in accordance with 5.2.2. A record of maintenance performed on existing fire door assemblies shall be provided that includes the following information:

(1) Date of maintenance
(2) Name of facility
(3) Address of facility
(4) Name of person(s) performing maintenance
(5) Company name and address of maintenance personnel
(6) Signature of maintenance personnel performing the work
(7) Individual listings of each inspected and tested fire door assembly
(8)* Opening identifier and location of each repaired fire door assembly
(9)* Type and description of each repaired fire door assembly
(10)* Description or listing of the work performed on each fire door assembly

Chapter 6 Swinging Doors with Builders Hardware

6.1 Doors.

6.1.1 General. This chapter shall cover the installation of swinging doors with builders hardware.

6.1.2 Mounting of Doors. Swinging composite, hollow metal, flush sheet metal, metal-clad (kalamein), and wood core doors with builders hardware shall be flush mounted in labeled door frames.

6.1.3 Operation of Doors. All swinging doors shall be closed and latched at the time of fire.

6.1.3.1 For the purposes of 6.1.3, the operation of doors shall be divided into the following categories:

(1) Self-closing doors
(2) Automatic-closing doors
(3) Power-operated fire doors

6.1.3.2 Self-Closing Doors.

6.1.3.2.1 Self-closing doors shall swing easily and freely and shall be equipped with a closing device to cause the door to close and latch each time it is opened.

6.1.3.2.2 The closing mechanism shall not have a hold-open feature.

6.1.3.3 Automatic-Closing Doors. Automatic-closing doors shall be permitted to close automatically by means of the installation of a closing device and one of the following:

(1) A separate, labeled, fail-safe door holder/release device or a hold-open mechanism that shall be permitted to be an integral part of the basic closing device
(2) An integral closing device that allows the door to swing freely and that automatically closes the door during an alarm condition, provided the hold-open mechanisms are released by one or a combination of automatic fire detectors acceptable to the AHJ

6.1.3.3.1 The fire door shall latch upon closure.

6.1.3.4 Power-Operated Fire Doors. Power-operated fire doors shall be equipped with a releasing device that shall automatically disconnect the power operator at the time of fire, allowing a self-closing or automatic device to close and latch the door regardless of power failure or manual operation.

6.2 Supporting Construction.

6.2.1 Walls. Wall openings shall be constructed to readily accept the fire door frame.

6.2.1.1 The frame shall be considered to be non–load bearing except where specifically designed to carry loads.

6.2.1.2 Frames shall be anchored securely to the wall construction.

6.2.2 Sills. Sills shall be installed in accordance with 4.8.2.

6.2.3 Lintels. Separate reinforcing units shall be provided for pressed steel door frames, where necessary, to support overhead wall loads over door openings.

6.3 Openings.

6.3.1 Door Frames.

6.3.1.1* Only labeled door frames shall be used.

6.3.1.2* Methods of anchoring shall be as shown in the listing.

6.3.1.3* Door frames intended for drywall installation shall be of the flush butt–mounted or wrap-around type, and anchors shall be secured in accordance with the manufacturer's instructions.

6.3.1.4* Proprietary-type slip-on door frames shall be installed in accordance with the manufacturer's installation instructions.

6.3.1.5 Door frames provided with expansion bolt–type anchors shall be installed in masonry walls only.

6.3.1.6 Steel-faced composite, hollow metal, metal-clad (kalamein), and flush sheet metal doors shall be installed in pressed steel or steel channel frames.

6.3.1.7* Clearances.

6.3.1.7.1* Clearances dimensions between doors and frames and meeting stiles of paired doors shall be measured on the pull side of the assemblies.

6.3.1.7.2* The clearances between the top and vertical edges of hollow metal doors and the frame, and the meeting stiles of doors swinging in pairs, shall be ⅛ in. ± 1/16 in. (3.18 mm ± 1.59 mm).

6.3.1.7.3 High-pressure decorative laminate (HPDL)-faced doors, ⅓-hour-rated flush wood doors, and stile and rail wood doors installed in hollow metal door frames shall not have clearances greater than ⅛ in. ± 1/16 in. (3.18 mm ± 1.59 mm) between the door and frame and the meeting stiles of paired doors.

6.3.1.7.4* HPDL-faced doors, flush wood doors, and stile and rail wood doors with fire ratings greater than ⅓ hour shall not have clearances greater than ⅛ in. (3.18 mm) between the door and frame, regardless of the door frame construction, and the meeting stiles of paired doors.

6.3.1.7.5* Door leaves constructed of other materials shall not have clearances greater than ⅛ in. (3.18 mm) between the top and vertical edges of doors and meeting stiles of paired doors, unless otherwise permitted in the door frame, door, and latching hardware manufacturers' published listings.

6.3.2 Frames for Lights or Panels. Where a frame assembly consists of both solid panels and glazed lights, the fire protection rating shall be based on the glazed area.

6.3.3 Frames for Transom Lights, Side Lights, or Both.

6.3.3.1 Transom or side lights shall be fixed.

6.3.3.2 Multiple-section transom and side light frames *(see G.10.3)* shall be field assembled using the assembly methods that are in accordance with the manufacturer's installation instructions.

6.3.3.3* Frames with transom lights, side lights, or both shall be permitted where a fire protection rating of ¾ hour or less is required.

6.3.3.4* Frames with transom lights, side lights, or both, installed with fire resistance–rated glazing tested as an assembly in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263, *Standard for Fire Tests of Building Construction and Materials*, shall be permitted where a fire protection rating exceeding ¾ hour is required.

6.3.3.5 Only labeled fire protection glazing or fire resistance glazing shall be used to glaze the light openings.

6.3.4 Frames for Transom or Side Panels.

6.3.4.1 Side panels, transom panels, or both shall be fixed.

6.3.4.2 Removable transom panels shall be permitted to allow for movement of materials or equipment through the opening.

6.3.4.3 Frames with transom panels shall be permitted in situations where fire protection ratings up to and including 3 hours are required.

6.3.4.4 Louvers shall not be installed in either transom or side panels.

6.3.5 Multiple-Opening Door Frames.

6.3.5.1 Individual frames shall be of a maximum size as defined in the manufacturer's published listing but are not to exceed 12 ft 8 in. (3.9 m) in overall width.

6.3.5.2 Where multiple-opening frames are installed adjoining each other in a fire-resistive wall, a 16 in. (406 mm) minimum wall section shall be provided between the frames.

6.3.5.3 The maximum fire protection rating of the door assembly shall not exceed 1 ½ hours.

6.4 Assembly Components.

6.4.1 Closing Devices.

6.4.1.1* Unless otherwise permitted by the AHJ, a closing device shall be installed on every fire door.

6.4.1.2 Coordinating Device.

6.4.1.2.1 Where there is an astragal or projecting latch bolt that prevents the inactive door from closing and latching before the active door closes and latches, a coordinating device shall be used.

6.4.1.2.2 A coordinating device shall not be required where each door closes and latches independently of the other.

6.4.1.3 All components of closing devices used shall be attached securely to doors and frames by steel screws or through-bolts.

6.4.1.4* All closing mechanisms shall be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation.

6.4.1.5 Where door holder/release devices are used, they shall be labeled.

6.4.2* Application of Door Holder/Release Devices. Door holder/release devices shall be installed in accordance with the manufacturer's instructions and only in conformance with the individual manufacturer's published listings.

6.4.3* Builders Hardware.

6.4.3.1 Hinges and Pivots. Hinges, spring hinges, continuous hinges, and pivots shall be as specified in individual door and hardware manufacturer's published listings or Table 6.4.3.1.

6.4.3.1.1* Doors up to 60 in. (1.52 m) in height shall be provided with two hinges and an additional hinge for each additional 30 in. (0.76 m) of door height or fraction thereof.

6.4.3.1.1.1 The distance between hinges shall be permitted to exceed 30 in. (0.76 m).

6.4.3.1.1.2 Where spring hinges are used, at least two shall be provided.

6.4.3.1.2 All hinges or pivots, except spring hinges, shall be of the ball bearing type.

6.4.3.1.2.1 Hinges or pivots employing other antifriction bearing surfaces shall be permitted if they meet the requirements of ANSI/BHMA A156.1, *Standard for Butts and Hinges*.

6.4.3.1.2.2 Spring hinges shall be labeled and shall meet the requirements of ANSI/BHMA A156.17, *Standard for Self Closing Hinges & Pivots*, Grade 1.

6.4.3.1.3 Hinges 4½ in. (114 mm) high and 0.180 in. (4.57 mm) thick shall be permitted for use on wide and heavy doors or doors that are subjected to heavy use or unusual stress.

6.4.3.1.4 Fire doors with hinges of lighter weight that are not of the ball bearing type shall be permitted under the following conditions:

(1) They are part of a listed assembly.
(2) They meet the test requirements of ANSI/BHMA A156.1, *Standard for Butts and Hinges*.
(3) They have been tested to a minimum of 350,000 cycles.

6.4.3.1.5 Pivot sets consisting of a floor or jamb-mounted bottom pivot and a head mounted top pivot, installed of door leaves up to 90 in. (2.29 m), in height shall have one intermediate pivot.

6.4.3.1.5.1 Pivot sets installed on door leaves greater than 90 in. (2.29 m) in height shall have one additional intermediate pivot for each additional 30 in. (0.76 m) of door height over 90 in. (2.29 m) or fraction thereof.

6.4.3.1.5.2 Where only intermediate pivots are used, two intermediate pivots shall be provided for door leaves up to 60 in. (1.52 m) in height, and an additional intermediate pivot shall be added for each additional 30 in. (0.76 m) of door height or fraction thereof.

Table 6.4.3.1 Builders Hardware: Hinges, Spring Hinges, and Pivots

Maximum Door Rating (hr)	Maximum Door Size				Minimum Hinge Size				Hinge Type
	Width		Height		Height		Thickness		
	ft	m	ft	m	in.	mm	in.	mm	
For 1 ¾ in. (44.5 mm) or Thicker Doors									
3 or less	4	1.22	10	3.05	4½	114.3	0.180	4.57	Steel, mortise or surface
3 or less	4	1.22	8	2.44	4½	114.3	0.134	3.40	Steel, mortise or surface
1½ or less	3⅙	0.96	8	2.44	6	152.4	0.225	5.72	Steel, olive knuckle or paumelle
3 or less	4	1.22	10	3.05	4	101.6	0.225	5.72	Steel pivots (including top, bottom, and intermediate)
1½ or less	3	0.91	5	1.52	4	101.6	0.130	3.30	Steel, mortise or surface
1½ or less	2	0.61	3	0.91	3	76.2	0.092	2.34	Steel, mortise or surface
3 or less	3	0.91	7	2.13	4½	114.3	0.134	3.40	Steel, mortise or surface (labeled, self-closing, spring type)
3 or less	3	0.91	7	2.13	4	101.6	0.105	2.67	Steel, mortise or surface (labeled, self-closing, spring type)
For 1⅜ in. (34.93 mm) Doors									
3 or less	3	0.91	7	2.13	3½	88.9	0.123	3.12	Steel, mortise or surface
3 or less	2⅔	0.81	7	2.13	3½	88.9	0.105	2.67	Steel, mortise or surface (labeled, self-closing, spring type)

Note: Table 6.4.3.1 lists the most common applications of hinges, spring hinges, and pivots. Consult the door and hardware manufacturer's specific listings for applications not addressed in this table.

6.4.3.1.5.3 Pivot sets made up of components that are smaller or of a lighter gauge than those shown in Table 6.4.3.1 shall be permitted to be used, provided they meet the requirements of ANSI/BHMA A156.4, *Standard for Door Controls (Closers)*, and are in accordance with the manufacturer's label service procedures.

6.4.3.1.6 The length of continuous hinges shall be within 1 in. (25 mm) of the height of the door leaves.

6.4.3.1.7 Continuous hinges shall be labeled and shall meet the requirements of ANSI/BHMA A156.26, *American National Standard for Continuous Hinges*.

6.4.3.2 Attaching Hinges to Doors.

6.4.3.2.1 Hinges shall be secured in accordance with the listing and the manufacturer's installation instructions.

6.4.3.2.2 Mortise hinges shall be secured to reinforcements in the doors with steel machine screws.

6.4.3.2.3 Mortise hinges shall be secured to wood and plastic-covered composite doors or wood core doors with No. 12 × 1¼ in. (31.75 mm) flat, threaded-to-the-head, steel wood screws. Pilot holes shall be drilled that are 5/32 in. (4 mm) in diameter.

6.4.3.2.4 Surface hinges shall be attached with steel through-bolts.

6.4.3.3 Attaching Hinges to Frames. Hinges shall be secured to frames with steel screws.

6.4.3.3.1 Types of screws shall be permitted to vary depending on the material used for the manufacture of labeled door frames.

6.4.3.3.2 The manufacturer's instructions and published listings for labeled door frames shall be referenced for specific screw requirements.

6.4.3.4 Shimming. When required to meet the clearances stated in 6.3.1.7, the shimming of hinges using steel shims shall be permitted.

6.4.4 Locks or Latches.

6.4.4.1 Only labeled locks and latches or labeled fire exit hardware (panic devices) meeting both life safety requirements and fire protection requirements shall be used.

6.4.4.2 Fire exit hardware shall be installed only on fire doors bearing a label stating "Fire Door to Be Equipped with Fire Exit Hardware."

6.4.4.2.1 Fire exit hardware shall be labeled for both fire and panic.

6.4.4.2.2 Fire exit hardware shall have a permanently attached label that bears the serial number and shows the manufacturer's name and type of approval.

6.4.4.2.3 The label shall differentiate between panic hardware, which is not acceptable for use on fire doors, and fire exit hardware.

6.4.4.3 All single doors and active leaves of pairs of doors shall be provided with an active latch bolt that cannot be held in a retracted position as specified in the individual manufacturer's published listings.

6.4.4.3.1 Doors other than those used in means of egress shall be permitted to be provided with dead bolts in addition to the active latch bolts or as otherwise permitted by the AHJ.

6.4.4.3.2 Locks with dead bolts that are interconnected with latch bolts and retract when the latch bolt is retracted shall be permitted for use on fire doors within a means of egress.

6.4.4.3.3 Latching arrangements that do not provide positive latching in the normal mode shall be permitted to be used provided that, in a fire emergency, the door becomes positively

latched by means of an automatic fail-safe device that is activated by an automatic fire detector. *(See Section 4.7.)*

6.4.4.4 Where both leaves are required for exit purposes, they shall be provided with labeled fire exit hardware.

6.4.4.4.1 Where permitted by the AHJ, pairs of doors not provided with an astragal shall be permitted to have labeled fire exit hardware and an open back strike installed on the inactive leaf, and either labeled fire exit hardware or any labeled latch capable of being opened by one obvious operation from the egress side installed on the active leaf.

6.4.4.5 Where a pair of doors is needed for the movement of equipment and where the inactive leaf of the pair of doors is not required for exit purposes, labeled, top and bottom, self-latching or automatic flush bolts, or labeled two-point latches shall be permitted.

6.4.4.5.1* Manually operated, labeled, top and bottom flush-mounted or surface-mounted bolts on the inactive leaf of a pair of doors shall be permitted to be used where acceptable to the AHJ, provided they do not pose a hazard to safety to life.

6.4.4.6 Throw.

6.4.4.6.1 The throw of single-point latch bolts shall not be less than the minimum shown on the fire door label.

6.4.4.6.2 The minimum throw shall be as specified in the manufacturer's installation instructions.

6.4.4.7 Door Attachments.

6.4.4.7.1 Locks, latches, surface-mounted top and bottom bolts, and fire exit hardware shall be secured to reinforcements in the doors with machine screws or shall be attached with through-bolts.

6.4.4.7.1.1 Pilot holes shall be drilled prior to lock and latch installation, in accordance with manufacturer's installation instructions.

6.4.4.7.2 Flush-mounted top and bottom bolts shall be secured to reinforcements in the doors with machine screws.

6.4.4.7.3 Locks and latches shall be attached to wood and plastic-covered composite doors or wood core doors with not less than No. 8, flat, threaded-to-the-head wood screws or shall be attached with through-bolts.

6.4.4.7.4 Fire exit hardware and surface-mounted top and bottom bolts shall be attached to wood and plastic-covered composite doors with through-bolts or with steel screws at locations specified in the door manufacturer's installation instructions.

6.4.4.8 Strike plates shall be secured to the frame with steel screws or other types of screws as indicated by the manufacturer's published listing or label service procedure.

6.4.4.9 Strike plates for doors swinging in pairs shall be secured to reinforcements in the inactive leaf with machine screws.

6.4.4.9.1 Pilot holes shall be drilled prior to strike plate installation, in accordance with manufacturer's installation instructions.

6.4.4.10* Open back strikes shall be permitted to be used in lieu of conventional strikes only where specifically provided for in the published listings.

6.4.4.11* Electric strikes shall be permitted to be used in lieu of conventional strikes in single swinging doors and pairs of doors where provided for in the published listings.

6.4.5 Protection Plates.

6.4.5.1 Factory-installed protection plates shall be labeled and installed in accordance with the listing of the door.

6.4.5.2 Field-installed protection plates shall be labeled and installed in accordance with their listing.

6.4.5.3 Labeling shall not be required where the top of the protection plate is not more than 16 in. (406 mm) above the bottom of the door.

6.4.6* Automatic Louvers. Only labeled fire door louvers shall be used in fire doors.

6.4.7* Astragals.

6.4.7.1 Doors swinging in pairs, where located within a means of egress, shall not be equipped with astragals that inhibit the free use of either leaf.

6.4.7.2* Pairs of doors that require astragals shall have at least one attached in place to project approximately ¾ in. (19 mm) or as otherwise indicated in the individual published listings.

6.4.8* Gasketing. Gasketing on fire doors or frames shall be in accordance with the published listings of the door, frame, or gasketing material manufacturer.

6.4.9 Thresholds. When used, thresholds shall be noncombustible or listed.

6.5 Application, Installation, and Adjustment.

6.5.1 General. The installation of all components of a fire door assembly shall be in accordance with the listing of each component.

6.5.2 Manufacturers' Instructions. All components shall be installed in accordance with the manufacturers' installation instructions and shall be adjusted to function as described in the listing.

6.5.3 Attachment. All components of a fire door assembly shall be attached firmly to walls, doors, and frames in a manner acceptable to the AHJ.

6.5.4 Mounting. All mounting screws, bolts, or shields shall be steel except where otherwise permitted by this standard.

6.5.5 Anchorage. Attachments to doors with composite cores shall provide firm anchorage for anticipated use.

Chapter 7 Swinging Doors with Fire Door Hardware

7.1 Doors.

7.1.1 General. This chapter shall cover the installation of swinging doors with fire door hardware.

7.1.2 Components. A fire door assembly shall consist of components that are separate products incorporated into the assembly.

7.1.3 Mounting of Doors.

7.1.3.1 Swinging tin-clad doors and flush- or corrugated-type sheet metal doors with fire door hardware shall be flush or lap mounted.

7.1.3.2 Flush-mounted doors shall be hung in steel channel frames securely anchored to the wall construction.

7.1.3.3 Lap-mounted doors shall be hung on the surface of the wall and shall lap the opening at least 4 in. (102 mm) at the top and on each side.

7.1.4 Operation of Doors.

7.1.4.1 The doors shall swing easily and freely on their hinges.

7.1.4.2 The latches shall operate freely.

7.2 Supporting Construction.

7.2.1 Walls.

7.2.1.1 Attachment of the door assembly to the wall shall be by means of through-wall bolts.

7.2.1.2 As an alternative, expansion anchors shall be permitted to be used as specified in 4.8.6.

7.2.2 Sills. Sills shall be installed in accordance with 4.8.2.

7.2.3 Reserved.

7.2.4 Vents.

7.2.4.1 Each tin-clad door formed of 14 in. × 20 in. (360 mm × 510 mm) sheets shall be provided with 3 in. (76.2 mm) diameter vent holes.

7.2.4.2 The vent holes shall be cut through the sheets on the face of the door to be provided with the fire door hardware, using care to avoid interference with the hardware or injury to the wood core when cutting the holes in the sheets.

7.2.4.3 The metal covering around the opening shall be secured with small nails spaced about 1 in. (25.4 mm) apart, and the exposed wood shall be painted thoroughly.

7.3 Openings.

7.3.1 Frames for Lap-Mounted Doors. Frames shall not be required for lap-mounted doors.

7.3.2* Frames for Flush-Mounted Doors.

7.3.2.1 Only labeled frames of the structural steel type shall be used for flush-mounted doors.

7.3.2.2 The frames shall be erected before the wall is built.

7.4 Assembly Components.

7.4.1* Closing Devices for Swinging Tin-Clad and Sheet Metal Fire Doors.

7.4.1.1 Swinging tin-clad and sheet metal fire doors shall be equipped with self-closing or automatic-closing devices to ensure that they are closed and latched at the time of fire.

7.4.1.2 Other arrangements acceptable to the AHJ shall be permitted.

7.4.2 Coordinating Devices.

7.4.2.1 Where there is an astragal or projecting latch bolt that prevents the inactive door of a pair of doors from closing and latching before the active door closes and latches, a coordinating device shall be used.

7.4.2.2 A coordinating device shall not be required where each door closes and latches independent of the other door.

7.4.3 Fire Door Hardware.

7.4.3.1 General.

7.4.3.1.1 Only labeled fire door hardware shall be used.

7.4.3.1.2 The design and construction of typical fire door hardware for swinging fire doors shall be as illustrated in ANSI/UL 14C, *Swing Hardware for Tin-Clad Fire Doors Mounted Singly and in Pairs.*

7.4.3.2 Components. Fire door hardware shall include hinge brackets, hinges, latches, latch keepers, and operating handle mechanisms, and hardware for an inactive door or pairs of doors shall include top and bottom bolts and keepers.

7.4.3.3* Hinges and Latches, Number and Length. The number and length of both the hinges and the latches shall be in accordance with the manufacturer's label service procedure and individual published listing.

7.4.3.4 Attaching Fire Door Hardware to Frames for Flush-Mounted Doors. Hinges and latch keepers shall be bolted, riveted, or welded to the frame.

7.4.3.5 Attaching of Wall Strips for Lap-Mounted Doors.

7.4.3.5.1 Hinges and latch keepers shall be mounted on wall strips bolted to or through the wall *(see 7.2.1)*.

7.4.3.5.2 Bolts of not less than $\frac{3}{4}$ in. (19.05 mm) shall be used for attaching hinge wall strips, and bolts not less than $\frac{1}{2}$ in. (12.7 mm) shall be used for latch keeper wall strips.

Chapter 8 Horizontally Sliding Doors

8.1 Doors.

8.1.1 General. This chapter shall cover the installation of horizontally sliding doors.

8.1.2 Door Panels.

8.1.2.1 Door panels shall be permitted to be a single section or multiple sections.

8.1.2.2 Connection between the panels shall be in accordance with the manufacturer's instructions and the individual published listing.

8.1.2.3 Tin-clad and metal-clad (kalamein) doors shall not be furnished in more than two sections.

8.1.2.4 Hollow metal or composite doors shall be furnished in not more than five panels, constructed for either field or factory assembly.

8.1.2.5 For biparting doors, not more than four panels shall comprise a single leaf.

15.2 Chute Intake Doors.

15.2.1 General Access Gravity Waste Chutes.

15.2.2 All chute intake doors into a waste chute shall be provided with a self-closing, positive latching and gasketed fire door assembly in accordance with 15.1.2. [**82:**6.2.3.3.1.1]

15.2.3 The fire door assembly shall be installed in accordance with its listing. [**82:**6.2.3.3.1.2]

15.2.4 The design and installation shall be such that no part of the frame or door projects into the chute. [**82:**6.2.3.3.1.3]

15.2.5 The area of each chute intake door shall be limited to one-third of the cross-sectional area of a square chute and 44 percent of the area of a round chute. [**82:**6.2.3.3.1.4]

15.3 Limited-Access Gravity Chutes.

15.3.1 All chute intake doors into a linen or waste chute shall be provided with a self-closing, positive-latching and gasketed fire door assembly in accordance with 15.1.2. [**82:**6.2.3.3.2.1]

15.3.2 The fire door assembly shall be installed in accordance with its listing. [**82:**6.2.3.3.2.2]

15.3.3 The design and installation shall be such that no part of the frame or door projects into the chute. [**82:**6.2.3.3.2.3]

15.3.4 A lock shall be provided for the chute intake door. [**82:**6.2.3.3.2.4]

15.3.5 The area of each waste chute intake door shall be limited to two-thirds of the cross-sectional area of the chute. [**82:**6.2.3.3.2.5]

15.3.6 The area of each linen chute intake door shall not exceed the cross-sectional area of the chute. [**82:**6.2.3.3.2.6]

15.4 Pneumatic Chute Intake Doors.

15.4.1 All full vacuum chute intake outer doors shall be provided with a gasketed, self-closing, positive-latching fire door assembly with a fire protection rating of not less than 1 hour. [**82:**6.3.3.2.1]

15.4.2 The door frame shall be installed onto the station and shall be set flush to the shaft wall. [**82:**6.3.3.2.2]

15.4.3 The width of the opening shall be permitted to be equivalent to the internal diameter of the chute, and the height shall be a maximum of one and a half times the diameter. [**82:**6.3.3.2.3]

15.4.4 Minimum door size for a waste or linen loading door shall be 457 mm (18 in.) and shall be side-hinged. [**82:**6.3.3.2.4]

Chapter 16 Access Doors

16.1 Doors.

16.1.1 General. This chapter shall cover the installation of both horizontal and vertical access doors in fire-rated walls, floors, and floor–ceiling or roof–ceiling assemblies.

16.1.2 Components.

16.1.2.1 An access door shall be an integral unit including the door, frame, hinges, latch, and closing device (where required) bearing a label that reads "Frame and Fire Door Assembly."

16.1.2.2 A vertical access door shall be permitted to have hinges that are not part of the labeled assembly, provided the hinges conform to Table 6.4.3.1.

16.1.2.3 Access doors shall be self-closing.

16.1.2.4 Access doors shall be self-latching.

16.1.2.4.1 A horizontal access door that does not open downward and that remains in place when an upward force of 1 lb/ft^2 (48 N/m^2) is applied over the entire exposed surface of the door shall not be required to be self-latching.

16.1.2.5 Self-closing access doors that are intended to be used to allow a person to completely enter the concealed space behind the door shall be operable from the inside without the use of a key or tool.

16.1.2.6 Access doors shall be installed in accordance with their listing.

16.2 Types of Doors.

16.2.1 Horizontal Access Doors.

16.2.1.1 Door assemblies used in fire resistance–rated floor-ceiling or roof-ceiling assemblies shall be tested in the horizontal position in accordance with the procedures described in ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* or ANSI/UL 263, *Standard for Fire Tests of Building Construction and Materials*, and shall be labeled as horizontal access doors.

16.2.1.2 A horizontal access door shall bear a label that includes the additional wording "For Horizontal Installation."

16.2.1.3 A horizontal access door shall be used in a fire resistance–rated floor–ceiling or roof–ceiling assembly only where it has been tested and listed for use as a component of the assembly.

16.2.1.4 Horizontal access doors shall not be required to be subject to the hose stream test.

16.2.2 Vertical Access Doors.

16.2.2.1 Vertical access doors shall have a fire protection rating of ¾ hour, 1 hour, or 1½ hours. *(See Annex E.)*

16.2.2.2 Vertical access doors shall be used only in walls.

16.2.2.3 Where the AHJ determines that a vertical access door is located in proximity to combustibles so that in a fire condition the door is likely to transmit heat to ignite the combustibles, the temperature rise on the unexposed face of the door shall not exceed 250°F (139°C) at the end of a 30-minute exposure to the standard fire test as described in NFPA 252.

16.2.2.3.1 Such an access door as described in 16.2.2.3 shall bear a label indicating a maximum temperature rise of 250°F (139°C).

16.2.2.4 Closing by means of gravity using top-hinging vertical access doors shall be permitted to meet the requirements for self-closing doors.

16.2.2.5 A vertical access door shall bear a label that includes the additional wording "For Vertical Installation."

16.2.3 Floor Fire Door Assemblies. Floor fire door assemblies shall be tested in accordance with the procedures described in NFPA 288.

Chapter 17 Fire Windows

17.1 Windows.

17.1.1 General. This chapter shall cover the installation of fire windows.

17.1.2 Testing.

17.1.2.1 Fire windows shall be tested in accordance with NFPA 257or ANSI/UL 9, *Standard for Fire Tests of Window Assemblies*, for the required fire protection rating of the window opening.

17.1.2.2 Fire windows shall be labeled.

17.1.3* Fire Window Frames. Fire window frame assemblies shall be permanently labeled for such use.

17.2 Glazing Material.

17.2.1* Labeled. Fire protection glazing or fire resistance glazing in fire windows shall be labeled. *(See also 17.2.3.)*

17.2.2* Size.

17.2.2.1 Glazing material installed in fire windows shall be limited to the maximum size openings indicated in their individual listings.

17.2.2.2 Individual glazing material exposed area shall not exceed 1296 in.^{2} (0.84 m^2), with no dimension exceeding 54 in. (1.37 m) unless otherwise tested.

17.2.3 Identification.

17.2.3.1 Each individual glazing unit shall be identified with a label or other identification.

17.2.3.2 The label or other identification shall be permanently applied and shall be visible after installation.

17.2.4 Safety. Fire protection glazing and fire resistance glazing installed in fire windows that are subject to human impact shall meet applicable impact safety standards.

17.3 Types of Windows.

17.3.1 Fire Window Applications.

17.3.1.1 Partitions. Fire windows shall be used to protect openings in interior and exterior partitions required by the AHJ to be protected.

17.3.1.2 Glass block assemblies shall be installed in accordance with Chapter 18.

17.3.1.3 In exterior walls, openings shall be limited to the maximum size listed in accordance with 17.3.2.2, 17.3.3.5, and 17.3.4.

17.3.2 Hollow Metal–Framed Windows.

17.3.2.1 Hollow metal–framed windows shall consist of formed steel sheet, reinforced as required.

17.3.2.2 Maximum size openings for hollow metal windows shall be as follows:

(1) Single window, other than casement: 5 ft × 5 ft (1.52 m × 1.52 m)
(2) Multiple windows, other than casement: 7 ft × 10 ft (2.13 m × 3.05 m)
(3) Single casement window: 3 ½ ft × 10 ft (1.07 m × 3.05 m)
(4) Multiple casement window: 7 ft × 10 ft (2.13 m × 3.05 m)

17.3.3 Hot-Rolled or Extruded Steel Section Windows.

17.3.3.1 The heavy intermediate window frame and ventilator sections shall be a minimum depth of 1^5⁄$_{16}$ in. (33 mm) with integrally rolled weathering contacts.

17.3.3.2 The standard intermediate window frame and ventilator sections shall be a minimum depth of 1¼ in. (32 mm) with integrally rolled weathering contacts.

17.3.3.3 The residential-type window frame and ventilator sections shall be a minimum depth of 1 in. (25.4 mm) with integrally rolled weathering contacts.

17.3.3.4 The industrial-type window frame and ventilator sections shall be a minimum depth of 1¼ in. (32 mm) with applied weathering contacts.

17.3.3.5 Maximum Openings for Hot-Rolled or Extruded Steel Section Windows.

17.3.3.5.1 Heavy Intermediate and Industrial Types.

17.3.3.5.1.1 The heavy intermediate and industrial types shall be used for openings not exceeding 84 ft^2 (7.8 m^2), with neither dimension exceeding 12 ft (3.66 m).

17.3.3.5.1.2 Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 7 ft (2.13 m).

17.3.3.5.2 Standard Intermediate Types.

17.3.3.5.2.1 The standard intermediate types shall be used for openings not exceeding 60 ft^2 (5.57 m^2), with neither dimension exceeding 10 ft (3.05 m).

17.3.3.5.2.2 Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 6½ ft (1.98 m).

17.3.3.5.3 Residential Types.

17.3.3.5.3.1 Residential-type windows shall be used for openings not exceeding 6½ ft (1.98 m) for either dimension.

17.3.3.5.3.2 Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 3½ ft (1.07 m).

17.3.4 Hollow Metal Plate Steel (Combination) Windows. Maximum size openings for hollow metal plate steel windows shall be as follows:

(1) Single window: 5 ft × 5 ft (1.52 m × 1.52 m)
(2) Multiple windows: 7 ft × 10 ft (2.13 m × 3.05 m)

17.4 Installation.

17.4.1 Frames. Frames shall be fastened securely to the wall and shall be capable of resisting all wind stresses and any other stresses for which the window was designed.

17.4.2 Fire Lock Angles.

17.4.2.1 Fire lock angles shall be designed to hold the ventilator in the frame as the assembly expands under exposure to fire.