

## SECTION 08710 - FINISH HARDWARE

### 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, except special types of unique and non-matching hardware specified in the same section as the door and door frame.
- 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. Push/pull units
  - 7. Closures
  - 8. Miscellaneous door control devices
  - 9. Door trim units
  - 10. Protection plates
  - 11. Weatherstripping for exterior doors
  - 12. Astragals or meeting seals on pairs of doors
  - 13. Thresholds
  - 14. Security products
- D. Silencers included integral with hollow metal frames specified with door frames elsewhere in Division 8.

#### 1.3 QUALITY ASSURANCE:

- A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closures, etc.) 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 2 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 project's hardware requirements, to Owner, Architect and Contractor.

- C. 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.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturers 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 finishes.
- B. Hardware Schedule: Submit final 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.
  - 1. Final 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. 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 frame schedule.
    - e. Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
    - f. Mounting locations for hardware.
    - g. Door and frame sizes and materials.
    - h. Keying information.
  - 2. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.
  - 3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
- C. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check 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. Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.

- B. Inventory hardware jointly with representatives of 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 site) 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.

## 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 Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following:
  - 1. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required. 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.
  - 2. Item listed herein are taken from the following manufacturer's catalogs:
    - a. Hager
    - b. Yale
    - c. Glynn Johnson
    - d. Trimco
    - e. Precision
    - f. Pemko
    - g. Bommer Ind
    - h. Cal-Royal
    - i. Dorma Closers
    - j. Dorma Exits
    - k. Ilco Unican
    - l. P.D.Q. Manufacturing
- B. Finish of products shall be as follows:
  - 1. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI A156.18 "Materials and Finishes Standard", including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
  - 2. Butts: 630 satin stainless steel at exterior doors and doors having 20 min. or 90 min. labels. Balance of doors shall have 652 satin chrome.
  - 3. Locksets and latchsets: 626 satin chrome
  - 4. Closures, holders and brackets: Sprayed aluminum lacquer.
  - 5. Exit Devices, Pull Plates, Push Plates, Kickplates, and Wall Bumpers: 630 Satin stainless steel.

C. Hinges: Shall be Hager or equal.

1. All hinges shall be 5 knuckle ball bearing.
2. All hinges shall be 4-1/2" x 4-1/2" at doors 3'-0" wide or less. Doors over 3'-0" wide shall have 5" hinges. All exterior doors shall have extra heavy weight hinges.
3. Hinge Quantities:
  - a. All doors over 7'-0" shall have (4) hinges.
  - b. All doors up to 7'-0" shall have (3) hinges.
  - c. All doors under 5'-0" shall have (2) hinges.
  - d. All exterior doors swinging out shall have non-removable pins.
  - e. All reverse bevel doors shall have non-removable pins.

D. Exit Devices: Precision as scheduled or equal.

1. There shall be a quarter inch offset built in the exit device bar from the face of the door. NO shims will be permitted.
2. Exit device trim shall be Precision 9L or equal.

E. Locksets: Locksets shall be Yale AUE8700 series with trim to match specified exit device trim unless noted otherwise.

F. Closures: Closures shall be Yale 3521 and 3501 series as scheduled or equal.

G. Kick Plates: Provide kick plates at all door scheduled with closures.

1. Kick plates shall be 8" high x 2" less door width.

H. All doors, except doors with 3521 series closures, doors that have closures and swing less than 160 degrees, except electronic closures or have overhead stops, shall have wall bumpers W1276CCS where door knob strikes wall, and floor stops W1210 combo or W1212 combo as required for balance.

I. Silencers shall be furnished at all openings not requiring weatherstripping. There shall be two (2) at each pair and three (3) at each single.

J. Miscellaneous items shall be as scheduled, or equal.

K. Thresholds:

1. Thresholds at exterior doors swinging out shall be as detailed on drawings in length required by National Guard or equal.
2. Weatherstripping shall be 160 in size required by National Guard or equal.
3. Astragals shall consist of two (2) pieces 160 in height required by National Guard or equal.
4. Door sweeps shall be 200 N by length required by National Guard or equal.

2.2 MATERIALS AND FABRICATION:

A. General:

1. 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.
2. 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.
3. 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 such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
4. 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. Do not use thru-bolts for installation where head bolt or nut on opposite face is exposed to 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.
5. Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instruction as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

2.3 KEYS AND KEYING:

A. All locks shall be keyed as directed, masterkeyed and grand mastered.

1. There shall be two (2) keys per lock, four (4) masterkeys, four (4) grand master keys, six (6) construction keys and two (2) control keys.

B. 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.
2. Provide multiple-drawer type cabinet.

2.4 HARDWARE LOCATIONS:

A. Mounting heights to be in accordance with the Door and hardware Institute's and Builders Hardware Manufacturing Association's recommended locations.

B. Hands of doors to be schedules by each opening on the hardware schedule.

2.5 INSTALLATION METHODS AND WORKMANSHIP:

A. The hardware installer shall be qualified and experienced in the installation of finish hardware.

B. The hardware installer shall be qualified and experienced in interpreting the Plans, the Door schedule and the Hardware Schedule to assure that the correct hardware is installed on the correct opening.

- C. All instruction material and adjusting tools that come packed with the finish hardware shall be turned over to the Owner's representative.
- D. The Hardware consultant, upon the request of the Architect and/or the Contractor, shall visit the jobsite prior to the final inspection and inspect the hardware installation and advise the Architect of any adjustments needed.

## 2.6 HARDWARE SETS:

- A. The hardware schedule in this specification is assumed to be correct. In the event that a door or doors are shown on the plans and does not appear in the specification, provide the same hardware as listed for like doors.

## PART 3 - EXECUTION

### 3.1 INSTALLATION:

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
- 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 protection 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 units 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. Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.
- E. Continued Maintenance Service: Approximately six months after the acceptance of hardware in each area, the Installer, accompanied by the representative of the latch and lock manufacturer, shall return to the project and re-adjust every item of hardware to restore proper function of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

END OF SECTION 08710