

SECTION 08710 - 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. Non-fire-rated sliding doors.
- c. Non-fire-rated folding doors.
- d. Other doors to the extent indicated.

2. Cylinders for doors specified in other Sections.
3. Electrified door hardware.

- B. Related Sections include the following:

1. Division 8 Section "Standard Steel Doors and Frames" [**for astragals provided as part of fire-rated labeled assemblies**] [**and**] [**for door silencers provided as part of hollow-metal frames**].
2. Division 8 Section "Custom Steel Doors and Frames" [**for astragals provided as part of fire-rated labeled assemblies**] [**and**] [**for door silencers provided as part of hollow-metal frames**].
3. Division 8 Section "Interior Aluminum Frames" for door silencers provided as part of frames.
4. Division 8 Section "Stainless-Steel Doors and Frames" [**for astragals provided as part of fire-rated labeled assemblies**] [**and**] [**for door silencers provided as part of hollow-metal frames**].
5. Division 8 Section "Flush Wood Doors" for [**astragals**] [**and**] [**integral intumescent seals**] provided as part of fire-rated labeled assemblies.
6. Division 8 Section "Stile and Rail Wood Doors" for [**astragals**] [**and**] [**integral intumescent seals**] provided as part of fire-rated labeled assemblies.
7. Division 8 Section "Access Doors and Frames" for access door hardware, [**except**] [**including**] cylinders.
8. Division 8 Section "Steel Detention Doors and Frames" for door silencers provided as part of hollow-metal detention frames.
9. Division 8 Section "Overhead Coiling Doors" for door hardware provided as part of overhead door assemblies.

10. Division 8 Section "Overhead Coiling Grilles" for door hardware provided as part of overhead grille assemblies.
11. Division 8 Section "ICU/CCU Entrance Doors" for entrance door hardware, **[except]** **[including]** cylinders.
12. Division 8 Section "Sound-Control Door Assemblies" for hinges and gasketing provided as part of sound-rated door assemblies.
13. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrance door hardware, **[except]** **[including]** cylinders.
14. Division 8 Section "All-Glass Entrances and Storefronts" for entrance door hardware, **[except]** **[including]** cylinders.
15. Division 8 Section "Sliding Automatic Entrance Doors" for entrance door hardware, **[except]** **[including]** cylinders.
16. Division 8 Section "Swinging Automatic Entrance Doors" for entrance door hardware, **[except]** **[including]** cylinders.
17. Division 8 Section "Folding Automatic Entrance Doors" for entrance door hardware, **[except]** **[including]** cylinders.
18. Division 8 Section "Detention Door Hardware" for hardware for detention doors.
19. Division 10 Section "Impact-Resistant Wall Protection" for plastic door protection units that match wall protection units.
20. Division 10 Section "Wire Mesh Partitions" for door hardware for doors in wire mesh partitions, **[except]** **[including]** cylinders.
21. Division 13 Section "Radiation Protection" for lead-lined astragals provided as part of fire-rated labeled assemblies.
22. Division 13 Section "Metal Building Systems" for door hardware, **[except]** **[including]** cylinders.
23. Division 13 Section "Intrusion Detection" for detection devices installed at door openings and provided as part of an intrusion detection system.
24. Division 13 Section "Security Access" for access control devices installed at door openings and provided as part of a security access system.
25. Division 13 Section "Fire Alarm" for connections to building fire alarm system.
26. Division 16 Sections for connections to electrical power system and for low-voltage wiring work.

C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

1. **[Pivots]** **[thresholds]** **[weather stripping]** **[and]** **[cylinders for locks]** specified in other Sections.
2. Permanent cores to be installed by Owner.

1.3 DOOR HARDWARE ALLOWANCE

- A. Door Hardware Selection: Furnish door hardware selected by Architect, in quantities specified in this Section and in Division 1 Section "Allowances."
- B. Allowance Bidding: After Architect selects door hardware and issues the door hardware sets, request bids for products and materials.
- C. Allowance Award: Architect will select bid from bids furnished by Contractor. Award purchase order to bidder selected.

- D. Allowance Adjustment: A Change Order will be issued to adjust difference between door hardware allowance and selected bid from door hardware Installer.
- E. Installation: General types and approximate quantities of door hardware are indicated in the list of door hardware sets to provide a basis for the cost of installation and other Work that is part of the Contract Sum but not included in door hardware allowance.

1.4 SUBMITTALS

- A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Details of electrified door hardware, indicating the following:
 - 1. Wiring Diagrams: Power, signal, and control wiring. Include the following:
 - a. System schematic.
 - b. Point-to-point wiring diagram.
 - c. Riser diagram.
 - d. Elevation of each door.
 - 2. Detail interface between electrified door hardware and [**fire alarm**] [**access control**] [**security**] [**building control**] system.
 - 3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
- C. Samples for Initial Selection: For each finish, color, and texture required for each type of door hardware indicated.
- D. Samples for Verification: Submit minimum 2-by-4-inch (51-by-102-mm) plate Samples of each type of finish required, except primed finish.
- E. Samples for Verification: For exposed door hardware of each type, in specified finish, full size. Tag with full description for coordination with the door hardware sets. Submit Samples before, or concurrent with, submission of the final door hardware sets.
 - 1. 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.
- F. Product Certificates: For electrified door hardware, signed by product manufacturer.
 - 1. Certify that door hardware approved for use on types and sizes of labeled fire doors complies with listed fire door assemblies.
- G. Qualification Data: For [**Installer**] [**Architectural Hardware Consultant**].
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for [**locks**] [**latches**] [**delayed-egress locks**] [**and**] [**closers**].

- I. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final [**hardware**] [**and**] [**keying**] schedule.
- J. Warranty: Special warranty specified in this Section.
- K. Other Action Submittals:
 - 1. Door Hardware Sets: Prepared by or under the supervision of [**Installer**] [**Architectural Hardware Consultant**], detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
 - b. Format: Use same scheduling sequence and format [**and use same door numbers**] as in the Contract Documents.
 - c. Content: Include the following information:
 - 1) Identification number, location, hand, fire rating, and material of each door and frame.
 - 2) Type, style, function, size, quantity, and finish of each door hardware item. [**Include description and function of each lockset and exit device.**]
 - 3) Complete designations of every item required for each door or opening including name and manufacturer.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for door hardware.
 - 8) Door and frame sizes and materials.
 - 9) Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
 - a) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.
 - 10) List of related door devices specified in other Sections for each door and frame.
 - d. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in 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 sets.
 - e. Submittal Sequence: Submit initial draft of final schedule along with essential Product Data to facilitate the fabrication of other work that is critical in Project construction schedule. Submit the final door hardware sets after Samples, Product

Data, coordination with Shop Drawings of other work, delivery schedules, and similar information has been completed and accepted.

2. Keying Schedule: Prepared by or under the supervision of [**Installer**] [**Architectural Hardware Consultant**], detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.
 1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 2. Installer shall have warehousing facilities in Project's vicinity.
 3. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 4. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI 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.
 1. Electrified Door Hardware Consultant Qualifications: A qualified Architectural Hardware Consultant who is experienced in providing consulting services for electrified door hardware installations.
- C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
 1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to [**NFPA 252**] [**UBC Standard 7-2**].
 1. Test Pressure: [**Test at atmospheric pressure**] [**After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill**].
- E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." In addition to

Owner[, **Construction Manager**,] Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant[**and Owner's security consultant**]. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Address for delivery of keys.
5. **<Insert requirements to suit Project.>**

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.6 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 sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.
- D. Deliver keys[**and permanent cores**] to Owner by registered mail or overnight package service.
 1. **<Insert name and address of Owner's representative.>**

1.7 COORDINATION

- A. Coordinate layout and installation of recessed [**pivots**] [**and**] [**closers**] with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- B. Templates: Distribute door hardware 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.

- C. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to [**power supplies**] [**fire alarm system and detection devices**] [**access control system**] [**security system**] [**building control system**].
- D. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of operators and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: [**Three**] <Insert number> years from date of Substantial Completion, except as follows:
 - a. [**Electromagnetic**] [**Delayed-Egress**] Locks: [**Five**] <Insert number> years from date of Substantial Completion.
 - b. Exit Devices: [**Two**] <Insert number> years from date of Substantial Completion.
 - c. Manual Closers: [**10**] <Insert number> years from date of Substantial Completion.
 - d. Concealed Floor Closers: [**Five**] [**10**] [**25**] <Insert number> years from date of Substantial Completion.

1.9 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**] <Insert number> 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 same as those used in the manufacture and installation of original products.

1.10 EXTRA MATERIALS

- A. Furnish full-size units of door hardware described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Door Hardware: **<Insert detailed descriptions and specific numbers of units.>**
 2. Electrical Parts: **<Insert detailed descriptions and specific numbers of units.>**

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section **and door hardware sets indicated in door and frame schedule** [**and door hardware sets indicated in Part 3 "Door Hardware Sets" Article**].
1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and **[named manufacturers' products]** **[products equivalent in function and comparable in quality to named products]** **[products complying with BHMA standard referenced]**.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:
1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
 2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.
- C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
 2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
 3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).

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4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).
- B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- C. Hinge Weight: Unless otherwise indicated, provide the following:
1. Entrance Doors: Heavy-weight hinges.
 2. Doors with Closers: Antifriction-bearing hinges.
 3. Interior Doors: Standard-weight hinges.
- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
1. Exterior Hinges: [**Stainless steel, with stainless-steel pin**] [**Brass, with stainless-steel pin body and brass protruding heads**].
 2. Interior Hinges: [**Brass, with stainless-steel pin body and brass protruding heads**] [**Steel, with steel pin**] [**Stainless steel, with stainless-steel pin**].
 3. Hinges for Fire-Rated Assemblies: [**Steel, with steel pin**] [**Stainless steel, with stainless-steel pin**].
- E. Hinge Options: Where indicated in door hardware sets or on Drawings:
1. Hospital Tips: Slope ends of hinge barrel.
 2. Decorator Tips: [**Oval**] [**Ball**] [**Steeple**] [**Urn**] [**Acorn**].
 3. Safety Stud: Designed for stud in one leaf to engage hole in opposing leaf.
 4. Maximum Security Pin: Fix pin in hinge barrel after it is inserted.
 5. 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 [**outswinging exterior doors**] [**and**] [**outswinging corridor doors with locks**].
 6. Corners: [**Square**] [**5/32-inch (4-mm) radius**] [**1/4-inch (6-mm) radius**] [**5/8-inch (16-mm) radius**].
- F. Electrified Functions for Hinges: Comply with the following:
1. Power Transfer: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle.
 2. Monitoring: Concealed electrical monitoring switch.
 3. Power Transfer and Monitoring: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle, and with concealed electrical monitoring switch.
- G. 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. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
 4. Screws: Phillips flat-head; [**machine screws (drilled and tapped holes) for metal doors**] [**wood screws for wood doors and frames**]. Finish screw heads to match surface of hinges.
 5. Thread-forming Screws: Phillips undercut flat-head. For metal doors and frames. Install into pre-drilled holes.

6. Self-Drilling and Thread-forming Screws: For metal doors and frames. Mark center point and install into hole formed by screw.

2.3 HINGES

- A. Butts and Hinges: BHMA A156.1.[**Listed under Category A in BHMA's "Certified Product Directory."**]
- B. Template Hinge Dimensions: BHMA A156.7.
- C. [**Available**]Manufacturers:
 1. Baldwin Hardware Corporation (BH).
 2. Bommer Industries, Inc. (BI).
 3. Cal-Royal Products, Inc. (CRP).
 4. Hager Companies (HAG).
 5. Lawrence Brothers, Inc. (LB).
 6. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 7. PBB, Inc. (PBB).
 8. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 9. **<Insert manufacturer's name.>**

2.4 SPRING HINGES

- A. Self-Closing Hinges: BHMA A156.17.[**Listed under Category A in BHMA's "Certified Product Directory."**]
- B. [**Available**]Manufacturers:
 1. Baldwin Hardware Corporation (BH).
 2. Bommer Industries, Inc. (BI).
 3. Cal-Royal Products, Inc. (CRP).
 4. Hager Companies (HAG).
 5. Lawrence Brothers, Inc. (LB).
 6. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 7. PBB, Inc. (PBB).
 8. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 9. **<Insert manufacturer's name.>**

2.5 PIVOTS AND PIVOT HINGES

- A. Pivots: BHMA A156.4.[**Listed under Category C in BHMA's "Certified Product Directory."**]
- B. Self-Closing Pivot Hinges: BHMA A156.17.[**Listed under Category A in BHMA's "Certified Product Directory."**]
- C. [**Available**]Manufacturers:

1. Bommer Industries, Inc. (BI).
2. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
3. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
4. Hager Companies (HAG).
5. IVES Hardware; an Ingersoll-Rand Company (IVS).
6. McKinney Products Company; an ASSA ABLOY Group company (MCK).
7. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
8. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
9. <Insert manufacturer's name.>

2.6 CONTINUOUS HINGES

- A. Standard: BHMA A156.26 [, **Grade 2-150**] [, **Grade 2-300**] [, **Grade 2-600**] [, **Grade 3-150**] [, **Grade 3-300**].
 1. Listed under Category N in BHMA's "Certified Product Directory."
- B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.
 1. Pinless continuous gear hinge, UL listed and labeled for [**1-1/2**] [**3**] hours.
 - a. Fabricate 3-hour rated hinges with intumescent material.
- C. Continuous, Barrel-Type Hinges: Hinge with knuckles formed around a pin that extends entire length of hinge.
 1. Base Metal for Exterior Hinges: [Stainless steel] [**Aluminum**].
 2. Base Metal for Interior Hinges: [**Stainless steel**] [**Steel**] [**Aluminum**].
 3. Base Metal for Hinges for Fire-Rated Assemblies: [**Stainless steel**] [**Steel**] [**Aluminum**].
 4. [**Available**] Manufacturers:
 - a. Hager Companies (HAG).
 - b. Markar Architectural Products, Inc.; a Subsidiary of Adams Rite Manufacturing Co. (MP).
 - c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
 - d. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 - e. Zero International (ZRO).
 - f. <Insert manufacturer's name.>
- D. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves; joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.
 1. Basis-of-Design Product: The design for continuous, gear-type hinges is based on Select Products Limited (SPL). Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
 - a. Bommer Industries, Inc. (BI).

- b. Select Products Limited (SPL).
- c. Zero International (ZRO).
- d. <Insert manufacturer's name.>

2.7 LOCKS AND LATCHES, GENERAL

- A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with **[the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."] [ANSI A117.1.] [FED-STD-795, "Uniform Federal Accessibility Standards."]** <Insert local regulation.>
 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).
- B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- C. Electrified Locking Devices: BHMA A156.25.
- D. Lock Trim:
 1. Levers: **[Wrought] [Forged] [Cast]**.
 - a. <Insert model number and description.>
 2. Knobs: **[Wrought] [Forged] [Cast]**.
 3. Escutcheons (Roses): **[Wrought] [Forged] [Cast]**.
 4. Dummy Trim: Match **[knob] [lever]** lock trim and escutcheons.
 5. Lockset Designs: **[Provide design indicated on Drawings] <Insert name(s) of manufacturer(s) and product name(s) designating lockset design(s) that other manufacturers must match>** or, if sets are provided by another manufacturer, provide designs that match those designated.
- E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
 2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
 3. Deadbolts: Minimum 1-inch (25-mm) bolt throw.
- F. Rabbeted Meeting Doors: Provide special rabbeted front and strike on locksets for rabbeted meeting stiles.
- G. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.
- H. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:
 1. Strikes for Bored Locks and Latches: BHMA A156.2.

2. Strikes for Mortise Locks and Latches: BHMA A156.13.
3. Strikes for Interconnected Locks and Latches: BHMA A156.12.
4. Strikes for Auxiliary Deadlocks: BHMA A156.5.
5. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
6. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
7. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.

2.8 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:
1. Bored Locks: BHMA A156.2.
 2. Mortise Locks: BHMA A156.13.
 3. Interconnected Locks: BHMA A156.12.
- B. Bored Locks: BHMA A156.2[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]; Series 4000.[**Listed under Category F in BHMA's "Certified Product Directory."**]
1. [**Available**]Manufacturers:
 - a. Arrow USA; an ASSA ABLOY Group company (ARW).
 - b. Best Access Systems; Div. of The Stanley Works (BAS).
 - c. Cal-Royal Products, Inc. (CRP).
 - d. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 - e. Falcon Lock; an Ingersoll-Rand Company (FAL).
 - f. Marks USA (MKS).
 - g. Medeco Security Locks, Inc.; an ASSA ABLOY Group company (MED).
 - h. PDQ Manufacturing (PDQ).
 - i. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - j. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
 - k. Security Door Controls (SDC).
 - l. Weiser Lock; a Masco Company (WEI).
 - m. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
 - n. <**Insert manufacturer's name.**>
- C. Mortise Locks: Stamped steel case with steel or brass parts; BHMA A156.13[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]; Series 1000.[**Listed under Category F in BHMA's "Certified Product Directory."**]
1. [**Available**]Manufacturers:
 - a. Accurate Lock & Hardware Co. (ALH).
 - b. Adams Rite Manufacturing Co. (ARM).
 - c. Arrow USA; an ASSA ABLOY Group company (ARW).
 - d. Best Access Systems; Div. of The Stanley Works (BAS).

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- e. Cal-Royal Products, Inc. (CRP).
 - f. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 - g. Folger Adam Security Inc.; an ASSA ABLOY Group company (FAS).
 - h. Falcon Lock; an Ingersoll-Rand Company (FAL).
 - i. Marks USA (MKS).
 - j. PDQ Manufacturing (PDQ).
 - k. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - l. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
 - m. Security Door Controls (SDC).
 - n. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
 - o. <Insert manufacturer's name.>
- D. Interconnected Locks: BHMA A156.12[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]; Series 5000.[**Listed under Category F in BHMA's "Certified Product Directory."**]
- 1. [**Available**] Manufacturers:
 - a. Arrow USA; an ASSA ABLOY Group company (ARW).
 - b. Cal-Royal Products, Inc. (CRP).
 - c. Falcon Lock; an Ingersoll-Rand Company (FAL).
 - d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
 - e. <Insert manufacturer's name.>

2.9 AUXILIARY LOCKS AND LATCHES

- A. Auxiliary Locks: BHMA A156.5[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]. [**Listed under Category E in BHMA's "Certified Product Directory."**]
- 1. [**Available**] Manufacturers:
 - a. ABLOY Security, Inc.; an ASSA ABLOY Group company (ABL).
 - b. Accurate Lock & Hardware Co. (ALH).
 - c. Adams Rite Manufacturing Co. (ARM).
 - d. Arrow USA; an ASSA ABLOY Group company (ARW).
 - e. Best Access Systems; Div. of The Stanley Works (BAS).
 - f. Cal-Royal Products, Inc. (CRP).
 - g. Falcon Lock; an Ingersoll-Rand Company (FAL).
 - h. Marks USA (MKS).
 - i. Medeco Security Locks, Inc.; an ASSA ABLOY Group company (MED).
 - j. PDQ Manufacturing (PDQ).
 - k. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - l. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
 - m. Weiser Lock; a Masco Company (WEI).
 - n. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
 - o. <Insert manufacturer's name.>

- B. Push-Button Combination Locks: BHMA A156.5, Grade [**1 for cylindrical**] [**2 for mortise**] locks.

1. [**Available**] Manufacturers:

- a. Kaba Ilco Inc.; a Kaba Group company (KAB).
- b. <**Insert manufacturer's name.**>

2.10 ELECTROMAGNETIC LOCKS

- A. General: BHMA A156.23; electrically powered, of strength and configuration indicated; with electromagnet attached to frame and armature plate attached to door. [**Listed under Category E in BHMA's "Certified Product Directory."**]

1. Type: Full exterior or full interior, as required by application indicated.
2. Strength Ranking: [**1500 lbf (6672 N)**] [**1000 lbf (4448 N)**] [**500 lbf (2224 N)**].
3. Inductive Kickback Peak Voltage: Not more than [**53**] [**0**] V.
4. Residual Magnetism: Not more than [**4 lbf (18 N)**] [**0 lbf (0 N)**] to separate door from magnet.

- B. Delayed-Egress Locks: BHMA A156.24. [**Listed under Category G in BHMA's "Certified Product Directory."**]

1. Means of Egress Doors: Lock releases within 15 seconds after applying a force not more than 15 lbf (67 N) for not more than 3 seconds, as required by NFPA 101.
2. Security Grade: Activated from secure side of door by initiating device.
3. Movement Grade: Activated by door movement as initiating device.

- C. [**Available**] Manufacturers:

1. Door Controls International (DCI).
2. Doorguard Systems, Inc. (DGS).
3. Dortronics Systems, Inc. (DS).
4. DynaLock Corp. (DLC).
5. Locknetics; an Ingersoll-Rand Company (LSE).
6. Rutherford Controls Int'l. Corp. (RCI).
7. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
8. Securitron Magnalock Corporation; an ASSA ABLOY Group company (SMC).
9. Security Door Controls (SDC).
10. <**Insert manufacturer's name.**>

2.11 ELECTROMECHANICAL LOCKS

- A. General: Grade [**1**] [**2**] [**1 unless Grade 2 is indicated**] for type of lock indicated; motor or solenoid driven.

- B. [**Available**] Manufacturers:

1. ABLOY Security, Inc.; an ASSA ABLOY Group company (ABL).

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2. Best Access Systems; Div. of The Stanley Works (BAS).
3. Brink, R. R. Locking Systems, Inc. (RRB).
4. DynaLock Corp. (DLC).
5. Folger Adam Security Inc.; an ASSA ABLOY Group company (FAS).
6. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
7. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
8. Security Door Controls (SDC).
9. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
10. <Insert manufacturer's name.>

2.12 SELF-CONTAINED ELECTRONIC LOCKS

- A. General: Internal, battery-powered, self-contained electronic locks; consisting of complete lockset, motor-driven lock mechanism, and actuating device; enclosed in zinc-dichromate-plated, wrought-steel case. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock; type and function indicated.

1. Type: [**Bored**] [**Mortise**].
2. Actuating Device: [**Digital keypad**] [**Magnetic-stripe card reader**].
 - a. Card: [**Manufacturer's standard**] [**0.030-inch- (0.76-mm-) thick PVC or polyester**] [**Custom**].
3. Faceplate Material: [**Wrought brass**] [**Wrought bronze**] [**Stainless steel**].
4. Trim: [**Lever**] [**Knob**] [**Match trim specified for mechanical locks**].

- B. Accessory: Card encoder and software.

- C. [**Available**] Manufacturers:

1. Best Access Systems; Div. of The Stanley Works (BAS).
2. Cypress Computer Systems, Inc. (CYP).
3. Kaba Ilco Inc.; a Kaba Group company (KAB).
4. Marks USA (MKS).
5. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
6. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
7. Security Door Controls (SDC).
8. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
9. <Insert manufacturer's name.>

2.13 EXIT LOCKS AND EXIT ALARMS

- A. Exit Locks: BHMA A156.29, Grade 1, surface mounted, battery powered, housed in metal case; with red-and-white lettering reading "EMERGENCY EXIT PUSH TO OPEN--ALARM WILL SOUND." [**Include the following features:**]

1. Low-battery alert.
2. Outside key control.
3. Audible alarm that sounds when unauthorized use of door occurs.

4. Silent alarm with remote signal capability for connection to remote indicating panel.
- B. Stand-Alone Exit Alarms: BHMA A156.29, Grade 1, [**surface mounted on door**] [**mounted separate from door and activated by door movement switch**]. [**Include the following features:**]
1. Low-battery alert.
 2. Outside key control.
 3. Automatic rearming after authorized use[, **with adjustable time delay**].
 4. Remote signal capability for connection to remote indicating panel.
- C. [**Available**]Manufacturers:
1. Arrow USA; an ASSA ABLOY Group company (ARW).
 2. Detex Corporation (DTX).
 3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 4. **<Insert manufacturer's name.>**

2.14 DOOR BOLTS

- A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Half-Round Surface Bolts: Minimum 7/8-inch (22-mm) throw.
 2. Interlocking Surface Bolts: Minimum 15/16-inch (24-mm) throw.
 3. Fire-Rated Surface Bolts: Minimum 1-inch (25-mm) throw; listed and labeled for fire-rated doors.
 4. Dutch-Door Bolts: Minimum 3/4-inch (19-mm) throw.
 5. Mortise Flush Bolts: Minimum 3/4-inch (19-mm) throw.
- B. Dustproof Strikes: BHMA A156.16[, **Grade 1**].
- C. Surface Bolts: BHMA A156.16[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**].
1. Flush Bolt Heads: Minimum of 1/2-inch- (13-mm-) diameter rods of brass, bronze, or stainless steel with minimum 12-inch- (305-mm-) long rod for doors up to 84 inches (2134 mm) in height. Provide longer rods as necessary for doors exceeding 84 inches (2134 mm).
 2. [**Available**]Manufacturers:
 - a. Burns Manufacturing Incorporated (BM).
 - b. Don-Jo Mfg., Inc. (DJO).
 - c. Door Controls International (DCI).
 - d. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
 - e. Hager Companies (HAG).
 - f. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - g. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 - h. Trimco (TBM).
 - i. **<Insert manufacturer's name.>**

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- D. Manual Flush Bolts: BHMA A156.16[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]; designed for mortising into door edge.
1. [**Available**] Manufacturers:
 - a. Adams Rite Manufacturing Co. (ARM).
 - b. Burns Manufacturing Incorporated (BM).
 - c. Don-Jo Mfg., Inc. (DJO).
 - d. Door Controls International (DCI).
 - e. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
 - f. Hager Companies (HAG).
 - g. Hiawatha, Inc. (HIA).
 - h. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - i. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 - j. Trimco (TBM).
 - k. <**Insert manufacturer's name.**>
- E. Automatic and Self-Latching Flush Bolts: BHMA A156.3[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]; designed for mortising into door edge.
1. [**Available**] Manufacturers:
 - a. Cal-Royal Products, Inc. (CRP).
 - b. Door Controls International (DCI).
 - c. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
 - d. Hager Companies (HAG).
 - e. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - f. Trimco (TBM).
 - g. <**Insert manufacturer's name.**>

2.15 EXIT DEVICES

- A. Exit Devices: BHMA A156.3[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]. [**Listed under Category G in BHMA's "Certified Product Directory."**]
- B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with [**the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."**] [ANSI A117.1.] [FED-STD-795, "**Uniform Federal Accessibility Standards.**"] <Insert local regulation.>
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22 N).
- C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf (67 N) to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.
- D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

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- E. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
- F. Removable Mullions: BHMA A156.3.
- G. Fire-Exit Removable Mullions: Provide removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252. Mullions shall be used only with exit devices for which they have been tested.
- H. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
1. Operation: [**Rigid**] [**Movable**] [**Movable with monitor switch**].
- I. Outside Trim: [**Lever**] [**Lever with cylinder**] [**Knob**] [**Knob with cylinder**] [**Pull**] [**Pull with cylinder**] [**Thumb turn with cylinder**]; material and finish to match locksets, unless otherwise indicated.
1. Match design for locksets and latchsets, unless otherwise indicated.
- J. Through Bolts: For exit devices and trim on [**metal doors**] [**non-fire-rated wood doors**] [**fire-rated wood doors**].
- K. Electronic Exit Bars: Nonlatching electronic releasing device, activated by an adjustable capacitance sensor, with no moving parts; listed and labeled as panic exit hardware. Fabricate bar from extruded aluminum, and provide door and frame transfer device and 16 feet (4.9 m) of cord to route wiring off the door frame.
- L. [**Available**] Manufacturers:
1. Adams Rite Manufacturing Co. (ARM).
 2. Arrow USA; an ASSA ABLOY Group company (ARW).
 3. Cal-Royal Products, Inc. (CRP).
 4. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 5. Detex Corporation (DTX).
 6. Door Controls International (DCI).
 7. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
 8. Dor-O-Matic; an Ingersoll-Rand Company (DOR).
 9. Locknetics; an Ingersoll-Rand Company (LSE).
 10. Monarch Exit Devices & Door Hardware; an Ingersoll-Rand Company (MON).
 11. Precision Hardware, Inc. (PH).
 12. Rutherford Controls Int'l. Corp. (RCI).
 13. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 14. Von Duprin; an Ingersoll-Rand Company (VD).
 15. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
 16. <Insert manufacturer's name.>

2.16 LOCK CYLINDERS

- A. Standard Lock Cylinders: BHMA A156.5[, **Grade 1**] [, **Grade 1A**] [, **Grade 2**] [, **Grade 1 unless Grade 1A is indicated**] [, **Grade 1 unless Grade 2 is indicated**].
- B. High-Security Lock Cylinders: BHMA A156.30[, **Grade 1**] [, **Grade 2**] [, **Grade 3**]; [**M, mechanical**] [**E, electrical**].
1. Key Control Level: Category [**A**] [**B**] [**C**].
 2. Destructive Test Level: Category [**A**] [**B**] [**C**].
 3. Surreptitious Entry Resistance Level: Category [**A**] [**B**] [**C**].
- C. 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: [**Five**] [**Six**] [**Seven**].
 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.
 4. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - a. High-Security Grade: BHMA A156.5, Grade 1A, listed and labeled as complying with pick- and drill-resistant testing requirements in UL 437 (Suffix A).
- D. 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; usable with other manufacturers' cylinders.
 2. Removable Cores: Core insert, removable by use of a special key; for use only with core manufacturer's cylinder and door hardware.
- E. Construction Keying: Comply with the following:
1. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
 2. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
 - a. Replace construction cores with permanent cores as [**indicated in keying schedule**] [**directed by Owner**].
 - b. Furnish permanent cores to Owner for installation.
- F. Manufacturer: Same manufacturer as for locks and latches.
- G. [**Available**] Manufacturers:
1. ABLOY Security, Inc.; an ASSA ABLOY Group company (ABL).
 2. Arrow USA; an ASSA ABLOY Group company (ARW).
 3. ASSA, Inc.; an ASSA ABLOY Group company (ASA).
 4. Best Access Systems; Div. of The Stanley Works (BAS).

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5. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
6. Falcon Lock; an Ingersoll-Rand Company (FAL).
7. Medeco Security Locks, Inc.; an ASSA ABLOY Group company (MED).
8. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
9. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
10. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
11. <Insert manufacturer's name.>

2.17 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:
1. No Master Key System: Cylinders are operated by change keys only.
 2. Master Key System: Cylinders are operated by a change key and a master key.
 3. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
 4. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
 5. Existing System: Master key or grand master key locks to Owner's existing system.
 6. Existing System: Re-key Owner's existing master key system into new keying system.
 7. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Nickel silver.
1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: **["DO NOT DUPLICATE."] [Information to be furnished by Owner.]**
 2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.
 - c. Grand Master Keys: Five.
 - d. Great-Grand Master Keys: Five.

2.18 KEY CONTROL SYSTEM

- A. Key Control Cabinet: BHMA A156.5, Grade [1] [2]; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of [150] <Insert number> percent of the number of locks.
1. Multiple-Drawer Cabinet: Cabinet with drawers equipped with key-holding panels and key envelope storage, and progressive-type ball-bearing suspension slides. Include single cylinder lock to lock all drawers.

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2. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.
 3. Portable Cabinet: Tray for mounting in file cabinet, equipped with key-holding panels, envelopes, and cross-index system.
- B. Cross-Index System: **[Multiple]** **[Single]**-index system for recording key information. Include three receipt forms for each key-holding hook. Set up by **[key control manufacturer]** **[Installer]**.
1. **[Available]** Manufacturers:
 - a. Key Control Systems, Inc. (KCS).
 - b. Lund Equipment Co., Inc. (LUN).
 - c. MMF Industries (MMF).
 - d. Sunroc Corporation (SUN).
 - e. **<Insert manufacturer's name.>**
 - C. Key Control System Software: BHMA A156.5, Grade 1; multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.
 1. **[Available]** Manufacturers:
 - a. Best Access Systems; Div. of The Stanley Works (BAS).
 - b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 - c. **<Insert manufacturer's name.>**
 - D. Key Lock Boxes: Designed for storage of **[two]** **[10]** **<Insert number>** keys**[, with tamper switches to connect to intrusion detection system]**.
 1. **[Available]** Manufacturers:
 - a. ABLOY Security, Inc.; an ASSA ABLOY Group company (ABL).
 - b. Knox Company (KNX).
 - c. Supra Products (SUP).
 - d. **<Insert manufacturer's name.>**

2.19 ELECTRIC STRIKES

- A. Standard: BHMA A156.31**[, Grade 1]** **[, Grade 2]** **[, Grade 1 unless Grade 2 is indicated]**.
- B. General: Use fail-secure electric strikes with fire-rated devices.
- C. **[Available]** Manufacturers:
 1. Adams Rite Manufacturing Co. (ARM).
 2. Brink, R. R. Locking Systems, Inc. (RRB).
 3. Folger Adam Security Inc.; an ASSA ABLOY Group company (FAS).
 4. HES, Inc.; an ASSA ABLOY Group company (HES).

5. Locknetics; an Ingersoll-Rand Company (LSE).
6. Precision Hardware, Inc. (PH).
7. Rutherford Controls Int'l. Corp. (RCI).
8. Security Door Controls (SDC).
9. Trine Access Technology (TAT).
10. Von Duprin; an Ingersoll-Rand Company (VD).
11. <Insert manufacturer's name.>

2.20 OPERATING TRIM

- A. Standard: BHMA A156.6[**and as illustrated on Drawings**].
- B. Materials: Fabricate from [**aluminum**] [**brass**] [**bronze**] [**stainless steel**], unless otherwise indicated.
- C. [**Available**]Manufacturers:
 1. Burns Manufacturing Incorporated (BM).
 2. Don-Jo Mfg., Inc. (DJO).
 3. Forms + Surfaces (FS).
 4. Hager Companies (HAG).
 5. Hiawatha, Inc. (HIA).
 6. IVES Hardware; an Ingersoll-Rand Company (IVS).
 7. Rockwood Manufacturing Company (RM).
 8. Trimco (TBM).
 9. <Insert manufacturer's name.>

2.21 ACCESSORIES FOR PAIRS OF DOORS

- A. Carry-Open Bars: Provide carry-open bars for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
 1. Material: Polished brass or bronze, with strike plate.

2.22 CLOSERS

- A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with [**the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."**] [**ANSI A117.1.**] [**FED-STD-795, "Uniform Federal Accessibility Standards."**] <Insert local regulation.>
 1. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
 - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

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- B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.
- C. Hold-Open Closers/Detectors: Coordinate and interface integral smoke detector and closer device with fire alarm system.
- D. Flush Floor Plates: Provide finish cover plates for floor closers unless thresholds are indicated. Match door hardware finish, unless otherwise indicated.
- E. Recessed Floor Plates: Provide recessed floor plates with insert of floor finish material for floor closers unless thresholds are indicated. Provide extended closer spindle to accommodate thickness of floor finish.
- F. Power-Assist Closers: As specified in Division 8 Section "Automatic Door Operators" for access doors for people with disabilities or where listed in the door hardware sets.
- G. 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.
- H. Surface Closers: BHMA A156.4[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]. [**Listed under Category C in BHMA's "Certified Product Directory."**] Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated.
1. [**Available**] Manufacturers:
 - a. Arrow USA; an ASSA ABLOY Group company (ARW).
 - b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 - c. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
 - d. Dor-O-Matic; an Ingersoll-Rand Company (DOR).
 - e. LCN Closers; an Ingersoll-Rand Company (LCN).
 - f. Norton Door Controls; an ASSA ABLOY Group company (NDC).
 - g. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
 - h. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - i. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).
 - j. <**Insert manufacturer's name.**>
 - I. Concealed Closers: BHMA A156.4[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**]. [**Listed under Category C in BHMA's "Certified Product Directory."**]
 1. [**Available**] Manufacturers:
 - a. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
 - b. LCN Closers; an Ingersoll-Rand Company (LCN).

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- c. Norton Door Controls; an ASSA ABLOY Group company (NDC).
 - d. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
 - e. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - f. <Insert manufacturer's name.>
- J. Closer Holder Release Devices: BHMA A156.15.[**Listed under Category C in BHMA's "Certified Product Directory."**]
- 1. Life-Safety Type: On release of hold open, door becomes self-closing. Automatic release is activated by [**smoke detection system**] [**loss of power**].
 - 2. [**Available**]Manufacturers:
 - a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
 - b. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
 - c. LCN Closers; an Ingersoll-Rand Company (LCN).
 - d. Norton Door Controls; an ASSA ABLOY Group company (NDC).
 - e. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
 - f. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 - g. <Insert manufacturer's name.>
- K. Coordinators: BHMA A156.3.

2.23 PROTECTIVE TRIM UNITS

- A. Size: 1-1/2 inches (38 mm) less than door width on push side and 1/2 inch (13 mm) less than door width on pull side, by height specified in door hardware sets.
- B. Fasteners: Manufacturer's standard machine or self-tapping screws.
- C. Metal Protective Trim Units: BHMA A156.6; beveled top and 2 sides; fabricated from [**material indicated in door hardware sets.**] [**the following material:**]
 - 1. Material: 0.050-inch- (1.3-mm-) thick [**aluminum**] [**brass**] [**bronze**] [**stainless steel**].
 - 2. [**Available**]Manufacturers:
 - a. American Floor Products Co., Inc. (AFP).
 - b. Baldwin Hardware Corporation (BH).
 - c. Burns Manufacturing Incorporated (BM).
 - d. Don-Jo Mfg., Inc. (DJO).
 - e. Hager Companies (HAG).
 - f. Hiawatha, Inc. (HIA).
 - g. IPC Door and Wall Protection Systems, Inc.; Div. of InPro Corporation (IPC).
 - h. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - i. Pawling Corporation (PAW).
 - j. Rockwood Manufacturing Company (RM).
 - k. Trimco (TBM).
 - l. <Insert manufacturer's name.>

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- D. Plastic Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from [**material indicated in door hardware sets.**] [**the following material:**]
1. Plastic Laminate: 1/8 inch (3.2 mm) thick; NEMA LD 3, Grade HGS.
 2. Rigid Plastic: 0.060-inch- (1.5-mm-) thick, PVC or acrylic-modified vinyl plastic.
 3. Acrylic: 1/8 inch (3.2 mm) thick.
 4. Color and Texture: [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].
 5. [**Available**] Manufacturers:
 - a. American Floor Products Co., Inc. (AFP).
 - b. Balco Inc. (BAL).
 - c. Burns Manufacturing Incorporated (BM).
 - d. Construction Specialties, Inc.; a C/S Group company (CS).
 - e. Don-Jo Mfg., Inc. (DJO).
 - f. Hager Companies (HAG).
 - g. Hiawatha, Inc. (HIA).
 - h. IPC Door and Wall Protection Systems, Inc.; Div. of InPro Corporation (IPC).
 - i. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - j. Korogard Wall Protection Systems, Inc.; Div. of RJF International Corporation (KWS).
 - k. Pawling Corporation (PAW).
 - l. Rockwood Manufacturing Company (RM).
 - m. Tepromark International, Inc. (TEP).
 - n. Trimco (TBM).
 - o. <**Insert manufacturer's name.**>

2.24 STOPS AND HOLDERS

- A. Stops and Bumpers: BHMA A156.16[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**].
1. Provide 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 or wall stops are not appropriate, provide overhead holders.
- B. Mechanical Door Holders: BHMA A156.16[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**].
- C. Combination Floor and Wall Stops and Holders: BHMA A156.8[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**].
- D. Combination Overhead Stops and Holders: BHMA A156.8[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**].
- E. Electromagnetic Door Holders: BHMA A156.15.[**Listed under Category C in BHMA's "Certified Product Directory."**]
1. Coordinate with fire detectors and interface with fire alarm system for labeled fire door assemblies.

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- F. Silencers for Wood Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum 5/8 by 3/4 inch (16 by 19 mm); fabricated for drilled-in application to frame.
- G. Silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.
- H. [**Available**]Manufacturers:
 1. Architectural Builders Hardware Mfg., Inc. (ABH).
 2. Baldwin Hardware Corporation (BH).
 3. Burns Manufacturing Incorporated (BM).
 4. Cal-Royal Products, Inc. (CRP).
 5. Don-Jo Mfg., Inc. (DJO).
 6. Door Controls International (DCI).
 7. DORMA Architectural Hardware; Member of The DORMA Group North America (DAH).
 8. Dor-O-Matic; an Ingersoll-Rand Company (DOR).
 9. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
 10. Hager Companies (HAG).
 11. HES, Inc.; an ASSA ABLOY Group company (HES).
 12. Hiawatha, Inc. (HIA).
 13. IVES Hardware; an Ingersoll-Rand Company (IVS).
 14. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
 15. Rockwood Manufacturing Company (RM).
 16. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 17. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 18. Trimco (TBM).
 19. <Insert manufacturer's name.>

2.25 DOOR GASKETING

- A. Standard: BHMA A156.22.[**Listed under Category J in BHMA's "Certified Product Directory."**]
- B. 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. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
 3. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.
- C. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
- D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.

1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors.
- E. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to **[NFPA 252]** **[UBC Standard 7-2]**.
 1. Test Pressure: **[Test at atmospheric pressure]** **[After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1016 mm) or less above the sill]**.
- F. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.
- G. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- H. Gasketing Materials: ASTM D 2000 and AAMA 701/702.
- I. **[Available]** Manufacturers:
 1. Hager Companies (HAG).
 2. M-D Building Products, Inc. (MD).
 3. National Guard Products (NGP).
 4. Pemko Manufacturing Co. (PEM).
 5. Reese Enterprises (RE).
 6. Sealeze; a unit of Jason Incorporated (SEL).
 7. Zero International (ZRO).
 8. **<Insert manufacturer's name.>**

2.26 THRESHOLDS

- A. Standard: BHMA A156.21. **[Listed under Category J in BHMA's "Certified Product Directory."**]
- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with **[the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."**] **[ANSI A117.1.]** **[FED-STD-795, "Uniform Federal Accessibility Standards."]** **<Insert local regulation.>**
 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than **[1/2 inch (13 mm) high]** **[3/4 inch (19 mm) high for exterior sliding doors]**.
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch (13 mm) high.
- D. **[Available]** Manufacturers:
 1. Hager Companies (HAG).
 2. M-D Building Products, Inc. (MD).

3. National Guard Products (NGP).
4. Pemko Manufacturing Co. (PEM).
5. Reese Enterprises (RE).
6. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
7. Sealeze; a unit of Jason Incorporated (SEL).
8. Zero International (ZRO).
9. <Insert manufacturer's name.>

2.27 SLIDING DOOR HARDWARE

- A. General: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.
 1. Exterior Door Hardware: Galvanized steel or anodized aluminum.
- B. Horizontal Sliding Door Hardware: Grade 1; rated for minimum door weight of [240 lb (109 kg)] [320 lb (145 kg)] [450 lb (205 kg)] [560 lb (254 kg)] [640 lb (290 kg)] [800 lb (363 kg)] [1000 lb (455 kg)] [1500 lb (681 kg)].
- C. Bypassing Sliding Door Hardware: Rated for doors weighing up to [200 lb (91 kg)] [125 lb (57 kg)] [75 lb (34 kg)].
- D. Pocket Sliding Door Hardware: Rated for doors weighing up to [200 lb (91 kg)] [125 lb (57 kg)] [75 lb (34 kg)].
- E. [**Available**]Manufacturers:
 1. Cox, Arthur & Sons, Inc. (ACS).
 2. Hager Companies (HAG).
 3. Henderson, P. C. Inc.; Div. of Hepworth PLC (PCH).
 4. Johnson, L. E. Products, Inc. (LEJ).
 5. Lawrence Brothers, Inc. (LB).
 6. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 7. <Insert manufacturer's name.>

2.28 FOLDING DOOR HARDWARE

- A. General: BHMA A156.14; consisting of complete sets including overhead rails, hangers, supports, bumpers, floor guides, and accessories indicated.
 1. Interior Doors: Provide door hardware for interior bifolding doors when not furnished as part of door package.
- B. Bifolding Door Hardware: Rated for door panels weighing up to [**125 lb (57 kg)**] [**50 lb (23 kg)**].
- C. Multiple Folding Door Hardware: Rated for door panels weighing up to [**75 lb (34 kg)**] [**30 lb (14 kg)**].
- D. [**Available**]Manufacturers:

1. Cox, Arthur & Sons, Inc. (ACS).
2. Hager Companies (HAG).
3. Henderson, P. C. Inc.; Div. of Hepworth PLC (PCH).
4. Johnson, L. E. Products, Inc. (LEJ).
5. Lawrence Brothers, Inc. (LB).
6. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
7. **<Insert manufacturer's name.>**

2.29 MISCELLANEOUS DOOR HARDWARE

- A. 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.
- B. Monitor Strikes: [**Cast strike with toggle**] [**Dustbox monitor for installation under standard strike**].
- C. Auxiliary Hardware: BHMA A156.16[, **Grade 1**] [, **Grade 2**] [, **Grade 1 unless Grade 2 is indicated**] [, **Grade 3**].
 1. [**Available**] Manufacturers:
 - a. Baldwin Hardware Corporation (BH).
 - b. Cal-Royal Products, Inc. (CRP).
 - c. Don-Jo Mfg., Inc. (DJO).
 - d. Hager Companies (HAG).
 - e. Lawrence Brothers, Inc. (LB).
 - f. Rockwood Manufacturing Company (RM).
 - g. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 - h. Trimco (TBM).
 - i. **<Insert manufacturer's name.>**

2.30 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 1. Manufacturer's identification is 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. 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, except aluminum

fasteners are not permitted. 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. Surface hinges to doors.
 - b. Closers to doors and frames.
 - c. Surface-mounted exit devices.
4. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
5. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.31 FINISHES

- A. Standard: BHMA A156.18, as indicated in door hardware sets.
- 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.
- 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 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 [**on Drawings**] [**as follows**] unless otherwise 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. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
 - 3. 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: Tag keys and place them 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**] [**in equipment room**]. Verify location with Architect.
 - 1. Configuration: Provide one power supply for each door opening.
 - 2. Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
1. Independent 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. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 3. Door Closers: Unless otherwise required by authorities having jurisdiction, 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 (75 mm) from the latch, measured to the leading edge of the door.
- B. Occupancy Adjustment: Approximately [**three**] [**six**] <Insert number> months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

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 that 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 finishes. Refer to Division 1 Section "Demonstration and Training."

3.8 DOOR HARDWARE SETS

Door Hardware Set No. <Insert number>

Door No. <Insert designation(s)>; each to have the following:

No.	Item	Description	Manufacturer	Finish
*	Hanging Devices	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Securing Devices (inactive leaf)	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Securing Devices (active leaf)	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Operating Trim	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Accessories for Pairs of Doors	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Closing Devices	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Protective Trim Units	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Stops and Holders	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Accessories	<Insert description.>	<Insert manufacturer.>	<Insert finish.>
[#]	Miscellaneous Items	<Insert description.>	<Insert manufacturer.>	<Insert finish.>

* Number of hinges, as specified.

END OF SECTION 08710