

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 SUMMARY:

A. Division 1 applies to this Section. Furnish finish hardware, complete. Finish hardware to be historically compatible. Extent of finish hardware required is indicated on Drawings, in Schedules, and specified herein.

B. Work Included: Types of finish hardware required include but are not limited to the following:

1. Hinges
2. Lock cylinders and keys
3. Lock and latch sets
4. Bolts
5. Exit devices
6. Push/pull units
7. Closers
8. Miscellaneous door control devices
9. Door trim units
10. Protection plates
11. Weather-stripping for exterior doors
12. Smoke seals for interior doors
13. Astragals or meeting seals on pairs of doors
14. Thresholds

B. Items Not Included:

1. Installation of the finish hardware.
2. Cabinet hardware.
3. Bath accessories.
4. Nameplates, room numbers exit signs.
5. Handicapped signs.
6. Roll-up door hardware, except cylinders.
7. Smoke detectors, 120VAC power, wiring, and conduit.
8. At acoustic doors, cam lift hinges, astragals, door bottoms, seals.

C. Related Sections:

1. Section 08110 – Metal Doors and Frames: Preparation for and coordination with finish hardware.
2. Section 08216 – Wood Doors: Preparation for and coordination with finish hardware.
3. Section 08455 – Glass Door System: Preparation for and coordination with finish hardware.

1.02 SUBMITTALS: Refer to Section 01330 for procedures.

A. Product Data: Submit manufacturers' technical product data for each item of hardware. Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finishes.

- B. Hardware Schedule: Submit a vertical format hardware schedule in a manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.
1. Final Hardware Schedule Content: Based on finish hardware indicated, organize a hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. 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 hardware set cross-referenced to indications on Drawings both on floor plans and in door and a frame schedule.
 - e. Explanation of all abbreviations, symbols, codes, etc. contained in a schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - h. Keying information.
 2. Submittal Sequence: Submit schedules at an earliest possible date particularly where acceptance of a hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with a schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of a hardware schedule.
 3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instruction on keying of locks has been fulfilled. Coordinate keying with Section 08715 for an integrated key system for both 08710 and 08715.
 4. Samples: Prior to submittal of the final hardware schedule, submit one sample of each type of exposed hardware unit, finished as required, and tagged with full description for coordination with a schedule.
 5. Samples will be returned to the supplier. Units which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.
 6. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.
 7. Door and Frame Clearances: Where continuous hinges or edge guards are scheduled, furnish door and frame suppliers with information on required special clearances.

1.03 REGULATORY REQUIREMENTS

- A. Code References:
1. Uniform Building Code (UBC).
 2. National Fire Protection Association (NFPA) Fire Doors and Windows Code 80, 1991 Edition.
 3. Part 2, Title 24, CCR including all current amendments.
 4. Life Safety Code 101 NFPA (1988).
 5. American Disabilities Act (ADA) of 1990 criteria.
- B. Exit doors shall be openable from the inside with non-grip openable hardware that does not require the use of a key or any special knowledge or effort.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Obtain each type of hardware as differentiated in this Section's "Manufacturers" list from a single manufacturer, although several may be indicated as offering products complying with requirements.
- B. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than two years, and who is, or who employs an experienced architectural hardware consultant who is available, at reasonable times during the course of the work, for consultation about projects' hardware requirements to Owner and Contractor.
- C. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NAPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or WHI for types and sizes of doors required and complies with requirements of door and door frame labels.
 - 1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL or WHI labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or WHI labels on exit devices indicating "Fire Exit Hardware".
- D. Compatibility: Field-verify compatibility of proposed hardware for retrofit of existing doors and/or frames prior to hardware schedule submittal. Notify the Owner of any incompatibilities prior to hardware schedule submittal.

1.05 PRODUCT HANDLING

- A. Tag each item or package separately, with identification related to a final hardware schedule, and include basic installation instructions with each item or package.
- B. Inventory hardware jointly with representatives of a hardware supplier and hardware installer until each is satisfied that count is correct.
- C. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project sites) for installation.
- D. Provide secure lock up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items, which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.

1.05 WARRANTY: Conform to Division 1.

- A. The following extended warranty service shall be provide for the hardware items detailed below:

Hinges	Warranted for the life of the building
Floor closers	Minimum ten (10) years mechanical
	Minimum two (2) years electrical
Exit devices	Minimum Three (3) years
Other hardware	Minimum two (2) years
- B. Defects in materials and workmanship occurring during the warranty period shall be corrected to complete satisfaction of the Owner.

1.07 TOOLS AND MAINTENANCE INSTRUCTIONS FOR MAINTENANCE: Furnish a complete set specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware. Deliver to Owner as directed.

PART 2 - PRODUCTS

2.01 SCHEDULED HARDWARE: Requirement for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Data Sheet and Hardware Schedule at the end of this Section.

- A. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required. Provide the product designated either, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers, which comply with requirements including those specified elsewhere in this Section.

2.02 MATERIALS AND FABRICATION

- A. 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.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated, using a 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 A156 series standard for each type hardware item and with ANSI 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. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
1. Furnish screws for installation, with each hardware item. Provide Phillips flathead 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 such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
 2. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners.
 3. Do not use thru-bolts for installation where bolt head on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.
 4. Provide sex nuts and bolts for all door closers and exit devices installed on wood doors.
 5. Provide machine screws and anchors for thresholds to be installed over concrete floor material.

2.03 HINGES AND PIVOTS

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Furnish Phillips flathead or machine screws for installation of units, except furnish Phillips flathead or wood screws for installation of units into wood. Finish screw heads to match surfaces of hinges or pivots.

- C. Hinges:
1. Number of hinges: Provide number of hinges indicated but not less than three hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
 2. Furnish 4½" x 4½" hinges, except at the following door widths:
 - a. Standard Weight 5" x 4-1/2" at doors 3'-6" and wider.
 - b. Heavy Weight 5" x 4-1/2" at doors 4'-0" wide.
 3. Furnish hinges of sufficient width to permit maximum door swing.
 4. Furnish heavyweight hinges where specified.
 5. Furnish steel-base hinges at doors rated 20-minutes or above.

2.04 LOCK CYLINDERS AND KEYING

- A. General: Suppliers shall meet with Owner to finalize instructions in writing, prior to ordering lock cylinders.
- B. Lock cylinders: All cylinders shall be furnished , a new Corbin Russwin I C mortise cylinder , coordinate with the Owner prior to placing the factory lock order.
- C. Hardware supplier shall develop key system according to the requirements of this section and coordinate with the Owner, prior to placing the factory lock order.
- D. Metals: Construct lock cylinder parts from brass/bronze, stainless steel, or nickel silver.
- E. Furnish construction masterkey system with temporary construction cores and construction masterkeys shipped with the locksets and cylinders. On completion of the project, the Contractor will collect all construction keys, and cores and in the presence of the Owner, will remove the construction cores from the lock cylinders.
- F. Key Material: Provide keys of nickel silver only.
- G. Key Quantity: Furnish three change keys for each lock; with maximum of 10 change key and five master keys for each master; 5 grand master keys for each grandmaster system, and six great grand master keys. Furnish 50 construction masterkeys.
- H. 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 key control manufacturer and place keys on markers and hooks in the cabinet as determined by the final key schedule.
- I. Cylinder Accessories: Furnish cylinder collars and spacers as needed to meet conditions.

2.05 LOCKS, LATCHES AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frames, finished to match hardware set.
- B. Lock Throw: Comply with UL requirements for a throw of bolts and latch bolts on rated fire openings.

2.06 EXIT DEVICES: Furnish crossbar type with lever design to match lockset. Verify exit devices meet exit and fire codes.

2.07 PUSH/PULL PLATES

- A. Exposed Fasteners: Provide manufacturers' standard exposed fastener for installation; through-bolted for matched pairs, but not for single units.
- B. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation; through-bolted for matched pairs, but not for single units.

2.08 CLOSERS

- A. Modern surface mounted closers shall be full rack and pinion type with pressure cast alloy shell, with no more than 2-1/8" projection from the door surface.
 - 1. Provide drop brackets, mortise shoes, long arms and low profile arms as required. Parallel, regular arm, and top jamb closers shall be capable of 180° swing.
 - 2. Provide non-handed door closers with non-sized springs, with separate adjustable valves for a latch, sweep speed, and back check.
 - 3. Spring power shall be adjusted closers per manufacturer's recommendations and to meet barrier free requirements.
 - 4. Closers shall have full spring power adjustment, two to six spring adjustments on exterior and fire doors, and one to four adjustments on interior doors.
 - 5. Mount surface closers on side of door away from corridor, inside rooms, or in stairs. Provide regular, parallel, or top jamb mount closers as required.
 - 6. Where parallel arms are used with applied seals, provide the Norton hardware with the closer, according to the application.
 - Standard Parallel NHO Arm - 2018D Bracket
 - Standard Parallel HO Arm - 6891 Block
 - Parallel Rigid - "PRO" Arm
 - 7. Norton "8501-Series closers" are also known as Norton "8301-Series x Less Cover."
- B. Size and adjust traditional "pot" closers to meet the opening force requirements of 3.5 below.
- D. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 and ADA provisions for door opening force and delayed action closing.

2.09 DOOR TRIM SETS

- A. Fasteners: Provide manufacturers' standard exposed fastener for door trim units (kick plates, edge trim, viewers, and similar units); either machine screws or self-tapping screws.

- B. Fabricate protection plates with beveled edges (armor, kick or mop) not more than 2" less than door width on a stop side and by the height indicated.
 - 1. Metal Plates:
 - a. Stainless steel ---0.050" (U.S. 16 ga.).
 - b. Brass or bronze --- 0.051" (U.S. 16 ga.).

2.10 STOPS

- A. Furnish carpet risers for floor stops where required. Where specified floor or wall stops would present a pedestrian hazard or cannot be used, furnish an overhead stop or provide closer with an integral stop as appropriate.
- B. Where traditional pot closers (Norton 78-Series) are installed on the pull side of the door, mount floor stops so as to permit maximum door swing without closer or lever trim impacting adjacent wall.

2.11 SILENCERS

- A. Furnish Trimco 1229A at hollow metal frames or Trimco 1229B at wood door frames that are without seals in quantities as follows:
 - 1. Single Doors: 3 silencers
 - 2. Pairs: 2 silencers

2.12 SEALS & GASKETTING: Except as otherwise indicated or specified, provide continuous weather-stripping at each edge of every exterior door leaf. Provide type, sizes and profiles shown or scheduled. Provide stainless steel fasteners for extruded seals. Furnish adhesive silicon seals at all labeled interior doors and doors, which require sound stripping.

- A. At wood doors rated 20-minutes or above, in addition to the adhesive silicon seals, furnish Pemko HSS2000 intumescent seals for the head and jambs, and Pemko S77 x HSS2000 for the meeting stile at pairs in lieu of the specified astragal.
- B. Weatherstripping at door bottoms to be nylon brush sweep seals, except where otherwise specified.

2.13 THRESHOLDS: Except as otherwise indicated or specified, provide standard metal threshold units of types, sizes, and profiles as shown or scheduled. Where the threshold model is not specified, but instead a threshold height (1/4" or 1/2") and threshold to match jamb depth, furnish full saddle threshold in standard profile closest to jamb depth.

- A. All thresholds are to be solid bronze, oil-rubbed unless otherwise specified.

2.14 HARDWARE FINISHES

- A. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI A156.18 "Materials & Finishes Standard", including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
 - 1. Oil-Rubbed Bronze (US10B, 613)
Oil-Rubbed Bronze-Steel (US10B, 640)
Dark Bronze Anodized-Aluminum (DKB)
Brown (BRN)
Sprayed Statuary Bronze Paint (690)

2.15 MANUFACTURERS

- A. Manufacturers: Substitutions as specified in Division 1 with Owner's written approval prior to bidding only. Where listed "As Specified," there is no substitute.

<u>Item</u>	<u>Listed</u>	<u>Approved Mfr.</u>
Hinges	MCK-McKinney	Stanley, Hager
Continuous Hinge	MAR-Markar	As Specified
Flush Bolts	DCI-Door Control International	Rockwood, Ives
Locks & Latches	C-R Corbin Russwin	Yale, Sargent, Schlage
Cylinders	C-R Corbin Russwin	Yale, Sargent, Schlage
Exit Devices	C-R Corbin Russwin	Von Duprin, Precision, Sargent
Closers	NOR- Norton	LCN, Sargent
Kick Plates	TRM-Trimco	Rockwood, Ives
Wall Stops	TRM-Trimco	Rockwood, Ives
Floor Stops	TRM-Trimco	Rockwood
Thresholds & Seals	PEM-Pemko	Reese, NGP, Zero

- 2.16 FINISH HARDWARE SCHEDULE: See ends of preamble. Any obvious error in the hardware groups will be called to the attention of Owner for clarification prior to bidding by the hardware dealer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings, instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and requirements of SDI, ANSI/NFPA 80, WIC, and BHMA. Select applicable standard based on door function, type and regulatory criteria.
- B. Install hardware in accordance with NFPA 80 in fire labeled doors.
1. Inspect existing hardware.
- C. Where door is designated as receiving new hardware, package and label hardware type and function, and deliver to Owner.
1. Renovate hardware designated to remain with new fasteners, refinishing, adjusting and aligning as necessary.

3.03 INSTALL HARDWARE USING TEMPLATES PROVIDED BY HARDWARE ITME MANUFACTURER

- A. Prior to finishing door, fit hardware to door, utilizing fasteners and templates as specified.
- B. Remove hardware, carefully label and store. Where door is existing and designated to receive new finish, remove existing hardware.
- C. Re-install after door finish is complete.

3.04 LESS NOTED OTHERWISE OR SHOWN ON DRAWINGS, MOUNT HARDWARE IN ACCORDANCE WITH THE FOLLOWING CRITERIA

- A. Latchset and Lockset handle: 38 inches above finish floor. Verify manufacturer's template with door design.
- B. Panic Devices: 36 to 40 inches above floor. Verify manufacturer's template with door design.
- C. Push and Pull Plates: 44 inches to centerline.

3.05 DJUSTING CLOSER OPERATING EFFORT CONFORM TO CALIFORNIA BUILDING CODE SECTION 10, T-24 CCR

- A. Interior Doors: 5.0 pounds force.
- B. Fire Rated Doors: 15.0 pounds force.

3.06 ADJUST CLOSER DELAY AND OPERATING SPEEDS TO COMPLY WITH REQUIREMENTS OF CALIFORNIA BUILDING CODE T-24 AND THE AMERICANS WITH DISABILITIES ACT ARCHTIECTURAL GUIDELINES, ARTICLE 4.13.10

- A. The sweep period of the door closers shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- B. Closer Certification: Provide written certification, signed by door closer representative, stating closers were inspected and installed in accordance with specified opening force and delay requirements.

3.07 INSTALL THRESHOLDS IN FULL BED OF SEALANT AT FRONT AND SIDE EDGE

3.08 FINISH HARDWARE SCHEDULE

HW-1

Each Door to Have:

90-Min.

1	Continuous Hinge	FM-200 WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Exit Device	ED5200A PR955	613	C-R
1	Cylinder	RIM I/C	613	C-R
1	Closer	PR7500-M	690	NOR
1	Floor Stop	1214	613	TRM
1	Kick Plate	K0050 10 x 2 LDW B4E	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Threshold	271B MS/LA	613	PEM

HW-2

Each Pair Doors to Have:

NR

2	Continuous Hinge	FM-200 WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Exit Device	ED5800-Exit Only	613	C-R
1	Exit Device	ED5800L-PR957	613	C-R
1	Cylinder	RIM I/C	613	C-R
2	Closers	PR500DA-M	690	NOR
2	Kick Plates	K0050 10 x 1 LDW B4E	613	TRM
2	Floor Stops	1214H	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
2	Astragals	18041DNB	DKB	PEM
2	Door Bottoms	18061DNB	DKB	PEM
1	Threshold	172B MS/LA	613	PEM

HW-3

Each Door to Have:

NR

1	Continuous Hinge	FM-200 WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Exit Device	ED5200L-PR957	613	C-R
1	Cylinder	RIM I/C	613	C-R
1	Closer	PR500DA-M	690	NOR
1	Kick Plate	K0050 10 x 2 LDW B4E	613	TRM
1	Floor Stop	1214H	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Door Bottom	18061DNB	DKB	PEM
1	Threshold	172B MS/LA	613	PEM

HW-4

Each Door to Have:

90-Min.

1	Continuous Hinge	FM-200 WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Exit Device	ED5200A PR910	613	C-R
1	Closer	UNI7500-M	690	NOR
1	Kick Plate	K0050 10 x 2 LDW B4E	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Threshold	271B MS/LA	613	PEM

HW-5

Each Door to Have:

90-Min.

1	Continuous Hinge	FM-200 CE4D-MP-EMAP WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Electric Lock	ML20903 IC PSA M17 M92 24VDC-QC4	630	C-R
1	Closer	PR500DA-M	690	NOR
1	Kick Plate	K0050 10 x 2 LDW B4E	613	TRM
1	Floor Stop	1214H	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Door Bottom	18061DNB	DKB	PEM
1	Threshold	172B MS/LA	613	PEM
1	Power Supply	MPS10-24VDC	XXX	C-R
1	Alarm Contact	1078	TBD	SEN

WIRING OF ALARM CONTACTS BY SECTION 13710.

REMOTE RELEASE FROM FIRE ALARM SYSTEM BY OTHERS.

HW-6

Each Door to Have:

90-Min.

1	Continuous Hinge	FM-200 WELDED ENDS x CHS-2 MP-PC-1	DKB	MAR
1	Exit Device	ED5200A PR957	613	C-R
1	Cylinder	RIM I/C	613	C-R
1	Closer	UNI7500-M	690	NOR
1	Kick Plate	K0050 10 x 2 LDW B4E	613	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Threshold	271B MS/LA	613	PEM

HW-7

Each Roll-Up Door to Have:

1	Cylinder	TYPE AS REQUIRED I/C	613	C-R
	BALANCE OF HARDWARE BY OTHERS.			

HW-8

Each Door to Have:

NR

3	Hinges	TA314 NRP	613	MCK
1	Storeroom Lock	ML2057 IC PSA M17	630	C-R
1	Closer	P7500-M	690	NOR
1	Kick Plate	K0050 10 x 2 LDW B4E	630	TRM
1	Floor Stop	1214H	626	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Door Bottom	18061DNB	DKB	PEM
1	Rain Drip	345D	DKB	PEM
1	Threshold	172B MS/LA	613	PEM

HW-9

Each Pair Doors to Have:

NR

6	Hinges	TA314 NRP	613	MCK
2	Flush Bolts	780F	626	DCI
1	Dust Proof Strike	82	626	DCI
1	Storeroom Lock	ML2057 IC PSA SS078	630	C-R
2	Floor Stops	1214H	626	TRM
1	Set Seal	S88D Head & Jambs	DKB	PEM
1	Astragal	357DP	DKB	PEM
2	Door Bottoms	18061DNB	DKB	PEM
2	Rain Drips	345D	DKB	PEM
1	Threshold	172B MS/LA	613	PEM

HW-Historical

Each Doors to Have:

NR

Re-use exiting hardware except to replace:				
2	Cylinders	Type as required (I C)	613	C-R

End of Section.