

SECTION 08712 - DOOR HARDWARE**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

- 1. Commercial door hardware for the following:

- a. Swinging doors.
- b. Hopper Windows

- B. Related Sections include the following:

- 1. Division 8 Section "Stile and Rail Wood Doors"

- C. Cylinders and keys for the completed project will be provided by the Owner and installed by the contractor. The contractor will provide temporary cylinders and lockset cores to secure the project during the construction period. Upon Substantial Completion, the Owner will provide their cylinders for installation by the contractor.

1.3 SUBMITTALS

- A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Samples: For exposed door hardware of each type indicated below, in specified finish, full size. Tag with full description for coordination with the Door Hardware Schedule. Submit samples before, or concurrent with, submission of the final Door Hardware Schedule.

- 1. Door Hardware: As follows:

- a. Hinges.
- b. Locks and latches.
- c. Closers.
- d. Hopper Window Operators.
- e. Miscellaneous items.

- 2. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final

check of operation, be incorporated into the Work, within limitations of keying requirements.

- C. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Description of each electrified door hardware function, including location and sequence of operation.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- D. Product Certificates: Signed by manufacturers of electrified door hardware certifying that products furnished comply with requirements.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
1. Include lists of completed projects with project names and addresses of architects and owners, and other information specified.
- F. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 1.
- G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- B. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
- D. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- E. Regulatory Requirements: Comply with provisions of the following:
 - 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA).

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing 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.

1.7 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of operators and door hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

1.8 MAINTENANCE SERVICE

- 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.
- B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets indicated in schedule.
 - 1. Door Hardware Sets: Requirements for quantity, item, design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3. Products are identified by descriptive titles corresponding to requirements specified in Part 2.

2.2 HINGES AND PIVOTS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hinges:
 - a. Baldwin Hardware Corporation.
 - b. Hager Companies.
 - c. McKinney Products Company; Div. of ESSEX Industries, Inc.
 - d. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc.
 - e. Stanley Commercial Hardware; Div. of The Stanley Works.
 - f. Ives
- B. Standards: Comply with the following:
 - 1. Butts and Hinges: BHMA A156.1.
 - 2. Template Hinge Dimensions: BHMA A156.7.
- C. Quantity: Provide the following, unless otherwise indicated:
 - 1. Two Hinges: For Hopper Windows and Existing doors having two hinges.
 - 2. Three Hinges: For Existing Doors having Three Hinges, New Doors to replace missing historic doors and New Doors.
- D. Template Requirements: Except for hinges to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

- E. Hinge Applications: Unless otherwise indicated, provide the following:
1. Doors with Closers: Antifriction-bearing hinges.
 2. Interior Doors: Standard-weight hinges.
- F. Hinge Base Metal: Unless otherwise indicated, provide the following:
1. Interior Hinges: Steel, with steel pin to match existing historic hinges.
- G. Hinge Options: Comply with the following where indicated in the Door Hardware Schedule or on Drawings:
1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - a. Outswinging exterior doors.
 2. Corners: Square
- H. Fasteners: Comply with the following:
1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
 2. Wood Screws: For wood doors and frames.
 3. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors and wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

2.3 HINGES

- A. Antifriction-Bearing, Full-Mortise (Butt) Hinges: Standard weight; BHMA Grade 2, with 2 ball bearings]; button tips; nonrising removable pins; and base metal as follows:
1. Base Metal: Wrought, forged, or cast steel, or malleable iron.
- B. Plain-Bearing, Standard-Weight, Full-Mortise (Butt) Hinges: BHMA Grade 3, button or ball tips, nonrising removable pins, and base metal as follows:
1. Base Metal: Wrought, forged, or cast steel, or malleable iron.

2.4 LOCKS AND LATCHES, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Mechanical Locks and Latches:
 - a. Arrow Architectural Hardware; Div. of ESSEX Industries, Inc.
 - b. Best Lock Corporation.
 - c. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc.
 - d. Hager Companies.
 - e. Ives: H. B. Ives.
 - f. McKinney Products Company; Div. of ESSEX Industries, Inc.
 - g. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc.

- h. Schlage Lock Company; an Ingersoll-Rand Company.
- B. Standards: Comply with the following:
 - 1. Bored Locks and Latches: BHMA A156.2.
 - 2. Mortise Locks and Latches: BHMA A156.13.
- C. Mortise Locks: Stamped steel case with steel or brass parts; BHMA Grade 1, unless Grade 2 is indicated; Series 1000.
- D. Lock Trim: Comply with the following:
 - 1. Lever: Wrought, forged, or cast.
 - 2. Escutcheon (Rose): Wrought, forged, or cast.
- E. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
 - 1. Mortise Locks: BHMA A156.13.
- F. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
- G.
 - 1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
- H. Backset: 2-3/4 inches, unless otherwise indicated.

2.5 DOOR BOLTS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Surface Bolts:
 - a. .
 - b. Glynn-Johnson; an Ingersoll-Rand Company.
 - c. Hager Companies.
 - d. Ives: H. B. Ives.
 - e. Baldwin Hardware Corporation.
 - f. Rockwood Manufacturing Company.
 - g. Triangle Brass Manufacturing Company, Inc.
- B. Standards: Comply with the following:
 - 1. Surface Bolts: BHMA A156.16.
- C. Surface Bolts: BHMA Grade 1, unless Grade 2 is indicated.
 - 1. Flush Bolt Heads: Minimum of 1/2-inch- diameter rods of brass, bronze, or stainless steel with minimum 12-inch- long rod for doors up to 84 inches in height.

- D. Bolt Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:

- 1. Half-Round Surface Bolts: Minimum 7/8-inch throw.

2.6 DOOR BOLTS

- A. Half-Round Surface Bolts: 12-inch polished brass or burnished steel half-round rod and knob; minimum 7/8-inch throw; with universal strike.

2.7 CYLINDERS AND KEYING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- 1. Cylinders: To be provided by the Owner.
- 2. Key Control Systems:
 - a. Key Control Systems, Inc.
 - b. Major Metalfab Co.
 - c. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc.
 - d. Sunroc Corporation.

- B. Standards: Comply with the following:

- 1. Key Control System: BHMA A156.5.

- C. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:

- 1. Existing System: Master key or grand master key locks to Owner's existing system.

- D. Key Control System: BHMA Grade 1 system, including key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers. Contain system in metal cabinet with baked-enamel finish.

- 1. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.
- 2. Capacity: Able to hold keys for 150 percent of the number of locks.
- 3. Cross-Index System: Set up by key control manufacturer, complying with the following:
 - a. Card Index: Furnish four sets of index cards for recording key information. Include three receipt forms for each key-holding hook.
 - b. Computer Software: Furnish cross-index software for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

2.8 STRIKES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.

C. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2.9 OPERATING TRIM, GENERAL

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Baldwin Hardware Corporation.
2. Hager Companies.
3. Ives: H. B. Ives.
4. Stanley Commercial Hardware; Div. of The Stanley Works.
5. Triangle Brass Manufacturing Company, Inc.

B. Standard: Comply with BHMA A156.6.

C. Materials: Fabricate from bronze, unless otherwise indicated.

D. Push-Pull Design: As illustrated on Drawings.

2.10 OPERATING TRIM

A. Push-Pull Plates: 1/8 inch thick, 4 inches wide by 16 inches high; with square corners, beveled edges, and raised integral lip; secured with exposed screws.

B. Straight Door Pulls: Varying-diameter pull, with minimum clearance of 1-1/2 inches from face of door; fastened at 8 inches o.c.

1. Mounting: Surface applied with concealed fasteners.

2.11 CLOSERS, GENERAL

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Surface-Mounted Closers:

- a. Arrow Architectural Hardware; Div. of ESSEX Industries, Inc.
- b. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc.
- c. DORMA Door Controls Inc.; Member of The DORMA Group.
- d. LCN Closers; an Ingersoll-Rand Company.
- e. Norton Door Controls; Div. of Yale Security Inc.

- f. Rixson-Firemark, Inc.; Div. of Yale Security Inc.
- g. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc.
- h. Yale Security Inc.; Div. of Williams Holdings.

B. Standards: Comply with the following:

- 1. Closers: BHMA A156.4.

C. Surface Closers: BHMA Grade 1, unless Grade 2 is indicated.

D. Certified Products: Provide door closers listed in BHMA's "Directory of Certified Door Closers."

E. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

F. Floor Closers: BMHA A156.4

2.12 CLOSERS

A. Traditional Surface Closers: Rack-and-pinion hydraulic type; with adjustable sweep and latch speeds controlled by key-operated valves; with forged-steel main arm; enclosed in a cast-aluminum alloy shell; complying with the following:

- 1. Mounting: Parallel arm.
- 2. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.

B. Floor Closers: Double acting, non-handed.

- 1. Automatic 90 degree hold open
- 2. Supplied with matching top pivot

2.13 PROTECTIVE TRIM UNITS, GENERAL

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- 1. Metal Protective Trim Units:
 - a. Baldwin Hardware Corporation.
 - b. Burns Manufacturing Incorporated.
 - c. Hager Companies.
 - d. Ives: H. B. Ives.
 - e. NT Quality Hardware; an Ingersoll-Rand Company.
 - f. Rockwood Manufacturing Company.
 - g. Triangle Brass Manufacturing Company, Inc.

B. Standard: Comply with BHMA A156.6.

C. Materials: Fabricate protection plates from the following:

- 1. Brass: 0.050 inch thick; beveled top and 2 sides.

- D. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine or self-tapping screws.
- E. Furnish protection plates sized 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side, by height specified in schedule.

2.14 PROTECTIVE TRIM UNITS

- A. Kick Plates: 12 inches high by door width, with allowance for frame stops.
- B. Mop Plates: 6 inches high by 1 inch less than door width.

2.15 STOPS AND HOLDERS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Architectural Builders Hardware Mfg., Inc.
 - 2. DORMA Door Controls Inc.; Member of The DORMA Group.
 - 3. Glynn-Johnson; an Ingersoll-Rand Company.
 - 4. Hager Companies.
 - 5. Ives: H. B. Ives.
 - 6. Rockwood Manufacturing Company.
 - 7. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc.
 - 8. Triangle Brass Manufacturing Company, Inc.
 - 9. Yale Security Inc.; Div. of Williams Holdings.
- B. Standards: Comply with the following:
 - 1. Stops and Bumpers: BHMA A156.16.
 - 2. Door Silencers: BHMA A156.16.
- C. Stops and Bumpers: BHMA Grade 1, unless Grade 2 is indicated.
- D. Floor Stops: For doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic.
 - 1. Where floor or wall stops are not appropriate, provide overhead holders.
- E. Silencers for Wood Door Frames: BHMA Grade 1; neoprene or rubber, minimum 5/8 by 3/4 inch; fabricated for drilled-in application to frame.
- F. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

2.16 STOPS AND HOLDERS

- A. Wall Bumpers: Polished cast brass or aluminum with rubber bumper; 2-1/2-inch diameter, minimum 3/4-inch projection from wall, with backplate for concealed fastener installation; with concave bumper configuration.

- B. Rigid Floor Stop: Polished cast brass, bronze, or aluminum, with rubber bumper; expansion-shield application.

2.17 DOOR GASKETING, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Door Gasketing:
 - a. Hager Companies.
 - b. National Guard Products, Inc.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.
- B. Standard: Comply with BHMA A156.22.
- C. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
 - 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 - 2. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.
- D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- E. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

2.18 DOOR GASKETING

- A. Rigid, Housed Perimeter Gasketing: Gasket material held in place by metal housing; fastened to frame stop with screws.
 - 1. Gasket Material: Silicone bulb
 - 2. Housing Material: Aluminum...
- B. Door Sweeps: Gasket material held in place by flat metal housing or flange; surface mounted to face of door with screws.
 - 1. Gasket Material: Neoprene
 - 2. Housing Material: Aluminum

2.19 THRESHOLDS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hager Companies.
 - 2. National Guard Products, Inc.
 - 3. NT Dor-O-Matic Hardware Div.; an Ingersoll-Rand Company.

4. Pemko Manufacturing Co., Inc.
5. Rixson-Firemark, Inc.; Div. of Yale Security Inc.

B. Standard: Comply with BHMA A156.21.

2.20 THRESHOLDS

A. Saddle Thresholds: Type and base metal as follows:

1. Type: Smooth top
2. Base Metal: Aluminum.

2.21 MISCELLANEOUS DOOR HARDWARE, GENERAL

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Baldwin Hardware Corporation.
2. Hager Companies.
3. Ives: H. B. Ives.
4. NT Quality Hardware; an Ingersoll-Rand Company.
5. Rockwood Manufacturing Company.
6. Triangle Brass Manufacturing Company, Inc.

B. Standard: Comply with the following:

1. Auxiliary Hardware: BHMA A156.16.

C. Auxiliary Hardware: BHMA Grade 1, unless Grade 2 is indicated.

D. Boxed Power Supplies: Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; and listed and labeled for use with fire alarm systems.

2.22 FABRICATION

A. Manufacturer's Nameplate: Do not provide 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 approved by Architect.

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

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to

commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Steel Machine or Wood Screws: For the following fire-rated applications:
 - a. Mortise hinges to doors.
 - b. Strike plates to frames.
 - c. Closers to doors and frames.
3. Steel Through Bolts: For the following fire-rated applications, unless door blocking is provided:
 - a. Closers to doors and frames.
4. Spacers or Sex Bolts: For through bolting of hollow metal doors.
5. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.23 FINISHES

- A. Standard: Comply with BHMA A156.18.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance of door hardware.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 series.
 - 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.
- B. Wood Doors: Comply with DHI A115-W series.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Key Control System: Place keys on markers and hooks in key control system cabinet, as determined by final keying schedule.
- D. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Architect.
 - 1. Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.
- E. Thresholds: Set thresholds for exterior doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period 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. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:

1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.
2. Consult with and instruct Owner's personnel on recommended maintenance procedures.
3. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

3.7 DOOR HARDWARE SCHEDULE

- A. General: Manufacturers listed in Hardware Schedule establish the quality, style and performance required. Equal products by others manufacturers will be accepted by prior approval.

- B. **Hardware Set 1:**

For doors 101:

1. Hinges: Reuse existing hinges.
2. Existing Lockset: Reuse existing lockset
3. Closers: LCN 4030 or Sargent 281. Parallel Arm, Dark Bronze Powder Coated

- C. **Hardware Set 2:**

For doors 200 & 300

1. Floor closer: Rixson 5020 with matching 340 Top Pivot.
2. Push Plate: 4" x 16", US10B. Provide on each side of each leaf.

- D. **Hardware Set 3:**

For doors 201, 202 & 204.

1. Hinges: Provide New ball bearing hinges. New hinges to be 4" x 4" ball bearing steel hinge with ball ends on pin by any manufacturer specified for field painting.

2. Lockset: Schlage L9000 Series with St. Annes lever handle or Sargent 8200 Series with MX2 lever handle Full Mortise lockset for 2" thick with Aged Bronze finish. Privacy Function.
3. Closer: LCN 4030 or Sargent 281. Parallel Arm, Dark Bronze Powder Coated
4. Mop Plate: US10B Finish.
5. Sign: Bronze Plaque, 6" x 8" ADA Bronze Door Sign. 1 - #201 Men and 1 -#202 Women and 1- 204 Toilet.

E. Hardware Set 4:

For door 205.

1. Hinges: 1-1/2 pr. 4" x 4" plain bearing steel hinges per leaf with ball ends on pin by any manufacturer specified for field painting.
2. Lockset: Schlage L9000 Series with St. Annes lever handle or Sargent 8200 Series with MX2 lever handle Full Mortise lockset with Aged Bronze finish. Storeroom Function

F. Hardware Set 5:

For doors 206 A & 206 B.

1. Hinges: Reuse existing hinges.
2. Lockset: Schlage L9000 Series with St. Annes lever handle or Sargent 8200 Series with MX2 lever handle Full Mortise lockset with Aged Bronze finish. Verify existing door thickness.

G. Hardware Set 6:

For doors 208A & 208B.

1. Hinges: 1-1/2 pr. 4" x 4" plain bearing steel hinges per leaf with ball ends on pin by any manufacturer specified for field painting.
2. Lockset: Schlage L9000 series or Sargent 8200 Series US26D finish. Non-Locking Passage function

Hardware Set 7:

For Doors: 209A & 209B

1. Hinges: Reuse existing hinges.
2. Lockset: Schlage L9000 Series with St. Annes lever handle or Sargent 8200 Series with MX2 lever handle Full Mortise lockset with Aged Bronze finish. Verify existing door thickness. Storeroom function on door 209B.
NOTE: Fix Door 209A to be Permanently Closed and non-functioning.

Hardware Set 8:

For Doors 210, 211A & 211B.

1. Hinges: Provide New ball bearing hinges. New hinges to be 4" x 4" ball bearing steel hinge with ball ends on pin by any manufacturer specified for field painting.
2. Lockset: Lockset: Schlage L9000 Series with St. Annes lever handle or Sargent 8200 Series with MX2 lever handle Full Mortise lockset for 2" thick with Aged Bronze finish.
3. Closer: LCN 4030 or Sargent 281. Parallel Arm, Dark Bronze Powder Coated

END OF SECTION 08712