

**SECTION 08710**  
**DOOR HARDWARE**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes

- 1. Furnishing and installation of all mechanical and electrical finish hardware necessary for all doors, and hardware as specified herein and as enumerated in hardware sets and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware. Installation shall include field modification and preparation of existing doors and/or frames for new hardware being installed. Provide necessary fillers, Dutchmen, reinforcements, and fasteners for mounting new hardware and to cover existing door/frame preps.

B. Related Sections

- 1. Division 6 Section - FINISH CARPENTRY.
- 2. Division 8 Section - STEEL METAL DOORS AND FRAMES.
- 3. Division 8 Section - WOOD DOORS.
- 4. Division 8 Section - ALUMINUM FRAMED STOREFRONOTS.
- 5. Section 08460 - SLIDING AUTOMATIC ENTRANCE DOORS for entrance doors packaged with automatic operators and controls.
- 6. Section 08720 - AUTOMATIC DOOR OPERATORS for doors with low-energy operators.
- 7. Division 16 Section - ELECTRICAL for electrical connections including conduit and wiring for electrified hardware.

- C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:

1. Windows
2. Cabinets of all kinds, including open wall shelving and locks.

### 1.3 REFERENCES

- A. Applicable state and local building codes and standards.
- B. FIRE/LIFE SAFETY
  1. NFPA - National Fire Protection Association
    - a. NFPA 70 – National Electric Code
    - b. NFPA 80 - Standard for Fire Doors and Fire Windows
    - c. NFPA 101 - Life Safety Code
    - d. NFPA 105 - Smoke and Draft Control Door Assemblies
- C. UL - Underwriters Laboratories
  1. UL 10C - Positive Pressure Test of Fire Door Assemblies
  2. UL 1784 - Air Leakage Tests of Door Assemblies
  3. UL 305 - Panic Hardware
- D. Accessibility
  1. ADA - Americans with Disabilities Act
  2. ICC (CABO) / ANSI A117.1 - Accessible and Usable Buildings and Facilities
- E. DHI - Door and Hardware Institute
  1. Sequence and Format for the Hardware Schedule
  2. Recommended Locations for Builders Hardware
- F. ANSI - American National Standards Institute
  1. ANSI/BHMA A156.1 - A156.24 - Standards for Hardware and Specialties

### 1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 requirements. Prior to submittal field verify existing doors and/or frames receiving new hardware and/or existing conditions receiving new openings. Verify new hardware is compatible with the existing door/frame preparation and/or existing conditions. Advise architect within the submittal package of incompatibility or issues.

- B. Catalog Cuts: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final Hardware Schedule Content: Submit schedule with hardware sets in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, Include the following information:
  - 1. Door Index; include door number, heading number, and Architects hardware set number.
  - 2. Opening Lock Function Spreadsheet; list locking device and function for each opening.
  - 3. Type, style, function, size, and finish of each hardware item.
  - 4. Name and manufacturer of each item.
  - 5. Fastenings and other pertinent information.
  - 6. Location of each hardware set cross-referenced to indications on Drawings.
  - 7. Explanation of all abbreviations, symbols, and codes contained in schedule.
  - 8. Mounting locations for hardware.
  - 9. Door and frame sizes and materials.
  - 10. Name and phone number for the local manufacturer's representative for each product.
  - 11. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and/or access control components). Operational description should include how the door will operate on egress, ingress, and/or fire/smoke alarm connection.
- D. Key Schedule: After a keying meeting between representatives of the Owner, Architect, hardware supplier, and, if requested, the representative for the lock manufacturer, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. Refer to keying schedule in this section.
- E. Samples: If requested by the Architect, submit production sample or sample installations as requested of each type of exposed hardware unit in the finish indicated, and tagged with a full description for coordination with the schedule.

1. Samples will be returned to the supplier in like-new condition. Units that are acceptable to the Architect may, after final check of operations, be incorporated into the Work, within limitations of key coordination requirements.
- F. Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.
- G. Riser and Wiring Diagrams: After final approval of the hardware schedule, submit riser and wiring diagrams as required for the proper installation of complete electrical, electromechanical, and electromagnetic products.
- H. Operations and Maintenance Data: Provide in accordance with Division 1 and include the following:
1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
  2. Catalog pages for each product.
  3. Name, address, and phone number of local representative for each manufacturer.
  4. Parts list for each product.
  5. Copy of final approved hardware schedule, edited to reflect “As installed.”
  6. Copy of final keying schedule.
  7. As installed “Wiring Diagrams” for each opening connected to power, both low voltage and 110 volts.
  8. One (1) complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
  9. Copy of warranties including appropriate reference numbers for manufacturers to identify the project.
- I. Certificates of Compliance: Upon request of Architect or Authority Having Jurisdiction certificates of compliance for fire-rated hardware and installation instructions shall be made available.

## 1.5 QUALITY ASSURANCE

- A. Substitutions: Products are to be those specified to ensure a uniform basis of acceptable materials. Requests for substitutions must be made in accordance with Division 1 requirements. If proposing a substitute product, submit product data for the proposed item with product data for the specified item and indicate basis for substitution and savings to be

made. Provide sample if requested. Certain products have been selected for their unique characteristics and particular project suitability.

1. Items specified as "no substitute" shall be provided exactly as listed.
  2. Items listed with no substitute manufacturers listed have been requested by the Owner or Architect to match existing for continuity and/or future performance and maintenance standards or because there is no known equal product.
  3. If no other products are listed in a category, then "no substitute" is implied.
- B. **Supplier Qualifications:** A recognized architectural hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an accredited Architectural Hardware Consultant (AHC), who is available to the Owner, Architect, and Contractor, at reasonable times during the course of the Work for consultation.
- C. **Single Source Responsibility:** Obtain each type of hardware (latch and locksets, hinges, exit devices, closers, etc.) from a single manufacturer.
- D. **Fire-Rated Openings:** Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwrites Laboratories, Intertek Testing Services, Factory Mutual, or other testing and inspecting organizations acceptable to the authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.
- E. **Electronic Security Hardware:** When electrified hardware is included in the hardware specification, the hardware supplier must employ an individual knowledgeable in electrified components and systems, who is capable of producing wiring diagrams and consulting as needed. Coordinate installation of the electronic security hardware with the Architect and electrical engineers and provide installation and technical data to the Architect and other related subcontractors. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.
- F. Comply with local codes and regulations.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Tag each item or package separately with identification related to the final hardware schedule, and include installation instructions with each item or package.
- B. Each article of hardware shall be individually packaged in manufacturer's original packaging.

- C. Contractor will provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- D. Items damaged in shipment shall be replaced promptly and with proper material and paid for by whomever did the damage or caused the damage to occur.
- E. Hardware shall be handled in a manner to avoid damage, marring, or scratching. Irregularities that occur to the hardware after it has been delivered to the Project shall be corrected, replaced, or repaired by the Contractor. Hardware shall be protected against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. No direct shipments will be allowed unless approved by the Contractor.

#### 1.7 WARRANTY

- A. Provide manufacturer's warranties as specified in Division 1 and as follows:
  - 1. Closers: 10 years, except electronic closers, 2 years.
  - 2. Exit Devices: 3 years, except electrified devices, 1 year.
  - 3. Locksets: 3 years, except electrified locksets, 1 year.
  - 4. Other hardware: 1 year.
- B. No liability is to be assumed where damage or faulty operation is due to improper installation, improper use, or abuse.
- C. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

#### 1.8 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

### **PART 2 - PRODUCTS**

#### 2.1 MANUFACTURERS

- A. Approval of manufacturers other than those listed shall be in accordance with paragraph 1.05.A.

- B. Note that even though an acceptable substitute manufacturer may be listed, the product must provide all the functions and features of the specified product or it will not be approved.

Item	Scheduled Manufacturer	Acceptable Substitute
Hinges	Ives (IVE)	Hager, McKinney
Emergency Release Pivots	Ives (IVE)	Rixson, Stanley
Double Lipped Strikes	Donjo (DON)	Hager, McKinney
Emergency Stop	Hager (HAG)	McKinney, Stanley
Flush Bolts & Coordinators	Ives (IVE)	Don-jo, Rockwood
Locksets	Schlage (SCH)	No Substitute
Aluminum Door Locks – Narrow Style	Adams Rite (ADA)	No Substitute
Hospital Latches	Glynn-Johnson (GLY)	No Substitute
Exit Devices & Mullions	Adams Rite (ADA) or Von Duprin (VON)	No Substitute
Key Pad Locks	Schlage (SCH)	No Substitute
Electric Strikes	Adams Rite (ADA) or Von Duprin (VON)	No Substitute
Door Closers	LCN (LCN)	No Substitute
Electro-Mechanical Automatic Operators	LCN (LCN)	No Substitute
Door Pulls at Aluminum Doors	Kawneer (KAW)	No Substitute
Door Trim	Ives (IVE)	Don-jo, Rockwood
Protection Plates	Brookline	Don-jo, Rockwood
Overhead Stops	Glynn-Johnson (GLY)	Rixson, Sargent
Stops	Ives (IVE)	Don-jo, Rockwood
Thresholds & Weatherstrip	Pemko (PEM)	As pre-approved
Silencers	Ives (IVE)	Don-jo, Rockwood
Latch Protector	Ives (IVE)	Don-jo, Rockwood
Bi-pass Hardware	Hager (HAG)	Lawrence, Stanley
Bi-fold Hardware	Hager (HAG)	Lawrence, Stanley
Robe Hooks	Gallery Specialty Hardware (GAL)	No Substitute
Cylinders & Keying	Schlage (SCH)	No Substitute
Key Cabinets	Telkee (TEL)	HPC, Lund

- C. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- D. Where the hardware specified is not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having the same operation and quality as the type specified, subject to the Architect's approval.

## 2.2 MATERIALS

### A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent that no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Hardware shall be installed with the fasteners provided by the hardware manufacturer.

### B. Hinges

1. Provide five-knuckle, ball bearing hinges of type, material, and height as outlined in the following guide for this specification:
  - a. 1-3/4 inch thick doors, up to and including 36 inches wide:  
Exterior: standard weight, bronze/stainless steel, 4-1/2 inches high  
Interior: standard weight, steel, 4-1/2 inches high
  - b. 1-3/4 inch thick doors over 36 inches wide:  
Exterior: heavy weight, bronze/stainless steel, 5 inches high  
Interior: heavy weight, steel, 5 inches high
  - c. 2 inches or thicker doors:  
Exterior: heavy weight, bronze/stainless steel, 5 inches high  
Interior: heavy weight, steel, 5 inches high
2. Provide three hinges per door leaf for doors 90 inches or less in height, and one additional hinge for each 30 inches of additional door height.
3. Where new hinges are specified for existing doors and/or existing frames, the new hinge size must be identical to hinge preparation present in the existing door and/or existing frame.
4. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
  - a. Steel Hinges: Steel pins
  - b. Non-Ferrous Hinges: Stainless steel pins
  - c. Out-Swinging Exterior Doors: Non-removable pins
  - d. Out-Swinging Interior Lockable Doors: Non-removable pins
  - e. Interior Non-lockable Doors: Non-rising pins



5. The width of hinges shall be 4-1/2 inches at 1-3/4 inch thick doors, and 5 inches at 2 inches or thicker doors. Adjust hinge width as required for door, frame, and/or wall conditions to allow proper degree of opening.
  6. Provide hinges with electrified option where specified. Provide with sufficient number and gage of concealed wires to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to the electrified locking component.
  7. Provide mortar guard for each electrified hinge specified, unless specified in hollow metal frame specification.
  8. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches or less in height. Provide one additional bearing hinge for each 30 inches of additional door height.
  9. Acceptable manufacturers and/or products: Ives 5BB series, Hager BB series, McKinney TA/T4A series.
- C. Emergency Release Pivots
1. Provide emergency release pivot sets, where required by code, offset-hung to allow door to swing open in opposite direction unless detailed otherwise.
  2. Acceptable manufacturers and/or products: Ives, Rixson, Stanley.
- D. Double Lipped Strike
1. Provide double lip strike, where specified, offset-hung to allow door to swing open in opposite direction unless detailed otherwise. Size for specific frame depth. Coordinate special latchbolt-hole location and/or special template, as required, to operate with the mortise lock being used as specified.
  2. Provide a compatible emergency stop/release as recommended by the manufacturer of the double lip strike or engineered to operate with the double lip strike.
  3. Acceptable manufacturers and/or products: Don-Jo, Hager, McKinney.
- E. Emergency Stop/Release
1. Provide emergency stop/release, where specified, for doors with double lip strikes offset-hung to allow door to swing open in opposite direction unless detailed otherwise.
  2. Acceptable manufacturers and/or products: Stanley, Hager, McKinney.
- F. Flush Bolts
1. Provide automatic and manual flush bolts with forged bronze face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch steel or

brass rods at doors up to 90 inches in height. Top rods at manual flush bolts for doors over 90 inches in height shall be increased by 6 inches for each additional 6 inches of door height. Provide dust-proof strikes at each bottom flush bolt.

2. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

G. Coordinators

1. Provide a bar-type coordinating device, surface applied to the underside of the stop at the frame head where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors.
2. Provide a filler bar of the correct length for the unit to span the entire width of the opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices if required.
3. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

H. Mortise Locks

1. Provide mortise locks, where specified, certified as ANSI A156.13, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Lock case shall be multi-function and field reversible for handing without opening the case. Cylinders: Refer to 2.04 KEYING.
2. Provide locks with a standard 2-3/4 inches backset with a full 3/4 inch throw stainless steel mechanical anti-friction latchbolt. Deadbolt shall be a full 1 inch throw, constructed of stainless steel.
3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
4. Lever trim shall be solid brass, bronze, or stainless steel, cast or forged in the design specified, with wrought roses and external lever spring cages. Levers shall be thru-bolted to assure proper alignment, and shall have a 2-piece spindle.
  - a. Lever design shall be Schlage 06A.
  - b. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
5. Acceptable manufacturers and/or products: Schlage L9000 series, No Substitute.

I. Aluminum Door Locks - Medium Style

1. Provide medium style aluminum door locks as specified. Cylinders: Refer to 2.04 KEYING.
2. Provide locks with a 1-1/8 inches, or 1-1/2 inches backset as required for door detail with a full 5/8" throw latchbolt.

3. Provide manufacturers standard strikes unless extended lip strikes are necessary to protect trim.
4. Acceptable manufacturers and/or products: Adams Rite 4900 series X 4568/9 Lever, No Substitute.

J. Cylindrical Locks - Grade 1 Exterior doors only, with rechargeable cores.

1. Provide grade 1 cylindrical locks, where specified, conforming to ANSI A156.2 Series 4000, Grade 1. Cylinders: Refer to 2.04 KEYING.
2. Provide locksets able to withstand 1500 inch pounds of torque applied to the locked outside lever without gaining access per ANSI A156.2 Abusive Locked Lever Torque Test and cycle tested to 3 million cycles per ANSI A156.2 Cycle Test.
3. Provide locks with a standard 2-3/4 inches backset, unless noted otherwise, with a 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with a separate anti-rotation throughbolts, and shall have no exposed screws. Levers shall operate independently, and shall have two external return spring cassettes mounted under roses to prevent lever sag.
5. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
6. Provide electrical options as scheduled. Provide power supplies, recommended and approved by the manufacturer of the electrified lock and other components requiring a power supply.
7. Lever trim shall be solid cast levers without plastic inserts, and wrought roses on both sides. Locksets shall be thru-bolted to assure proper alignment.
  - a. Lever design shall be Schlage Athens. When lever with return is required by code, lever design shall be Rhodes.
  - b. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
8. Acceptable manufacturers and/or products: Schlage ND series, No Substitute.

K. Cylindrical Locks - Grade 2 – All interior doors

1. Provide grade 2 cylindrical locks, where specified, conforming to ANSI A156.2 Series 4000, Grade 2. Cylinders: Refer to 2.04 KEYING.
2. Provide locks with a standard 2-3/4 inches backset, unless noted otherwise, with a 1/2 inch latch throw. Provide 2-3/8 inches backset where noted of if door or frame detail requires. Provide proper latch throw for UL listing at pairs.
3. Provide locksets with a separate anti-rotation throughbolts, and shall have no exposed screws. Levers shall operate independently, and shall have two external return spring cassettes mounted under roses to prevent lever sag.

4. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
5. Lever trim shall be solid cast levers without plastic inserts, and wrought roses on both sides. Locksets shall be thru-bolted to assure proper alignment.
  - a. Lever design shall be Schlage Juniper. When lever with return is required by code, lever design shall be Saturn.
  - b. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
6. Acceptable manufacturers and/or products: Schlage AL series, No Substitute.

L. Mortise Locks - Push/Pull Trim

1. Provide mortise locks with push/pull trim, where specified, certified as ANSI A156.13, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Lock case shall be multi-function and field reversible for handing without opening the case. Cylinders: Refer to 2.04 KEYING.
2. Provide locks with a standard 2-3/4 inches backset with a full 3/4 inch throw stainless steel mechanical anti-friction latchbolt. Deadbolt shall be a full 1 inch throw, constructed of stainless steel.
3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
4. Trim shall be push paddle mounted up and pull paddle mounted down except at psychiatric or security areas provide both paddles mounted down for safety, unless noted otherwise.
  - a. Trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
5. Acceptable manufacturers and/or products: Glynn-Johnson HL6-9000 series, No Substitute.

M. Exit Devices – Standard Duty

1. Exit devices shall be tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit and/or Fire Exit Hardware. Cylinders: Refer to 2.04 KEYING.
2. Provide touchpad type exit devices.
3. Provide manufacturer's standard strikes.
4. Provide exit devices cut to door width and height. Locate exit devices at a height recommended by the exit device manufacturer, allowable by governing building codes, and approved by the Architect.
5. Non-fire-rated exit devices shall have hex key dogging.

6. Where lever handles are specified as outside trim for exit devices.
    - a. Lever style will match the lever style of the locksets.
  7. Exit devices for fire rated openings shall be UL labeled fire exit hardware.
  8. Provide electrical options as scheduled.
  9. Provide power transfer sufficient for number and gage of wires to accommodate electric function of specified hardware. Electric power transfer is to be located per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.
  10. Provide power supplies, recommended and approved by the manufacturer of the electrified exit device and other components requiring a power supply.
  11. Acceptable manufacturers and/or products: Adams Rite, No Substitute.
- N. Exit Devices – Heavy Duty. Note: Heavy duty hardware sets shall be used only when required as determined by the architect.
1. Exit devices shall incorporate a fluid damper or other device that eliminates noise associated with exit device operation. Touchpad shall extend a minimum of one half of the door width, but not the full length of the exit device rail. End-cap will have two-point attachment to door. Touch-pad shall match exit device finish, and shall be stainless steel for US26, US26D, US28, US32, and US32D finishes; for all other finishes, the touch-pad finish shall be of compatible finish to exit device. Only compression springs will be used in devices, latches, and outside trims or controls.
  2. Devices to incorporate a deadlatching feature for security and/or for future addition of alarm kits and/or other electrical requirements.
  3. Vertical rod devices shall be capable of being field modified to less bottom rod devices by removal of bottom rod and adding firing pin(s), if required at fire rated openings.
  4. Provide manufacturer's standard strikes.
  5. Provide exit devices cut to door width and height. Locate exit devices at a height recommended by the exit device manufacturer, allowable by governing building codes, and approved by the Architect.
  6. Mechanism case shall sit flush on the face of all flush doors, or spacers shall be furnished to fill gaps behind devices. Where glass trim or molding projects off the face of the door, provide glass bead kits.
  7. Non-fire-rated exit devices shall have hex key dogging.
  8. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that

will travel to a 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.

a. Lever style will match the lever style of the locksets.

9. Exit devices for fire rated openings shall be UL labeled fire exit hardware.
10. Provide electrical options as scheduled.
11. Provide power transfer sufficient for number and gage of wires to accommodate electric function of specified hardware. Electric power transfer is to be located per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.
12. Provide power supplies, recommended and approved by the manufacturer of the electrified exit device and other components requiring a power supply.
13. Acceptable manufacturers and/or products: Adams Rite, Von Duprin.

O. Key Pad Locks

1. Provide manually programmable locks conforming to ANSI A156 standards. Cylinders: Refer to 2.04 KEYING.
2. Provide manufacturers standard strikes.
3. Lever trim shall be brass, bronze, or stainless steel, cast or forged in the design specified.
  - a. Lever design shall be Schlage 17.
4. Provide keypad product with a minimum of 100 users at exterior doors.
5. Acceptable manufacturers and/or products: Schlage MPC Cobra – 17 at interior door, Schlage King Cobra series, at exterior doors. No substitute.

P. Electric Strikes

1. Provide electric strikes, as specified, designed for use with the type locks shown at each opening.
2. Provide electric strikes UL Listed as burglary-resistant electric door strikes and where required shall be UL Listed as electric strikes for fire doors and frames. Provide fail-secure type electric strikes, unless specified otherwise.
3. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.
4. Acceptable manufacturer and/or product: Adams Rite 7000 series or Von Duprin 6000 series, No Substitute (for which ever is specified in the hardware set).

Q. Door Closers – Heavy Duty

1. Provide heavy-duty door closers, at exterior doors where specified, certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory. Surface mounted mechanical closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory. Closers shall be ISO 9000 certified. Units shall be stamped with date of manufacture code.
2. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder and shall utilize full complement bearings at shaft. Cylinder body shall be 1-1/2 inch diameter, and double heat-treated pinion shall be 11/16 inch diameter.
3. Provide hydraulic fluid requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F. Fluid shall be fireproof and shall pass the requirements of the UL10C “positive pressure” fire test.
4. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
5. Provide closers with a solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within a 6-inch top rail without the use of a mounting plate so that closer shall not be visible through vision panel from pull side.
6. Closers shall not incorporate Pressure Relief Valve (PRV) technology.
7. Closer cylinders, arms, adapter plates, and metal covers shall have a powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or shall have special rust inhibitor (SRI).
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.
9. Mount closers inside of exterior and vestibule doors.
10. Door closers meeting this specification: LCN 4010/4110 series, No Substitute.

R. Door Closers – Medium Duty

1. Provide medium-duty door closers, at exterior doors where specified, certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory.
2. Door closers shall have fully hydraulic, full rack and pinion action with a cast iron cylinder and shall utilize full complement bearings at shaft. Cylinder body shall be 1-1/4 inch diameter, and double heat-treated pinion shall be 5/8 inch diameter.

3. Provide hydraulic fluid requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to 10 degrees F. Fluid shall be fireproof and shall pass the requirements of the UL10C “positive pressure” fire test.
4. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
5. Closers shall not incorporate Pressure Relief Valve (PRV) technology.
6. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.
7. Mount closers inside of exterior and vestibule doors.
8. Door closers meeting this specification: LCN 1460 series, No Substitute.

S. Door Closers – Standard Duty

1. Provide standard-duty door closers, at interior doors where specified, certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory.
2. Door closers shall have fully hydraulic, full rack and pinion action with a cast iron cylinder. Piston shall be 1-1/4 inch diameter, and pinion journals shall be 5/8 inch diameter.
3. Provide all-weather hydraulic fluid. Fluid shall be fireproof and shall pass the requirements of the UL10C “positive pressure” fire test.
4. Closers shall not incorporate Pressure Relief Valve (PRV) technology.
5. Provide special template, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.
6. Mount closers on room side of corridor doors and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless necessary.
7. Acceptable manufacturers and/or products: LCN 1370 series, No Substitute.

T. Electro-Mechanical Automatic Operators

1. Specified in Section 08720.
2. Acceptable manufacturers and/or products: LCN Senior Swing, No Substitute.



U. Door Pulls at Aluminum Doors

1. Provide push bars of solid bar stock, diameter and length as scheduled. Push bars shall be of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
2. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
3. Acceptable manufacturers and/or products: Manufacturer's standard..

V. Door Trim

1. Provide flush pulls as specified. Where required, provide back-to-back mounted model.
2. Provide wire pulls of solid bar stock, diameter and length as scheduled.
3. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

W. Protection Plates

1. Provide 1/8" thick clear plexiglass kick plates beveled 4 edges as scheduled. Furnish with machine or wood screws. Sizes of plates shall be as follows:
  - a. Kick Plates – 16 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs
  - b. 30 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs.
2. Acceptable manufacturers and/or products: Brookline Ives, Don-jo, Rockwood.

X. Overhead Stops and Overhead Stop/holders

1. Provide heavy duty concealed mounted overhead stop or overhead stop/holder as specified for exterior and interior vestibule single acting doors.
2. Provide medium duty concealed mounted overhead stop as specified for double acting doors with emergency release hardware.
3. Provide heavy or medium duty and concealed or surface mounted overhead stop or overhead stop/holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking a wall, open against equipment, casework, sidelights, and/or where conditions do not allow a wall stop or a floor stop presents a tripping hazard.
4. Where overhead holders are specified provide friction type at doors without a closer and positive type at doors with a closer.
5. Acceptable manufacturers and/or products: Glynn-Johnson, Rixson, Sargent.

Y. Door Stops and Holders

1. Provide door stops for all doors in accordance with the following requirements:
  - a. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
  - b. Where wall stops cannot be used, provide dome type floor stops of the proper height.
  - c. At any opening where a wall or floor stop cannot be used, a medium duty surface mounted overhead stop shall be used.
2. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

Z. Thresholds, Seals, Door Sweeps, Automatic Door Bottoms, and Gasketing:

1. Provide thresholds, weatherstripping (including door sweeps, seals, astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items as closely as possible. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
2. Provide Pemko S88 gasketing or equal, at all fire-rated doors in smoke barriers or corridors.
3. Acceptable manufacturers and/or products: Pemko, as pre-approved.

AA. Silencers:

1. Provide "Push-in" type silencers for each hollow metal or wood frame. Provide three for each single frame and two for each pair frame. Omit where gasketing is specified or required by code.
2. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

BB. Magnetic Holders:

1. Provide wall or floor mounted electromagnetic door holding as specified with a minimum of 25 pounds of holding force. Projection of holder and armature must be coordinated with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Where magnetic holders are used on fire-rate doors, they must be wired into the fire control panel for release during fire signal.
2. Acceptable manufacturers and/or products: LCN, Rixson, Sargent.

CC. Latch Protectors

1. Provide latch protectors of type required to function with the specified lock.
2. Acceptable manufacturers and/or products: Ives, Don-jo, Rockwood.

DD. Bi-Pass Door Hardware

1. Provide complete sets of by-pass door hardware as recommended by the manufacturer for the door type and weight.
  - a. Include track, hangers, fasteners, guides, cup pulls, and all hardware required for a complete installation.
2. Acceptable manufacturers and/or products: Hager, Lawrence, Stanley.

EE. Bi-Fold Door Hardware

1. Provide complete sets of bi-fold door hardware as recommended by the manufacturer for the door type and weight.
  - a. Include track, hangers, fasteners, guides, and all hardware required for a complete installation.
2. Acceptable manufacturers and/or products: Hager, Lawrence, Stanley.

FF. Coat Hooks

1. Provide robe hooks as specified.
2. Acceptable manufacturers and/or products: Gallery Specialty Hardware, No Substitute.

2.3 FINISHES

A. Finish of all hardware shall be US10B (BHMA 613/640) with the exceptions as follows:

1. Door Closers: Powder Coat to Match.
2. Latch Protectors: SP313 (Steel Dark Bronze).
3. Weatherstripping: Dark Bronze Anodized Aluminum.
4. Thresholds: Mill Finish Aluminum Dark Bronze.

2.4 KEYING

A. Provide cores for the new or Owner's Existing Schlage key system conforming to the following requirements:

1. Provide removable core cylinders at all exterior keyed devices. Provide construction cores with construction master keying for use during construction. The hardware supplier, accompanied by the Owner or Owner's security agent, shall install

permanent keyed cores upon completion of the project. The temporary construction cores are to be returned to the hardware supplier.

2. Provide permanent cores keyed by the manufacturer or authorized distributor into the existing key system as directed by the Owner. Provide owner with a copy of the bitting list, return receipt requested.
3. The hardware supplier, accompanied by a qualified factory representative for the manufacturer of the cores and cylinders, shall meet with Owner and Architect to review keying requirements and lock functions prior to ordering finish hardware. Submit a keying schedule to Architect for approval.
4. Provide keys as follows. Refer to keying schedule.
  - a. Ten master keys for each set.
  - b. Three keys per core and/or cylinder.
  - c. Two construction core control keys
  - d. Two permanent core control keys
  - e. Six construction master keys for each type (Contractor is to provide one set of construction keys to Architect)
5. Visual key control:
  - a. Keys for exterior locks shall be stamped with their respective key set number and stamped "DO NOT DUPLICATE".
  - b. All keys shall be stamped with their respective key set letters.
  - c. Do not stamp any keys with the factory key change number.
  - d. Do not stamp any cores with key set on face (front) of Core. Stamp on back or side of cores so not to be visible when core is in cylinder.
6. Deliver all keys and/or key blanks from the factory or authorized distributor directly to the Owner in sealed containers, return receipt requested. Failure to comply with these requirements may be cause to require replacement of all or any part of the keying system that was compromised at no additional cost to the Owner.
7. Approved products: Schlage Everest C, No Substitute.

## 2.5 KEY CONTROL SYSTEM

- A. Provide a key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of the number of locks required for the Project.
  1. Provide complete cross index system set up by the hardware supplier, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
  2. Provide hinged-panel type cabinet for wall mounting.
  3. Approved products: Telkee, HPC, Lund.

### **PART 3 - EXECUTION**

#### 3.1 EXAMINATION

- A. Prior to installation of any hardware, examine all doors, frames, walls and related items for conditions that would prevent proper installation of finish hardware. Correct all defects prior to proceeding with installation.

#### 3.2 INSTALLATION

- A. Coordination:
  - 1. Prior to installation of hardware, schedule and hold a meeting for the purpose of instructing installers on proper installation and adjustment of finish hardware. Representatives of locks, exit devices, closers, automatic operators, and electrified hardware shall conduct training; provide at least 10 days notice to representatives. After training a letter of compliance, indicating when the training was held and who was in attendance, shall be sent to the Architect.
  - 2. Prior to ordering electrified hardware, schedule and hold a meeting for the purpose of coordinating finish hardware with security, electrical, doors and frames, and other related suppliers. A representative of the supplier of finish hardware, and doors and frames, the electrical subcontractor, and the Owner's security contractor shall meet with the Owner, Architect, and General Contractor prior to ordering finish hardware. After meeting a letter of compliance, indicating when the training was held and who was in attendance, shall be sent to the Architect.
- B. Hardware will be installed by qualified tradesmen, skilled in the application of commercial grade hardware. For technical assistance if necessary, installers may contact the manufacturer's rep for the item in question, as listed in the hardware schedule.
- C. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- D. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.
- E. Do not install surface mounted items until finishes have been completed on the substrate. Protect all installed hardware during painting.
- F. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- G. Operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.
- H. Existing Doors and/or Frames: Remove existing hardware being replaced, tag, and store according to contract documents. Field modify and prepare existing door and/or frame for

new hardware being installed. Provide necessary fillers, Dutchmen, reinforcements, and fasteners for mounting new hardware and to cover existing door/frame preps.

- I. Wire (including low voltage), conduit, junction boxes, and pulling of wire is by Division 16, Electrical. Electrical Contractor shall connect wire to door position switches and run wire to central room or area as directed by the Architect. Wires shall be tested and labeled with the Architects opening number. Connections to/from power supplies to electrified hardware and any connection to fire/smoke alarm system, and/or smoke evacuation system where specified is by Division 16 Electrical.

### 3.3 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.
- B. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make a final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- C. Clean adjacent surfaces soiled by hardware installation.
- D. Instruct Owner's personnel in the proper adjustment, lubrication, and maintenance of door hardware and hardware finishes.

### 3.4 FIELD QUALITY CONTROL

- A. Prior to Substantial Completion, the installer, accompanied by representatives of the manufacturers of locks, exit devices, closer, and any electrified hardware, shall perform the following work:
  1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
  2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
  3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
  4. Prepare a written report of current and predictable problems of substantial nature in the performance of the hardware.
  5. At completion of project, a qualified factory representative for the manufacturers of locksets, closer, exit devices, and access control products shall arrange and hold a

training session to instruct the Owner’s personnel on the proper maintenance, adjustment, and/or operation of their respective products. After training a letter of compliance, indicating when the training was held and who was in attendance, shall be sent to the Architect.

3.5 PROTECTION

- A. Provide for the proper protection of complete items of hardware until the Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.6 HARDWARE SCHEDULE

- A. Provide hardware for each door to comply with requirements of Section “Door Hardware,” hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
- B. It is intended that the following schedule includes complete items of door hardware necessary to complete the work. If a discrepancy is found in the schedule, such as a missing item, improper hardware for a frame, door or fire codes, the preamble will be the deciding document.
- C. Locksets, exit devices, and other hardware items are referenced in the Hardware Sets for series, type, and function. Refer to the preamble for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

HW SET: 01 n/a

HW SET:02 n/a

HW SET:03 n/a

HW SET: 04 Interior Vestibule – Aluminum Single door with lockset, electric strike, and auto operator. Interior vestibule to waiting. Controlled entry.

3 EA	Hinges	5BB1 Series as Specified	IVE
1 EA	Aluminum Door Lock	4710 X Lever Trim	ADA
1 EA	Cylinder	As Required	SCH
1 EA	Electric Strike	7100 Fail Secure	ADA
1 EA	Lock Guard	LG11	IVE
1 EA	Offset Door Pull	C0-9	KAW
1 EA	Auto. Operator	9540 Series X Relay Board (as specified in 08720)	LCN

1 EA	Overhead Stop	Concealed Heavy Duty 100s Series	GLY
1 SET	Seals	By Aluminum Door Supplier	
2 EA	Wall Plate Switch	As specified in 08720	LCN
2 EA	Button Mini Box	660-PB	LOC

All wiring and connections by Division 16

**OPERATIONAL DESCRIPTION:**

For controlled entry (toggle in secure position)

Immediate egress always allowed. Manual access by key. Automatic operation for access by remote release at receptionist and nurse station or automatic operation for egress by actuator in waiting area which signals automatic operator to release electric strike and open door. Locate remote release and actuators as directed by architect.

For non-controlled entry (toggle in non-secure position)

Immediate egress always allowed. Toggle (by others) in automatic operator head to release and hold electric strike and enable outside automatic operator actuator. Manual operation by push n' go feature or automatic operation by pushing either actuator which will signal automatic operator to open door. Locate actuators as directed by architect.

- A. Power on, fire alarm quiet.
  - Door operator is secure/unsecured via rocker switch located in door operator.
- B. Power out, fire alarm quiet.
  - Door operator is inoperable due to loss of power, electric strike "Fail Secure" hardware will allow egress from waiting room but not gain entry from outside without key.
- C. Power on, fire alarm active
  - Fire alarm de-energizes electric strike and door operator. Door operator is inoperable due to loss of power. Electric strike "Fail Secure" hardware will allow egress from waiting room but not gain entry from outside without key.

- HW SET: 05 n/a
- HW SET: 06 n/a
- HW SET: 07 n/a
- HW SET: 08 n/a
- HW SET: 09 n/a
- HW SET: 10 n/a
- HW SET: 11 n/a
- HW SET: 12 n/a
- HW SET: 13 n/a
- HW SET: 14 n/a
- HW SET: 15 n/a



HW SET: 16 n/a  
HW SET: 17 n/a  
HW SET: 18 n/a  
HW SET: 19 n/a  
HW SET: 20 n/a  
HW SET: 21 n/a  
HW SET: 22 n/a  
HW SET: 23 n/a  
HW SET: 24 n/a  
HW SET: 25 n/a

HW SET: 26 Interior – Non-Rated Single with Storeroom Lockers – Storage, Janitor

3	EA	Hinges	5BB1 Series As Specified	IVE
1	EA	Storeroom Lock	AL80	SCH
1	EA	Armor Plate	8400 30" X 2" LDW	IVE
1	EA	Stop	WS407/FS436 As Specified	IVE
3	EA	Silencer	SR64/SR65	IVE

HW SET: 27 n/a  
HW SET: 28 n/a  
HW SET: 29 n/a  
HW SET: 30 n/a  
HW SET: 31 n/a

HW SET: 32 Interior – Rated or Non-Rated Single with Push/Pull Trim Classroom Lockset X Closer – Treatment to Mechanical

3	EA	Hinges	5BB1 Series As Specified	IVE
1	EA	Push/Pull Latch	HL6-9070	GLY
1	EA	Surface Closer	1371/P1371 As Specified	LCN
1	EA	Armor Plate	8400 30" X 2" LDW	IVE
1	EA	Stop	WS407/FS436 As Specified	IVE
3	EA	Silencer	SR64/SR65	IVE

HW SET: 33 n/a

HW SET: 34 Interior – Non-Rated Single with Storeroom Lockset X Closer – Waiting to Treatment Room – Controlled Entry

3	EA	Hinges	5BB1 Series as Specified	IVE
1	EA	Classroom Lock	ND70	SCH
1	EA	Electric Strike	7140 Fail Safe	ADA
1	EA	Auto. Operator	9540 Series X Realy Board (As Specified in 08720)	LCN
1	EA	Armor Plate	8400 30" X 2" LDW	IVE
1	EA	Stop	WS407/FS436 As Specified	IVE
2	EA	Wall Plate Switch	As Specified in 08720	LCN
3	EA	Silencer	SR64/SR65	IVE

2 EA Button Mini Box 660-PB

LOC

**OPERATIONAL DESCRIPTION:**

For controlled entry (toggle in secure position)

Immediate egress always allowed, manual access by key. Automatic operation for access by remote release at receptionist and nurse station or automatic operation for egress by actuator in treatment area which signals automatic operator to release electric strike and open door. Locate remote release and actuators as directed by architect.

For non-controlled entry (toggle in non-secure position)

Immediate egress always allowed. Toggle (by others) in automatic operator head to release and hold electric strike and enable outside automatic operator actuator. Manual operation by Push N’ Go feature or automatic operation by pushing either actuator or remote release which will signal automatic operator to open door. Locate actuators as directed by architect.

- A. Power on, fire alarm quiet.
  - Door operator is secure/unsecured via rocker switch located in door operator.
- B. Power out, fire alarm quiet.
  - Door operators are inoperable due to loss of power. Electric strike “Fail Safe” hardware will allow egress from Treatment Area and allow entry from Waiting Room
- C. Power on, fire alarm active
  - Fire alarm de-energizes electric strike and door operator. Door operator is inoperable due to loss of power. Electric strike “Fail Safe” hardware will allow egress from Treatment Area and allow entry from Waiting Room.

HW SET: 35 n/a

HW SET: 36 n/a

HW SET: 37 n/a

HW SET: 38 n/a

END OF SECTION