

SECTION 08710 HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Finish hardware for doors as specified and as listed in "Hardware Groups" and required by actual conditions.
 - 2. Include screws, special screws, bolts, special bolts, expansion shields, and other devices for proper application of hardware.
- B. Related Sections:
 - 1. Section 06101: Carpentry 1. Section 08110, Section 08120, and Section 08211 - Certain hardware items installed with doors.
 - 2. Division 16: Electrical.

1.2 GENERAL REQUIREMENTS

- A. Provide items, articles, materials, operations and methods listed, mentioned or scheduled herein or on drawings, in quantities as required to complete project. Provide hardware that functions properly. Prior to furnishing hardware, advise Architect of items that will not operate properly, are improper for conditions, or will not remain permanently anchored.

1.3 SUBMITTALS

- A. Hardware Schedule: Submit 5 copies of hardware schedule in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Schedules, which do not comply, will be returned for correction before checking. Hardware schedule shall clearly indicate architect's hardware group and manufacturer of each item proposed. The schedule shall be reviewed prior to submission by a certified Architectural Hardware Consultant, who shall affix his or her seal attesting to the completeness and correctness of the schedule.
 - 1. Provide 2 copies of illustrations from manufacturer's catalogs and data in brochure form.
 - 2. Check specified hardware for suitability and adaptability to details and surrounding conditions. Indicate unsuitable or incompatible items and proposed substitutions in hardware schedule.
 - 3. Provide listing of manufacturer's template numbers for each item of hardware in hardware schedule.
 - 4. Furnish other Contractors and Subcontractors concerned with copies of final approved hardware schedule. Submit necessary templates and schedules as soon as possible to hollow metal, wood door, and aluminum door fabricators in accordance with schedule they require for fabrication.
 - 5. Samples: Lever design or finish sample: Provide 3 samples if requested by architect.
- B. Wiring Diagrams: Provide complete and detailed system operation and elevation diagrams specially developed for each opening requiring electrified hardware, except openings where only magnetic hold-opens or door position switches are specified. Provide these diagrams with hardware schedule submittal for approval. Provide detailed wiring diagrams with hardware delivery to jobsite.
- C. Installation Instructions: Provide manufacturer's written installation and adjustment instructions for finish hardware. Send installation instructions to site with hardware.
- D. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

- E. Contract Closeout Submittals: Comply with Section 01700 including specific requirements indicated.
 - 1. Operating and maintenance manuals: Submit 3 sets containing the following:
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
 - 2. Copy of final approved hardware schedule, edited to reflect "As installed".
 - 3. Copy of final keying schedule.
 - 4. As installed "Wiring Diagrams" for each opening connected to power, both low voltage and 110 volts.
 - 5. One complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Obtain each type of hardware (ie. latch and locksets, hinges, closers) from single manufacturer, although several may be indicated as offering products complying with requirements.
- B. Supplier: Recognized architectural finish hardware supplier, with warehousing facilities, who has been providing hardware for period of not less than 3 years. The supplier shall be, or employ, a certified Architectural Hardware Consultant (AHC), who is registered in the continuing education program as administered by the Door and Hardware Institute. The hardware schedule shall be prepared and signed by a certified AHC.
- C. Installer: Firm with 3 years experience in installation of similar hardware to that required for this project, including specific requirements indicated.
- D. Regulatory Label Requirements: Provide nationally recognized testing agency label or stamp on hardware for labeled openings. Where UL requirements conflict with drawings or specifications, hardware conforming to UL requirements shall be provided. Conflicts and proposed substitutions shall be clearly indicated in hardware schedule.
- E. Handicapped Requirements: Doors to stairs (other than exit stairs), loading platforms, boiler rooms, stages and doors serving other hazardous locations shall have knurled or other similar approved marking of door lever handles or cross bars in accordance with local building codes.
- F. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's representatives for locksets, closers, and exit devices shall arrange and hold a jobsite meeting to instruct the installing contractor's personnel on the proper installation of their respective products. A letter of compliance, indicating when this meeting is held and who is in attendance, shall be sent to the Architect and Owner.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver hardware to jobsite in manufacturer's original packaging, marked to correspond with approved hardware schedule. Do not deliver hardware until suitable locked storage space is available. Check hardware against reviewed hardware schedule. Store hardware to protect against loss, theft or damage.
- B. Deliver hardware required to be installed during fabrication of hollow metal, aluminum, wood, or stainless steel doors prepaid to manufacturer.

1.6 WARRANTY

- A. Guarantee workmanship and material provided against defective manufacture. Repair or replace defective workmanship and material appearing within period of one year after Substantial Completion.
- B. Provide ten year factory warranty on door closer body against defects in material and workmanship from date of occupancy of Project.

- C. Replace shortages and incorrect items with correct material at no additional cost to Owner.
- D. At completion of project, qualified factory representative shall inspect closer installations. After this inspection, letter shall be sent to Architect reporting on conditions, verifying that closers have been properly installed and adjusted.

PART 2 PRODUCTS

2.1 AUTOMATIC OPERATORS

- A. Acceptable Manufacturers:

Sargent	Besam	Norton
4000 Series	PowerSwing	6900

- B. Provide automatic operators as specified in hardware groups. Provide complete with drop plates, brackets, or adapters for arms as required to suit details.
- C. Provide wall-mounted actuator switches by the same manufacturer as the operator. Actuators shall be weather-resistant type at exterior applications.

2.2 LOW ENERGY DOOR OPERATORS

- A. Low energy door operators shall be 4000 Series as manufactured by SARGENT Manufacturing Company, New Haven, CT.
- B. Low energy door operators shall meet ANSI/BHMA A156.19 requirements.
- C. Low energy door operators shall meet UL, cUL, UL10c, and UL10B standards for use on fire doors.
- D. Low energy door operators shall have the following adjustments:
 1. Motor assist shall be adjustable from 0 to 30 seconds in 5 second increments.
 2. Door control shall be adjustable to provide compliance with the requirements of the Americans with Disabilities Act (ADA).
 3. Door closing force and backcheck shall be adjustable
 4. Motor start up delay.
 5. Vestibule interface delay.
 6. Electric lock delay.
 7. Door hold open delay up to 30 seconds.
- E. Operator units shall provide conventional door closer opening and closing forces unless the power operator motor is activated by an initiating device.
- F. Operator units shall have a three position selector mode switch that shall permit units to be switched "ON" to monitor for function activation, "HO" for indefinite hold open function, or "OFF" which shall deactivate all control functions but will allow standard door operation by means of the internal mechanical closer.
- G. Operators shall have push and go function to activate power operator or power assist functions.
- H. Operator units shall have door closer assembly with adjustable spring size, backcheck valve, sweep valve, latch valve, speed control valve, and pressure adjustment valve to control door closing.

- I. Operator units shall have inputs for smoke ventilation doors, which allow doors to power open upon fire alarm activation and hold open indefinitely or until fire alarm is reset.
- J. Operator units shall have a presence detector input to prevent a closed door from opening or a door that is fully opened from closing.
- K. Operator units shall have a hold open toggle input to allow remote activation for indefinite hold open; door shall close the second time the input is activated.
- L. Operator units shall have vestibule inputs to allow sequencing operation of two units.
- M. Operators shall have a SPDT relay for interfacing with latching or locking devices.

2.3 BUTTS AND HINGES

A. Acceptable Manufacturers and Types:

Type	McKinney
Type 1	T4A3795
Type 2	TA2714
Type 3	TA2314
Type 4	T4A3786
Type 5	T4A3386

B. Application:

- 1. Exterior outswinging doors Type 5 x NRP
- 2. Exterior inswinging doors and vestibule doors Type 4
- 3. Interior doors with closers Type 2 or 4
- 4. Interior doors over 36 inches wide Type 4
- 5. Interior doors 36 inches or less without closer Type 2
- 6. Provide NRP (non-removable pins) at out-swinging lockable doors.

C. Size:

- 1. 2-1/4 inch Doors 5 inch by 5 inch
- 2. 1-3/4 inch Doors 4-1/2 inch by 4-1/2 inch
- 3. 1-3/8 inch Doors 3-1/3 inch by 3-1/2 inch

D. Quantity:

- 1. 2 - hinges per leaf for openings through 60 inches high.
- 2. 1 - additional hinge per leaf for each additional 30 inches in height or fraction thereof.
- 3. 4 - Dutch doors up to 90 inches in height.

E. Drill 5/32 inch hole and use No. 12, 1-1/4 inch steel threaded to the head wood screws for hinges on wood doors.

2.4 ELECTRIC HINGES

A. Acceptable manufacturers:

McKinney
CC

B. Provide sufficient number of concealed wires to accommodate electric function of specified hardware.

C. Electric hinges to be located at second hinge from bottom. Where electric hinges are used in conjunction with exit devices, locate hinge nearest to exit device.

D. Provide mortar guard similar to McKinney MG-16 for each electric hinge specified.

2.5 CONTINUOUS HINGES

- A. Acceptable manufacturers:

McKinney
MCK-12HD
MCK-25HD

- B. Provide one of the above two models of continuous hinges as appropriate for the type, inset, and thickness of door where specified. Coordinate hinge types with the door supplier.

2.6 FLOOR CLOSERS AND INTERMEDIATE PIVOTS

- A. Acceptable Manufacturer and Series:

Rixson
27 Series
M19

- B. Floor closers shall be complete with ball-bearing top pivot, floor plates, intermediate pivots and cement boxes unless indicated otherwise. One intermediate pivot for doors less than 91 inches high. Two intermediate pivots for doors between 91 inches and 121 inches high. Intermediate pivots spaced equally not less than 25 inches or not more than 35 inches on center, for doors over 121 inches high.
- C. Provide single-acting offset hung floor closers as specified in Hardware Groups.
- D. Provide floor closers with adjustable swing speed, latch speed, back-check, and automatic hold-open features. Closer shall have built in positive stop at specified degree of opening.
- E. Floor closers shall meet maximum opening force requirements of ADA.

2.7 PIVOT SETS

- A. Acceptable Manufacturer and Series:

Type	Rixson
Offset, std. duty	117
Offset, hvy. duty	147
Intermed.	M19
Center, std. duty	1282
Center, hvy. duty	370

- B. Pivot sets shall be complete with oil-impregnated top pivot, unless indicated otherwise. For offset pivoted doors, provide one intermediate pivot for doors less than 91 inches high. Two intermediate pivots for doors between 91 inches and 121 inches high. Intermediate pivots spaced equally not less than 25 inches or not more than 35 inches on center, for doors over 121 inches high.
- C. Provide pivot sets as specified in Hardware Groups.

2.8 FLUSH BOLTS AND DUSTPROOF STRIKES

- A. Acceptable manufacturers:

Trimco
3915
3810
3815

3910

- B. Non-labeled Openings: Provide 2 flush bolts 3915 for inactive leaf of pairs of locked and latched doors. Locate centerline of top bolt not more than 78 inches from finished floor. Provide dustproof strike 3910 for bottom bolt.
- C. Labeled Openings: Provide automatic flush bolt set 3810 or 3815, as applicable, for inactive leaf of pairs of doors. Provide dustproof strike 3910 for bottom bolt.

2.9 LOCKSETS – MORTISE

- A. Acceptable Manufacturer and Series:

Manufacturer	Series
Sargent	8200 x LNL
Yale	8700FL x AUR
Corbin/Ruswin	ML2200 x NSA

- B. Provide lock functions specified in Hardware Groups, with following provisions:
 - 1. Cylinders: Manufacturer’s high security removable core 6-pin, meeting the requirements of UL437.
 - 2. Backsets: 2-3/4 inches.
 - 3. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim but not to project more than 1/8 inch beyond trim, frame or inactive leaf. Where required, provide open back strike and protected to allow practical and secure operation.

2.10 LOCKSETS – CYLINDRICAL

- A. Acceptable Manufacturer and Series:

Manufacturer	Series
Sargent	10-Line x LL
Yale	5400L x AU
Corbin/Ruswin	CL3400 x NZD

- 1. Cylinders: Manufacturer’s high security removable core 6-pin, meeting the requirements of UL437.
- 2. Backsets: 2-3/4 inches.
- 3. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim but not to project more than 1/8 inch beyond trim, frame or inactive leaf. Where required, provide open back strike and protected to allow practical and secure operation.

2.11 LOCKSETS – 11-LINE

- A. Acceptable Manufacturer and Series (No Substitutions):

Manufacturer	Series
Sargent	11-Line x LL

- 1. Locksets shall be able to withstand 2400 inch pounds of torque applied to the locked lever without gaining access.
- 2. Locksets shall be cycle tested per ANSI A156.2, 1996, to two million cycles without any visible lever sag.
- 3. Locksets shall be able to fit a standard 2-1/8 inch (55 mm) bore without the use of thru-bolts. Standard rose size shall be 2-3/4 inches (70 mm) in diameter.
- 4. Lockset levers shall be made of solid material with no plastic fillers.
- 5. Latchbolt head shall be one piece stainless steel.
- 6. Latchbolt assemblies shall be encased within the lockbody.
- 7. Cylinders: Sargent Signature Series, UL437 listed, high security 6-pin cylinders.
- 8. Backsets: 2-3/4 inches.

- 9. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim but not to project more than 1/8 inch beyond trim, frame or inactive leaf. Where required, provide open back strike and protected to allow practical and secure operation.
- 10. Locksets shall have a seven year limited warranty.

2.12 SLIDING DOOR PRIVACY LOCKS

- A. Acceptable Manufacturers:

Quality
101 PD

2.13 EMERGENCY DOOR STOP RELEASE AND STRIKE

- A. Acceptable Manufacturers:

McKinney
CSS-9

- B. Provide combination emergency stop and strike to allow door to swing open in opposite direction. Size for specific frame depth.

2.14 EXIT DEVICES

- A. Acceptable Manufacturers:

Sargent
80 Series

- B. Provide exit device series and functions as specified in Hardware Groups. Sargent product numbers are referenced in the Hardware Groups.
- C. All exit devices shall be UL listed for panic. Exit devices for labeled doors shall be UL listed as "Fire Exit Hardware".
- D. Where lever trim is specified, provide lever design to match lockset levers.
- E. Provide cylinders for exit devices with locking trim and cylinder dogging.
- F. Provide cylinder dogging feature for non-rated exit devices.
- G. Provide keyed removable mullions, as specified in the Hardware Groups.

2.15 HOSPITAL LATCHES

- A. Acceptable Manufacturers and Series:

Sargent
115P

- B. Provide hospital latches as specified, with covers engraved "Push" and "Pull."
- C. Provide 5 inch backset for hospital latches, unless noted otherwise.

2.16 ELECTRIC STRIKES

- A. Acceptable Manufacturers and Series:

HES	Folger-Adam
1003 Series	310 Series

- B. Provide electric strikes designed for use with the type locks shown at each opening where specified.
- C. Electric Strikes shall be UL Listed as Burglary-Resistant Electric Door Strikes and where required shall be UL Listed as Electric Strikes for Fire Doors and Frames. Provide non fail-safe type electric strikes, unless specified otherwise.
- D. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.17 MAGNETIC LOCKS

- A. Acceptable Manufacturers and Series:

Sargent	Securitron
1584	62
1585	62(2)

- B. Magnetic locks shall meet ANSI/BHMA A156.23-1992 classification criteria including a minimum holding force of 1200 LBF.
- C. Locks shall be equipped with a SPDT Magnetic Bond Sensing device to monitor whether sufficient magnetic holding force exists to ensure adequate locking. The bond sensor shall be fully concealed within the electromagnet to resist tampering or damage.
- D. Magnetic Locks shall be equipped with a concealed adjustable time delay option to re-lock the door, adjustable from 1 to 90 seconds.
- E. Provide power supplies for magnetic locks by the same manufacturer as locks.
- F. Provide fasteners, mounting brackets, and spacer bars required to suit details.

2.18 KEYING

- A. Master key or Grand master key cylinders and key in groups, unless otherwise specified. Factory masterkey with manufacturer retaining permanent keying records.
- B. Provide 6 masterkeys for each masterkey set. Provide 3 change keys for each lock. Provide 2 control keys for core removal. Stamp keys "DO NOT DUPLICATE."
- C. Submit proposed keying schedule to Architect. If requested, meet with Owner and Architect to review schedule.
- D. Provide high security removable core cylinders, with patented key control, for each lock with construction masterkeying. Permanent cores shall be installed upon completion of the project.
- E. Cylinders shall meet the requirements of UL437.

2.19 DOOR TRIM

- A. Acceptable Manufacturers and Types:

Hiawatha	Trimco	Burns
200H	1001-9	56
200F	1001-3	54
1081LBP	1741	422
658A	1191-3	39C
536B	1195-2	26C
523A	1194-2	25B
DE-2AJ	KE36-1	307

- B. Push Plates:

1. Hiawatha type 200H 6 inches by 16 inch unless otherwise indicated.
 2. Where width of door stile prevents use of 6 inch wide plate, provide push plate one inch less than width of stile but not less than 4 inches wide.
- C. Push Bars:
1. Hiawatha type 1081LBP, unless otherwise indicated.
- D. Pulls:
1. Hiawatha Series 658A, unless otherwise indicated.
 2. Where required, mount back to back with push bars.
- E. Kick Plates and Armor Plates: Minimum of 0.050 inch thick, beveled 4 edges.
1. At single doors provide width 1-1/2 inch less than door width on stop side and one inch less than door width on face side.
 2. At pairs of doors provide width one inch less than door width on both sides.
 3. Height of 10 inches, unless otherwise indicated.
- F. Edge Guards: Minimum .050" thick, stainless steel,
1. Hiawatha type DE-2AJ x 42 inches high as noted in Hardware Groups.

2.20 COORDINATORS

- A. Acceptable Manufacturers:

Trimco
3094 Series

- B. Provide 3094 Series coordinator for labeled pairs of doors equipped with automatic flush bolts and those with vertical rod/mortise lock fire exit device combinations with astragals.
- C. Provide filler bars for total opening width, closer mounting brackets, carry bars, and special preparation for top latches where applicable.

2.21 DOOR CLOSERS

- A. Acceptable Manufacturers and Types of Exposed Closers:

Sargent	Norton	Yale
351/351-P10	7500/PR7500	4400/PR4400

- B. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.
- C. Provide drop plates, brackets, or adapters for arms as required to suit details.
- D. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- E. Provide back-check for closers.
- F. Provide hold-open arms where indicated.
- G. Provide closers for doors as noted in Hardware Groups and, in addition, provide closers for labeled doors whether or not specifically noted in group.
- H. Provide closers meeting the requirements of UBC 7-2 and UL 10C positive pressure tests.

2.22 CLOSER/HOLDERS

- A. Acceptable Manufacturers Types of Exposed Closer/holders:

Sargent	Norton	Yale
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2467	7700PT	400PT
2900	7210MPI	4210MPI

- B. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.
- C. Provide drop plates, brackets, or adapters for arms as required to suit details.
- D. Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- E. Provide back-check for closers.
- F. Provide single-point or multi-point hold-open arms as specified.
- G. Provide closer/holders meeting the requirements of UBC 7-2 and UL 10C positive pressure tests.

2.23 AUTOMATIC OPERATORS

- A. Acceptable Manufacturers:

Sargent
2600 Series

- B. Provide low energy automatic operators as specified in hardware groups. Provide complete with drop plates, brackets, or adapters for arms as required to suit details.
- C. Operators shall meet the requirements of ANSI/BHMA A156.19, 1997.
- D. Provide wall-mounted actuator switches by the same manufacturer as the operator. Actuators shall be weather-resistant type at exterior applications.

2.24 BI-FOLDING DOOR HARDWARE

- A. Acceptable Manufacturers and Types:

Grant	Lawrence
1260	ED600

- B. Provide complete hardware sets for each opening specified with bi-folding door hardware.
 - 1. Include track, hangers, fasteners, guides, and all hardware required for a complete installation.

2.25 SLIDING DOOR HARDWARE

- A. Acceptable Manufacturers:

Grant	Lawrence
5150	ED500

- B. Provide complete hardware sets for each opening specified with sliding door hardware.
 - 1. Include track, hangers, fasteners, guides, and all hardware required for a complete installation.

2.26 POCKET DOOR HARDWARE

- A. Acceptable Manufacturers and types:

Lawrence
PF617

- B. Provide complete hardware sets for each opening specified with pocket door hardware.
 1. Include track, hangers, fasteners, guides, and all hardware required for a complete installation.

2.27 OVERHEAD STOPS

- A. Acceptable Manufacturers:

Sargent	Yale
1540	500V
1530	500
590	900V
690	100

- B. Provide 1540 Series overhead stops for doors equipped with regular arm surface type closer that swing more than 140 degrees before striking wall, and for doors that open against equipment, casework, sidelights, other objects that would make wall stops inappropriate.
- C. Provide sex bolt attachments for mineral core door application.

2.28 WALL STOPS AND HOLDERS

- A. Acceptable Manufacturers and Types:

Trimco
1270WX
1205
1207

- B. Provide 1270WX Series wall stop as applicable, for each door leaf except where wall stops WB11X are specified in Hardware Groups, or where conditions require the use of an overhead stop.
- C. Provide 1540 Series overhead stops for doors that swing more than 140 degrees before striking a wall.
- D. Floor or base stops shall be used only where definitely specified or absolutely unavoidable.

2.29 THRESHOLDS

- A. Acceptable Manufacturers: Pemko, Reese Enterprises, and National Guard Products.

Pemko	Reese	National Guard
171A	S205A	425 Alum

- B. Where thresholds are specified in hardware groups, provide 171A thresholds unless detailed otherwise.
 1. Refer to drawings for special details. Provide accessories, shims and fasteners.
 2. Where thresholds occur at openings with one or more mullions, they shall be cut for the mullions and extended continuously for the entire opening.

2.30 WEATHERSTRIPPING

- A. Acceptable Manufacturers and Product:

	Pemko	Reese	National Guard
Sweeps	315CN	323A	200N
Jambs	316AV	DS75A	152
Door top drips	346C	R201A	16AD

- B. Where weatherstripping is specified in hardware groups, provide 316AV unless detailed otherwise.
1. Provide self-tapping fasteners for weatherstripping being applied to hollow metal frames.
- C. Where sweeps are specified in hardware groups, provide 315CN unless detailed otherwise.
- D. Where rain drips are specified in hardware groups, provide 346C x full frame width, unless detailed otherwise.

2.31 GASKETING

- A. Acceptable Manufacturers: Pemko, Reese Enterprises, and National Guard Products. Refer to drawings for special details. Provide accessories, shims and fasteners.

Pemko	Reese	National Guard
PK55D	F-897B	2525

- B. Where smoke gasket is specified in hardware groups, provide PK55D, unless detailed otherwise.
- C. Provide gaskets for 20-minute doors and doors designated for smoke and draft control.
- D. Where frame applied intumescent seals are required by the manufacturer, provide gaskets that comply with UBC 7-2 and UL 10C positive pressure tests.

2.32 SOUND GASKETING

- A. Acceptable Manufacturers:
1. Acoustical gasketing and door bottoms:

	Pemko	Reese	National Guard
Automatic Door Bottoms	4301CR L	330C	420A
Jambs	379CR	33C	107NA

- B. Where gasketing is specified in hardware groups, provide 4301 CRL and 379 CR unless detailed otherwise.
1. Provide self-tapping fasteners being applied to hollow metal doors and frames.
 2. Cutting or notching of sound gasket for stop mounted hardware shall not be permitted.

2.33 MAGNETIC HOLDERS

- A. Acceptable Manufacturers and Types:

Sargent	Rixson-Firemark	HES
1504	FM-998	8837

- B. Where magnetic holders are specified in the Hardware Groups, provide Rixson FM-998, LCN SEM 850, or Sargent 1504 unless detailed otherwise.
1. Verify voltage with Electrical Contractor.

2.34 DOOR POSITION SWITCHES

- A. Acceptable Manufacturers and Types:

Sargent
3287

- B. Coordinate door and frame preparations with door and frame suppliers.
C. Switches shall be installed in frame head approximately 4" from latching door edge.

2.35 LATCH PROTECTORS

- A. Acceptable Manufacturers and types:

Don-Jo
CLP-110-32D

- B. Latch protectors shall be stainless steel of the type required to work with the specified latch.

2.36 KEY CABINET

- A. Provide key cabinets by Lund Equipment, Telkee Incorporated, or Key Control.
B. Lund Deluxe wall type cabinet, Series 1200.
C. Provide cabinet with one hook for each lock or cylinder plus at least 50 percent extra hooks.
D. Provide each hook with one non-removable security key tag and one snap-on link duplicate key tag.
E. Provide tools, instruction sheets and accessories required to complete installation.
F. Owner will place keys in key cabinet and complete index cards furnished with key system.

2.37 KEY MANAGEMENT SOFTWARE

- A. Provide Key Wizard key management software.
B. Software shall provide tracking, issuing, collecting and transferring information regarding keys, doors, and hardware.
C. Provide training for Owner's personnel on the proper operation and application of the key management software.

2.38 FASTENERS

- A. Including, but not limited to, wood or machine screws, bolts, nuts, anchors, etc. of proper type, material, and finish required for installation of hardware.
B. Use phillips head for exposed screws. Do not use aluminum screws to attach hardware.
C. Provide self-tapping (TEC) screws for attachment of sweeps and stop-applied weatherstripping.

2.39 TYPICAL FINISHES AND MATERIALS

- A. Finishes, unless otherwise specified:
1. Butts: Outswinging Exterior Doors
a. US32D (BHMA 630) on Stainless Steel
2. Butts: Interior Doors and Inswinging Exterior Doors
a. US26D (BHMA 652) on Steel

3. Continuous Hinges:
 - a. US28 (BHMA 628) on Aluminum
4. Flush Bolts:
 - a. US26D (BHMA 626) on Brass or Bronze
5. Exit Devices:
 - a. US32D (BHMA 630) on Stainless Steel
6. Locks and Latches:
 - a. US26D (BHMA 626) on Brass or Bronze
7. Push Plates, Pulls and Push Bars:
 - a. US32D (BHMA 630) on Stainless Steel
8. Coordinators:
 - a. USP (BHMA 600) on Steel
9. Kick Plates, Armor Plates, and Edge Guards:
 - a. US32D (BHMA 630) on Stainless Steel
10. Overhead Stops and Holders:
 - a. US26D (BHMA 626) on Brass or Bronze
11. Closers: Surface mounted.
 - a. Sprayed Aluminum Lacquer.
12. Latch Protectors:
 - a. US32D (BHMA 630) on Stainless Steel
13. Miscellaneous Hardware:
 - a. US26D (BHMA 626) on Brass or Bronze

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine doors, frames, and related items for conditions that would prevent the proper application of finish hardware. Do not proceed until defects are corrected.

3.2 INSTALLATION

- A. Install finish hardware in accordance with reviewed hardware schedule and manufacturer's printed instructions. Prefit hardware before finish is applied, remove and reinstall after finish is completed. Install hardware so that parts operate smoothly, close tightly and do not rattle.
- B. Installation of hardware shall comply with NFPA 80 and NFPA 101 requirements.
- C. Set units level, plumb and true to line and location. Adjust and reinforce attachment to substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant, forming tight seal between threshold and surface to which set. Securely and permanently anchor thresholds, using countersunk non-ferrous screws to match color of thresholds (stainless steel screws at aluminum thresholds).
- F. Lead Protection: Lead wrap hardware penetrating lead-lined doors. Levers and roses to be lead lined. Apply kick and armor plates with 3M adhesive #1357, as recommended by 3M Co., on lead-lined doors.

3.3 FIELD QUALITY CONTROL

- A. After installation has been completed, provide services of qualified hardware consultant to check Project to determine proper application of finish hardware according to schedule. Also check operation and adjustment of hardware items.
- B. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3.4 ADJUSTING AND CLEANING

- A. At final completion, hardware shall be left clean and free from disfigurement. Make final adjustment to door closers and other items of hardware. Where hardware is found defective repair or replace or otherwise correct as directed.
- B. Adjust door closers to meet opening force requirements of Uniform Federal Accessibility Standards.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of space or area, return to work during week prior to acceptance or occupancy, and make final check and adjustment of hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors.
- D. Instruct Owner's personnel in proper adjustment and maintenance of door hardware and hardware finishes.
- E. Clean adjacent surfaces soiled by hardware installation.

3.5 PROTECTION

- A. Provide for proper protection of items of hardware until Owner accepts Project as complete.

3.6 HARDWARE GROUPS

- A. The following schedule of hardware groups shall be considered a guide only, and the supplier is cautioned to refer to general conditions, special conditions, and the preamble to this section. It shall be the hardware supplier's responsibility to furnish all required hardware.
- B. Refer to the door schedule for hardware group required at each door opening. Ignore hardware groups not used on the door schedule.

END OF SECTION