

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes all door hardware indicated in the schedule attached to this section.

1.2 SUBMITTALS

- A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. 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.
 - 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.
- C. Keying Schedule: Prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, indicating current products comply with requirements.
- E. Maintenance Data: For each a type of door hardware to include in maintenance manuals specified in Division 01.
- F. Warranties: Special warranties specified in this Section.

1.3 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 ICC/ANSI A117.1 as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Maximum opening-force for interior hinged doors shall not exceed 5 lbf applied perpendicular to door.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.

1.4 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.
- C. Deliver keys to Owner by registered mail or overnight package service.

1.5 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.

1.6 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.
- D. Warranty Period for Closers: 10 years from date of Substantial Completion.

1.7 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, and the Door Hardware Schedule.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products equivalent in function and comparable in quality to named products.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

2.2 HINGES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hinges:
 - a. McKinney Products Company; Div. of ESSEX Industries, Inc.
 - b. Bommer Industries, Inc.
 - c. Hager Companies.
- B. Standards: Comply with the following:
 - 1. Butts and Hinges: BHMA A156.1.
 - 2. Template Hinge Dimensions: BHMA A156.7.
- C. Quantity: Provide three hinges per leaf.
- D. Hinge Size:
 - 1. Standard Door Leaf: Provide 4-1/2" height hinges.
 - 2. Gate: full length half surface continuous geared hinge.
- E. Hinge Weight: 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.
- G. Hinge Options:

1. Non-removable 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 out-swinging exterior doors.
 2. Corners: Square or as required to fit existing frames to be reused.
- 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; wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

2.3 LOCKS AND LATCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Mechanical Locks and Latches:
 - a. Sargent: 8200 x LNL trim design
 - b. Schlage: L9000 x 06A trim design
 - c. Corbin Russwin: ML2000 x NSA trim design
- B. Standards: Comply with the following:
1. Bored Locks and Latches: BHMA A156.2.
- C. Mortise Locks: Stamped steel case with steel or brass parts; BHMA Grade 1, Series 1000.
- D. Auxiliary Locks: BHMA Grade 1.
- E. Lock Trim: Comply with the following:
1. Lever: Cast
 2. Escutcheon (Rose): Forged
 3. Lockset Designs: Curved lever style as selected by Architect.
- F. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
1. Mortise Locks: BHMA A156.13.
- G. Backset: 2-3/4 inches, unless otherwise indicated.
- H. Deadbolt: Comply with the following:
1. Grade 1 Deadbolt
 2. 2-3/8" backset
 3. T-Shaped Strike
 4. Single cylinder keyed outside operation; blank plate interior trim

2.4 CYLINDERS AND KEYING

- A. Manufacturers: Subject to compliance with requirements.
1. Sargent Signature exterior, "C" conventional interior.
 2. Cylinders: Match existing campus cylinders.
 3. Cylinders shall be keyed to an existing grand master key system.
 4. Keying requirements to be coordinated and completed by the owner to protect the integrity of the system.
 5. Contractor installs permanent cores and sets up key box with tagged keys and key schedule.
- B. Standards: Comply with the following:
1. Cylinders: BHMA A156.5, removable core.

- C. Cylinder Grade: BHMA Grade 1.
- D. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
 - 1. Number of Pins: Six.
 - 2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 - 3. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
- E. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 - 1. Interchangeable Cores: Core insert, removable by use of a special key.
 - 2. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- F. Keys: Provide nickel-silver keys complying with the following:
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
 - 2. Quantity: In addition to one extra blank key for each lock, provide the following:
 - a. Cylinder Change Keys: Five.

2.5 STRIKES

- A. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 - 2. Strikes for Auxiliary Deadlocks: BHMA A156.5.
- B. 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.

2.6 OPERATING TRIM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hager
 - 2. Ives
 - 3. Rockwood
- B. Standard: Comply with BHMA A156.6.
- C. Materials: Fabricate from stainless steel, unless otherwise indicated.
- D. Push-Pull Design: As shown in Hardware Sets.

2.7 CLOSERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Surface-Mounted Closers:
 - a. Sargent: 351 series
 - b. LCN: 4040 Series
 - c. Corbin Russwin: DC8000 Series
- B. Standards: Comply with BHMA A156.4.

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

2.8 STOPS AND HOLDERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hager Companies.
 - 2. Ives
 - 3. Rockwood
 - 4. McKinney
- 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.
- 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. Where floor stops are not appropriate, provide wall stops or overhead holders.
- E. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

2.9 THRESHOLDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Pemko
 - 2. Reese Enterprises
 - 3. National Guard

2.10 MISCELLANEOUS DOOR HARDWARE

- A. Kickplates: Provide other BHMA Grade 1 auxiliary door hardware as required for a complete installation. Subject to compliance with requirements, provide products by one of the following:
 - 1. Hager Companies
 - 2. Ives
 - 3. Rockwood Manufacturing Company
 - 4. McKinney
 - 5. National Guard Products
- B. Sweeps
 - 1. Surface applied to the face of a door.
 - 2. 1 1/4" height plus insert x 1/2" width x door size

2.11 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 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. Spacers or Sex Bolts: For through bolting of hollow metal doors.
 3. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.12 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. BHMA Designations: Comply with base material and finish requirements indicated by the following:
 1. BHMA 619: Satin nickel plated, clear coated, over brass or bronze base metal.
 2. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
 3. BHMA 627: Satin aluminum, clear coated, over aluminum base metal.
 4. BHMA 628: Satin aluminum, clear anodized, over aluminum base metal.
 5. BHMA 630: Satin stainless steel, over stainless-steel base metal.
 6. BHMA 652: Satin chromium plated over nickel, over steel base metal.

2.13 SCHEDULE

- A. See paragraph 3.8 for scheduled hardware.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.
- B. 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 ANSI A250.6.
- 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 09 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: Key cores to match existing campus system. Deliver four keys to Owner.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Contractor will engage a qualified Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 1. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 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, and 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.

3.6 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.

3.7 DEMONSTRATION

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

3.8 HARDWARE SCHEDULE:

- A. See drawings for hardware

END OF SECTION 08 71 00

DOOR HARDWARE SCHEDULE

Heading	Doors	Rating	Hardware	Description	Acceptable Manufacturers
A	Interior Single WD			New Group Toilet	
	101A		Push/Pull	Square corner plate pull w/ round pull [equal to Hager 34G] ; US32D Square Corener rounded bevel push plate; US32D	Section 2.6
	102A		Cylinder	Signature Series Cylinder; Match to Owner's Prevailing Keying System; US32D	Section 2.4
	111A		Deadbolt	Grade 1 Deadbolt w/ keyed outside operation and blank plate interior trim; US32D	Section 2.3
	112A		Closer	Heavy Duty surface door closer w/ Compression Stop Arm; Finish Spray Alum. Enamel	Section 2.7
			Hinges	Mortised, 5 knuckle 4 ½" x 4 ½"; three per leaf; US32D	Section 2.2
			Kickplate	8" x 34" x .050" Kickplate; US32D; Interior and Exterior Side	Section 2.10
			Silencers	1/2" drilled in to frame 3 per leaf	Section 2.8
			Stop	Wall Stop, Concave dome,US32D	Section 2.8
B	Interior Single WD			New Private Toilet Door	
	113A		Lockset	Mortise; Standard Lever and Rose; Curved Strike; Privacy function w/ occupancy indicator; US32D	Section 2.3
	115A		Cylinder	Signature Series Cylinder; Match to Owner's Prevailing Keying System; US32D	Section 2.4
			Closer	Heavy Duty surface door closer w/ Compression Stop Arm; Finish Spray Alum. Enamel	Section 2.7
			Hinges	Mortised, 5 knuckle 4 ½" x 4 ½"; three per leaf; US32D	Section 2.2
			Kickplate	8" x 34" x .050" Kickplate; US32D; Interior and Exterior Side	Section 2.10
			Silencers	1/2" drilled in to frame 3 per leaf	Section 2.8
			Stop	Wall Stop, Concave dome,US32D	Section 2.8
C	Interior Single WD			New Office Door	
	114A		Lockset	Mortise single cylinder with Deadbolt; Standard Lever, Escutcheon trim; Curved Strike; Office function; US32D	Section 2.3
			Cylinder	Signature Series Cylinder; Match to Owner's Prevailing Keying System; US32D	Section 2.4
			Closer	Heavy Duty surface door closer w/ Compression Stop Arm; Finish Spray Alum. Enamel	Section 2.7
			Hinges	Mortised, 5 knuckle (match Exist Size and Prep) three per leaf; US32D	Section 2.2
			Kickplate	8" x 34" x .050" Kickplate; US32D; Interior and Exterior Side	Section 2.10
			Silencers	1/2" drilled in to frame 3 per leaf	Section 2.8
			Stop	Wall Stop, Concave dome,US32D	Section 2.8