DIVISION 08 - OPENINGS

METAL DOORS AND FRAMES 08 11 00
Frames: Steel Door Institute (SDI) Extra Heavy Duty. Fully welded with mortar boxes for all hardware. Frames for all exterior openings and interior openings 4 feet wide or wider shall be 14 ga. steel. Frames for interior openings, except as noted above, shall be 16 ga. steel. All exterior frames shall be galvanized. All frames set in concrete block walls which are to be grout filled, shall be coated with asphaltic paint on the inside of the frames and on all frame anchors.

Doors: Steel Door Institute (SDI) Type II, Heavy Duty. For doors in the Animal Holding Areas, close top and bottom edges to provide weather seal as integral part of door construction, or by addition of inverted steel channels. Provide hole in bottom channel of doors for escape of trapped moisture. Reinforce doors for hardware per ANSI/SDI A250.6 except for the following changes:
Hinges: Steel plate 3/16 inch thick by 1-1/2 inches wide by 6 inches longer than hinge; secured by not less than 6 spot welds.
Surface-Applied Closers: 12-gauge steel sheet; secured with not less than 6 spot welds.

SPECIALTY DOORS AND FRAMES 08 30 00
FRP DOORS
Fiberglass reinforced polyester (FRP) doors are recommended for use in areas with excessive moisture or corrosives, such as in animal facilities and wash down areas. Core shall be foam in place with urethane of 5 pounds per cubic foot density, completely free of CFC and HCFC. Color shall be permanently bonded through the full thickness of the fiberglass door faces.

ACCESS DOORS
Access doors and panels shall be primed metal to receive field paint, except at wet areas where they shall be fabricated from stainless steel.

AUTOMATIC ENTRANCES 08 42 29
Provide automatic doors at the main entries of every new major building on the UCD campus. For security, maintenance and life cycle cost considerations, the preferred type of automatic door is the swinging as opposed to the sliding type. The door shall be activated by interior and exterior push pads mounted at 2 levels. Both upper body and foot control shall activate the door. The pads shall be located at the correct distance from the door for safe clearances and proper travel time.

For double doors, a removable center mullion shall be provided to allow for the use of rim panic hardware. In the case of double automatic swinging doors, only 1 leaf has to be activated by the push pads.
MANUFACTURERS
The manufacturer shall have a minimum of 5 years successful experience in the fabrication of automatic operators of the type required for the project. The standard of quality shall be LCN Mid Swing or Senior Swing, Horton Automatics 7100 series or equal.

DOOR OPERATOR
1. Automatic door operators will be required to operate by push pad, radio frequency remote control, card access or a combination of these. Electrified exit devices, locksets or strikes shall work in conjunction with door operators.

2. The door shall reverse when closing if an object stops the door. The master control unit shall provide immediate reversal of door motion without undue strain on the drive train by providing stepped voltage to the motor.

3. The opening and closing speed shall be between 4 to 6 seconds. The master control unit shall incorporate an adjustable closing time delay of 2 to 30 seconds. The pushbutton switch activates the door to open and to close after the time delay expires. Provide infinite adjustments to the opening and back check speeds.

4. The opening force shall be able to be adjusted without affecting the opening speed. The opening and closing force, measured 1 inch out from the lock stile or the door, shall not exceed 15 pounds in either direction.

5. The door shall have the ability to function as an automatic or manually operated door. When operated manually, with the power on or off, the operator shall not be damaged.

6. A keyed shut off switch keyed to the University master key system shall be provided to shut off power to the outside push pads after normal hours of operation. Handicap access to the building after normal hours shall be provided by either a hand held radio frequency remote control or card access system. A locked door motor protection circuit will be supplied that will shut off current to the motor when the door is locked or otherwise prevented from opening.

7. Operators shall be surface mounted and enclosed in an extruded aluminum case extending the full width of the door frame or a minimum of 23 inches. Access to the operator shall be obtained by easily removing the casing.
HARDWARE

CODE REQUIREMENTS

Except for doors provided with exit devices, doors from rooms or closets shall have locks or latches of types which are operable at all times inside by merely turning lever and not requiring any special knowledge or effort.

All doors, which open onto stairways, mechanical rooms, or other spaces where caution is required, shall have levers with tactile markings to alert a visually impaired person of such conditions.

Hardware, such as locks, latches, butts, door closers, coordinating devices and exit devices, etc., for labeled openings shall be State Fire Marshal and Underwriters' Laboratories, Inc. (UL) listed and approved for opening classification noted or specified. Any specified hardware for such labeled openings not in compliance therewith shall be referred to University’s Representative.

KNOX BOX

Provide a Knox Box at the main entrance for all new buildings on the UC Davis Campus. Recommended location is 4-5 feet above ground and no more than 2 feet from the door.
LOCKS AND KEYING

All locks and keying shall adhere to the following guidelines:

New Construction:

1. All locksets shall be Schlage “L” Series, to match campus standard. Lock functions and finishes will be furnished as indicated in the hardware schedule. Classroom lock functions such as L9070 ANSI number F05 are not acceptable. The contractor shall provide the specified locksets with temporary 6-pin construction cylinder and keys. Provide temporary cylinders only in locations where it is necessary to secure the project during the construction process. Also, provide 5 sets construction keys to the University’s Representative. Upon acceptance of the building or space, the University will provide permanent keys and Medeco lock cylinders to replace the construction cylinders. The Contractor shall verify that all doors and locksets easily accept permanent cylinders with no extra effort or modification by University Representatives. Construction lock cylinders will be returned to the contractor. When replacing existing locksets, the cylinders shall be tagged and returned to the University’s Representative (then returned to Lock Shop).

2. Each lockset shall be installed only after the door to which it is to be applied has received its final coat. If the lockset is installed prior to painting, it shall be removed to permit painting.

3. The lip of the strike shall be the proper length for jamb detail and shall be curved.

4. Strikes for locks, latches, and deadlocks shall have wrought boxes.

5. All locksets in wood doors shall be installed in mortise or holes prepared by using a mortising or boring jig.

6. Locksets shall be reversible without opening the lock case.

7. All locksets shall have lever handles, and shall operate in both the up and down directions.

8. All locksets shall have multiple functions within 1 case (9050, 9060, 9070, 9080).

9. All locksets shall be able to change lock function by changing the lock cylinder tailpiece.

Remodel Construction

1. All locksets shall match existing locksets in design. Lock functions and finishes will be furnished as indicated in the hardware schedule. Classroom lock functions such as L9070 ANSI number F05, D70 ANSI number F84 and the Entrance/Office function D50 ANSI number F82 are not acceptable. The Contractor shall provide the specified locksets with temporary 6-pin construction cylinder and keys. Provide temporary cylinders only in locations where it is necessary to secure the project during the construction process. Also, provide 5 sets construction keys to the University’s Representative. Upon acceptance of the building or space, the University will provide permanent keys and Medeco lock cylinders to replace the construction cylinders. The Contractor shall verify that all doors and locksets easily accept permanent cylinders with no extra effort or modification by University Representatives. Construction lock cylinders will be returned to the Contractor. When replacing existing locksets, the cylinders shall be tagged and returned to the University’s Representative (then returned to Lock Shop).
2. Each lockset shall be installed only after the door to which it is to be applied has received its final coat. If the lockset is installed prior to painting, it shall be removed to permit painting.
3. The lip of the strike shall be the proper length for jamb detail and shall be curved.
4. Strikes for locks, latches, and deadlocks shall have wrought boxes.
5. All locksets in wood doors shall be installed in mortise or holes prepared by using a mortising or boring jig.
6. If existing locksets are mortise design, refer to campus standard for Locks and Keying “New Construction”

FASTENERS AND ANCHORS
Provide sex bolts for door closers attached to wood doors. Hardware fastened to concrete or masonry shall be installed with machine screws and “Star” type double expansion shields, or for screw sizes less than 1/4 inch, fasten with wood screws and plastic anchors. Do not use lead shields or tampins.

HINGES
1. The entire length of the hinge pin shall be circumferenced with a continuous machined surface on ball bearing hinges.
2. Swaging of the hinge leaf shall not be in contact with the hinge pin on a ball bearing hinge.
3. All hinges shall have 5 knuckles.
4. All ball bearings shall be completely concealed without the use of ferrules or sleeves.
5. All bearings and raceways shall be stainless steel.
6. All screws shall be stainless steel or silicone bronze.

CLOSERS
LCN is the basis of design for door closers. An authorized factory representative shall inspect all installed closers to ensure proper adjustment, and operation shall inspect all closers after installation. Closers shall carry a manufacturer’s ten-year warranty against manufacturing defects and workmanship.

Door closer cylinders shall be of high strength cast iron construction to provide low wear operating capabilities of internal parts throughout the life of installation. All door closers shall be tested to American National Standards Institute (ANSI)/ Builders Hardware Manufacturers’ Association (BHMA) A156.4 test requirements by BHMA certified testing laboratory. A written certificate showing successful completion of a minimum of 10,000,000 cycles shall be provided.

All closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1-1/2 inches to ensure longevity and durability under all closer applications. Closer shall utilize full complement bearing at shaft to provide greatest load carrying capabilities of the shaft. Pinion and pistons shall be hardened regardless of size, to provide durable wearing surfaces. For hydraulic regulation, the closer shall incorporate
tamper resistant, non-critical screw valves of v-slot design to reduce possible clogging from particles inside the closer. Closers shall have separate and independent screw valve adjustments for latch speed, general speed and hydraulic back-check. Back-check shall be properly located so as to effectively slow the swing of the door at a minimum of 10 degrees in advance of the dead stop location to protect the door frame and hardware from damage.

All parallel arm closers shall incorporate one piece solid forged steel stud shoulder bolts and shall be incorporated in regular arms and hold open arms. All other closers to have forged steel main arms for durability and esthetics for versatility of trim accommodation, high strength, and long life. Built-in stop arms or cush stop arms are not acceptable.

All closers shall be non-sized to provide a full range (1 to 4) closing power for all sizes, according to BHMA product standards (ANSI 156.4-1986, Table I) and shall be listed in BHMA Certified Products Directory to provide minimum closing force required to properly latch the doors as tested by an independent testing lab. For barrier-free applications, closer spring power shall be adjustable where desired, to provide less than 5 lbs. opening force for doors 36 inches to 48 inches wide.

All closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120 deg. F to -30 deg. F without requiring seasonal adjustment of closer speed to properly close the door.

EXIT DEVICES
1. Von Duprin, Precision, or equal are the standard of quality. All devices must have a 3-year manufacturer’s warranty.
2. No vertical rod or concealed rod devices shall be accepted. Only rim devices with mullions are acceptable.
3. Bronze or stainless steel, plated or finished as specified; aluminum or brass are not acceptable. Moving parts made of die-cast “pot” or “white” metals are also not acceptable.
4. All moving parts shall be easily removable for repair and maintenance; moving parts that are riveted or swaged in place are not acceptable.
5. All wide stile devices must have dead latching latch bolts to ensure safe and secure opening.
6. Outside trims must be of wrought construction.
7. All devices must be inspected by a factory service technician at the completion of installation to ensure proper adjustment and operation. Service technician shall submit a written report to the University’s Representative, General Contractor, and hardware supplier upon completion of service inspection.
8. The entire length of the push bar shall act as one piece.

PUSH AND PULL PLATES
1. Baldwin, Brookline, or equal are the standard of quality.
2. Plates shall be bronze or stainless steel – finished as specified.
3. There shall be a 1/16 inch minimum thickness for plates. Bevel 4 sides.
4. Pull plates shall be without screw holes when used with pulls. Pulls shall be bolted through the door at the grip only.

SURFACE AND FLUSH BOLTS
1. Flush bolts shall have a lever arm that is not friction-operated.
2. Flush bolts shall have a lever arm that is connected to the bolt mechanism.
3. Face plates shall be shaped to match the door edge.
4. The operating mechanism for the bottom flush bolt shall not be more than 12 inches from the floor; the top flush bolt shall not be more than 72 inches from the floor.
5. All flush bolts shall have dustproof strikes where engaging the floor, threshold or curb.
6. Surface bolts shall have a dustproof strike or an easy-to-clean floor strike.
7. Lifting handles on surface bolts shall be mechanically fastened (not press fitted).

STOPS AND HOLDERS
1. Glynn Johnson, Baldwin, or equal are the standard of quality.
2. All stops and holders shall be solid or forged bronze; wrought is not acceptable.
3. All screws on wall-mounted stops shall be concealed.
4. All rubber bumpers shall be fastened by a pin or screw that goes through the rubber and seats into the metal on the opposite side. A rubber bumper that is screwed into the metal holder is acceptable.

THRESHOLDS
All thresholds shall have a reinforcing center leg. Single length for each opening - ends must be cut to jamb profile.

SILENCERS
Provide silencers for all interior doors, except weather stripped or smoke sealed doors.
1. Single doors: Three each lock jamb frames.
2. Double doors: Two leaves at head frame, plus 3 each on astragal.

SMOKE AND WEATHER DOOR SEALS
Where required, provide adhesive jamb weather-strip. Pemko S88, S44W, or equal are the standard of quality.

HARDWARE CAMPUS STANDARDS
Acceptable campus standards for the following devices:
1. Closers: LCN 4010 or 4110 Series as required.
2. Butt Hinges
   Manufacturer: Hagger, McKinney, or equal.
   Unless otherwise specified, conform to following sizes:
   Length: For Doors to 3 feet-0 inches Wide: 4-1/2 inches.
For Doors over 3 feet-0 inches to 4 feet-0 inches Wide: 5 inches.
Width: Two times door thickness plus trim projection, but not less than 4-1/2 inches unless otherwise specified.

3. Locks and Latches: Schlage L series, or equal.
4. Lockset and Latchset Design: Schlage Lever, Rhodes, or equal.
5. Escutcheons: If used, Schlage wrought rose, 2-1/8 inches or 2-9/16 inches diameter. Schlage type L escutcheon may also be used. Schlage type N escutcheons are not acceptable.
6. Handle Type: Lever type only. Schlage 03 and 17 preferred, or Schlage 06 or equal.

FINISHES
All hardware finishes shall conform to BHMA product standards, materials and finishes. Campus standard is 626 Satin Chrome or 613 Oil Rubbed Bronze. Finishes for hardware in existing facilities shall be as listed above or to match existing.

HARDWARE INSTALLATION
Door Levers: Center 38 inches above finished floor.
Top Hinge: Top 7 inches below head of frame.
Bottom Hinge: Bottom 11 inches above finished floor.
Center Hinge: Equal distance between top and bottom hinges.

RECOMMENDED LOCKSET FUNCTIONS

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Lockset**</th>
<th>ANSI</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>L9050</td>
<td>F04</td>
<td>Latch-bolt retracted by lever or knob from either side unless outside is made inoperative by key outside or by lever or knob inside. Outside lever or knob remains locked until thumb-turn is returned to vertical or by counter clockwise rotation of key. Auxiliary latch deadlocks latch-bolt when door is closed.</td>
</tr>
<tr>
<td>Office</td>
<td>D53</td>
<td>F109</td>
<td>For matching</td>
</tr>
<tr>
<td>Labs, Classrooms, Entrances</td>
<td>L9060</td>
<td>F09</td>
<td>Latch-bolt retracted by lever or knob from either side unless outside is locked by key from inside. When locked, latch-bolt retracted by key outside or lever or knob inside.</td>
</tr>
</tbody>
</table>
Auxiliary latch deadlocks when door is closed.

<table>
<thead>
<tr>
<th>Location</th>
<th>Model Number</th>
<th>Key Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs, Classrooms, Entrances</td>
<td>D60</td>
<td>F88</td>
<td>For matching</td>
</tr>
<tr>
<td>Storage &amp; Mechanical Rooms</td>
<td>L9080</td>
<td>F07</td>
<td>Latch-bolt is retracted by key outside or by lever or knob inside. Outside lever or knob is always inoperative. Auxiliary latch deadlocks latch-bolt when door is closed.</td>
</tr>
<tr>
<td>Storage &amp; Mechanical Rooms</td>
<td>D80</td>
<td>F86</td>
<td>For matching</td>
</tr>
<tr>
<td>Passage Latch - No Lock</td>
<td>L9010</td>
<td>F01</td>
<td>Latch-bolt retracted by lever or knob from either side at all times.</td>
</tr>
<tr>
<td>Passage Latch - No Lock</td>
<td>D10S</td>
<td>F75</td>
<td>For matching</td>
</tr>
<tr>
<td>&quot;Classroom Lock&quot;</td>
<td>L9070</td>
<td>FO5</td>
<td>Do not use at any location.</td>
</tr>
</tbody>
</table>

** Lockset model numbers are Schlage as the basis of design