DIVISION 08 – OPENINGS
08 70 00 HARDWARE AND KEYING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the design and coordination for all necessary hardware and coordination for all doors. Hardware shall include but not necessarily be limited to the following:

1. Hinges
2. Lock Cylinders and Keys
3. Lock and Latch sets
4. Bolts
5. Exit Devices
6. Push/Pull Units
7. Closers
8. Holders
9. Dust Proof Strikes
10. Protection Plates
11. Weatherstripping
12. Thresholds
13. Cylinders
14. Electric Strikes
15. Silencers

B. Consultant shall specify which hardware is not included under this section, and shall ensure that hardware not specified under this section is clearly specified in the pertinent section.

C. IMPORTANT: Locks, cylinders, exit devices, door closers/auto operators, and key systems outside of those specified in this section are not allowed in any WSU project without authorizing signatures of both a WSU Key Shop Representative and the WSU Facilities Services Maintenance Director.

1.02 DEFINITIONS

A. Finish Hardware is defined to include all items known commercially as Builder's Hardware as generally required for, but not limited to, swing doors and pocket doors. The consultant shall also include all necessary hardware definition specific to project. These may include but not limited to cylinders for elevators, overhead coiling doors and grilles, electrical panels, fire alarm panels, control panels, and fire extinguisher cabinets.

1.03 DESIGN REQUIREMENTS

A. Coordinate height of panic bar devices with location of lower edge of vision panels to minimize use of spacing shims and minimize occlusion of glass surface by panic bar. (Glass lights are difficult to clean and replace when blocked by the panic device.)

1.04 WARRANTY

A. Specify the following warranty requirements:

1. Locks and Latches: 5 years

2. Closers: 5 years

3. Automatic Door Openers: 5 years

1.05 MAINTENANCE

A. Extra Material:

1. Include one gross of extra key blanks for Major Capital Projects. Deliver directly to the WSU Key Shop (coordinate through the WSU Construction Manager).

2. Provide two percent additional spare locksets or five of each type, whichever is more.

B. Tools and Manuals:

1. With the delivery of permanent keys, Contractor shall deliver to the WSU Key Shop two complete sets of adjustment tools and one set of

maintenance manuals for locksets, closers and panic devices in accordance with project close-out requirements. Coordinate turnover of materials to the Key Shop through the WSU Construction Manager.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Specify each similar item from a single manufacturer, unless deviation is specifically approved by the WSU Project Manager and WSU Key Shop. WSU maintains a standardized key and locking system, and minimizing the number and variety of stocked repair parts is a priority.

B. Locksets: Acceptable manufacturers:

Location	Item/Manufacturer	Substitute
Classrooms & Teaching Labs (see Note 1 below)	Cylindrical: Schlage ND73 F90 Mortise: Schlage L9456 F13 Exit Device: Von Duprin 99-2	None
Classrooms & Labs (Card Access) (see Note 1 below)	Cylindrical: Schlage AD400-CY Mortise: Schlage AD400-MS Exit Device: Schlage AD400-993	None
Offices	Cylindrical: Schlage ND73 F90 Mortise: Schlage L9456 F13	None
Entrance Doors	Cylindrical: Schlage ND53 F109 Mortise: Schlage L9453 F20	None
Dormitory Rooms	Schlage – functions determined by Housing and Dining Services Key Shop	None
Mechanical Spaces	Cylindrical: Schlage ND80 F86 Mortise: Schlage L9080 F07	None
Utility Tunnel to Building (see Note 2 below)	Cylindrical: Schlage ND80 F86 Mortise: Schlage L9080 F07	None
Roof Access	Cylindrical: Schlage ND80 F86 Mortise: Schlage L9080 F07	None
Access Doors & Panels	Schlage “Large Format Interchangeable Core” 1347 Keyway	None
Electrical Panels	Corbin Cabinet lock with TEU-1 number	None
Fire Alarm Panels	Corbin Cabinet lock with "B" Key	None

C. Other Hardware: Acceptable Manufacturers:

Item	Manufacturer	Substitute
Butt Hinges	Ives (Non-Removable Hinge Pins)	Stanley (Non-Removable Hinge Pins)
Continuous Hinges (see Note 3 below)	PEMKO “Heavy Duty”	Roton “Heavy Duty”
Lock Cylinders	Schlage Everest D145	None
Key System	Schlage Everest D145	None
Surface-mount Door Closers	LCN 4040XP	None
Floor-mount or Overhead Door Closers	None	None
Automatic Door Openers (Exterior)	Norton 6060	None
Automatic Door Openers (Interior)	Norton 6060	Motion Access Condor
Panic Devices	Von Duprin 99/33	No vertical rod exit devices
Dummy Panic Devices	Von Duprin 350	None
Electric Strikes	HES 9400/9600 Securitron MUNL/UNL	Requires WSU PM & Key Shop approval
Mullions (Locking)	Stanley	Von Duprin
Thresholds / Weatherstrip	PEMKO	None
Silencers	PEMKO	None
Auto Flushbolts	Glyn Johnson	None
Coordinators	Glyn Johnson	None
Kick Plates and Pulls	Ives	Requires WSU PM & Key Shop approval

Special Locks	Match existing	Requires WSU PM & Key Shop approval
Magnetic Hold Opens	See 28 31 00 "Fire Detection and Alarm"	None
Wall Stops	Ives	Requires WSU PM & Key Shop approval
Push Plates	Ives	Requires WSU PM & Key Shop approval
Key Storage Cabinet	Requires WSU PM & Key Shop approval	Requires WSU PM & Key Shop approval
Padlocks	Schlage KS23 with 1347 Keyway	Requires WSU PM & Key Shop approval
Fire Extinguisher Cabinet Locks	See 10 44 00 "Fire Extinguishers and Cabinets"	None
Telecommunications Closets	Schlage 1347 Keyway	None
Restrooms	Lockable deadbolt Schlage Everest D145 Keyway	Requires WSU PM & Key Shop approval
Keyboxes	Knox Box	None

Note 1: All classrooms and teaching labs shall be equipped to secure the room from the inside. See specifications in 2.02 below.

Note 2: All Utility Tunnel to Building door hardware shall include a door closer and the hardware identified above.

Note 3: Butt hinges with non-removable hinge pins are the standard. Exceptions require approval from the WSU Key Shop

2.02 MATERIALS

A. General

1. Mortise-type locks are only acceptable as like substitutions during renovations of existing facilities. They are not acceptable in new construction.

2. Butt hinges with non-removable hinge pins are the standard. Continuous hinges may acceptable based on unique project conditions, but require approval from the WSU Key Shop.

3. Lever type hardware shall be installed everywhere public access is required. The use of door knob hardware is prohibited.

4. Furnish silencers for door frames, except at weather stripped doors and doors with light seals, sound seals, or smoke gaskets. Furnish snap-in type silencers, 3 per single door, 4 per pair of doors.

5. Surface-mounted door bottoms are required, due to ease of maintenance and replacement. Recessed door bottoms are prohibited. Verify height and thickness. Fasten with flush screws.

6. Provide kickplates at both sides of wood doors at heavily traveled corridor areas, laboratories, equipment rooms, stairs, kitchen doors, gymnasiums, toilet rooms, classrooms and where required by ADA codes. Wood doors are of particular concern, but consider these at metal doors as well. Stainless steel is the preferred material.

7. Floor stops are not permissible. They are difficult to clean around and constitute a tripping hazard. Where a stop is desired at exterior doors in series, provide a 4 inches x 3 feet-0 inches high concrete filled metal bollard to accept the door stops (structural steel tubing may be considered for architectural purposes). These are preferable to stop arms provided as part of the closer assembly.

8. All wall-mounted hardware shall have solid backing.

9. Knox Boxes are required by the Fire Marshall. These shall be recessed into the wall adjacent to the main front entrance doors. In renovation projects where conditions prevent recessing the box, it may be through bolted to the front face of the main entrance doors. In either case, verify location and mounting elevation with the Fire Marshall.

10. Provide one coat hook on the back of each office door.

11. Provide pulls and push plates on all doors having push-pull operations. Standard push and pulls are recommended over high-maintenance custom designs.

12. Closure arms shall not extend into corridors where they can be vandalized or broken.

13. Use Phillips type flat - head screws to match hardware finish.

14. Do not use "through bolts" where the head is not exposed. Use machine screws or concealed fasteners.

15. Provide fasteners that are compatible with doors and hardware which will

not cause corrosion of door or hardware.

16. Provide threshold with positive anchoring device. Set thresholds in a caulking compound.

17. Coordinate key requirements with WSU Key Shop for all telecommunication room locks, all mechanical room locks and roof access door locks. These locks have a WSU standard separate keying requirement which must be verified with Key Shop prior to final hardware design. These locations may require different a lock manufacturer.

B. Classroom / Lab Door Lock Requirements

1. To increase security in the event of an active threat, so that rooms can be secured from the inside, classroom and lab doors shall be equipped with the Schlage ND73 F90 Corridor lock, Schlage L9456 F13 Mortise Corridor lock (renovations only), the Schlage AD400 card swipe, or the Von Duprin -2 Double Cylinder Exit Device.

2. Standard Schlage Corridor lock specifications:
   i. Lock or unlock by key from outside.
   ii. Push-button locking from inside.
   iii. Turn inside lever or close door to release button.
   iv. When outside lever is locked by key, it can only be unlocked by key.
   v. Inside lever is always unlocked.

3. Schlage AD400 card swipe lock specifications:
   i. See electrical and installation specifications in section 28 13 00 “Access Control”.
   ii. Push-button locking from inside.
   iii. Turn inside lever or close door to release button.
   iv. Inside lever is always unlocked.

4. Von Duprin -2 Double Cylinder Exit Device specifications:

   i. Thumb turn (not keyed cylinder).

C. Electrical Items

1. Electric door strikes are preferable over electrically operated hardware. This allows for better coordination with security systems. Consult with the Project Officer and the WSU Key Shop prior to specifying.

2. Provide magnetic hold opens at area separation doors. See technical

requirements in section 28 31 00 “Fire Detection and Alarm.”

3. Provide automatic door openers at all main building entries.

   i. Other locations (e.g., assembly areas) shall be reviewed on a site-by-site basis.
   ii. Coordinate door openers with security system.

D. Keying

1. Key schedule will be provided by the WSU Project Manager or designated Facilities Services representative. All cylinders shall be keyed by the WSU Key Shop.

2. Requirements for change keys, master keys and grand master key locks and cylinders shall be determined by the WSU Key Shop.

3. All new cylinder items shall be keyed according to the WSU Key Shop’s direction. In addition, the hardware supplier shall furnish new "Schlage Everest D145" cylinders for all existing locks, unless otherwise directed. The hardware consultant shall perform a field survey, in conjunction with the WSU Key Shop, to verify type and quantity required for a complete and operational system.

4. All cylinders for new construction will be Schlage Everest D145, unless otherwise directed.

5. The Contractor shall supply temporary cylinders for the exterior doors in new construction and a minimum of six (6) each temporary cylinders for the interior doors for contractor security during construction. These temporary cylinders shall be the same type specified for the completed work but keyed separately from any key system on campus. The WSU Key Shop will return these cylinders to the Contractor at the completion of the project. The cylinders may be repinned and used at a later date.

6. All grand masters, master and key alikes are to be delivered to the WSU Key Shop. None of these keys should be delivered to the project site.

7. At the conclusion of the project, Contractor shall deliver all individual keys on a clearly marked key board to the WSU Key Shop (coordinate through the WSU Construction Manager). Alternatively, keys may be sent directly to the Key Shop if each key envelope is marked with the door number it operates.

E. Construction Keying

1. Contractor shall furnish a construction master key system for locks and

cylinders.

2. The contractor will be allowed to use only the construction keys during construction.

3. The WSU Key Shop will install the permanent cylinders and turn over construction cylinders to the Contractor at the close of the project, unless otherwise directed by the WSU PM or CM.

4. When the General Contractor is allowed to install the permanent cylinders, the Contractor shall sign out copies of the permanent keys from the WSU Key Shop during installation. However, if a permanent master key is lost or stolen during construction, the Contractor shall rekey all cylinders and provide new keys at his own expense. All keys shall be returned to the WSU Key Shop upon request or at the completion of the project.

5. Upon substantial completion of the work, the contractor shall void the construction key system and demonstrate that the specified key system is operating properly.

6. For renovation or remodel work, the General Contractor will establish a Key Coordinator System. All keys required by subcontractors will be obtained through the General Contractor's Key Coordinator. Project retainage will not be released until the General Contractor returns all keys to the WSU Key Shop.

F. Closers

1. All exterior doors shall have adequate closers to protect against strong winds (suction) and slamming.

2. All closers shall be attached with sex-bolts.

3. Do not use floor/overhead concealed closers.

4. Provide closers with a maximum pull force required per the ADA.

G. Panic Devices

1. Panic Devices are to be provided for exit doors only where required by code.

2. On single doors and on one door in multiple openings, provide cylinder operated by key from outside unless otherwise directed. Door is to be permanently locked from the outside. During the time when the building is to be open to the public the panic device is to be "dogged down" from the inside.

3. Provide single and double door entries with heavy duty "rim type" panic devices. Double door entries should be provided with removable mullions.

H. Butts

1. Use heavy duty, ball bearing butts on all exterior doors and on interior doors which receive moderate to heavy use.

2. Number as recommended by the manufacturer. Minimum of 1-1/2 pairs of 4-1/2 inch x 4-1/2 inch on all doors.

I. Weatherstripping

1. Weatherstripping is required on all exterior doors.

2. Do not specify or use interlocking thresholds.

J. Identification and Delivery

1. Permanent keys shall be factory stamped "Do Not Duplicate."

2. Permanent keys shall be identified with tags, and sent directly to the WSU Key Shop from the factory, by registered mail or receipt personal delivery.

3. Require a fully labeled and lockable metal key storage cabinet for each project. Coordinate cabinet type, size and location with the WSU Project Manager.

PART 3 - EXECUTION

3.01 QUALIFICATIONS

A. Installer shall have no less than three years' experience specializing in the work covered in this section. Installer shall maintain qualified personnel trained and experienced in this work.

3.02 ADJUSTING

A. The Contractor shall adjust the operation of all doors to meet ADA requirements for opening force.

B. The operation of the ventilation system shall not cause doors to slam shut or fail to close completely.

END OF SECTION