, TN
PR	Precision Exit Devices	Indianapolis, IN
TR	Triangle Brass Mfg. Co.	Los Angeles, CA
SD	Stanley Door Closers	Indianapolis, IN

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

#### 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

A156.3-08 ..... 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

A156.13-05 ..... Mortise Locks and Latches Series 1000

A156.14-07 ..... Sliding and Folding Door Hardware

A156.15-06 ..... Release Devices-Closer Holder, Electromagnetic  
and Electromechanical

A156.16-08 ..... Auxiliary Hardware

A156.17-04 ..... Self-Closing Hinges and Pivots

A156.18-06 ..... Materials and Finishes

A156.20-06 ..... Strap 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

A156.25-07 ..... Electrified Locking Devices

A156.26-06 ..... Continuous Hinges

A156.28-07 ..... Master Keying Systems

A156.29-07 ..... Exit Locks and Alarms

A156.30-03 ..... High Security Cylinders

A156.31-07 ..... Electric Strikes and Frame Mounted Actuators

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

D. National Fire Protection Association (NFPA):

80-10 ..... Fire Doors and Fire Windows

101-09 ..... Life Safety Code

E. Underwriters Laboratories, Inc. (UL):  
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 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.

### **2.3 DOOR CLOSING DEVICES**

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

### **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.
15. Provide manufacturer as scheduled to match existing facility standard.

## **2.6 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).

## **2.7 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 LOCKS AND LATCHES**

- 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 [14H]. 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. Provide manufacturer as scheduled to match existing facility standard.

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).

#### 2.12 ELECTRIC STRIKES

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

#### 2.13 KEYS

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

Locks/Keys	Quantity
Mortise 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

#### 2.14 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.

## **2.15 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.

## **2.16 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. Provide manufacturer as scheduled to match existing facility standard.

- 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.

#### **2.17 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).

#### **2.18 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).

- 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.

#### **2.19 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.

#### **2.20 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.

#### **2.21 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.

#### **2.22 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.

### **2.23 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.

### **2.24 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).

### **2.25 WEATHERSTRIPS (**

- A. Conform to ANSI A156.22. Air leakage shall not to exceed 0.50 CFM per foot of crack length ( $0.000774\text{m}^3/\text{s/m}$ ).

### **2.26 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.

## **2.30 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.
- 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.

### 2.31 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:
- Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
  - Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
  - Deadlocks centerline of strike 1219 mm (48 inches).
  - Hospital arm pull 1168 mm (46 inches) to centerline of bottom supporting bracket.
  - Centerline of door pulls to be 1016 mm (40 inches).
  - 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.

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.

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

- 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

- 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)

#### Manufacturer List

<u>Code</u>	<u>Name</u>
AB	ABH Manufacturing Inc.
BE	Best Access Systems
BY	By Others
CK	K.N. Crowder
EN	EnerSys
NA	National Guard
PR	Precision
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

#### Finish List

<u>Code</u>	<u>Description</u>
AL	Aluminum
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
BLACK	Black
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

#### Option List

<u>Code</u>	<u>Description</u>
FL	Fire Exit Hardware
LS	Latch Status Monitor (45HW,47HW)
LS	LATCHBOLT MONITOR SWITCH
S3	ANSI Strike Package
SN	Sex Nuts (Pkg. of 4)
TS	TOUCHBAR MONITORING SWITCH
WS	Wind Storm Listed (Miami-Dade/Florida)
48"	48" Door Width
B4E	BEVELED 4 EDGES - ARMOR PLATES
B4E	BEVELED 4 EDGES - KICK PLATES
CSK	COUNTER SINKING OF KICK and MOP PLATES
FSE	Fail Secure
IDH	Integrated Dr. Hardware (45HW,47HW)
MLR	MOTORIZED LATCH RETRACTION
NRP	NON REMOVEABLE PIN STD/HEAVY WT HINGE
C161	CYLINDER CAM
R705	STRAIGHT CYLINDER RING - 5/16"
CSK-AP	COUNTER SINKING OF ARMOUR PLATES
UL(sticker)	UL - Sticker

#### Hardware Sets

##### SET #1

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Privacy Set	45H-0L14H	630	BE
1 Door Closer	CLD-4550 EDA	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Threshold	As Detailed		BY
3 Door Silencers	1229A		TR

##### SET #2 - CR

4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN
3 Door Silencers	1229A		TR

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

##### SET #3

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Wall Bumper	1270CV	626	TR

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2 Smoke Seal	5075 B x Dr Height	NA
1 Smoke Seal	5075 B x Dr width	NA

**SET #4 - CR**

3 Hinges	CB168 4 1/2 X 4 1/2 NRP	US26D	ST
1 Exit Device	FL LS MLR TS 2103 X 4903D FSE	630	PR
1 Rim Cylinder	12E-72 PATD	626	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
2 Battery Back-up	NP7AH-12V		EN
1 Power Supply	RPSMLR2BB		PR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA

NOTE: Card Reader signals retractiun of latch allowing entry, TS switch signals request to exit, LS switch monitors latchbolt. Exit devcie is FSE fail secure. Coordinate electrical requirements with the related trades and sections.

**SET #5 - CR**

4 Hinges	CB168 4 1/2 X 4 1/2 NRP	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Door Closer	CLD-4550 EDA	689	SD
2 Edge Guard	KE33-2 42"	630	TR
2 Armor Plate	KA050 42" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN
3 Door Silencers	1229A		TR

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #6**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7AB14H PATD	630	BE
1 Wall Bumper	1270CV	626	TR
3 Door Silencers	1229A		TR

**SET #7**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE
1 Door Closer	CLD-4550 S	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
3 Door Silencers	1229A		TR

**SET #8**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE

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1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Edge Guard	KE32-1 34"	630	TR
1 Edge Guard	KE33-2 42"	630	TR
2 Armor Plate	KA050 42" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Auto Door Bottom	220NA		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #9**

2 Mortise Cylinder	1E-74 PATD C161 R705	626	BE
1 Door Lock	C-90L-CC	626	CK
1 Pocket Door Set	PDFC150N-00-70		ST

**SET #10**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
3 Door Silencers	1229A		TR

**SET #11 - CR**

3 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #12 - CR**

3 Hinges	CB168 4 1/2 X 4 1/2 NRP	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Door Closer	CLD-4550 EDA	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #13 -**

4 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
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1 Lockset	45H-7R14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Floor Stop	1211	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #14 -**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Floor Stop	1211	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #15 - Unequal leafs**

6 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Set Auto Flush Bolts	3810 X 3810	626	TR
1 Lockset	45H-7R14H PATD	630	BE
1 Coordinator	3094B x Dr Width	BLACK	TR
2 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
2 Armor Plate	KA050 34" X 2" LDW UL B4E CSK	630	TR
2 Wall Bumper	1270CV	626	TR
1 Dustproof Strike	3910	630	TR
1 Astragal	By Door Mfg.		BY
2 Door Silencers	1229A		TR

**SET #16**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Wall Bumper	1270CV	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA

**SET #17 - CR**

4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Closer w-Holder	CLD-4551 H	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN
3 Door Silencers	1229A		TR

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #18 - CR**

4 Hinges	CB168 4 1/2 X 4 1/2 NRP	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE



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1 Door Closer	CLD-4550 EDA	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Card Reader	BY OTHERS		BY
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN
3 Door Silencers	1229A		TR

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #19**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Wall Bumper	1270CV	626	TR
3 Door Silencers	1229A		TR

**SET #20**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE
1 Wall Bumper	1270CV	626	TR
3 Door Silencers	1229A		TR

**SET #21**

4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Deadlock	48H-7K PATD	626	BE
1 Push/Pull Plate	1820	630	TR
1 Door Closer	CLD-4550 HS	689	SD
2 Edge Guard	KE33-2 42"	630	TR
NOTE: Cutout for hardware preps as required.			
1 Push Plate	1001-11	630	TR
2 Armor Plate	KA050 42" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
NOTE: Where wall is at 90 Deg.			
2 Seal	5075 B x Dr Height		NA
1 Seal	5075 B x Dr width		NA
1 Auto Door Bottom	220NA		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #22**

3 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Deadlock	48H-7K PATD	626	BE
1 Push/Pull Plate	1820	630	TR
1 Closer w-Holder	CLD-4551 H	689	SD
2 Edge Guard	KE33-2 42"	630	TR
1 Push Plate	1001-11	630	TR
2 Armor Plate	KA050 42" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
2 Seal	5075 B x Dr Height		NA
1 Seal	5075 B x Dr width		NA
1 Auto Door Bottom	220NA		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #23 - Hardware set not used**

**SET #24 - Hardware set not used**

**SET #25**

4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Exit Device	FL 2114 X 4914D 48"	630	PR
1 Door Closer	CLD-4550 S	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #26**

3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	9K3-7R14D PATD S3	626	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Floor Stop	1211	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA

**SET #27 - CR**

3 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Electro-mech Lock	45HW-7DEU14H PATD IDH LS	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Power Transfer	EPT-5		PR
1 Power Supply	AL300ULX		BE
2 Battery Back-up	NP7AH-12V		EN
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA

NOTE: Card Reader signals unlocking of the lockset allowing entry, IDH includes door monitoring switch, request to exit and electric unlocking. LS switch monitors latchbolt.

**SET #28**

3 Hinges	CB179 4 1/2 X 4 1/2 NRP	US26D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4550 S	689	SD
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA

**SET #29**

4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Fire Exit Device	FL 2114 X 4914D	630	PR
1 Door Closer	CLD-4550 S	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Handicap Threshold	513 x WOD	AL	NA

**SET #30**

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4 Hinges	CB168 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7R14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Floor Stop	1211	626	TR
2 Smoke Seal	5075 B x Dr Height		NA
1 Smoke Seal	5075 B x Dr width		NA
1 Handicap Threshold	513 x WOD	AL	NA
<b>SET #31</b>			
3 Hinges	CB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	KO050 10" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
3 Door Silencers	1229A		TR
<b>SET #32</b>			
6 Hinges	CB179 4 1/2 X 4 1/2 NRP	US26D	ST
2 Flush Bolt	3917-12	626	TR
1 Lockset	45H-7D14H PATD	630	BE
2 Overhead Stop	4420 Series	US32D	AB
1 Dustproof Strike	3910	630	TR
2 Door Silencers	1229A		TR
<b>SET #33</b>			
3 Hinges	CB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7D14H PATD WS	626	BE
1 Door Closer	CLD-4550 CS SN	689	SD
1 Gasketing	127 NA @ Head and Jambs		NA
1 Door Sweep	200 NA		NA
1 Saddle Threshold	425	AL	NA

**Opening List**

<u>Opening</u>	<u>Hdw Set</u>	<u>Opening Label</u>
PB01	27	90
1M01	28	
GA02	1	
GA03	1	
GA04	3	
GA05	19	
GB01	5	
GB05	21	
GB06	21	
GB07	21	
GB08	22	
GB09	21	
GB10	8	
GB20	21	
GB21	16	
GB22	21	
GB23	21	
GB24	21	
GB25	19	
GTC-1	25	60
GTC-2	25	60
GTC-3	25	60
GTC-4	25	60
GTC-5	14	60
GTC-6	26	60
S2G	4	90
1A05	12	
1A08	16	90
1A09	1	
1A10	11	
1A11	1	
1A12	6	
1A12A	6	
1A12B	3	
1A12C	6	
1A13	3	
1A13B	32	
1A15	6	
1A16	6	
1A18	6	
1A19	6	
1A19A	9	
1A20	6	
1A20A	9	
1A21	6	
1A21A	7	
1A22	31	
1A24	16	
1A25	10	

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1A27	6	
1A28	6	
1A28A	9	
1A29	6	
1C05	15	
1TC-1	25	60
1TC-2	25	60
1TC-3	29	60
1TC-4	30	60
1TC-5	14	60
M03	16	90
S21	4	90
2A04	10	
2A05	14	90
2A06	1	
2A07	11	
2A08	1	
2A09	3	
2A12	6	
2A13	6	
2A14	6	
2A15	6	
2A16	6	
2B02	18	
2B04	28	
2B05	17	
2B06	10	
2B06A	20	
2B06B	20	
2B18	2	
2TC-1	25	60
2TC-2	25	60
2TC-3	25	60
2TC-4	25	60
2TC-5	13	60
2TC-6	25	60
S22	4	90
PA01A	33	