

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. **This Section** includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. **This Section includes the following:**
 - 1. Hinges
 - 2. Pivots
 - 3. Key control system
 - 4. Lock cylinders and keys
 - 5. Lock and latch sets
 - 6. Bolts
 - 7. Exit devices
 - 8. Push/Pull units
 - 9. Closers
 - 10. Overhead holders
 - 11. Miscellaneous door control devices
 - 12. Door trim units
 - 13. Protection plates
 - 14. Weatherstripping for exterior doors
 - 15. Astragals or meeting seals on pairs of doors
 - 16. Thresholds
 - 17. Card Readers
- C. **Related Sections:** The following Sections contain requirements that relate to this Section:
 - 1. Section 08110: Steel Doors and Frames
 - 2. Section 08210: Wood Doors
 - 3. Section 08410: Aluminum Entrances and Storefronts
 - 4. Division 16: Electrical
- D. **Products** furnished but not installed under this Section to include:
 - 1. Cylinders for locks on entrance doors.

1.3 REFERENCES

- A. **Standards** of the following as referenced:
 - 1. American National Standards Institute (ANSI)
 - 2. Door and Hardware Institute (DHI)
 - 3. Factory Mutual (FM)
 - 4. National Fire Protection Association (NFPA)
 - 5. Underwriters' Laboratories, Inc. (UL)
 - a. UL 10C - Fire Tests Door Assemblies
 - 6. Warnock Hersey
- B. **Regulatory standards** of the following as referenced:
 - 1. Department of Justice, Office of the Attorney General, *Americans with Disabilities Act*, Public Law 101-336 (ADA).
 - 2. CABO/ANSI A117.1: *Providing Accessibility and Usability for Physically Handicap People*, 1992 edition.

1.4 SYSTEM DESCRIPTION

- A. Refer to applicable "Headings" for system description for electric and electro-pneumatic hardware products.

1.5 SUBMITTALS

- A. **General:** Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. **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. For items other than those scheduled in the "Headings" of Section 3, provide catalog information for the specified items and for those submitted.
- C. **Final hardware schedule** coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. **Final Hardware Schedule Content:** Based on hardware indicated, organize schedule into vertical format "hardware sets" indicating complete designations of every item required for each door or opening. Use specification Heading numbers with any variations suffixed a, b, etc. Include the following information:
 - a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
 - i. Cross-reference numbers used within schedule deviating from those

specified.

- 1) Column 1: State specified item and manufacturer.
 - 2) Column 2: State prior approved substituted item and its manufacturer.
2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
 3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- D. Samples:** If requested, furnish samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.
- E. Templates** for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- F. Contract closeout submittals:**
1. Operation and maintenance data: Complete information for installed door hardware.
 2. Warranty: Completed and executed warranty forms.

1.6 QUALITY ASSURANCE

- A. Single Source Responsibility:** Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer.
- B. Supplier Qualifications:** A recognized architectural door 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 experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
 2. Required supplier to meet with installer prior to beginning of installation of door hardware. (Pre-installation conference)
- C. The hardware manufacturer's representative(s)** shall conduct a pre-installation conference with the Contractor's installer, a representative of the county planning and/or maintenance department, and a representative of the hardware supplier,

to demonstrate product installation and adjustment in accordance with manufacturer's recommendations and Owner's requirements.

- D. **Hardware manufacturers' representative** shall inspect hardware installation to confirm that all products are installed and adjusted according to manufacturers recommendations. A certificate of compliance shall be submitted with the project closeout documents.
- E. **Fire-Rated Openings:** Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not. All hardware shall comply with standards UBC 702 (1997) and UL 10C.
 - 1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

1.7 PRODUCT HANDLING

- A. **Tag** each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. **Packaging** of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. **Inventory** door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. **Deliver** individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. **Provide secure lock-up** for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.8 WARRANTY

- A. **Special warranties:**
 - 1. Door Closers: Ten year period
 - 2. Exit Devices: Three year period
 - 3. Locks and Cylinders: Three year period

1.9 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 MANUFACTURED UNITS

(*Denotes manufacturer referenced in the Hardware Headings)

A. Hinges:

1. Acceptable manufacturers:
 - a. Hager Hinge Company
 - b. Stanley Works
 - c. Ives
2. Characteristics:
 - a. Templates: Provide only template-produced units.
 - b. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1) For metal doors and frames install machine screws into drilled and tapped holes.
 - 2) For wood doors and frames install threaded-to-the-head wood screws.
 - 3) For fire-rated wood doors install #12 x 1-1/4 inch, threaded-to-the-head steel wood screws.
 - 4) Finish screw heads to match surface of hinges or pivots.
 - c. Hinge pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1) Out-Swing Exterior Doors: Non-removable pins.
 - 2) Out-Swing Corridor Doors with Locks: Non-removable pins.
 - 3) Interior Doors: Non-rising pins.
 - 4) Tips: Flat button and matching plug. Finished to match leafs.
 - d. Size: Size hinges in accordance with specified manufacturer's published recommendations.
 - e. Quantity: Furnish one pair of hinges for all doors up to 5'0" high. Furnish one hinge for each additional 2-1/2 feet or fraction thereof.

B. Pivot Sets:

1. Acceptable manufacturers:
 - a. Rixson
 - b. Ives*
2. Characteristics:
 - a. Pivots to be high strength forged bronze with top pivot housing with spring activated bronze retracting pin. Pivots to have tilt-on bearing and bearing pin.
 - b. Offset and intermediate pivots to be handed at the factory. Pivot set to support doors to 200 pounds. With intermediate pivot to support 100 pounds. Center line of pivots to be 3/4" from face of

door, 3/4" from edge of door.

C. Cylinders:

1. Acceptable manufacturers:
 - a. Corbin/Ruswin
 - b. Sargent
 - c. Schlage* Everest D
2. Characteristics:
 - a. Standard System: Except as otherwise indicated, provide new master key system for Project.
 - b. Review the keying system with the Owner and provide the type required (master, grandmaster or great-grandmaster), either new or integrated with Owner's existing system.
 - c. Equip locksets with cylinders featuring patented keys and auxiliary locking pin and construction master key feature. Construction master key feature permits voiding of construction keying without cylinder removal..
 - d. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
 - e. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
 - 1) Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
 - f. Key Material: Provide keys of nickel silver only.
 - g. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, 5 grandmaster keys for each grandmaster system.
 - 1) Furnish one extra blank for each lock.
 - 2) Deliver keys to Owner.

D. Locksets, Latchsets, Deadbolts:

1. Acceptable manufacturers:
 - a. Corbin/Ruswin: ML2000 Series LWA Trim
 - b. Sargent: 8200 Series LNJ Trim
 - c. Schlage* Schlage L9000 Series 93A Trim
2. Mortise Locksets and Latchsets: as scheduled.
 - a. Chassis: cold-rolled steel, handing field-changeable without disassembly.
 - b. Latchbolts: 3/4-inch throw stainless steel anti-friction type.
 - c. Lever Trim: through-bolted, accessible design, cast or solid rod lever as scheduled. Spindles: independent break-away.
 - d. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
 - e. Deadbolts: stainless steel 1-inch throw.
 - f. Electric operation: Manufacturer-installed continuous duty solenoid.
 - g. Strikes: 16 gage curved stainless steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect

clothing.

h. Scheduled Lock Series and Design: Schlage L series, 93A design.

i. Certifications:

- 1) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
- 2) ANSI/ASTM F476-84 Grade 30 UL Listed.

E. Exit Devices:

1. Acceptable manufacturers:

- a. Monarch* : DL18 Series
- b. Sargent: 19-GL-80 Series
- c. Precision: Apex 2000 Series

2. Characteristics:

- a. Exit devices shall be "UL" listed for life safety. All exit devices for fire rated openings shall have "UL" labels for "Fire Exit Hardware."
- b. All exit devices mounted on labeled wood doors shall be mounted on the door per the door manufacturer's requirements.
- c. All trim shall be thru-bolted to the lock stile case. Lever design to match locksets.
- d. Provide glass bead conversion kits to shim exit devices on doors with raised glass heads.
- e. All exit devices shall be one manufacturer. No deviation will be considered.
- f. Furnish stainless steel touch pads. Plastic touch pads are not acceptable.
- g. Devices shall have deadlocking type latchbolts.
- h. Lever trim shall be heavy duty type with a breakaway feature to limit damage to the unit from vandalism and fastened by means of concealed welded lugs thru through-bolts from inside.
- i. Surface vertical rod devices shall be UL labeled for fire door applications without the use of bottom rod assemblies. Where bottom rods are required for security applications, the devices shall be UL labeled for fire doors applications with rod and latch guards by the device manufacturer.

F. Closers and Door Control Devices:

1. Acceptable manufacturers:

- a. LCN Closers* 1460/1461 Series
- b. Sargent: 280/281 Series
- c. Corbin-Russwin: DC2000 Series

2. Characteristics:

- a. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder.
- b. All closers shall utilize a stable fluid withstanding temperature range of 120°F to -30°F without seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UBC 7-2 (1997) and UL 10C.
- c. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Spring power adjustment (LCN Fast TM Power Adjust)

allows for quick and accurate power adjustment and visually shows closer power size settings by way of dial adjustment gauge located on closer spring tube. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and back check.

- d. All closers shall have solid forged steel main arms (and forearms for parallel arm closers) and where specified shall have a cast-in solid stop on the closer shoe ("CNS"). Where door travel on out-swing doors must be limited, use "CNS" or "S-CNS" type closers. Auxiliary stops are not required when cushion type closers are used.
- e. All closers (overhead, surface and concealed) shall be of one manufacturer and carry manufacturer's ten year warranty (electric closers to have two year warranty).
- f. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped provide adjustable units complying with ADA and ANSI A-117.1 provisions for door opening force.
- g. Closers to be installed to allow door swing as shown on plans. Doors swinging into exit corridors shall provide for corridor clear width as required by code. Where possible, mount closers inside rooms.
- h. Powder coating finish to be certified to exceed 100 hours salt spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification.
- i. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and automatically close door under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.
- j. Magnetic Door Holders to be heavy duty wall or floor mounted with metal housing and complete mounting hardware. Provide 24V holding coils unless otherwise scheduled.

G. Overhead Door Holders:

- 1. Acceptable manufacturers:
 - a. Glynn Johnson* 450 Series
 - b. Rixson Firemark 10 Series
- 2. Characteristics:
 - a. Provide standard duty surface mounted door stops or door holders of brass, bronze or stainless steel.
 - b. Surface holders to be installed with the jamb bracket mounted on the stop.

H. Floor Stops and Wall Bumpers:

- 1. Acceptable manufacturers:
 - a. Trimco
 - b. Ives*
 - c. Rockwood Manufacturing
- 2. Characteristics: Refer to Hardware Headings.

I. Door Bolts/Coordinators:

1. Acceptable manufacturers:
 - a. Trimco
 - b. Ives*
 - c. Rockwood Manufacturing
2. Characteristics:
 - a. Flush bolts to be forged brass 6-3/4" x 1", with 1/2" diameter bolts. Plunger to be supplied with milled surface one side that fits into a matching guide.
 - b. Automatic flush bolts to be UL listed as top and bottom bolts on a pair of classified fire doors. Bolt construction to be of rugged steel and brass components.
 - c. Self-latching flush bolts to be UL listed as top and bottom bolts on a pair of classified fire doors. Bolt construction to be of rugged steel and brass components.
 - d. Automatic flush bolts and self-latching flush bolts shall be UL listed for fire door application without bottom bolts (LBB).
 - e. Coordinator to be soffit mounted non-handed fully automatic UL listed coordinating device for sequential closing of paired doors with or without astragals.
 - f. Provide filler pieced to close the header. Provide brackets as required for mounting of soffit applied hardware.
 - g. Furnish dust proof strikes for all openings without thresholds receiving flush bolts.

J. Push Plates:

1. Acceptable manufacturers:
 - a. Trimco
 - b. Ives*
 - c. Rockwood Manufacturing
2. Characteristics:
 - a. Exposed Fasteners: Provide manufacturers standard exposed fasteners.
 - b. Material to be stainless steel, per the Hardware Headings.
 - c. Provide plates sized as shown in Hardware Headings.

K. Door Pulls & Pull Plates:

1. Acceptable manufacturers:
 - a. Trimco
 - b. Ives*
 - c. Rockwood Manufacturing
2. Characteristics:
 - a. Provide concealed thru-bolted trim on back to back mounted pulls, but not for single units.
 - b. Material to be stainless steel.
 - c. Provide units sized as shown in Hardware Headings.

L. Push Pull Sets:

1. Acceptable manufacturers:
 - a. Trimco

- b. Ives*
 - c. Rockwood Manufacturing
 - 2. Characteristics:
 - a. Provide mounting systems as shown in hardware sets.
 - b. Material to be (description - i.e. solid rod, tubular, cast etc.). stainless steel.
 - c. Provide Push/Pull sets sized as shown in Hardware Headings.
- M. Protective Plates:**
 - 1. Acceptable manufacturers:
 - a. Trimco
 - b. Ives*
 - c. Rockwood Manufacturing
 - 2. Characteristics:
 - a. Provide manufacturers standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
 - b. Materials:
 - 1) Metal Plates: Stainless Steel, .050 inch (U.S. 18 gage).
 - c. Fabricate protection plates not more than 2 inches less than door width on hinge side and not more than 1 inch less than door width on pull side.
 - d. Heights:
 - 1) Kick plates to be 10 inches in height.
- N. Thresholds:**
 - 1. Acceptable manufacturers:
 - a. National Guard Products, Inc.*
 - b. Reese Industries
 - c. Zero Weatherstripping Co., Inc.
 - 2. Types: Indicated in Hardware Headings.
- O. Door Seals/Gasketing:**
 - 1. Acceptable manufacturers:
 - a. National Guard Products, Inc.*
 - b. Reese Industries
 - c. Zero Weatherstripping Co., Inc.
 - 2. Types: Indicated in Hardware Headings.
- P. Silencers:**
 - 1. Acceptable manufacturers:
 - a. Hager
 - b. Ives*
 - c. Rockwood Manufacturing
 - 2. Three for each single doors; four for pairs of doors.
- Q. Key Cabinet and System:**
 - 1. Acceptable manufacturers:
 - a. Telkee, Inc.
 - b. Lund
 - 2. 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 percent of the number of locks required for the Project.

- a. Provide complete cross index system set up by key control distributor, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
- b. Provide hinged-panel type cabinet for wall mounting.

R. Security Equipment:

1. Acceptable manufacturers:
 - a. Locknetics
 - b. Sargent
2. Characteristics:
 - a. Provide items as found in Hardware Headings.
3. Coordinate security equipment with Electrical.

2.2 MATERIALS AND FABRICATION

A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.

1. Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.

1. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
2. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. 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 no standard units of type specified are available with concealed fasteners.

4. Do not use thru-bolts or sex bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of adequately fastening the hardware, or otherwise found in Headings. Coordinate with wood doors and metal doors and frames where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.3 HARDWARE FINISHES

- A. **Match items** to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).
- B. **Provide finishes** that match those established by ANSI or, if none established, match the Architect's sample.
- C. **Provide quality of finish**, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- D. **Provide protective lacquer** coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- E. **The designations** used to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
 1. Hinges (Exterior): 630 (US32D) Satin Stainless Steel
 2. Hinges (Interior doors): 652 (US26D) Satin Chrome Plated Steel
 3. Flush Bolts: 626 (US26D) Satin Chrome Plated Brass/Bronze
 4. Locks: 626 (US26D) Satin Chrome
 5. Exit Devices: 630 (US32D) Satin Stainless Steel
 6. Door Closers: 689 Powder Coat Aluminum
 7. Push Plates: 630 (US32D) Satin Stainless Steel
 8. Pull Plates: 630 (US32D) Satin Stainless Steel
 9. Protective Plates: 630 (US32D) Satin Stainless Steel
 10. Door Stops: 626 (US26D) Satin Chrome Plated Brass/Bronze
 11. Overhead Holders: 630 Satin Stainless Steel and 689 Powder Coated Steel (as scheduled)
 12. Thresholds/Weatherstripping: 627/628 (US27/US28) Aluminum

PART 3 - EXECUTION

3.1 INSTALLATION

- A. **Mount hardware units** at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 1. "Recommended Locations for Builders Hardware for Standard Steel Doors

- and Frames" by the Door and Hardware Institute.
 2. "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute.
 3. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors."
- B. Install each hardware item** in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units** level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink** units that 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 complying with requirements specified in Division 7 Section "Joint Sealers".
- F. Weatherstripping and Seals:** Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check** each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
1. 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 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 function properly with final operation of heating and ventilating equipment.
- B. Clean** adjacent surfaces soiled by hardware installation.
- C. Door Hardware Supplier's Field Service**
1. Inspect door hardware items for correct installation and adjustment after complete installation of door hardware.
 2. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
 3. File written report of this inspection to Architect.
- D. Prior to project completion,** representatives of the lock, exit device and overhead

closer manufacturers shall inspect and adjust all units and certify that all units are installed in accordance with the manufacturer's instructions, and are regulated properly and functioning correctly. A written report shall be provided to the Architect as to the inspection and shall include appropriate certificates.

3.3 HARDWARE SCHEDULE

HW SET: 01

DOOR NUMBERS:

101A

EACH TO HAVE:

2	SETS	PIVOTS	7212	626	IVE
2	EA	INTERMEDIATE PIVOTS	7212 INT	626	IVE
1	EA	POWER TRANSFER	EPT-10	SP28	VON
1	EA	REMOVABLE MULLION	4423	PC	MON
1	EA	EXIT DEVICE	17-R X PULL BELOW	630	MON
1	EA	EL DEVICE	ELR-17-C	630	MON
1	EA	RIM CYINDER	20-022	626	SCH
2	EA	CONCEALED CLOSER	2031	689	LCN
2	EA	OVERHEAD STOP	904S	620	GLY
2	EA	PULLS	RM3150 - 20"	630	ROC
1	EA	THRESHOLD	896S	628	NGP
		GASKETING	BY DOOR MFG		
1	EA	CARD READER	CR90		LOC
1	EA	POWER SUPPLY	RDS		MON
1	EA	CONTROLLER	CT500		LOC

ELECTRICAL CONNECTION REQUIRED:

OPERATION: THE EXIT DEVICES ARE PUT IN THE DOGGED POSTION DURING REGULAR OFFICE HOURS AND DOORS ARE PUSH/PULL. AFTER HOURS THE DOORS ARE UNDOGGED AND LOCKED. ENTRY TO BUILDING IS THEN BY CARD READER. FREE EGRESS AT ALL TIMES.

HW SET: 02

DOOR NUMBERS:

101B 110A

EACH TO HAVE:

2	SETS	PIVOTS	7212	626	IVE
2	EA	INTERMEDIATE PIVOTS	7212 INT	626	IVE
1	EA	EXIT DEVICE DT	17-R DT X PULL BELOW	630	MON
1	EA	EXIT DEVICE	17-R-C	630	MON
1	EA	RIM CYLINDER	20-022	626	SCH
2	EA	CONCEALED CLOSER	2031	689	LCN
2	EA	OVERHEAD STOPS	904S	630	GLY
2	EA	PULLS	RM3150 - 20"	630	ROC

1	EA	THRESHOLD GASKETING	896S BY DOOR MFG.	628	NGP
---	----	------------------------	----------------------	-----	-----

HW SET: 03

DOOR NUMBERS:
102A 202A

EACH TO HAVE:

5	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	POWER TRANSFER	EPT-10	SP28	VON
1	SET	AUTOMATIC FLUSH BOLT	FB41P	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELECTRIC LOCK	L9080-EU X 93A	626	SCH
2	EA	DOOR CLOSERS	1461 CUSH	689	LCN
1	SET	ASTRAGAL	672A	628	NGP
1	EA	COORDINATOR	3092		TRM
1	EA	CARD READER	CR90		LOC
1	EA	CONTROLLER	CT500		LOC

ELECTRICAL CONNECTION REQUIRED

HW SET: 04

DOOR NUMBER:
103A

EACH TO HAVE:

6	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
2	EA	FLUSH BOLTS	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	OFFICE LOCK	L9050P X 93A	626	SCH
1	EA	DOOR CLOSER (ACT LEAF)	1460	689	LCN
1	EA	ASTRAGAL	672A	628	NGP
2	EA	FLOOR STOPS	FS436	626	IVE

HW SET: 05

DOOR NUMBER:
103B

EACH TO HAVE:

2	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	POWER TRANSFER	EPT10	SP28	VON
1	EA	ELECTRIC LOCK	L9080-EU X 93A	626	SCH
1	EA	DOOR CLOSER	1461 CUSH	689	LCN
1	EA	CARD READER	CR90		LOC

1	EA	CONTROLLER	CT500	LOC
1	EA	POWER SUPPLY	PS861	VON

ELECTRICAL CONNECTION REQUIRED

HW SET: 06

DOOR NUMBER:

104A	123A	124A	125A	126A	127A	128A	129A	130A	216A	217A	218A
219A	220A	221A	222A	223A	224A	227A	228A	237A	238A	240A	241A
242A	243A	244A	245A	246A							

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	OFFICE LOCK	L9050P X 93A	626	SCH
1	EA	FLOOR STOP	FS436	626	IVE

HW SET: 07

DOOR NUMBER:

106A 106B 106C

EACH TO HAVE:

6	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
2	EA	EXIT DEVICES	F-18-V-ST SUTRO X LBR	630	MON
2	EA	RIM CYLIDNERS	20-022	626	SCH
2	EA	DOOR CLOSERS	1461 CUSH	689	LCN
1	EA	ASTRAGAL	672A	628	NGP

HW SET: 08

DOOR NUMBER:

106D

EACH TO HAVE:

PIVOTS
SOSS HINGES
FLUSH PULLS

HW SET: 09

DOOR NUMBER:

107A 132A 226A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
---	----	--------	------------------	-----	-----

1	EA	DOOR CLOSER	1461	689	LCN
1	EA	PUSH PLATE	8200 4 X 16	630	IVE
1	EA	PULL PLATE	8302-8 4 X 16	630	IVE
1	EA	FLOOR STOP	FS436	626	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE

HW SET: 10

DOOR NUMBER:

121A 136A 141A 141B 207A 230A 232A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 OR 1461 EDA AS REQ.	689	LCN
1	EA	FLOOR STOP	FS436	626	IVE

HW SET: 10A

DOOR NUMBER: 108A 143A 148A 248A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 OR 1461 EDA AS REQ.	689	LCN
1	EA	FLOOR STOP	FS436	626	IVE
1	EA	DOOR SEAL	700SA (HEAD)	628	NGP
1	SET	DOOR SEAL	107SA (JAMB)	628	NGP
1	EA	AUTO DOOR BOTTOM	220SA	628	NGP
1	EA	THRESHOLD	950	628	NGP

HW SET: 11

DOOR NUMBER:

109A 111A 214A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	552	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	FLOOR STOP	FS436	626	IVE

HW SET: 12

DOOR NUMBER:

113A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 EDA	689	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE

HW SET: 12A

DOOR NUMBER:

115A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 EDA .	689	LCN
1	EA	WALL STOP	WS407CVX	626	IVE
1	EA	DOOR SEAL	700SA (HEAD)	628	NGP
1	SET	DOOR SEAL	107SA (JAMB)	628	NGP
1	EA	AUTO DOOR BOTTOM	220SA	628	NGP
1	EA	THRESHOLD	950	628	NGP

HW SET: 13

DOOR NUMBER:

116A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	STOREROOM LOCK	L9080P X 93a	626	SCH
1	EA	OVERHEAD STOP	450S	630	GLY

HW SET: 14

DOOR NUMBER:

114A 117A 139A 140A 208A 210A

EACH TO HAVE:

3	EA	HINGES	BB5004 4.5 X 4.5	652	BOM
1	EA	DOOR CLOSER	1461	689	LCN
1	EA	PUSH PLATE	8200 4 X 16	630	IVE
1	EA	PULL PLATE	8302-8 4 X 16	630	IVE
1	EA	FLOOR STOP	FS436	626	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE

HW SET: 15

DOOR NUMBER:

142A 144A 147A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	OFFICE LOCK	L9050P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 OR 1461 EDA AS REQ	689	LCN
1	EA	FLOOR STOP	FS436	626	IVE

HW SET: 16

DOOR NUMBER:

134A 134B 203A 204A 247A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	CLASSROOM LOCK	L9070P X 93A	626	SCH
1	EA	DOOR CLOSER	1461	689	LCN
1	EA	WALL STOP	WS407CVX	630	IVE

HW SET: 17

DOOR NUMBER:

133A 133B 229A 229B

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	PASSAGE	L9010 X 93A	626	SCH
1	EA	OVERHEAD STOP	450S	630	GLY

HW SET: 18

DOOR NUMBER:

137A 233A

EACH TO HAVE:

6	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
2	EA	FLUSH BOLTS	FB458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 CUSH (ACT LEAF)	689	LCN
1	SET	ASTRAGAL	672A	628	NGP
1	EA	DOOR SEAL	700SA (HEAD)	628	NGP
1	SET	DOOR SEAL	107SA (JAMBS)	628	NGP
2	EA	AUTO DOOR BOTTOM	220SA	628	NGP
1	EA	THRESHOLD	950A	628	NGP

HW SET: 19

DOOR NUMBER:

138A ST1-2A ST2-1A ST2-2A

EACH TO HAVE:

3	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
1	EA	PASSAGE	L9010 X 93A	626	SCH
1	EA	DOOR CLOSER	1461	689	LCN
1	EA	FLOOR STOP	FS436	626	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE

HW SET: 20

DOOR NUMBER:

146A 146B

EACH TO HAVE:

6	EA	HINGES	BB5000 4.5 X 4.5	652	BOM
2	EA	FLUSH BOLT	FS458	626	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	OFFICE LOCK	L9050P X 93A	626	SCH
1	EA	DOOR CLOSER	1461H	689	LCN
1	EA	OVERHEAD HOLDER	450H	630	GLY
1	EA	ASTRAGAL	672A	628	NGP

HW SET: 21

DOOR NUMBER:

144B

EACH TO HAVE:

3	EA	HINGES	BB5002 4.5 X 4.5 NRP	630	BOM
1	EA	ENTRY LOCK	L9453P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 CUSH	689	LCN
1	SET	WEATHERSTRIPPING	172SA	628	NGP
1	EA	THRESHOLD	896S	628	NGP
1	EA	OVERHEAD DRIP	16A	628	NGP

HW SET: 22

DOOR NUMBER:

144C

EACH TO HAVE:

1	EA	CYLINDER	AS REQUIRED	626	SCH
---	----	----------	-------------	-----	-----

BALANCE OF HARDWARE BY DOOR SUPPLIER

HW SET: 23

DOOR NUMBER:
145A 148B

EACH TO HAVE:

3	EA	HINGES	BB5002 4.5 X 4.5 NRP	630	BOM
1	EA	STOREROOM LOCK	L9080P X 93A	626	SCH
1	EA	DOOR CLOSER	1461 CUSH	689	LCN
1	EA	THRESHOLD	896S	628	NGP
1	SET	WEATHERSTRIPPING	172SA	628	NGP
1	EA	OVERHEAD DRIP	16A	628	NGP

HW SET: 24

DOOR NUMBER:
STA-1A

EACH TO HAVE:

3	EA	HINGES	BB5002 4.5 X 4.5 NRP	630	BOM
1	EA	EXIT DEVICE	17-R-BA	630	MON
1	EA	DOOR CLOSER	1461 CUSH	689	LCN
1	EA	THRESHOLD	896S	628	NGP
1	SET	WEATHERSTRIPPING	172SA	628	NGP
1	EA	OVERHEAD DRIP	16A	628	NGP

HW SET: 25

DOOR NUMBER:
ST2-1B

EACH TO HAVE:

3	EA	HINGES	BB5002 4.5 X 4.5 NRP	630	BOM
1	EA	EXIT DEVICE	18-R-LE (NL) SUTRO	630	MON
1	EA	RIM CYLINDER	20-022	626	MON
1	EA	ELECTRIC STRIKE	6111	630	VON
1	EA	CLOSER	1461 CUSH	689	LCN
1	EA	THRESHOLD	896S	628	NGP
1	SET	WEATHERSTRIPPING	172SA	628	NGP
1	EA	OVERHEAD DRIP	16A	628	NGP
1	EA	CARD READER	CR60		LOC
1	EA	CONTROLLER	CT500		LOC
1	EA	POWER SUPPLY	PS861		VON

ELECTRICAL CONNECTION REQUIRED

HW SET:26

MISCELLANEOUS ITEMS:

1	EA	LOCKLINE EXPRESS SOFTWARE	EXCIP+	LOC
150	EA	MAG CARDS	MAG3	LOC

END OF SECTION