

SECTION 08710
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Provisions of The General Conditions of the Contract (Design/Bid/Build) and Division 1 General Requirements and applicable provisions elsewhere in the contract documents apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Commercial door hardware for the following:
 - a. Swinging doors
- B. Related Sections include the following:
 - 1. Section 08110: "Steel Doors and Frames"

1.3 SUBMITTALS

- A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of the supplier's Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 - a. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item
 - b. Manufacturer of each item
 - c. Fastenings and other pertinent information
 - d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule
 - e. Explanation of abbreviations, symbols, and codes contained in schedule
 - f. Mounting locations for door hardware
 - g. Door and frame sizes and materials
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data,

Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

- C. Keying Schedule: Prepared by or under the supervision of supplier's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- D. Maintenance Data: For each type of door hardware.
- E. Refer to Project-Specific "Submittal Log" provided by Owner at Pre-Bid Meeting.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
- D. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- E. Regulatory Requirements: Comply with provisions of the following:
 - 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)", ICC A117.1 and NFPA 101.
- F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 1 Section 01200 "Project Meetings." 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

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver keys to Owner either in person or by registered mail or overnight package service.

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3.

2.2 HINGES AND PIVOTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hinges
 - a. Ives (IVE)
 - b. McKinney
 - c. Stanley
- B. Standards: Comply with the following:
 - 1. Butts and Hinges: ANSI/BHMA A156.1.
 - 2. Template Hinge Dimensions: ANSI/BHMA A156.7.
- C. Quantity: As scheduled.
- D. Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
- E. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- F. Hinge Weight: Unless otherwise indicated, provide the following:
 - 1. Entrance Doors: Heavy-weight ball bearing hinges.
 - 2. Doors with Closers: Ball-bearing hinges.
 - 3. Interior Doors: Ball-bearing hinges.
- G. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Stainless steel, with stainless-steel pin.
2. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - a. Out-swinging doors with locksets.
3. Corners: Square.

H. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.

2.3 LOCKS AND LATCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Card Reader Lock
 - a. Alarm Lock Trilogy PDL3000 Card Reader Lock (with interior lever handle) – no substitutions (ALA).
2. Mechanical Locks and Latches:
 - a. Best Lock Corporation (BLC)
 - b. Sargent Manufacturing; An ASSA ABLOY Group Company (SGT)
 - c. Schlage Lock Company; an Ingersoll-Rand Company

B. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

C. Card Reader Lock Accessories:

1. At each exterior card reader lock provide a Key Pad Cover sized to match lock.
 - a. Manufacturer: Safety Technology International
(1 Product: STI-6516 Mini Bopper Stopper with Spring Loaded Hinge - Clear

2.4 CYLINDERS AND KEYING

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cylinders: Same manufacturer as for locks and latches.

B. Standards: Comply with the following:

1. Cylinders: ANSI/BHMA A156.5.

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: Six
2. Bored-Lock Type: Cylinders with tailpieces to suit locks

D. 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.

- E. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:
 - 1. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
- F. Keys: Provide nickel-silver keys complying with the following:
 - 1. Quantity: In addition to one extra blank key for each lock, provide the following:
 - a. Cylinder Change Keys: Five
 - b. Master Keys: Five
 - c. Grand Master Keys: Five

2.5 CLOSERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Surface-Mounted Closers:
 - a. LCN Closers; and Ingersoll-Rand Company (LCN)
 - b. Norton Door Controls; Div. of Yale Security Inc.; An ASSA ABLOY Group Company (NDC)
 - c. Sargent Manufacturing Company; An ASSA ABLOY Group Company (SGT)
- B. Standards: Comply with the following:
 - 1. Closers: ANSI/BHMA A156.4.
- C. 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 non-sized closers, adjustable to meet field conditions and requirements for opening force.

2.6 PROTECTIVE TRIM UNITS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Metal Protective Trim Units:
 - a. Hager Companies (HA)
 - b. Ives; an Ingersoll-Rand Company (IVS)
 - c. Rockwood Manufacturing; An ASSA ABLOY Group Company (RO)
 - d. Trimco (TR)
- B. Standard: Comply with ANSI/BHMA A156.6.
- C. Materials: Fabricate protection plates from the following:
 - 1. Stainless Steel: 0.050 inch thick; beveled top and 2 sides.
- D. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine or self-tapping screws.
- E. Furnish protection plates sized 2 inches less than door width by height specified in Door

Hardware Schedule.

2.7 STOPS AND HOLDERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Ives; an Ingersoll-Rand Company (IVS)
 - b. Rockwood Manufacturing; An ASSA ABLOY Group Company (RO)
 - c. Trimco (TR)
- B. Standards: Comply with the following:
 - 1. Stops and Bumpers: ANSI/BHMA A156.16
- C. Wall Stops: For doors, unless wall or other type stops are scheduled or indicated.
 - 1. Where wall stops are not appropriate, provide overhead holders.
- D. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame.

2.8 DOOR GASKETING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Door Gasketing:
 - a. National Guard Products, Inc. (NG)
 - b. Pemko Manufacturing Co., Inc. (PK)
 - c. Zero International (ZI)
- C. Standard: Comply with ANSI/BHMA A156.22.
- D. 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.
- E. 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.
- F. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

2.9 THRESHOLDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. National Guard Products, Inc. (NG)
2. Pemko Manufacturing Co., Inc. (PEM)
3. Zero International (ZI)

B. Standard: Comply with ANSI/BHMA A156.21.

2.10 FABRICATION

A. Manufacturer's Nameplate: Do not provide manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise approved by Architect.

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

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

C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

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

2.11 FINISHES

A. Standard: Comply with ANSI/BHMA A156.18.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

- D. BHMA Designations: Comply with base material and finish requirements indicated by the following:
 - 1. BHMA 630: Satin stainless steel, over stainless-steel base metal.

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. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- 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. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section 07920 "Joint Sealants."

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

3.5 CLEANING AND PROTECTION

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

3.6 DOOR HARDWARE SCHEDULE

<u>Manufacturer:</u>	<u>Approved Substitution:</u>
(ALA) Alarm Lock	no substitutions
(IVE) Ives	McKinney, Stanley
(LCN) LCN	Sargent
(NGP) National Guard Products	Pemko, Zero
(SCH) Schlage	Sargent
(VON) Von Duprin	Precision
(STI) Safety Technology International	no substitutions

HARDWARE GROUP NO. 01: EXTERIOR DOOR AT VESTIBULE DOOR NUMBER: 01

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	CARD READER	PDL3000 IC/26D	26D	ALA
1	EA	KEY PAD COVER	STI-6516	CLR	STI
1	EA	LATCH GUARD	LGO	630	VON
1	EA	MORTISE CYLINDER	20-001 114 XQ11-947	626	SCH
1	EA	RIM CYLINDER	20-022	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH SRI TBSRT - ST-1595 - INSTALL PARALLEL ARM	689	LCN
2	EA	KICK PLATE	8400 12" X 34" LDW B4E	630	IVE
1	EA	DRIP CAP	16A X FRAME WIDTH	CL	NGP
1	EA	HEAD SEAL	700SA - INSTALL BEFORE DOOR CLOSER	AL	NGP
2	EA	JAMB SEAL	700ES	AL	NGP
1	EA	DOOR SWEEP	198NA	AL	NGP
1	EA	THRESHOLD	613 SIA - OR AS SHOWN AT SILL DETAIL	AL	NGP

HARDWARE GROUP NO. 02: VESTIBULE DOOR
DOOR NUMBER: 02

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PASSAGE SET	L9010 07A	630	SCH
1	EA	SURFACE CLOSER	4040XP EDA SRI TBSRT - INSTALL PARALLEL ARM	689	LCN
2	EA	KICK PLATE	8400 12" X 34" LDW B4E	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5050B - HEAD AND JAMBS	BRN	NGP
1	EA	DOOR SWEEP	198NA	AL	NGP
1	EA	THRESHOLD	613 SIA - OR AS SHOWN AT SILL DETAIL	AL	NGP

HARDWARE GROUP NO. 03: MECH ROOM DOOR
DOOR NUMBER: 03

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	L9080P 07A	630	SCH
1	EA	SURFACE CLOSER	4040XP CUSH SRI TBSRT - INSTALL PARALLEL ARM	689	LCN
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

HARDWARE GROUP NO. 04: WOMEN'S RESTROOM DOOR
DOOR NUMBER: 04

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	PRIVACY LOCK	L9040 07A L583-363	630	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA SRI TBSRT - INSTALL REGULAR ARM	689	LCN
2	EA	KICK PLATE	8400 12" X 34" LDW B4E	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5050B - HEAD AND JAMBS	BRN	NGP

HARDWARE GROUP NO. 05: MEN'S RESTROOM DOOR
DOOR NUMBER: 05

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	PUSH/PULL SET	8103 E2 DOOR PULL 1" ROUND 12"	630	IVE
			8300 PULL PLATE 3.5" X 15"		
			8200 PUSH PLATE 3.5" X 15"		
1	EA	SURFACE CLOSER	4040XP RW/PA SRI TBSRT - INSTALL REGULAR ARM	689	LCN
2	EA	KICK PLATE	8400 12" X 34" LDW B4E	630	IVE
1	EA	WALL STOP	WS407CVX	630	IVE
1	SET	SEALS	5050B - HEAD AND JAMBS	BRN	NGP

HARDWARE GROUP NO. 06: CLASSROOM DOOR
DOOR NUMBER: 06

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	EXIT DEVICE	98/99E	630	VON
1	EA	SURFACE CLOSER	4040XP RW/PA SRI TBSRT - INSTALL PARALLEL ARM	689	LCN
1	EA	WALL STOP	WS407CVX	630	IVE
3	EA	SILENCER	SR64-1	GRY	IVE

HARDWARE GROUP NO. 07: EXTERIOR DOOR AT CLASSROOM
DOOR NUMBER: 07

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
<u>3</u>	<u>EA</u>	<u>HW HINGE</u>	<u>5BB1HW 4.5 X 4.5 NRP</u>	<u>630</u>	<u>IVE</u>
<u>1</u>	<u>EA</u>	<u>EXIT DEVICE</u>	<u>98/99E</u>	<u>630</u>	<u>VON</u>
<u>1</u>	<u>EA</u>	<u>CARD READER</u>	<u>ETPDL-1/S/26D V99</u>	<u>26D</u>	<u>ALA</u>
<u>1</u>	<u>EA</u>	<u>KEY PAD COVER</u>	<u>STI-6516</u>	<u>CLR</u>	<u>STI</u>
<u>1</u>	<u>EA</u>	<u>LATCH GUARD</u>	<u>LGO</u>	<u>630</u>	<u>VON</u>
<u>1</u>	<u>EA</u>	<u>MORTISE CYLINDER</u>	<u>20-001 114 XQ11-947</u>	<u>626</u>	<u>SCH</u>
<u>1</u>	<u>EA</u>	<u>RIM CYLINDER</u>	<u>20-022</u>	<u>626</u>	<u>SCH</u>
<u>1</u>	<u>EA</u>	<u>SURFACE CLOSER</u>	<u>4040XP SCUSH SRI TBSRT - ST-1595 - INSTALL PARALLEL ARM</u>	<u>689</u>	<u>LCN</u>
<u>2</u>	<u>EA</u>	<u>KICK PLATE</u>	<u>8400 12" X 34" LDW B4E</u>	<u>630</u>	<u>IVE</u>
<u>1</u>	<u>EA</u>	<u>DRIP CAP</u>	<u>16A X FRAME WIDTH</u>	<u>CL</u>	<u>NGP</u>
<u>1</u>	<u>EA</u>	<u>HEAD SEAL</u>	<u>700SA - INSTALL BEFORE DOOR CLOSER</u>	<u>AL</u>	<u>NGP</u>
<u>2</u>	<u>EA</u>	<u>JAMB SEAL</u>	<u>700ES</u>	<u>AL</u>	<u>NGP</u>
<u>1</u>	<u>EA</u>	<u>DOOR SWEEP</u>	<u>198NA</u>	<u>AL</u>	<u>NGP</u>
<u>1</u>	<u>EA</u>	<u>THRESHOLD</u>	<u>613 SIA - OR AS SHOWN AT SILL DETAIL</u>	<u>AL</u>	<u>NGP</u>

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