American National Standard for power operated pedestrian doors
ANSI/BHMA A156.10-1985
Revision of:
ANSI A156.10-1979

AMERICAN NATIONAL STANDARD
FOR
POWER OPERATED PEDESTRIAN DOORS

SPONSOR
BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.

APPROVED 25 APRIL 1985
AMERICAN NATIONAL STANDARDS INSTITUTE, INC.
AMERICAN NATIONAL STANDARD

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This Standard was approved by ANSI under the Canvass Method. BHMA was accredited on 21 March 1983 by ANSI as a sponsor using the Canvass Method.
The general classification of builders hardware includes a wide variety of items which are divided into several categories. To recognize this diversity, a sectional classification system has been established. Power Operated Doors is one such section and this Standard is the result of the collective efforts of members of the Builders Hardware Manufacturers Association, Inc. who manufacture this product. The total product standards effort is, therefore, a collection of sections, each covering a specific category of items.

Performance tests, and, where necessary, dimensional requirements, have been established to insure a degree of safety. There are no restrictions on design, except for those dimensional requirements imposed for reasons of safety.

This Standard is not intended to obstruct, but rather to encourage, the development of improved products, methods, and materials. The BHMA recognizes that errors will be found, items will become obsolete, and new products, methods, and materials will be developed. With this in mind, the Association plans to update, correct, and revise these Standards on a regular basis. It shall also be the responsibility of manufacturers to request such appropriate revisions.
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>General</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Definitions</td>
<td>5 &amp; 6</td>
</tr>
<tr>
<td>3.</td>
<td>Control Mats - Applications</td>
<td>6 &amp; 7</td>
</tr>
<tr>
<td>4.</td>
<td>Performance Requirements of Control Mats</td>
<td>7 &amp; 8</td>
</tr>
<tr>
<td>5.</td>
<td>Sensing Devices - Applications</td>
<td>8</td>
</tr>
<tr>
<td>6.</td>
<td>Safety Zones - Applications</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>Marking</td>
<td>9 &amp; 10</td>
</tr>
<tr>
<td>9.</td>
<td>Entrapment Protection</td>
<td>10</td>
</tr>
<tr>
<td>10.</td>
<td>General Performance</td>
<td>10 &amp; 11</td>
</tr>
<tr>
<td>11.</td>
<td>Salt Spray Test</td>
<td>11</td>
</tr>
<tr>
<td>12.</td>
<td>Testing Laboratory</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Tables 1A and 2A - Mat Sizes</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Appendix A - Illustrations</td>
<td>13 through 18</td>
</tr>
<tr>
<td></td>
<td>Appendix B - Definitions</td>
<td>19 through 22</td>
</tr>
<tr>
<td></td>
<td>Appendix C - Reference to Other Standards</td>
<td>23</td>
</tr>
</tbody>
</table>
1. GENERAL

1.1 Requirements for this Standard apply to power operated swinging and sliding doors for pedestrian use and some small vehicular traffic. Included are provisions intended to reduce the chance of user injury or entrapment. Power operated doors primarily for industrial, vehicular or trained traffic are not covered in this Standard.

1.1.1 Where this Standard contains specifications relating to minimum or maximum dimensions of various components of power operated doors for pedestrian use and some small vehicular traffic, such dimensions are included to provide user protection for what are, in the industry, standard application conditions. This Standard does not attempt to assess any factors that may exist with respect to custom design installations which may or may not meet the requirements of this Standard.

1.2 This standard does not apply to Power Assist and Low Energy Power Operated Doors covered in ANSI/BHMA A156.19.

1.3 Required dimensions are expressed in US units first and the SI (metric) equivalents given in parentheses are approximate.

1.4 American National Standards referenced in A156.10 are available from the American National Standards Institute, 1430 Broadway, New York, NY 10018. See Appendix C for a list of other standards affecting products described in ANSI/BHMA A156.10.

2. DEFINITION OF TERMS USED IN THIS STANDARD

2.1 Active Area. The area where a mat or sensing device detects presence or motion.

2.2 Approach Mat. An actuating control mat usually placed on the normal approach side of a door causing the door to open when activated.

2.3 Automatic Door Operator. A power operated mechanism which is attached to a sliding or swinging door for the purpose of mechanically opening and closing a door upon the receipt of an actuating signal.

2.4 Back Check. The checking or slowing down of the speed of door opening before being fully opened.

2.5 Break Away Device. A system which may be a component or an integral part of a power operated sliding or swinging door permitting the door or a panel to swing in the direction of egress when manual pressure is applied.

2.6 Break Out. The process of actuating a break away device causing the door or panel to swing in the direction of egress.

2.7 Closing Time. Time from starting of a door closing until it is at rest fully closed.

2.8 Control Mat. A device placed on the floor in front of a doorway sensing the presence of a person or object. It is normally constructed of a rubber like material with slip resistant surface and is either recessed into or surface mounted on the floor.

2.9 Control Mat, Actuating. A control mat which when activated causes a door to open.

2.10 Control Mat, Safety. A control mat which when activated prevents a door from opening or holds a door open.

2.11 Cycle. The action of an automatic door operator starting with actuation through opening and full closing of (a) door(s).

2.12 Emergency Break Away. A safety device other than an exit device which permits egress under emergency conditions. (Also called Emergency Release)

2.13 Exposed Area. The visible area of a mat after the trim is installed.
2.14 Finger Guard. A device applied at the hinge stile of a door or to the hinge jamb adjacent to the door preventing damage to hands or fingers.

2.15 Guide Rail. A separator used with power operated doors for traffic separation and control.

2.16 Latch Check. The checking or slowing down of the speed of closing a door before being fully closed.

2.17 Motion Sensor. A device designed to detect the movement of a person or object in the vicinity of the doorway and give an actuating signal to the operator.

2.18 Power Operated Door. The combination of door, operator and controls constituting the system. (Also called Automatic Door)

2.19 Presence Sensor. A device located in the vicinity of the doorway to detect the presence of people or objects.

2.20 Safety Zone. An area protected such that the door operator will not operate when the area is occupied by persons or objects moving or stationary.

2.21 Sensing Device. A device that detects the motion or presence of a person or object.

2.22 Trained Traffic. A controlled group of people trained in the safe use and operation of a particular automatic door installation.

2.23 Trim, Mat. Material installed around the perimeter of a control mat securing it to the floor.

2.24 See Appendix B for definitions of other terms used in the power operated door industry, but not used in this Standard.

3. CONTROL MATS - APPLICATIONS (See Tables 1-A and 2-A)

3.1 The edge of the exposed area of all control mats shall not exceed 1/2 in (13 mm) thickness. (See Figure A-10)

3.2 Doors shall remain open for 1 1/2 seconds minimum after loss of actuating signal.

3.3 Swinging Doors

3.3.1 The width of the exposed area of an actuating or safety control mat shall be the width of the door opening less a maximum of 5 in (127 mm) measuring from both sides for a total maximum of 10 in (254 mm). (See Figures A-1, A-2, & A-3)

3.3.2 A safety zone shall be provided on the swing side of the door. If a safety control mat is used, the length of the exposed area shall extend a minimum of 5 in (127 mm) beyond the edge of the door in the open position. (See Figures A-1, A-2, & A-3 and Section 6.)

3.3.3 Swinging doors serving both egress and ingress shall have a series of control mats on the swing side of the door(s) consisting of a safety control mat nearest the opening with a length of exposed area a minimum of 5 in (127 mm) beyond the edge of the door in the open position and one or more actuating control mats totaling an additional 55 in (1397 mm) of exposed length. (See Exception #2 in 7.1 and see Figure A-4)

3.4 Sliding Doors

3.4.1 The width of the exposed area of an actuating mat shall be the clear opening width less a maximum of 5 in (127 mm) measured from both sides for a total maximum of 10 in (254 mm). (See Figures A-5 & A-6)

3.4.2 Sliding doors shall have an actuating control mat with a minimum exposed length according to Table 2-A. (See Figures A-5 & A-6)

3.5 Joining of Control Mats

3.5.1 Control mats may be fitted side by side with the longest dimension perpendicular to the opening and shall not have an inactive area of the meeting line exceeding 2 1/2 in (63 mm). (See Figure A-8)
3.5.2 Control mats may be fitted side by side with the longest dimension parallel to the door opening and shall not have an inactive area at the meeting line exceeding 3 3/4 in (95 mm). (See Figure A-9)

3.6 Controls mats meeting at a threshold shall not have an inactive width exceeding 6 in (152 mm) including threshold width. (See Figure A-7)

3.7 The active area of a control mat shall be a maximum of 1 1/2 in (38 mm) from any edge of the exposed area. (See Figure A-10)

4. PERFORMANCE REQUIREMENTS OF CONTROL MATS

4.1 A control mat circuit shall operate at 30 volts rms or less.

4.2 Control mats shall be resistant to water, oil, grease and detergent.

4.3 Control Mat Sensitivity Test

4.3.1 Circuiting shall be activated when a solid steel test disc 2.26 in (59 mm) in diameter is depressed with a 25 lbf (111 N) applied vertically, perpendicular to the disc in accordance with 4.3.3 and 4.3.4, except that a 30 lbf (133 N) may be applied at the area of the electrical contact connections and adjacent locations described in 4.3.3, if necessary.

4.3.2 The Control Mat shall be divided into 12 equal rectangles covering the active area, except when the length of the mat is such that the length of each rectangle would be greater than 12 in (300 mm) then the mat shall be divided into 15 or 18 equal rectangles so that the length of each rectangle is not less than 8 in (202 mm) nor more than 12 in (300 mm).

4.3.3 The test disc shall be placed in the approximate center of each interior rectangle. For perimeter rectangles, place the disc so that it abuts the edge of the active area 1-1/2 in (38 mm) from the exposed edge of the mat at the approximate centerline of the rectangle. Compensating for the weight of the disc, apply a force to activate the circuit. If the disc and force fail to activate the Control Mat at any of the test locations, place the disc on adjacent 90 degree tangents to test location(s) within the active area of the mat. The disc must actuate the mat at all adjacent locations. Only one reading shall be taken at each test location or adjacent locations. If a check on the initial reading is desired, a period of at least 10 minutes shall be allowed between readings. One test disc diameter shall be omitted from each corner of the mat when testing. The mats shall be tested on a flat, rigid surface.

4.3.4 The test shall be conducted at 68 degrees ± 5 degrees F (20 degrees ± 2 degrees C).

4.4 Control Mat Friction Test

4.4.1 A control mat shall have a coefficient of friction when dry and clean of not less than .66 when tested in accordance with 4.4.2, 4.4.3, 4.4.4.

4.4.2 Coefficient of friction (M) shall be measured using a standard friction block (N) having a diameter of 4 in (102 mm), weighing 15 lbs (7 kg) and equipped with a neolite bottom 1/4 in (6 mm) thick.

4.4.3 The block shall be placed in the middle of the mat with a linear scale calibrated in pounds and kilograms attached.

4.4.4 Force required to just begin to move the block in any direction shall be a minimum of 10 lbf (44 N) (F) applied 1/2 in (13 mm) from the bottom of the block.

4.4.5 The test shall be conducted in a room temperature of 68 degrees ± 5 degrees F (20 degrees ± 2 degrees C). Mats shall be placed in the test room not less than 4 hours prior to the test.
4.4.6 The formula used for determining the coefficient of friction (M) shall be:
\[ M = \frac{F}{N} \]
where \( N = 15 \) lb weight (See 4.4.2) and \( F = 10 \) lbf minimum (See 4.4.4)

4.5 Control Mat Trim. Surface applied control mats shall be secured to the floor with trim having a tapered leadup a minimum of 4 times the mat thickness at the exposed edge. (See Figure A-10)

5. SENSING DEVICES - APPLICATIONS
(Also see 6)

5.1 Swinging Doors

5.1.1 Detection patterns shall be generally elliptical and have a minimum width equal to the width of the door opening measured 30 in (762 mm) from the face of the door. The length at the longest dimension from the face of the door shall be 48 in (1219 mm) minimum. Detection shall be effective to within 5 in (127 mm) from the door measured at the center of the door opening. (See Figure A-14)

5.1.2 The sensing device shall detect an object within the detection pattern measuring 10 in (254 mm) wide, 6 in (152 mm) deep and 28 in (711 mm) high including a 3 in (76 mm) radius top and moving at a rate of 6 in (152 mm) per second perpendicular to the door for motion sensors and stationary for presence sensors. Actuation shall last for 1 1/2 seconds minimum after the object has left the pattern. The object shall be made from solid pine or fir wood. Dimensions given shall be ± 1/4 in (6 mm). (See Figure A-13)

5.2 Sliding Doors

5.2.1 Patterns and detection capabilities shall be in accordance with 5.1. The length at the longest dimension from the face of the door shall be 54 in (1372 mm) minimum. (See Figure A-12)

5.2.2 A presence sensing device shall be located to detect an object as defined in 5.1.2 when the object is centered in the path of a fully opened door.

6. SAFETY ZONES FOR SWINGING DOORS - APPLICATIONS

6.1 A safety zone shall be provided on the swing side of all power operated swinging doors.

6.2 See 3.1 and 3.2 for requirements when both actuating and safety control mats are used in combination. (See Figure A-3)

6.3 If a sensing device is used for activation and a safety control mat is used as a safety zone, the active area of the safety control mat shall extend a minimum of 5 in (127 mm) beyond the edge of the door in the open position and:
1) extend 5 in (127 mm) into the approach area of the door measured from the face of the door; or
2) the door opening area shall be provided with a presence sensing device in accordance with 5.2.2; or
3) the door closing cycle shall have a delay of 4 seconds minimum after the actuating area is clear.

The width of a safety control mat shall be in accordance with 3.2.1. (See Figure A-14)

6.4 If sensing devices are used to provide a safety zone, the length of the active area when the door is in the closed position shall extend a minimum of 5 in (127 mm) beyond the edge of the door when open and the width of the active area when the door is in the open position shall be the door opening less a maximum of 5 in (127 mm) measuring both sides for a total maximum of 10 in (254 mm).

6.5 If sensing devices are used to provide both an actuation and a safety zone, any inactive width exceeding 6 in (152 mm) including threshold width shall:
1) be equipped with a safety control mat; or
2) equipped with a presence sensing device in accordance with 5.2.2; or
3) have a door closing cycle delay of 4 seconds minimum after the actuation area is clear.

7. GUIDE RAILS FOR SWINGING DOORS
(See Figure A-11)
7.1 Two guide rails shall be installed on the swing side of each door and shall project from the face of the door jambs for a distance of not less than the width of the widest door leaf.

Exception #1: A wall or separator may be used in place of a rail, provided that it meets the criteria in 7.2 through 7.5.

Exception #2: Guide rails for swinging doors serving both egress and ingress shall project out from the face of the door jambs on the swing side to no less than the outside leading edge of the required activating carpet (See 3.2.4) less 5 in (127 mm). (See Figure A-4)

7.2 Guide rails shall be a minimum of 30 in (762 mm) high measured from the floor surface.

7.3 Guide rails shall have panels or dividers to inhibit access to the protected area.

7.4 There shall be a maximum of 6 in (152 mm) clearance between the rail and the door in the fully open position or between the rail and the leading edge of the door at the point in its arc of travel when it is closest to the rail. There shall be a 2 in (51 mm) minimum clearance between the rail at the hinge side and the door in the fully open position.

7.5 Free standing guide rails shall have a maximum dimension between the rail and the jamb (or other adjacent surface) of 2 in (51 mm).

8. MARKING

8.1 An arrow sign (See Figure 1) shall be visible from the approach side of a swinging door mounted on the door at a height 58 in ± 5 in (1427 ± 127 mm) from the floor to the center line of the sign. The sign shall be a minimum of 6 in (152 mm) in diameter, having a green circle surrounding a black arrow on a white background.

8.2 An international "DO NOT ENTER" sign (See Figure 2) shall be visible from the side of doors that would swing toward pedestrians attempting to travel in the wrong direction mounted on the door at a height 58 in ± 5 in (1427 ± 127 mm) from the floor to the center line of the sign. The sign shall be a minimum of 6 in (152 mm) in diameter, having a red circle with the wording, "DO NOT ENTER", in white letters in the red circle.

8.3 Swinging doors serving both egress and ingress shall be marked with a decal, visible from both sides of the door, with the words "Automatic Caution Door" (See Figure 3). The sign shall be mounted on the door at a height 58 in ± 5 in (1472 ± 127 mm) from the floor to the centerline of the sign. The sign shall be a minimum of 6 in (152 mm) in diameter and made with black lettering on yellow background.
8.4 Sliding doors with swinging leaves shall be provided with signs reading, "IN EMERGENCY PUSH TO OPEN". The signs shall have red backgrounds with contrasting letters a minimum of 1 in (25 mm) high. The signs shall read horizontally and be located adjacent to the lock stile on a centerline 36 in (914 mm) minimum and 60 in (1524 mm) maximum from the floor.

9. ENTRAPMENT PROTECTION

9.1 Measurements required in 9 Entrapment Protection shall be taken under neutral air pressure conditions.

9.2 The force required to prevent a power operated swinging door from moving in the direction of closing shall not exceed a 40 lbf (180 N) applied 1 in (25 mm) from the lock edge of the door at any point in the closing cycle.

9.3 The opening speed of a swinging door to back check shall not be less than 1.5 seconds.

9.4 The force required to prevent a power operated swinging door from moving in the direction of opening, when in the last 10 degrees of opening shall not exceed a 40 lbf (180 N) applied 1 in (25 mm) from the lock edge of the door.

9.5 A swinging door shall not close through the final 10 degrees in less than 1.5 seconds.

9.6 A swinging door shall be adjusted so that closing time to latch check (assumed to be 10 degrees) shall be the minimum values in the following table:

<table>
<thead>
<tr>
<th>inches (mm)</th>
<th>lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 and under (914) up to 100 (44)</td>
<td>2.0 sec.</td>
</tr>
<tr>
<td>36 (914) up to 140 (64)</td>
<td>2.3 sec.</td>
</tr>
<tr>
<td>42 (1067) up to 110 (50)</td>
<td>2.3 sec.</td>
</tr>
<tr>
<td>42 (1067) up to 150 (68)</td>
<td>2.7 sec.</td>
</tr>
<tr>
<td>48 (2119) up to 120 (50)</td>
<td>2.8 sec.</td>
</tr>
<tr>
<td>48 (2119) up to 160 (73)</td>
<td>3.2 sec.</td>
</tr>
</tbody>
</table>

Doors of other weights and width can be calculated by the formula, \( T = \frac{D V W}{188} \) where

- \( W \) = Weight of Door in pounds
- \( D \) = Width of Door in inches
- \( T \) = Closing time to latch check in seconds

9.7 Clearance. Swinging doors shall have provisions for finger guard protection in accordance with the Underwriters Laboratories, Inc. Standard UL 325 (See Appendix C, C1.4)

9.8 A sliding door shall not require more than a 30 lbf (133 N) to prevent it from closing at any point in the closing cycle.

9.9 A sliding door shall be adjusted so that the closing speed is one foot per second maximum for doors weighing up to and including 160 lbs (71 kg) per leaf.

For doors weighing more than 160 lbs (71 kg).

\[ V = \sqrt{\frac{161}{W}} \]

where

- \( V \) = Velocity in ft/sec
- \( W \) = Weight of Door in lbs

10. GENERAL PERFORMANCE

10.1 Latch Check. Latch check shall occur for swinging doors at no less than ten degrees of door opening and for sliding doors at no less than 2 in (51 mm) from the closed position.

10.2 Manual Opening Force for Swinging Doors. In the event of a power failure the door shall be capable of opening with no greater than a 50 lbf (222 N), applied one inch from the edge of the lock stile.

10.3 Emergency Break Away for Swinging Doors. Swinging doors provided with a break away device shall require no more than a 50 lbf (222 N) applied one inch from the edge of the lock stile to open. When the door is opened in the break out mode, powered operation excluding spring power shall be removed from the door.
10.4 Emergency Break Out for Sliding Doors. Sliding doors provided with a break away device shall require no more than a 50 lbf (222 N) applied at the lock stile for the break out panel to open. Break away devices (swinging panels) for doors that slide on the egress side of an opening may be equipped with a self closing device or cut off power to the operator when used in the break out mode. Break away devices incorporating swing out side lites shall cut off power to the operator when used in the break out mode. (See Appendix C, C1.3)

10.5 Emergency Egress Test for Swinging and Sliding Doors.

10.5.1 Doors with power operators shall be installed in a simulated wall and door framing assembly of sufficient strength to withstand all forces required by the tests. Installation shall be in accordance with manufacturer's printed instructions. Maintenance and repair of other than break away equipment may be performed during the testing cycles.

10.5.2 The test specimen shall be of the largest door size to be listed by the manufacturer.

10.5.3 Cycle for 300,000 cycles at a rate of 5 to 8 per minute.

10.5.4 Break away devices shall not be lubricated or adjusted during the test.

10.5.5 At every 50,000 cycles during the test, sliding and swinging doors shall undergo 6,000 break out cycles without failure. At the conclusion of the test, break out forces shall not exceed those listed in 10.3 and 10.4.

11. SALT SPRAY TEST

11.1 A sample of the latching and hinge assembly of the break away device of a power operated door contained in an approximately 25 in (635 mm) wide panel shall be subjected to a salt fog test in accordance with ANSI Z118.1 (ASTM B-117) for 168 hours.

11.2 Record the release force prior to conducting the test. This shall not exceed a 50 lbf (222 N).

11.3 At the conclusion of the exposure time, remove the sample and allow to dry for 24 hours without cleaning.

11.4 Then cycle the sample 10 times. The release force for the first cycle shall not exceed a 100 lbf (445 N). Release forces for the next 9 cycles shall not exceed a 50 lbf (222 N).

12. TESTING LABORATORY

12.1 Tests described in 10 and 11 shall be performed under the supervision of a nationally recognized independent testing laboratory on pre-production samples prior to acceptance of the design for production and subsequent installation. Production units shall be under an in-plant follow-up inspection service.
### Table 1-A Minimum Exposed Mat Sizes for Swinging Doors

<table>
<thead>
<tr>
<th>Door Opening Size</th>
<th>Min. Width Required</th>
<th>Safety Mat Min. Length 3(^{\text{rd}}) Threshold</th>
<th>Safety Mat Min. Length 1(^{\text{st}}) Threshold</th>
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<tr>
<td>72</td>
<td>62</td>
<td>41-3/4</td>
<td>41-3/4</td>
</tr>
<tr>
<td>84</td>
<td>74</td>
<td>47-3/4</td>
<td>47-3/4</td>
</tr>
</tbody>
</table>

### Table 2-A Minimum Exposed Mat Sizes for Sliding Doors

<table>
<thead>
<tr>
<th>Clear Opening Width</th>
<th>Minimum Exposed Mat Length Required</th>
<th>Minimum Exposed Mat Width Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Slide</td>
<td>37(^{\text{th}}) &amp; Under Over 37(^{\text{th}})</td>
<td>43(^{\text{rd}}) 54(^{\text{th}})</td>
</tr>
<tr>
<td>Bipart Slide</td>
<td>61(^{\text{th}}) &amp; Under Over 61(^{\text{th}})</td>
<td>43(^{\text{rd}}) 54(^{\text{th}})</td>
</tr>
</tbody>
</table>
CONTROL MAT LAYOUTS FOR SWINGING DOORS

Figure A-1
(Ref. 3.2.1 and 3.2.2)

Figure A-2
(Ref. 3.2.1 and 3.2.2)
CONTROL MAT LAYOUTS FOR SWINGING DOORS

**Figures A-3 and A-4**

(Ref. 3.2.1 and 3.2.2)

**Figure A-3**

SINGLE DOOR ON 3¾" CENTER PIVOTS

PAIR OF DOORS ON 3¾" CENTER PIVOTS

**Figure A-4**

(Ref. 3.2.4)
APPENDIX A (Continued)

CONTROL MAT LAYOUTS FOR SLIDING DOORS

![Diagram of Single Sliding Door]

Figure A-5
(Ref. 3.3.1 and 3.3.2)

![Diagram of Bi-Parting Sliding Door]

Figure A-6
(Ref. 3.3.1 and 3.3.2)
APPENDIX A (Continued)

CONTROL MATS CROSS SECTIONS

Figure A-7
(Ref. 3.6)

Figure A-8
(Ref. 3.4.1)

Figure A-9
(Ref. 3.4.2)

Figure A-10
(Ref. 3.1, 3.6 and 4.5)
APPENDIX A (Continued)

GUIDE RAIL LAYOUTS FOR SWINGING DOORS

Figure A-11
(Ref. 7.1 through 7.5)
APPENDIX A (Continued)

DETECTION PATTERN - SLIDING DOORS

Figure A-12
(Ref. 5.2.1)

A = 54" Minimum Length
B = Clear Door Opening Width

SENSING DEVICE

Figure A-13
(Ref. 5.1.2)

DETECTION PATTERN - SWINGING DOORS

Figure A-14
(Ref. 5.1.1 and 6.3)

A = 48" Minimum Length
B = Door Opening Width Measured Jamb to Jamb at a point 30" from the face of the door.
APPENDIX B (Not a part of ANSI/BHMA A156.10)

DEFINITIONS OF TERMS AS USED IN THE POWER OPERATED DOOR INDUSTRY

Actuator (or Operator). The mechanical device used to move (a) door(s).

Air Lock. Air space between doors such as in a vestibule where only one door or set of doors can be opened at one time.

Approach Beam. Photo-electric control beam used to actuate an automatic door.

Arm. A device connecting the door operator to the door. May be concealed, semi-concealed or surface applied.

Automatic Door. The combination of door, operator and controls constituting the system.

Automatic Entrance Package. Complete entrance way containing door(s), frame, controls, and automatic operator, unglazed.

Balanced Door. A door equipped with double-pivoted hardware so designed as to cause a semi-counterbalanced swing action when opening.

Bi-Parting Sliding Doors. A pair of door leaves sliding away from each other to form a single common door opening.

Bottom Arm (Hardware). The arm mechanism attached to the bottom rail of a door and connecting to the spindle of a floor closer, pivot or automatic door operator.

Break Out Opening. The clear space in a doorway when a swinging or sliding door is operated in the emergency mode. This opening is not necessarily the same as the clear opening in the doorway when the door is operated in the normal mode.

Break Out Side. The side of the opening to which the door swings when broken out.

Clear Opening. The clear space in a doorway when the door is in the normal open position.

Closing Cycle. Movement of a swinging or sliding door from the fully open position to the fully closed position.

Concealed Mounting. Automatic door operators which are mounted above or below the door and power the door through the pivot or arm.

Control. A unit containing electrical components for automatic control of door operation and overload protection.

Cover Plate. In reference to door hardware, a finish plate used to cover the exposed face of a floor closer not covered by the threshold; also a plate used to cover the exposed face of a closer or automatic door operator mounted in the head of the door frame.

Door Arm. A device which is usually located in the top or bottom rail of a swinging automatic door. The function of this device is to provide suitable connection of the automatic door operator to the door.

Door Light. The glass area in a glazed door.

Door Size (Actual). For swinging or sliding doors, the actual width and height of the door leaf itself.

Double Acting Operator. An automatic door operator which operates the door in either direction from the closed position.

Flush Glazing. A method of setting glass whereby glazing beads are recessed and flushed with the edge of the frame.

Guard Bar. A protective bar applied to the lower portion of a door or sidelight to prevent collision with the glass.

Harness. A combination of wires and connectors providing connection of electrical controls to operating equipment.
"In" Door. An automatic door installation designed for traffic into a building, space, etc.

In-Header Operator. A door operator completely contained in the door header requiring only electric, pneumatic or hydraulic power.

Knowing Act. With reference to the act of operating a door operator, such as pressing a switch with the knowledge of what will happen, and as opposed to "unknowing act."

Left Hand Traffic. The traffic routing when the entrance door is placed to the left of adjacent exit doors.

Lintel. A horizontal structural member spanning an opening at its head to carry construction above the opening.

Masonry Opening. The wall opening into which the door is installed.

Meeting Stile. The vertical edge of a door or window, in a pair, which is adjacent to the other door or window. A parallel meeting stile is one which has a beveled edge paralleling the edge of the door. A round meeting stile is one having a rounded edge.

Opening Cycle. Movement of a swinging or sliding door from closed position to fully open. For swinging doors, this is normally 90 degrees.

"Out" Door. An automatic door installation designed for traffic out of a building, space, etc.

Photo-Cell System. A device employing the use of visible or invisible beams and receivers across an opening. When a beam is interrupted by a person or object, a signal is generated and used to activate or de-activate the operation of an automatic door.

Photoelectric Control. A device which employs the use of a visible or invisible light beam across or through an opening. When the beam is interrupted by a person or object, a signal is generated.

Power Closing. The closing of a door by energy supplied from hydraulics, pneumatics or electricity.

Power Open. The opening of a door by energy supplied by other than manual.

Power Unit. A remote mechanical device used to convert energy (usually electrical) to pneumatic, hydraulic, or mechanical energy for transmission to the actuator.

Pressure Relief. A safety device to guard against excessive pressure buildup. Usually with reference to pneumatic or hydraulic systems.

Pull Cord Switch. A switch located above the doorway having a cord with handle extending down to approximately 6 feet above the floor. When the cord is pulled, a switch is closed and a signal generated which can be used to actuate an automatic door operator.

Recessed Frame. A frame set into the floor during construction which secures mats into a frame provide flush condition between floor and mat surface.

Recycle. A mode of operation of an automatic door operator that occurs when the door is in the closing portion of its travel and is actuated causing the door to immediately reverse and go to the open position.

Right Hand Traffic. The traffic routing when the entrance door is placed to the right of adjacent exit doors.
Self-Contained Operator. An automatic operator in which the actuator and the power unit are made as a single unit.

Sequential or Latching Operation. Operation of push switch to actuate and push switch to deactuate.

Setting Blocks. Small pieces of neoprene, lead or other material which are placed under the lower edge of a sheet of glass to support it within a frame.

Setting Frame. A frame set into the floor to form a cavity for a control mat.

Single Acting Operator. An automatic door operator which provides electrical, hydraulic, or pneumatic power to the door in the opening mode only. Return power is provided by spring action, gravity, weights, etc.

Single Slide Automatic Door. An automatic door which has one sliding leaf, either left hand or right hand.

Slave Unit. A device that is controlled by another device of the same function.

Sliding Left Hand Automatic Door. Automatic sliding doors are said to be left hand when the door is viewed from the break out side of the opening and it travels to the left side of the viewer.

Sliding Right Hand Automatic Door. Automatic sliding doors are said to be right hand when the door is viewed from the break out side of the opening and it travels to the right side of the viewer.

Spring Closing. The closing of a door by energy supplied by springs.

Strike. An opening or retaining device provided in a frame, threshold or in the edge of a stile of an inactive door to receive a lock or latch bolt. (Also referred to as a Keeper or Strike Plate).

Synchronized Operators. Operators connected together either mechanically or electrically for simultaneous operation. (Synonyms --co-active, simultaneous)

Trim, Recessed Mat. Material installed around the perimeter of a control mat securing it recessed into the floor.

Unknowing Act. Actuating a door operator, such as pressing a switch, without specific knowledge of how it is done or what will happen.

Variable Time Delay. A device which may be adjusted to change the time a door remains open, after removal of the open signal.

Visible Mounting. Automatic door operators which are mounted above the door, protruding from the wall, and drive the door with a visible bracket and arm are said to be visibly mounted.

Definitions of other terms may be found in the American National Standard for Nomenclature for Steel Doors and Steel Door Frames, ANSI A123.1 and in the other ANSI/BHMA A156 Series of Standards.
APPENDIX B (Continued)
SYMBOLS USED FOR POWER OPERATED SLIDING DOORS

TYPICAL DOOR ELEVATIONS

O·X The sliding panel shall be installed to inside of sidelite. Sliding panel slides along sidelite.

O·SX The swing-slide panel shall be installed to the exterior of the fixed sidelite. The swing-slide panel(s) (SX) shall swing out 90° from any position of slide movement.

SO·X The swing out (SO) sidelite shall be installed to the exterior of the sliding (X) panel.

SO·SX The swing out sidelite (SO) shall be installed to the exterior of the swing-slide panel (SX). Swing out sidelite(s) is provided to allow the sliding panel to swing out from any point of slide travel.

SO/SO·SX The swing out sidelite (SO) shall be installed to the exterior and interior of the swing-slide panel (SX). Swing out sidelite(s) exterior only is provided to allow the sliding panel to swing out from any point of slide travel.

O/SO·SX Swing pocket panel applied to the outside of the unit.

P·SX Mounting of unit is to the surface of the wall. As door opens, the sliding panel slides beside the wall.
APPENDIX C (Not a part of ANSI/BHMA A156.10)

C1 REFERENCE TO OTHER STANDARDS

C1.1 When power operated fire doors are used, they may be subject to the requirements of the Standard for Fire Doors and Windows ANSI/NFPA 80.*

C1.2 Glazing in doors may be subject to criteria in the Standard, Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings, ANSI Z97.1.*

C1.3 Where required by the authority having jurisdiction, products meeting the requirements of this Standard may also be required to comply with Chapter 5, Means of Egress, of the Code for Safety from Fire in Buildings and Structures. ANSI/NFPA 101.*

C1.4 Where required by the authority having jurisdiction, products meeting the requirements of the Standard may be required to comply with UL 325** and be listed or labeled by a nationally recognized independent testing laboratory having periodic examination service.

C1.5 Products meeting the requirements of this Standard shall also comply with applicable local building code requirements.


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American National Standards

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