

3.1. **Definitions.** The three types of systems approved to handle waste and linen, each with separate fire safety criteria, are defined in 3.1.1 through 3.1.3.

3.1.1. **Gravity Waste or Linen Chutes.** An enclosed vertical passageway (riser) in a building, used for transferring trash or linen by gravity to a room at the bottom or to an interface to a compactor. A gravity chute also can be used to interface with a pneumatic transport system. Access of chute intake doors might or might not be limited to the use of keys.

3.1.2. **Full Pneumatic Waste or Linen Conveying Systems.** A closed system consisting of loading stations with inner doors and a fire-rated, normally locked, outer (intake) door; normally closed air damper above the topmost loading station; transport piping, both vertical and horizontal; waste or linen collector; fan with a fan damper; and a central process controller.

3.1.3. **Gravity Pneumatic Waste or Linen Conveying Systems.** A system using a combination of the gravity waste or linen chutes defined in 3.1.1 and a pneumatic conveying system that receives the material from the chute by gravity. This system consists of gravity chutes; a material damper to interface between the chute and the transport piping; the transport pipe; waste or linen collector; fan with fan damper; and a central process controller.

3.2. **Gravity Waste or Linen Chutes.**

3.2.1. **General.** General access gravity chutes shall be permitted to be supplied with unlocked doors and shall be permitted to be available to all occupants at all times. A trash or linen gravity chute shall be permitted to be installed as a limited access gravity chute by installing a key in either the chute intake door or the entry door into the service room. Limited access waste chutes shall be installed so that they can be used only by authorized personnel. A gravity waste or linen chute also shall be permitted to be used to interface with a pneumatic transport system.

3.2.2. **Construction.**

3.2.2.1. **Chute Supports.** A steel or steel-jacketed refractory chute supported at intervals by the building structure shall be provided with expansion joints between support levels. Other chutes shall be supported on a substantial noncombustible foundation.

3.2.2.2. **Chute Offsets.** Gravity metal chutes shall be constructed straight and plumb where allowed by the building configuration. Gravity metal chutes shall be permitted to be offset a maximum of 15 degrees from plumb with the approval of the authority having jurisdiction. Offsets shall be limited to a maximum of one offset for every two floors. A single offset shall be completed (return to vertical) between floors. No access door shall be less than 4 ft (1.2 m) above an offset. The portion of chute between the highest loading door and the chute termination shall be permitted to be offset a maximum of 45 degrees from the plumb, subject to the approval of the authority having jurisdiction.

3.2.2.3. **Standard Diameter of Waste and Linen Gravity Chutes.** Standard waste gravity chutes shall be a minimum of 24 in. (610 mm) in diameter. Standard linen gravity chutes shall be a minimum of 20 in. (508 mm) in diameter.

3.2.2.4. **Chute Venting.** A waste or linen chute shall extend (full size) at least 3 ft. (0.92 m) above the roof of the building. The chute shall open to the atmosphere with the opening being the same cross-sectional area as the chute.

3.2.2.5. **Masonry Waste Chutes.** Masonry waste chutes shall be constructed of clay or shale brickwork not less than 8 in. (203 mm) thick or of reinforced concrete not less than 6 in. (152 mm) thick. Such chutes shall be lined with low-duty refractory brick (as defined in ASTM C 27) not less than 4 ½" (114 mm) thick. Equivalent construction with walls providing a 2-hour fire resistance rating with equivalent structural features shall be acceptable.

- 3.2.2.6. **Lined Metal Waste Chutes.** Metal waste chutes shall be permitted to be lined with low-duty refractory brick (as defined in ASTM C27) not less than 2 ½ in. (63.5 mm) thick or equivalent castable refractories. All unlined steel chutes shall be protected internally by automatic sprinklers. (See 3.2.5.1)
- 3.2.2.7. **Chute Wall Thickness.** Metal waste or linen chutes shall be made of stainless steel, galvanized steel or aluminum-coated steel with no screws, rivets or other projections on the interior surface of the chute. Laps or joints shall be designed so that the liquid will drain to the interior of the chute. The steel shall not be lighter than 16 U.S. gauge. Special waste chutes designed to handle dense or heavy material over 10 lb/ft³ (1500 kg/m³) shall be made of steel not lighter than 14 U.S. gauge.
- 3.2.2.8. **Medium-Heat Chimneys.** Listed medium-heat appliance chimney sections shall be acceptable for use as a trash chute.
- 3.2.2.9. **Chute Discharge Doors.** Gravity chutes shall be constructed so that the base opening of the chute or shaft, or both, shall be protected by an approved automatic-closing or self-closing 1-hour fire door suitable for a Class B opening.
- 3.2.3. **Chute Enclosure (Chase).** Vertical waste or linen chutes in all stories above the storage or compacting room shall be enclosed within a continuous enclosure constructed of noncombustible materials and extending from the ceiling of the storage or compacting room to or through the roof so as to retain the integrity of the fire separation. The walls of the enclosure, or the walls of the masonry chute, shall have a fire resistance of not less than 1 hour if the building is less than 4 stories and not less than 2 hours if the building is 4 or more stories in height.
- 3.2.4. **Chute Loading Doors.**
- 3.2.4.1. **General Access Gravity Waste Chutes.** All chute loading doors into a waste chute shall be provided with a self-closing, positive latching frame and gasketed fire door assembly approved for Class B openings and having a fire resistance rating of not less than 1 hour. The door frame shall be fastened into the chute and the shaft wall. The design and installation shall be such that no part of the frame or door projects into the chute. The area of each chute loading 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.
- 3.2.4.2. **Limited Access Gravity Chutes.** All chute loading doors into a linen or waste chute shall be provided with a self-closing, positive-latching frame and gasketed fire door assembly approved for Class B openings and having a rating of not less than 1 hour. The door frame shall be fastened into the chute and the shaft wall. The design and installation shall be such that no part of the frame or door projects into the chute. A key shall be required to open the door. The area of each waste chute loading door shall be limited to two-thirds of the cross-sectional area of the chute. The area of each linen chute loading door shall not exceed the cross-sectional area of the chute.
- 3.2.4.3. **Service Opening Rooms.** Every service opening shall be in a room or compartment that is separated from the other parts of the building by a wall, partition, floor-ceiling assemblies having a fire resistance rating of not less than the required rating of the chute enclosure. Openings into such a room or compartment shall be protected by approved self-closing doors that are appropriate for protecting the openings and suitable for Class B openings, or not less than 1-hour partition rating with a ¾ hour door.
- 3.2.4.3.1. The size of the opening room or compartment shall not be less than that required to maintain a minimum 6 in. (152.4 mm) clearance between the opening loading door and the closed service opening room door.
- 3.2.4.3.2. **Service Opening Room Key.** If entrance to a limited-access service opening is gained by key, the service opening door shall not require a key to be opened. One opening or the other shall be keyed. Keying shall be required only for limited-access installations.

3.2.5. Chute Automatic Sprinklers.

3.2.5.1. **Gravity Chute.** Gravity chutes shall be protected internally by automatic sprinklers. This protection requires that a sprinkler be installed at or above the top service opening of the chute. In addition, a sprinkler shall be installed within the chute at alternate floor levels in buildings over two stories in height with a mandatory sprinkler located at the lowest service level. Sprinkler system installation shall comply with NFPA 13, *Standard for the Installation of Sprinkler Systems*.

3.2.5.2. **Chute Sprinkler Head Protection.** Automatic sprinklers installed in gravity chute service openings shall be recessed out of the chute area through which the material travels.

3.2.6. Chute Discharge Rooms.

3.2.6.1. **Chute Discharge Room Criteria.** Waste and linen chutes shall terminate or discharge directly into a room having a minimum fire resistance rating not less than that specified for the chute. Openings to such rooms shall be protected by approved automatic-closing or self-closing 1 ½ hour fire doors suitable for Class B openings.

3.2.6.2. **Chute Room Automatic Sprinklers.** Automatic sprinklers shall be installed in chute terminal rooms.

3.2.6.3. **Chute to Incinerator Interface.** Trash gravity chutes shall not discharge directly into an incinerator.