087113-H: AUTO DOOR OPERATORS (INCLUDES ICU DOORS)
(08720-H)

GENERAL

In general, follow the guidelines below when designing and specifying auto operated doors and ICU Doors. Unless specifically indicated otherwise, these guidelines are not intended to restrict or replace professional judgment.

All details of operation should be carefully reviewed on a door-by-door basis in the Mandatory Hardware Meetings as noted in Design Guideline 087100-H "Finish Hardware".

Operators shall comply with all current codes, as listed in 1.0 "Codes and Regulatory Agencies" in the Design Guidelines.

Door operators and associated operating hardware are to be specified to perform their intended function for at least two million complete operating cycles before requiring an overhaul.

Power circuit, control circuit and electrical hookup shall be provided by the Electrical Contractor. Label circuit breaker or power-disconnect locations for each door system. The coordination of door locking hardware, door operator, key switch, etc. will be the responsibility of the door operator contractor. Proper decals and labels are to be applied and maintained on doors.

The use of fire rated automatic accordion fire barriers is discouraged. Automatic revolving doors shall not be considered for UMHHC facilities.

All operators are to be equipped with a three-position toggle switch concealed within the box of the auto operator header.

Provide all appropriate overhead, door and presence sensors as required by ANSI 156.10 and 156.19.

APPLICABILITY:

1. Automatic entry systems are to be considered for certain door types, including the following:
   a. Building main entrances, or other frequently-used entry doors
   b. Door required for access by persons with disabilities.
   c. Doors accommodating stretcher and wheelchair traffic.
   d. Doors accommodating high cart traffic.
   e. Extremely heavy or lead shielded doors.

OPERATORS:

1. Electro-Hydraulic Low Energy Power Operated Door: Specify when the opening is primarily a manual opening. Not to be used in corridors or areas with high traffic.
   a. Where “Low Energy Power Operated Door” as defined by ANSI Standard A156.19 is indicated for doors required to be accessible to the disabled, provide electrically powered operators complying with the ADA requirements for opening force and time to close standards.
   b. Provide door mounted infrared presence sensor to provide a safety zone on swing and approach side.
   c. Full closing force shall be provided when the power or assist cycle ends.
   d. Modular design, adjustments easily accessible from the front, UL listed for use on labeled doors.
   e. Shall have built in logic to control peripheral access controlled devices.
f. Shall have separate and independent adjustments for back check, main speed and latch speed.
g. Furnish actuators and other controls as shown in Hardware Sets.
h. Acceptable manufacturers:
   i. LCN 4640 series.
   ii. Besam Power Swing

2. **Electro-Mechanical Low Energy Power Operated Door**: Specify when the opening is primarily a manual opening with medium to high traffic areas. Not to be used in corridors or areas with heavy patient and cart traffic.
   a. Where “Low Energy Power Operated Door” as defined by ANSI Standard A156.19 is indicated for doors required to be accessible to the disabled, provide electrically powered operators complying with the ADA requirements for opening force and time to close standards.
   b. Acceptable manufacturers:
      i. Besam SW100
      ii. Stanley Magic Access

3. **Electro-Mechanical High Energy Power Operated Door**: Specify when the opening is primarily an Automatic opening. High Energy Operators are to be used in corridors, and where there is heavy patient and cart traffic.
   a. Where “High Energy Power Operated Door” as defined by ANSI Standard A156.10 is indicated for doors required to be accessible to the disabled, provide electrically powered operators complying with the ADA requirements for opening force and time to close standards.
   b. Acceptable Manufacturers:
      i. Stanley Magic Force
      ii. Besam SW200i

4. **Electro-Mechanical General Operator Requirements**:
   a. Electro-mechanical systems generate power to open and close swing doors. Closing motion is performed by spring power, regulated as to force, speed and sequenced coordination of pairs of doors (if so required). Pneumatic fluids and air operation are not to be used. Operators also control door movement in conformance with established methods of operation.
   b. Door operation is to be quiet and smooth. Motor and control system shall be protected against damage due to locked door conditions
   c. Operators should be surface mounted on either side of door, housed in an aluminum enclosure spanning the opening. Housing should be continuous over the outside width dimension of the associated door frame.
   d. Operators are to be header mounted, exposed but enclosed by a removable cover.
   e. Door operator mechanisms should be unaffected by temperatures over a range from minus 20°F. to 100°F.
   f. Full closing force shall be provided when the power or assist cycle ends.
   g. Modular design, UL listed for use on labeled doors.
   h. Operators shall have built in 12V and 24V power supply for actuators, electric strikes and magnetic door locks, inputs for both swing and stop side sensors. All wiring connections between operator modules will be made by easy-to-handle electrical connectors. Comply with both UL and NEC requirements for Class 1 and Class 2 wiring by providing separate conduits for each.
   i. Operators shall have independent electronic adjustments to tailor the operator for specific site conditions, including opening speed, holding force at 90 deg., hold-open time and opening force, with time delay systems adjustable from one to twenty-eight seconds. Opening speed, closing speed, back check and latch check are all required to be fully and independently adjustable.
   j. Operators shall have separate and independent adjustments for back check, main speed and latch speed.
   k. Furnish actuators and other controls, as shown in Hardware Sets and reviewed in Hardware Design Meeting(s).
   l. Heavy, lead lined, shielded doors with patient and cart traffic, should have high energy auto operators set to slow speeds as specified in ANSI standards.
m. Power units are required to be self-contained, electro-mechanical units utilizing dripless lubrication for all mechanical parts.

n. Operator control circuits shall be low-voltage, 24 volt current. Power circuits for operator are to be 115 VAC, 60 cycles on a dedicated 20 amp circuit.
   i. Terminals shall be required to be labeled within the operator housing

5. **Actuating Controls**: Hard wired is preferred. Mount heights for new actuating controls must meet applicable codes and shall typically be 42" above finish floor, or match existing adjacent controls, unless directed otherwise by UMHHC Design Manager.
   a. **Push Plates**: A wall or push plate to activate the door operator. When pressed, the wall switch shall send an electric signal to the operator to open the door.
      i. Hard wired is always preferred.
      ii. Locate actuators ample distance away from door(s) to accommodate staff pushing and walking behind carts, wheelchairs and/or gurneys. Mounting locations should be selected for intuitive use by people unfamiliar with the facility.
      iii. Where multiple push plates are adjacent to one another, plates should be provided with proper signage including engraved “arrows” to indicate which door(s) the actuators control.
      iv. Wall switches are generally recessed into an adjacent wall.
      v. Exposed operating plate is to be specified in Type 302 or Type 304 stainless steel, fabricated as a 4-6” diameter disc with number 4 finish, or blue plastic coated.
      vi. Narrow style push plates are acceptable for frame mounting, where frame mounting is required.
      vii. Provide escutcheons, Wikks 6 is the design standard or equal.
      viii. Push plates are to have no sharp edges.
      ix. Should be used to activate the door, in locations where motion sensors would pick up unrelated traffic and activate door operators unnecessarily.
      x. Provide “Press to Operate” legend engraved on face.
   b. **Touchless Push-Plates** are to be adjusted so that the detection field is a minimum of 1” and maximum of 9” from wall.
      i. Preferred where staff have scrubbed and hands-free is required, such as within OR and IR areas. Consider use elsewhere in consultation with UMHHC Design Manager.
      ii. LCN 8310-813 double gang, is the design standard.
   c. **Remote Transmitting Push Plates**: Limit use to renovations where hardwiring would be cost prohibitive. Wireless must be approved by UMHHC Design Manager. Specify model types using 9vdc battery power. Renovation projects where remote transmitters might be used are:
      i. Exterior conduit that would have to run under existing sidewalks to remote posts.
      ii. Existing sensitive building finish materials.
      iii. Existing lead lined walls
   d. **Motion Detector**: Preferred at fully automated door except where access controls, heavy unrelated traffic, or “ghosting” would require use of push plates.
      i. When required, provide microwave motion detector by selected door operator vendor, in accordance with ANSI 156.10.
      ii. Adjust motion detector to minimize “ghosting”, i.e., false opens. Adjust motion detection to allow time for opening for carts, patients, or gurneys.
   e. **Control mats**: Are not to be used.

6. **Presence Sensor Controls**: Provide sensors in accordance with current ANSI 156.10 or ANSI 156.19.
   a. Acceptable Manufacturer:
      i. Stanley Swing Guard Elite
      ii. Besam I-Adapt A202 Premium

7. **Key Switch**: Only provide where doors require ADA automation, where actuators are to be disabled after business hours.
   a. The use of frame mounted key switches should be minimized and discussed with UMHHC Design Manager.
   b. Key core cylinders are coordinated by UMHHC Security Services.
c. Keyways for key switches are to be specified as the “Restricted Q” keyway, assigned to the University of Michigan.

d. Schlage Electronics 653-14-L2 is the design standard.

8. Card Reader: Card readers are intended to control access for security purposes only.
   a. Coordinate heights of new card reader installations with existing adjacent push plates and/or card reader heights. Where project requires; mount card reader at same height as adjacent push plates or card readers.
   b. Mount new card reader installations 48” above finish floor and a minimum of 12” from door frame opening, unless directed otherwise by UMHHC Design Manager.
   c. Card readers and associated conduit and wiring are to be specified by the Electrical Engineer and furnished and installed by Electrical Contractors.
   d. The door Operator Contractor is to provide wiring terminals within the operator housing to receive the wiring connection, and shall be required to fully prepare the operator to respond to the electrical contract closure from the card reader.
   e. When the card reader is secured, the electrical contacts within are open and the door operator is prohibited from opening the door. However, exiting is always allowed.
   f. When activated, the card reader will close a low voltage (typically 24 VDC) contact to allow the operator to open the door normally.

9. Manual Horizontal ICU Style Sliding Door
   a. Provide trackless manual ICU doors where required by function (no floor track).
   b. Doors shall have a full breakout system for the entire width of the opening, and should typically swing out of the patient room.
   c. The break out function should be easy to use by a person unfamiliar with the operation of the door. Labels and/or signage should be used to assist in the door break out operation as required.
   d. Bottom flush bolts should not be used.
   e. Review door pulls at the Door Hardware Design Meetings. Recessed pulls are not preferred.
   f. Normal opening width of sliding door, without breakout, should be a minimum of 48”.
   g. Limit the width of each break out panel to reduce interference with equipment.
   h. Acceptable Manufacturer:
      i. Stanley
      ii. Besam

CONTRACTOR SUBMITTALS:

1. Project Construction Documents should include the following requirements:
   a. Product Data: Manufacturer’s technical data for auto operated doors specified.
   b. Shop drawings are required: To include plans, elevations, sections and details indicating dimensions, materials, and fabrication of doors, frames, sidelights, anchors, hardware, finish, options and accessories.
      i. Show locations, sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement.
      ii. Indicate samples of aluminum finishes.
      iii. Specify glazing material.
      iv. A sequence of operation is to be included with all hardware sets.
      v. Coordinate location with adjacent hardware, push plates and access control systems.