

SECTION 08710

FINISH HARDWARE

1 PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for swing, sliding and folding doors.
- B. Extent of finish hardware required is indicated on drawings and in schedules.
- C. Types of finish hardware required include the following:
 - 1. Hinges.
 - 2. Lock cylinders and keys.
 - 3. Lock and latch sets.
 - 4. Bolts.
 - 5. Exit devices.
 - 6. Bifold door hardware.
 - 7. Closers.
 - 8. Miscellaneous door control devices.
 - 9. Door trim units.
 - 10. Protection plates.
 - 11. Weatherstripping for exterior doors.
 - 12. Sound stripping for interior doors.
 - 13. Astragals or meeting seals on pairs of doors.
 - 14. Thresholds.
- D. Silencers included integral with hollow metal frames are specified with door frames elsewhere in Division 8.

1.3 QUALITY ASSURANCE:

- A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
- B. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM 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 FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware".

C. ANSI Standards: Provide hardware that meets or exceeds the performance requirements of ANSI A 156.2 for the following applications:

1. Doors in public areas: Series 4000, Grade 1.
2. Doors within dwelling units: Series 4000, Grade 2.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical product data for each item of hardware in accordance with Division-1 section "Submittals". Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.
- B. Hardware Schedule: Submit hardware schedule in manner indicated below. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.
- C. Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Cross reference to designations in door and hardware schedules in Contract Documents.
- D. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- E. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Review shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

1.5 PRODUCT HANDLING:

- A. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.
- B. 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.

2 PART 2 PRODUCTS

2.1 SCHEDULED HARDWARE:

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Finish Hardware Schedule. Products are identified by using hardware designation numbers of the following.
- B. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required, whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated, 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.

1. Manufacturer: Provide products of one of the following:

- a. Locksets: Corbin, Schlage, Sargent.
- b. Closers: LCN, Norton, Rixson, Sargent.
- c. Hinges: Hager, Stanley.
- d. Panic Devices: Sargent, Von Duprin.
- e. Door Trim and Accessories: Ives, Rockwood.

C. ANSI/BHMA designations used elsewhere in this section or in schedules to describe hardware items or to define quality or function are derived from the ANSI A 156.1 standards. Provide products complying with these standards and requirements specified elsewhere in this section.

2.2 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 as shown.

B. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.

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

C. 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 the 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.

D. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

E. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed 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.

F. Provide concealed fasteners for hardware units which are exposed when door is closed, except to the extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use hex screw fasteners.

2.3 HINGES, BUTTS 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 flat-head or machine screws for installation of units, except furnish Phillips flat-head or wood screws for installation of units into wood. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Steel Hinges: Steel pins.
 - 2. Non-ferrous Hinges: Stainless steel pins.
 - 3. Exterior Doors: Non-removable pins.
 - 4. Out-swing Corridor Doors: Non-removable pins.
 - 5. Interior Doors: Non-rising pins.
 - 6. Tips: Flat button and matching plug, finished to match leaves.
- D. Provide only ball bearing hinges at doors with closers.
- E. Number of hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90" or less in height.

2.4 LOCK CYLINDERS AND KEYING:

- A. General: Supplier will meet with Owner to finalize keying requirements and obtain final instructions in writing.
- B. Standard System: Except as otherwise indicated, provide new masterkey system for project.
- C. Equip locks with manufacturer's special 6-pin tumbler cylinder, with construction master key feature, which permits voiding of construction keys without cylinder removal, or with cylinders for interchangeable-core pin tumbler inserts. Furnish only temporary inserts for the construction period, and remove these when directed.
- D. Metals: Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver.
- E. Comply with Owner's instructions for masterkeying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.
- 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; and 5 grandmaster keys for each grandmaster system.
 - 1. Furnish one extra blank for each lock.
 - 2. Deliver keys to Owner's representative and obtain receipt.
- 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.

2.5 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 frame, finished to match hardware set.
- B. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.
- C. Lock Throw: Comply with UL requirements for throw of bolts and latch bolts on rated fire openings. Provide 1/2" minimum throw on other latch and deadlock bolts.
- D. Flush Bolt Heads: Minimum of 1/2" diameter rods of brass, bronze or stainless steel, with minimum 12" long rod for doors up to 7'-0" in height.

2.6 CLOSERS AND DOOR CONTROL DEVICES:

- A. Type of Units: Overhead surface mounted, parallel arm door closers.
- B. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.
- C. 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 provisions for door opening force and delayed action closing.

2.7 DOOR TRIM UNITS:

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units (kick plates, edge trim, viewers, knockers, mail drops and similar units); either machine screws or self-tapping screw.
- B. Fabricate protection plates (armor, kick or mop) not more than 1-1/2" less than door width on stop side and not more than 1/2" less than door width on pull side, x the height indicated.
 - 1. Metal Plates: Stainless steel, 1/8" (0.125") thick.

2.8 HARDWARE FOR BY-PASSING / BI-FOLDING DOORS:

- A. General: Provide manufacturer's standard hardware for interior bypassing and/or bifolding doors which are not furnished as a "package" complete with hardware. Provide manufacturer's complete heavy duty set, consisting of overhead extruded aluminum track, adjustable hangers (carriages), bumpers and floor guides; designed to accommodate the number, size, thickness and weight of door leaves indicated. Provide pulls for each door leaf of bypassing doors and each pair of bifolding doors.

2.9 WEATHERSTRIPPING:

- A. General: Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.

2.10 THRESHOLDS:

- A. General: Except as otherwise indicated provide standard thermal barrier aluminum threshold unit of type, size and profile as shown or scheduled.
- B. Exterior Hinged/Pivoted Doors: Provide units not less than the width of door jambs, fabricated to accommodate door hardware and to fit door frames.
- C. Wheelchair accessibility: Provide units with maximum 1/2" rise and beveled edges, complying with ADA requirements for approach slope and coefficient of friction.

2.11 HARDWARE FINISHES:

- A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set (or push-pull units if no latch-lock sets) for color and texture.
- B. Provide finishes which match those established by BHMA.
- 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 for the applicable units of hardware by referenced standards.

3 PART 3 EXECUTION

3.1 INSTALLATION:

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware" for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect. Comply with ADA and ICC/ANSI A117.1-2003.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.
- 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 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.

3.2 ADJUST AND CLEAN:

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace items which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work 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 compensate for final operation of heating and ventilating equipment.
- D. Initial maintenance: Return to the work one month after occupancy and inspect all doors, adjust hardware as necessary for proper operation and instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes.

...END OF SECTION 08710