

SECTION 08710 - DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes hardware for interior and exterior doors.
- B. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- C. Related Sections:
 - 1. Section 08114 - Standard Steel Doors.
 - 2. Section 08115 - Standard Steel Frames.
 - 3. Section 08212 - Flush Wood Doors.
 - 4. Section 08333 - Overhead Coiling Doors.
 - 5. Section 08410 - Metal-Framed Storefronts

1.02 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A156.1 - Butts and Hinges.
 - 2. ANSI A156.2 - Bored and Preassembled Locks and Latches.
 - 3. ANSI A156.3 - Exit Devices.
 - 4. ANSI A156.4 - Door Controls - Closers.
 - 5. ANSI A156.6 - Architectural Door Trim.
 - 6. ANSI A156.8 - Door Controls - Overhead Holders.
 - 7. ANSI A156.13 - Mortise Locks and Latches.
 - 8. ANSI A156.16 - Auxiliary Hardware.
 - 9. ANSI A156.18 - Materials and Finishes.
 - 10. ANSI A156.21 - Thresholds.
 - 11. ANSI A156.22 - Door Gasketing and Edge Seal Systems.
 - 12. ANSI A156.26 - Continuous Hinges.
 - 13. ANSI A156.28 - Keying Systems.
 - 14. ANSI A156.30 - High Security Cylinders.
- B. Builders Hardware Manufacturers Association: BHMA Directory of Certified Products.
- C. National Fire Protection Association:
 - 1. NFPA 80 - Standard for Fire Doors, Fire Windows.
 - 2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- D. Underwriters Laboratories Inc.:
 - 1. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
 - 2. UL 305 - Panic Hardware.
 - 3. UL - Building Materials Directory.
- E. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.

1.03 PERFORMANCE REQUIREMENTS

- A. Fire Rated Openings: Provide door hardware listed by UL or Intertek Testing Services (Warnock Hersey Listed), or other testing laboratory approved by applicable authorities.
 - 1. Hardware: Tested in accordance with NFPA 252.
- B. Provide hardware of the proper type for any location where it has been determined that the scheduled hardware, because of detail or size of member to which the hardware is to be applied, is unsuitable; such hardware shall be similar in operation to types specified and not of lesser quality.

1.04 SUBMITTALS

- A. Section 01600 - Product Requirements: Submittal procedures.
- B. Shop Drawings:
 - 1. Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts, electrical characteristics and connection requirements.
 - 2. Submit manufacturer's parts lists and templates.
 - 3. Submit wiring diagrams, point to point diagrams, riser diagrams and theory of operation.
- C. Qualifications: Submit documentation of supplier's Architectural Hardware Consultant experience.
- D. Samples: Submit for approval samples of representative hardware, descriptive literature and finishes.
- E. Schedules:
 - 1. After samples have been approved, but prior to delivery, submit seven copies of complete schedule of hardware and a single copy of the hardware manufacturer's "Checking List" covering materials.
 - 2. Include with the Schedule a complete parts list and complete maintenance instructions cross-referenced to the final approved hardware schedule for each item furnished under this Section.
 - 3. Schedule shall follow requirements of the Project Manual and shall indicate type, manufacturer's name and number, location and finish of each item required.
 - 4. Schedule hardware in a vertical format as recognized by the Door & Hardware Institute (DHI); horizontal format schedule will not be accepted.
 - 5. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
 - 6. Approval of schedules will not relieve Contractor of responsibility for furnishing all necessary quantities whether itemized or not.
- F. Manufacturer's Installation Instructions: Submit special procedures, and perimeter conditions requiring special attention.

1.05 CLOSEOUT SUBMITTALS

- A. Section 01770 - Closeout Procedures.
- B. Project Record Documents: Record actual locations of installed cylinders and their master key code.
- C. Operation and Maintenance Data: Submit data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- D. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
 - 1. ANSI A156 series.
 - 2. NFPA 80.
 - 3. UL 305.
- B. Furnish hardware marked and listed in BHMA Directory of Certified Products.
- C. Qualifications:
 - 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.
 - 2. Hardware Supplier: Company specializing in supplying commercial door hardware with minimum five years experience and approved by primary hardware manufacturers.
 - 3. Hardware Supplier Personnel: Employ Architectural Hardware Consultant (AHC) with minimum five years documented experience to assist in Work of this Section.
 - 4. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for purpose specified and indicated.
- D. Pre-installation Conference:
 - 1. Section 01300 - Administrative Requirements: Pre-installation conference.
 - 2. Convene minimum one week prior to commencing Work of this Section.
 - 3. Include persons involved with installation of doors, frames, and hardware, and door hardware supplier's Architectural Hardware Consultant.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Package hardware items individually with necessary fasteners, instructions, and installation templates, when necessary; label and identify each package with door opening code to match hardware schedule.
- C. Provide secure lock-up for hardware delivered to the Project, but not yet installed

- D. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the Work will not be delayed by hardware losses, both before and after installation.

1.08 COORDINATION

- A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- B. Provide templates or actual hardware as required to ensure proper preparation of doors and frames.
- C. Door hardware supplier is responsible for furnishing physical hardware to the aluminum entrance manufacturer prior to fabrication.
- D. Door hardware supplier is responsible for coordinating hardware delivery requirements with the hardware manufacturers, the General Contractor, and the aluminum entrance manufacturer to ensure the Project will not be delayed.
- E. Sequence installation to accommodate required utility connections.
- F. Coordinate Owner's keying requirements during course of Work.

1.09 WARRANTY

- A. Section 01770 - Closeout Procedures.
- B. Furnish five year manufacturer warranty for locksets and ten years for door closers.

1.10 MAINTENANCE

- A. Furnish special wrenches and tools applicable for each different or special hardware component.
- B. Extra Materials:
 - 1. Section 01770 - Closeout Procedures.
 - 2. Furnish ten extra cylinder cores keyed as directed by the owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Primary Components:
 - 1. Butt Hinges: McKinney Products Company.
 - 2. Locksets: Best Access Systems 93K.
 - 3. Closers: Sargent 351 Series.
 - 4. Cylinders: Best Access Systems.
- B. Secondary Components:
 - 1. Kickplates: McKinney, H.B. Ives Company or Rockwood.

2. Silencers: McKinney, H.B. Ives Company or Rockwood.
 3. Floor/Wall Stops: McKinney, Glynn Johnson or Rockwood.
 4. Threshold and Weatherstripping: McKinney, Pemko or National Guard.
- C. Acceptable Alternative Manufacturers (prior to bidding):
1. Butt Hinges: Hager Hinge Company or Stanley.
 2. Closers: LCN 4041, Norton 7500, Yale 4400
 3. Cylinders: No Substitution
- D. Substitutions: Section 01600 - Product Requirements.

2.02 COMPONENTS

- A. General Hardware Requirements: Where not specifically indicated, comply with applicable ANSI A156 standard for type of hardware required. Furnish each type of hardware with accessories as required for applications indicated and for complete, finished, operational doors.
1. Templates: Furnish templates or physical hardware items to door and frame manufacturers sufficiently in advance to avoid delay in Work.
 2. Reinforcing Units: Furnished by door and frame manufacturers; coordinated by hardware supplier or hardware manufacturer.
 3. Fasteners: Furnish as recommended by hardware manufacturer and as required to properly install hardware.
 4. Fire Ratings: Provide hardware with UL or Intertek Testing Services (Warnock Hersey Listed) listings for type of application involved.
 5. Electrical Devices: Make provisions and coordinate requirements for electrical devices and connections for hardware.
- B. Hinges: ANSI A156.1, full mortise type complying with following general requirements unless otherwise scheduled.
1. Widths: Sufficient to clear trim projection when door swings 180 degrees.
 2. Number: Furnish minimum three hinges to 90 inches high, four hinges to 120 inches high for each door leaf; fire rated doors to 86 inches high with minimum three hinges.
 3. Size and Weight: 4-1/2 inch standard weight typical for 1-3/4 inch doors.
 - a. Doors Over 36 Inches Wide: 5 inch extra heavy weight ball bearing hinges.
 - b. Doors 2 Inches Thick: 5 inch extra heavy weight ball bearing hinges.
 4. Pins: Furnish nonferrous hinges with non-removable pins (NRP) at exterior and locked outswinging doors; non-rising pins at interior doors.
 5. Tips: Flat button tips with matching plug.
- C. Locksets: Furnish locksets compatible with specified cylinders. Typical 2-3/4 inch backset. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt, verify type of cutouts provided in metal frames.
1. Mortise Locksets: ANSI A156.13, Series 1000, Grade 1 unless otherwise indicated.
 2. Bored (Cylindrical) Locksets: ANSI A156.2, Series 4000, Grade 1 unless otherwise indicated.

- D. Latch Sets: Match locksets. Typical 2-3/4 inch backset. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt; verify type of cutouts provided in metal frames.
1. Mortise Latch Sets: ANSI A156.13, Series 1000, Grade 1 unless otherwise indicated.
 2. Bored (Cylindrical) Latch Sets: ANSI A156.2, Series 4000, Grade 1 unless otherwise indicated.
- E. Exit Devices: ANSI A156.3, Grade 1 with push pad, unless otherwise indicated. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt, verify type of cutouts provided in metal frames, with dust-proof floor strikes.
1. Types: Suitable for doors requiring exit devices.
- F. Cylinders: ANSI A156.28, Grade 1, 6 or 7 pin type removable core cylinders. Match existing building cylinders.
1. Keying: Key to existing keying system.
 2. Include construction cores.
 3. Keys: Nickel silver. Stamp keys with "DO NOT DUPLICATE".
 4. Supply keys in the following minimum quantities:
 - a. 10 master keys.
 - b. 5 grand master keys.
 - c. 5 great grand master keys.
 - d. 5 control keys and [10] extra cylinder cores.
 - e. 3 change keys for each lock.
- G. Closers: ANSI A156.4 modern type with cover, surface mounted closers; full rack and pinion type with steel spring; closers required for fire rated doors unless otherwise indicated.
1. Adjustability: Furnish controls for regulating closing, latching, speeds, and back checking.
 2. Arms: Type to suit individual condition; parallel-arm closers at exterior doors, reverse bevel doors and where doors swing full 180 degrees.
 3. Location:
 - a. Exterior Doors: Mount closers on interior face of doors.
 - b. Interior Doors: Mount closers on room side of doors.
 4. Operating Pressure: Maximum operating pressure as follows.
 - a. Interior Doors: Maximum 5 pounds.
 - b. Fire Rated Doors: As required for fire rating, maximum 8 pounds.
- H. Door Controls and Overhead Holders: Furnish with accessories as required for complete operational installation.
1. Furnish surface mounted Overhead Holders where shown in hardware sets.
 2. Manual Door Holders and Overhead Stops: ANSI A156.8, Grade 1 types as specified.
 3. Electro-Magnetic Door Holder: ANSI A156.15 wall mounted type.
- I. Push/Pulls, Flush Bolts, Protection Plates, Silencers, Gaskets, Thresholds, and Trim: Furnish as indicated in Schedule, with accessories as required for complete operational door installations.

1. Push/Pulls: ANSI A156.6; push plates minimum 0.050 inch thick. Furnish pulls with bolts to secure from opposite door face.
2. Flush Bolts: ANSI A156.16 Grade 1 top and bottom flush bolts, with dust-proof floor strike, unless otherwise indicated.
3. Kickplates and door protection devices: ANSI A156.6, metal; height indicated in Schedule by 1 inch less than door width on double doors and 2 inches less than door width on single doors.
4. Weatherstripping: Furnish continuous weatherstripping at top and sides of exterior doors.
5. Fire and Smoke Rated Gaskets: ANSI A156.22; Furnish continuous fire rated gaskets at top and sides of fire rated doors.
6. Thresholds: ANSI A156.21; Maximum 1/2 inch height. Furnish full length of opening with lead expansion shields for anchoring. Furnish door sweeps at exterior doors with saddle type threshold. All thresholds shall be set in full bed of sealant.
7. Silencers: Furnish rubber door silencers for all hollow metal frames; three (3) per single and two (2) per pair of doors. Omit door silencers at doors with perimeter gaskets.
8. Wall Stops: ANSI A156.16, Grade 1, convex pad wall stop with no visible screws.
9. Floor Stops: ANSI A156.16 Grade 1 dome type with no visible screws; furnish with accessories as required for applications indicated.

2.03 ACCESSORIES

- A. Lock Trim:
 1. Furnish levers with rose or escutcheon plate as indicated in Schedule.
- B. Through Bolts: Do not permit through bolts and grommet nuts on door faces in occupied areas unless no alternative is possible.
 1. Do not use through bolts on solid wood core doors.

2.04 FINISHING

- A. Finishes: ANSI A156.18; furnish finishes as indicated in Schedule at end of Section.
 1. Thresholds: Finish appearance to match door hardware on exterior face of door.
 2. Fasteners: Furnish manufacturer's standard finish to match hardware item being fastened.
 3. Other Items: Furnish manufacturer's standard finishes to match similar hardware types on same door, and maintain acceptable finish considering anticipated use and BHMA category of finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01300 - Administrative Requirements: Pre-installation Conference.

- B. Verify doors and frames are ready to receive door hardware and dimensions are as indicated on shop drawings.
- C. Verify electric power is available to power operated devices and is of correct characteristics.

3.02 INSTALLATION

- A. Coordinate mounting heights with door and frame manufacturers; use templates provided by hardware item manufacturer.

3.03 FIELD QUALITY CONTROL

- A. Suppliers Architectural Hardware Consultant shall inspect installation and certify hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust hardware for smooth operation.

3.05 PROTECTION OF INSTALLED CONSTRUCTION

- A. Do not permit adjacent Work to damage hardware or hardware finish.
- B. Protect material of this Section before, during, and after installation, including protection of existing construction and the installed Work of other trades.

3.06 SCHEDULES

- A. The following schedule is included as a guide in determining the quality, type, and function of hardware required for each opening and is not to be construed as all-inclusive.
- B. Quantities listed under each Hardware Set are per opening, whether for single or double door.
- C. Should hardware not scheduled be required for completion of the Work, provide such items of types and quantities suitable for the service required and comparable to adjacent or similar hardware.

SET #1

Doors: 134, 150

3 Hinges	T4A3786 4 1/2 X 4 1/2	26D	MC
1 Office Lock	93K-7AB15D	626	BE
1 Electric Strike	1006 x J FACEPLATE	630	HE
1 Power Controller	SMART PAC II		HE
1 Door Closer	351 O/P9	EN	SA
1 Kickplate	KP50 8" x 2" L.D.W.	US32D	MC

1 Convex Stop	WS04	US26D	MC
1 Gasketing	MCKS88D (HEAD & JAMBS)		MC
Valid card at reader (specified elsewhere) release the latch on the fail secure electric strike allowing entry. Key override. Free egress at all times. Power Supply provided by the system integrator.			

SET #2

Doors: 122, 141

5 Hinges	T4A3786 4 1/2 X 4 1/2	26D	MC
1 Hinge	QC8 T4A3786 4 1/2 X 4 1/2	26D	MC
1 Auto Flush Bolt Set	FB13W	US26D	MC
1 Office Lock	93K-7AB15D	626	BE
1 Electric Strike	1006 x J FACEPLATE	630	HE
1 Power Controller	SMART PAC II		HE
2 Closers	351 O/P9	EN	SA
1 Coordinator	UC125	PRIMED	MC
2 Kickplates	KP50 8" x 1" L.D.W.	US32D	MC
2 Convex Stops	WS03	US26D	MC
1 Dust Proof Strike	DPS3	US26D	MC
1 Gasketing	MCKS88D (HEAD & JAMBS)		MC
Valid card at reader (specified elsewhere) release the latch on the fail secure electric strike allowing entry. Key override. Free egress at all times. Power Supply provided by the system integrator.			

SET #3

Doors: 151

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Storeroom Lock	93K-7D15D	626	BE
1 Convex Stop	WS03	US26D	MC
3 Door Silencers	S1M		MC

SET #4

Doors: 102, 110B, 123, 140, 147, 149

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Classroom Lock	93K-7R15D	626	BE
1 Convex Stop	WS03	US26D	MC
1 Gasketing	MCKS88D		MC

SET #5

Doors: 110A, 116, 117, 118, 119, 125B, 136, 137, 138, 139

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Office Lock	93K-7AB15D	626	BE
1 Convex Stop	WS04	US26D	MC
3 Door Silencers	S1M		MC

SET #6

Doors: 100, 103

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Office Lock	93K-7AB15D	626	BE
1 Door Closer	351 O/P9	EN	SA
1 Kickplate	KP50 8" x 2" L.D.W.	US32D	MC
1 Convex Stop	WS04	US26D	MC
1 Gasketing	MCKS88D (HEAD & JAMBS)		MC

SET #7

Doors: 133

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Privacy Set	93L-0L15D	626	BE
1 Concave Stop	WS04	US26D	MC
3 Door Silencers	S1M		MC

SET #8

Doors: 101A, 101B, 124, 126, 127, 128, 129, 130, 131, 132, 148

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Passage Set	93K-0N15D	626	BE
1 Convex Stop	WS03	US26D	MC
3 Door Silencers	S1M		MC

SET #9

Doors: 142B, 143, 145B

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Passage Set	93K-0N15D	626	BE
1 Closer	351 O/P9	EN	SA
1 Kickplate	KP50 8" x 2" L.D.W.	US32D	MC
1 Convex Stop	WS03	US26D	MC
3 Door Silencers	S1M		MC

SET #10

Doors: 142A, 145A

3 Hinges	T4A3786 4 1/2 X 4 1/2	26D	MC
1 Push Plate	P055 x CFC/CFTT	US32D	MC
1 Door Pull	DP1603 CFC/CFTT	US32D	MC
1 Closer	351 O/P9	EN	SA
1 Kickplate	KP50 8" x 2" L.D.W.	US32D	MC
1 Convex Stop	WS03	US26D	MC
3 Door Silencers	S1M		MC

END OF SECTION 08710