

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mechanical door hardware for the following:
 - a. Swinging doors.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .
- B. Keying Conference: NCSU Lock Shop shall conduct keying meeting with end user. Contractor to coordinate at appropriate time .

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Door hardware schedule.
- C. Keying schedule.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 1. Scheduling Responsibility: Preparation of door hardware and keying schedule.

2. 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.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Three years from date of Final Acceptance unless otherwise indicated below:
 - a. Exit Devices: Two years from date of Final Acceptance.
 - b. Manual Closers: 10 years from date of Final Acceptance.

PART 2 - PRODUCTS

- 2.1 All door hardware components to be steel reinforced.

- 2.2 Reference attached door hardware quote, and per ADD ALTERNATE 06 reference NCSU Preferred Manufacturer's List.

2.3 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
 1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
- C. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- D. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design" the DOT's "ADA Standards for Transportation Facilities" the ABA standards of the Federal agency having jurisdiction ICC A117.1 HUD's "Fair Housing Accessibility Guidelines" .

2.4 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- Allegion plc.
 - Baldwin Hardware Corporation.
 - Cal-Royal Products, Inc.
 - Design Hardware.
 - Don-Jo Mfg., Inc.
 - Hager Companies.
 - INOX by Unison Hardware, Inc.
 - McKinney Products Company; an ASSA ABLOY Group company.
 - PAMEX Inc.
 - Stanley Commercial Hardware; a division of Stanley Security Solutions.

2.5 MECHANICAL LOCKS AND LATCHES

- A. Owner-Preferred Alternate 06: BEST 45H Mortise Locks & BEST 9K Cylindrical Locks
- B. Lock Functions: As indicated in door hardware schedule.
- C. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
- Bored Locks: Minimum 1/2-inch latchbolt throw.
 - Mortise Locks: Minimum 3/4-inch latchbolt throw.
 - Deadbolts: Minimum 1.25-inch bolt throw.
- D. Lock Backset: 2-3/4 inches unless otherwise indicated.
- E. Lock Trim:
- Description: As indicated on Drawings .
 - Levers: Cast.
 - Escutcheons (Roses): Cast.
 - Dummy Trim: Match lever lock trim and escutcheons.
- F. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
 - Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

G. Bored Locks: BHMA A156.2; Grade 1 ; Series 4000.

H. Mortise Locks: BHMA A156.13; Operational Grade 1 ; stamped steel case with steel or brass parts; Series 1000.

2.6 MANUAL FLUSH BOLTS

A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.

2.7 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

2.8 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Provide cylinder from same manufacturer of locking devices.

B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.

1. Core Type: SFIC 7 Pin .

2.9 KEYING

A. All keying will be provided by the NCSU Lock Shop. 7 Pin SFIC cores will be sent to the lock shop sub-assembled.

B. Keying Conference shall be completed by NCSU Lock Shop.

C. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.

1. Existing System:

a. Master key or grand master key locks to Owner's existing system.

b. Re-key Owner's existing master key system into new keying system.

2. Keyed Alike: Key all cylinders to same change key.

D. Keys: Brass.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2.10 ACCESSORIES FOR PAIRS OF DOORS

- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release ; and with internal override.
- B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
- C. Astragals: BHMA A156.22.

2.11 SURFACE CLOSERS

- A. Owner-Preferred Alternate 06: LCN 4010 Series
- B. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

2.12 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: BHMA A156.16.

2.13 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- B. Maximum Air Leakage: When tested according to ASTM E283 with tested pressure differential of 0.3-inch wg, as follows:
 - 1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
 - 2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
 - 3. Gasketing on Double Doors: 0.50 cfm per ft. of door opening.

2.14 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

2.15 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Wood Doors: DHI's "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. Do not install surface-mounted items until finishes have been completed on substrates involved.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 - 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.2 ADJUSTING

- A. 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.

3.3 DOOR HARDWARE SCHEDULE

- A. REFERENCE ATTACHED SCHEDULE.
- B. REFERENCE ATTACHED NCSU PREFERRED MANUFACTURER'S LIST PER ADD ALTERNATE 06.

END OF SECTION 087100

Quote prepared by DFH COMMERCIAL
Contact Reid Trexler for further inquiries
8241 Backlick Road, Suite E, Lorton, VA 22079
Direct: 703 665 0507
Main: 703 272 5001
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Set #1: UNUSED

Set #2

Doors: 118A
Card reader to be supplied by NCSU security contractor.

1 Exit Device LX-RX 98EO US26D	VO
1 Exit Device LX-RX QEL 98NL-OP x 110MD-NL US26D	VO
2 Door Pull 9264 36" TYPE O MTG. 630-316	IV
2 Continuous Hinge 112XY 119" EPT 628	IV
1 Closer 4111 SCUSH AL	LC
1 Operator 4642 REGARM WMS AL	LC
2 Electric Power Transfer EPT 10 SP28	VO
2 Push Button 8310-853T	LC
1 Weatherstrip 8780N 25'	ZE
2 Door Bottom 307 AV 38"	PE
1 Threshold 171 A 76"	PE
1 Steel Mullion KR4954 10'6" SP28	VO

Number of Openings: 1

Set #2.1

Doors: 119B

4 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1 Lockset 45H-7D3R L/C 626	BE
1 Wall Stop 409 US32D	RO
3 Door Silencer 608-RKW GRAY	RO

Number of Openings: 1

Set #3

Doors: 118C

3 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1 Privacy Set 45H-0LT3R VIT 626	BE
1 Closer 4040XP RWPA AL	LC
1 Protection Plate K1050 10" x 34" US32D	RO
1 Wall Stop 409 US32D	RO
3 Door Silencer 608-RKW GRAY	RO

Number of Openings: 1

Set #4

Doors: 120B

6 Hinges MPB91 4 1/2 X 4 1/2 NRP 32D	MC
1 Lockset 45H-7D3R L/C 626	BE
1 Door Coordinator 2660 US28	RO
2 Closer 4111 SCUSH AL	LC
2 Protection Plate K1050 10" x 31" US32D	RO
1 Dust Proof Strike 570 US26D	RO
1 Smoke Seal S88 BL 25'	PE
2 Door Bottom 307 AV 33"	PE
1 Flush Bolt Set FB51P US32D	IV

Number of Openings: 1

Set #5

Doors: 120A

4 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1 Lockset 45H-7D3R L/C 626	BE
1 Closer 4040XP RWPA AL	LC
1 Protection Plate K1050 10" x 38" US32D	RO
1 Wall Stop 409 US32D	RO
1 Smoke Seal S88 BL 25'	PE

Number of Openings: 1

Set #6

Doors: 119

6 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1 Lockset 45H-7R3R L/C 626	BE
2 Closer 4111 EDA AL	LC
2 Protection Plate K1050 10" x 26" US32D	RO
2 Wall Stop 409 US32D	RO
1 Dust Proof Strike 570 US26D	RO
2 Door Silencer 608-RKW GRAY	RO
1 Flush Bolt Set FB51P US32D	IV

Number of Openings: 1

Set #7

Doors: 117B

Card reader to be supplied by NCSU security contractor.

8 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
2 Door Pull 8190EZHD-0 US32D316	IV
2 Closer 4111 SCUSH AL	LC
1 Exit Device RX 98NL-OP x 110MD-NL US26D	VO
1 Dust Proof Strike 570 US26D	RO
1 Electric Power Transfer EPT 10 SP28	VO
1 Flush Bolt Set FB51P US32D	IV

Set #10

Doors: 117

Card reader to be supplied by NCSU security contractor.

1 Exit Device LX-RX QEL 98NL-OP x 110MD-NL US26D	VO
1 Door Pull 8190EZHD-0 US32D316	IV
1 Continuous Hinge 112XY 119" EPT 628	IV
1 Closer 4111 SCUSH AL	LC
1 Electric Power Transfer EPT 10 SP28	VO
1 Door Bottom 307 AV 40"	PE
1 Threshold 171 A 40"	PE

Number of Openings: 1

Set #11

Doors: 117J-N

3 Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1 Closer 4040XP RWPA AL	LC
1 Lockset 45H-7A3R L/C 626	BE
1 Protection Plate K1050 10" x 38" US32D	RO
3 Door Silencer 608-RKW GRAY	RO

Number of Openings: 5

Set #12

Doors: 118B
Card reader to be supplied by NCSU security contractor.

1	Exit Device LX-RX 98EO US26D	VO
1	Exit Device LX-RX QEL 98NL-OP x 110MD-NL US26D	VO
2	Door Pull 9264 36" TYPE O MTG. 630-316	IV
2	Continuous Hinge 112XY 119" EPT 628	IV
2	Closer 4111 SCUSH AL	LC
2	Electric Power Transfer EPT 10 SP28	VO
1	Weatherstrip 8780N 25'	ZE
2	Door Bottom 307 AV 38"	PE
1	Threshold 171 A 76"	PE
1	Steel Mullion KR4954 10'6" SP28	VO

Number of Openings: 1

Set #15

Doors: 119A

4	Hinges MPB79 4 1/2 x 4 1/2 NRP 26D	MC
1	Lockset 45H-7A3R L/C 626	BE
1	Wall Stop 409 US32D	RO

Number of Openings: 1

Total Number of Openings: 16