

## Chapter 16 Safeguarding Construction, Alteration, and Demolition Operations

### 16.1 General Requirements.

16.1.1 Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, and this chapter.

16.1.1.1 Permits. Permits, where required, shall comply with Section 1.12.

16.1.2 A fire protection plan shall be established ~~where required by the AHJ~~ and submitted in accordance with the building code.

16.1.3\* In buildings under construction, adequate escape facilities shall be maintained at all times for the use of construction workers. Escape facilities shall consist of doors, walkways, stairs, ramps, fire escapes, ladders, or other approved means or devices arranged in accordance with the general principles of Chapter 14 and NFPA 101, *Life Safety Code*, insofar as they can reasonably be applied to buildings under construction. [101:4.6.10.2]

16.1.4 Fire department access roads provided in accordance with 18.2.3 shall be provided at the start of a project and shall be maintained throughout construction.

16.1.5 Permanent fire department access road markings shall not be required until the building is complete or occupied for use.

### 16.2 Processes and Hazards.

#### 16.2.1 Temporary Heating Equipment.

16.2.1.1 Temporary heating equipment shall be listed and shall be installed, used, and maintained in accordance with the manufacturer's instructions. [241:5.2.1]

16.2.1.2 Chimney or vent connectors, where required from direct-fired heaters, shall be maintained at least 18 in. (460 mm) from combustibles and shall be installed in accordance with NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*. [241:5.2.2]

16.2.1.3 Oil-fired heaters shall comply in design and installation features with Section 11.5. [241:5.2.3]

16.2.1.4 Fuel supplies for liquefied petroleum gas-fired heaters shall comply with NFPA 54, *National Fuel Gas Code*, and Chapter 69. [241:5.2.4]

16.2.1.5\* Refueling operations shall be conducted in an approved manner. [241:5.2.5]

16.2.1.6 Heating devices shall be situated so that they are secured. [241:5.2.6]

16.2.1.7 Heating devices shall be installed in accordance with their listing, including clearance to combustible material, equipment, or construction. [241:5.2.7]

16.2.1.8\* Temporary heating equipment, where utilized, shall be monitored for safe operation and maintained by properly trained personnel. [241:5.2.8]

16.2.1.9 Heaters used in the vicinity of tarpaulins, canvas, or similar coverings shall be located a safe distance from coverings and other combustible materials. The coverings shall be securely fastened to prevent ignition of the covering or upsetting of the heater due to wind action on the covering or other material.

16.2.1.10 Tests for the presence of carbon monoxide shall be made by a qualified person within one hour after the start of each work shift and at least every three hours thereafter. If concentrations of carbon monoxide reach 30 parts per million by volume, tests shall be made more frequently to determine if there is a continuing increase of carbon monoxide concentration. Records of all tests, including the date, time, results obtained, and person making tests, shall be maintained for a seven-day period.

16.2.1.11 Each time a salamander is placed in operation, it shall be checked to ensure that it is functioning properly and its operation shall be checked periodically thereafter. When concentrations of carbon monoxide attain quantities greater than 50 parts per million (0.005%) to air volume at employee breathing levels, the salamander shall be extinguished, unless additional natural or mechanical ventilation is provided to reduce the carbon monoxide content to permissible limits.

16.2.1.12 No employee shall be permitted to enter a heated area until notification of such entry is given to another person located outside. Periodic checks of at least one every 15 minutes shall be made to ensure the safety of employees entering the heated area.

16.2.1.13 Fresh air shall be supplied in sufficient quantities to maintain the safety of employees. Where natural means of fresh air supply is inadequate (less than 16% oxygen by volume), mechanical ventilation shall be provided. Particular attention shall be given to confined spaces and pockets where heat and fumes may accumulate and employees may be present.

#### 16.2.2 Waste Disposal.

16.2.2.1\* Accumulations of combustible waste material, dust, and debris shall be removed from the structure and its immediate vicinity at the end of each work shift or more frequently as necessary for safe operations. [241:5.4.1]

16.2.2.2 Rubbish shall not be burned on the premises without first obtaining a permit from the AHJ. (See Section 10.11.) [241:5.4.2]

16.2.2.3 Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container. [241:5.4.3]

16.2.2.4 Trash chutes, where provided, shall comply with 16.2.2.4.1 through 16.2.2.4.6. [241:5.4.4]

16.2.2.4.1\* A trash chute safety plan shall be submitted to and approved by the AHJ. [241:5.4.4.1]

16.2.2.4.2 Trash chutes used on the exterior of a building shall be of noncombustible construction, or protected in accordance with 16.2.2.4.3 through 16.2.2.4.6 if of combustible construction. [241:5.4.4.2]

16.2.2.4.3\* The interior of combustible trash chutes shall be provided with not less than one temporary automatic sprinkler within a recess near the top of the chute. [241:5.4.4.3]

16.2.2.4.4 The temporary sprinkler required by 16.2.2.4.3 shall be protected by the recess as well as a listed sprinkler guard. [241:5.4.4.4]

16.2.2.4.5 The temporary sprinkler required by 16.2.2.4.3 shall be connected to any available water supply with a listed fire hose, or a flexible, commercial rubber hose, with a diameter of not less than ¾ in. (19 mm) and a listed flexible connector. [241:5.4.4.5]

16.2.2.4.6 The temporary sprinkler required by 16.2.2.4.3 shall be protected against freezing where required by the AHJ. [241:5.4.4.6]

### 16.2.3 Flammable and Combustible Liquids and Flammable Gases.

#### 16.2.3.1 Storage.

16.2.3.1.1 Storage of flammable and combustible liquids shall be in accordance with Chapter 66, unless otherwise modified by 16.2.3. [241:5.5.1.1]

M ~~16.2.3.1.2\* Storage of Class I and Class II liquids shall not exceed 60 gal (227 L) within 50 ft (15 m) of the structure. [241:5.5.1.2]~~

A 16.2.3.1.2 Only a one-day supply of heater fuel shall be stored inside a building in the vicinity of the temporary heating equipment.

M 16.2.3.1.3 Storage areas shall be kept free of weeds, debris, and combustible materials not necessary to the storage. [241:5.5.1.3]

16.2.3.1.4 Open flames and smoking shall not be permitted in flammable and combustible liquids storage areas. [241:5.5.1.4]

16.2.3.1.5 Such storage areas shall be appropriately posted as "no smoking" areas. [241:5.5.1.5]

16.2.3.1.6 Storage areas shall be appropriately posted with markings in accordance with NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*. [241:5.5.1.6]

#### 16.2.3.2 Handling of Flammable and Combustible Liquids at Point of Final Use.

16.2.3.2.1 Handling of flammable and combustible liquids shall be in accordance with Chapter 66, except as modified by 16.2.3.2.2 through 16.2.3.2.4. [241:5.5.2.1]

16.2.3.2.2 Class I and Class II liquids shall be kept in approved safety containers. [241:5.5.2.2]

16.2.3.2.3 Means shall be provided to dispose of leakage and spills promptly and safely. [241:5.5.2.3]

16.2.3.2.4\* Class I liquids shall be dispensed only where there are no open flames or other sources of ignition within the possible path of vapor travel. [241:5.5.2.4]

#### 16.2.3.3 Storage and Handling of Combustible and Flammable Gases.

16.2.3.3.1 Storage and handling of combustible and flammable gases shall be in accordance with NFPA 54, *National Fuel Gas Code*, and Chapter 69. [241:5.5.3.1]

16.2.3.3.2 Open flames and smoking shall not be permitted in flammable gas storage areas. [241:5.5.3.2]

### 16.3 Fire Protection.

16.3.1 **Fire Safety Program.** An overall construction or demolition fire safety program shall be developed. Essential items to be emphasized include the following:

- (1) Good housekeeping
- (2) On-site security
- (3) Installation of new fire protection systems as construction progresses
- (4) Preservation of existing systems during demolition
- (5) Organization and training of an on-site fire brigade

- (6) Development of a prefire plan with the local fire department
- (7) Rapid communication
- (8) Consideration of special hazards resulting from previous occupancies
- (9) Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations [241:7.1]

#### 16.3.2 Owner's Responsibility for Fire Protection.

16.3.2.1\* The owner shall designate a person who shall be responsible for the fire prevention program and who shall ensure that it is carried out to completion. [241:7.2.1]

16.3.2.1.1 The fire prevention program manager shall have the authority to enforce the provisions of NFPA 241 and other applicable fire protection standards. [241:7.2.1.1]

16.3.2.1.2 The fire prevention program manager shall have knowledge of the applicable fire protection standards, available fire protection systems, and fire inspection procedures. [241:7.2.1.2]

16.3.2.1.3 Inspection records shall be available for review by the AHJ. [241:7.2.1.3]

16.3.2.2 Where guard service is provided, the fire prevention program manager shall be responsible for the guard service. [241:7.2.2]

#### 16.3.2.3\* Prefire Plans.

16.3.2.3.1 Where there is public fire protection or a private fire brigade, the manager shall be responsible for the development of prefire plans in conjunction with the fire agencies. [241:7.2.3.1]

16.3.2.3.2 Prefire plans shall be updated as necessary. [241:7.2.3.2]

16.3.2.3.3 The prefire plan shall include provisions for on-site visits by the fire agency. [241:7.2.3.3]

#### 16.3.2.4 Program Manager Responsibilities.

16.3.2.4.1 The manager shall be responsible for ensuring that proper training in the use of protection equipment has been provided. [241:7.2.4.1]

16.3.2.4.2 The manager shall be responsible for the presence of adequate numbers and types of fire protection devices and appliances and for their proper maintenance. [241:7.2.4.2]

16.3.2.4.3 The manager shall be responsible for supervising the permit system for hot work operations. (*See Section 5.1 of NFPA 241.*) [241:7.2.4.3]

16.3.2.4.4 A weekly self-inspection program shall be implemented, with records maintained and made available. [241:7.2.4.4]

16.3.2.4.5\* Impairments to the fire protection systems or fire alarm, detection, or communications systems shall be authorized only by the fire prevention program manager. [241:7.2.4.5]

16.3.2.4.6 Temporary protective coverings used on fire protection devices during renovations, such as painting, shall be removed promptly when work has been completed in the area. [241:7.2.4.6]

#### 16.3.2.5 Site Security.

16.3.2.5.1\* Guard service shall be provided where required by the AHJ. [241:7.2.5.1]

**16.3.2.5.2\*** Where guard service is provided, the guard(s) shall be trained in the following:

- (1) Notification procedures that include calling the fire department and management personnel
- (2) Knowledge of fire protection equipment
- (3) Familiarization with fire hazards
- (4) Use of construction elevators [241:7.2.5.2]

**16.3.2.5.3** Guards shall be informed of any special status of emergency equipment or hazards. [241:7.2.5.3]

**16.3.2.5.4\*** Security fences shall be provided where required by the AHJ. [241:7.2.5.4]

**16.3.2.5.5\*** Entrances (e.g., doors and windows) to the structure under construction, alteration, or demolition shall be secured where required by the AHJ. [241:7.2.5.5]

### **16.3.3\* Fire Alarm Reporting.**

**16.3.3.1** There shall be a readily available public fire alarm box near the premises, telephone service to the responding fire department, or equivalent facilities. [241:7.4.1]

**16.3.3.2** Instructions shall be issued for the immediate notification of the fire department in the case of a fire. Where telephone service is employed, the local fire department number and site address shall be conspicuously posted near each telephone. [241:7.4.2]

### **16.3.4 Access for Fire Fighting.**

**16.3.4.1** A suitable location at the site shall be designated as a command post and provided with plans, emergency information, keys, communications, and equipment, as needed. [241:7.5.1]

**16.3.4.2** The person in charge of fire protection shall respond to the location command post whenever fire occurs. [241:7.5.2]

**16.3.4.3** Where access to or within a structure or an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the AHJ shall be permitted to require a key box to be installed in an accessible location. [241:7.5.3]

**16.3.4.4** The key box shall be an approved type and shall contain keys to gain access as required by the AHJ. (See Section 18.2.) [241:7.5.4]

### **16.3.4.5 Stairs.**

**16.3.4.5.1** In all buildings over one story in height, at least one stairway shall be provided that is in usable condition at all times and that meets the requirements of NFPA 101. [241:7.5.6.1]

**16.3.4.5.2** This stairway shall be extended upward as each floor is installed in new construction and maintained for each floor still remaining during demolition. [241:7.5.6.2]

**16.3.4.5.3** The stairway shall be lighted. [241:7.5.6.3]

**16.3.4.5.4** During construction, the stairway shall be enclosed where the building exterior walls are in place. [241:7.5.6.4]

**16.3.4.5.5** All exit stairs shall be provided with stair identification signs to include the floor level, stair designation, and exit path direction as required to provide for safe egress. [241:7.5.6.5]

**16.3.5 Standpipes.** In all new buildings in which standpipes are required or where standpipes exist in buildings being altered or

demolished, such standpipes shall be maintained in conformity with the progress of building construction in such a manner that they are always ready for use. [241:7.6]

### **16.3.6\* First-Aid Fire-Fighting Equipment.**

**16.3.6.1\*** The suitability, distribution, and maintenance of extinguishers shall be in accordance with Section 13.6. [241:7.7.1]

**16.3.6.2** Wherever a toolhouse, storeroom, or other shanty is located in or adjacent to the building under construction or demolition, or where a room or space within that building is used for storage, a dressing room, or a workshop, at least one approved extinguisher shall be provided and maintained in an accessible location, unless otherwise permitted by 16.3.6.3. [241:7.7.2]

**16.3.6.3** The requirement of 16.3.6.2 shall be permitted to be waived where the structure does not exceed 150 ft<sup>2</sup> (14 m<sup>2</sup>) in floor area or is equipped with automatic sprinklers or other approved protection. [241:7.7.3]

**16.3.6.4** At least one approved fire extinguisher also shall be provided in plain sight on each floor at each usable stairway as soon as combustible material accumulates. [241:7.7.4]

**16.3.6.5** Suitable fire extinguishers shall be provided on self-propelled equipment. [241:7.7.5]

**16.3.6.6\*** Free access to permanent, temporary, or portable first-aid fire equipment shall be maintained at all times. [241:7.7.6]

### **16.4 Safeguarding Construction and Alteration Operations.**

#### **16.4.1\* Scaffolding, Shoring, and Forms.**

**16.4.1.1** Accumulations of unnecessary combustible forms or form lumber shall be prohibited. [241:8.2.1]

**16.4.1.2** Combustible forms or form lumber shall be brought into the structure only when needed. [241:8.2.2]

**16.4.1.3** Combustible forms or form lumber shall be removed from the structure as soon as stripping is complete. [241:8.2.3]

**16.4.1.4** Those portions of the structure where combustible forms are present shall not be used for the storage of other combustible building materials. [241:8.2.4]

**16.4.1.5\*** During forming and stripping operations, portable fire extinguishers or charged hose lines shall be provided to protect the additional combustible loading adequately. [241:8.2.5]

#### **16.4.2 Temporary Separation Walls.**

**16.4.2.1** Protection shall be provided to separate an occupied portion of the structure from a portion of the structure undergoing alteration, construction, or demolition operations when such operations are considered as having a higher level of hazard than the occupied portion of the building. [241:8.6.2.1]

**16.4.2.2** Walls shall have at least a 1-hour fire resistance rating. [241:8.6.2.2]

**16.4.2.3** Opening protectives shall have at least a 45-minute fire protection rating. [241:8.6.2.3]

**16.4.2.4\*** Nonrated walls and opening protectives shall be permitted when an approved automatic sprinkler system is installed. [241:8.6.2.4]

### 16.4.3 Fire Protection During Construction.

#### 16.4.3.1 Water Supply.

16.4.3.1.1\* A water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material accumulates. [241:8.7.2.1]

16.4.3.1.2 There shall be no delay in the installation of fire protection equipment. (See A.16.4.1.5.) [241:8.7.2.2]

16.4.3.1.3\* Where underground water mains and hydrants are to be provided, they shall be installed, completed, and in service prior to commencing construction work on any structure. [241:8.7.2.3]

#### 16.4.3.2 Sprinkler Protection.

16.4.3.2.1\* If automatic sprinkler protection is to be provided, the installation shall be placed in service as soon as practicable. [241:8.7.3.1]

16.4.3.2.2 The details of installation shall be in accordance with NFPA 13. [241:8.7.3.2]

16.4.3.2.3 Where sprinklers are required for safety to life, the building shall not be occupied until the sprinkler installation has been entirely completed and tested so that the protection is not susceptible to frequent impairment caused by testing and correction, unless otherwise permitted by 16.4.3.2.4. [241:8.7.3.3]

16.4.3.2.4 The provision of 16.4.3.2.3 shall not prohibit occupancy of the lower floors of a building, even where the upper floors are in various stages of construction or protection, provided the following conditions are satisfied:

- (1) The sprinkler protection of the lower occupied floors is completed and tested in accordance with 16.4.3.2.3.
- (2) The sprinkler protection of the upper floors is supplied by entirely separate systems and separate control valves so that the absence or incompleteness of protection in no way impairs the sprinkler protection of the occupied lower floors. [241:8.7.3.4]

16.4.3.2.5 The operation of sprinkler control valves shall be permitted only by properly authorized personnel and shall be accompanied by the notification of duly designated parties. [241:8.7.3.5]

16.4.3.2.6 Where the sprinkler protection is regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work shift to ascertain that protection is in service. [241:8.7.3.6]

#### 16.4.3.3 Standpipes.

##### 16.4.3.3.1 General.

16.4.3.3.1.1\* The pipe size, hose valves, hose, water supply, and other details for new construction shall be in accordance with Section 13.2. [241:8.7.4.1.1]

16.4.3.3.1.2 On permanent Type II and Type III standpipes, hose and nozzles shall be provided and made ready for use as soon as the water supply is available to the standpipe, unless otherwise permitted by 16.4.3.3.1.3. [241:8.7.4.1.2]

16.4.3.3.1.3\* In combined systems where occupant hose is not required, temporary hose and nozzles shall be provided during construction. [241:8.7.4.1.3]

16.4.3.3.2 Standpipe Installations in Buildings Under Construction. Where required by the AHJ, in buildings under construction, a standpipe system, either temporary or permanent in nature, shall be installed in accordance with 16.4.3.3.2.1 through 16.4.3.3.2.10. [241:8.7.4.2]

16.4.3.3.2.1 The standpipes shall be provided with conspicuously marked and readily accessible fire department connections on the outside of the building at the street level and shall have at least one standard hose outlet at each floor. [241:8.7.4.2.1]

16.4.3.3.2.2 The pipe sizes, hose valves, hose, water supply, and other details for new construction shall be in accordance with NFPA 241. [241:8.7.4.2.2]

16.4.3.3.2.3 The standpipes shall be securely supported and restrained at each alternate floor. [241:8.7.4.2.3]

16.4.3.3.2.4\* At least one approved hose valve for attaching fire department hose shall be provided at each intermediate landing or floor level in the exit stairway, as determined by the AHJ. [241:8.7.4.2.4]

16.4.3.3.2.5 Valves shall be kept closed at all times and guarded against mechanical injury. [241:8.7.4.2.5]

16.4.3.3.2.6 Hose valves shall have NH standard external threads for the valve size specified in accordance with NFPA 1963, *Standard for Fire Hose Connections*, unless modified by 16.4.3.3.2.7. [241:8.7.4.2.6]

16.4.3.3.2.7 Where local fire department connections do not conform to NFPA 1963, the AHJ shall designate the connection to be used. [241:8.7.4.2.7]

16.4.3.3.2.8\* The standpipes shall be extended up with each floor and shall be securely capped at the top. [241:8.7.4.2.8]

16.4.3.3.2.9 Top hose outlets shall be not more than one floor below the highest forms, staging, and similar combustibles at all times. [241:8.7.4.2.9]

16.4.3.3.2.10 Temporary standpipes shall remain in service until the permanent standpipe installation is complete. [241:8.7.4.2.10]

#### 16.4.4 Alteration of Buildings.

16.4.4.1 Where the building is protected by fire protection systems, such systems shall be maintained operational at all times during alteration.

16.4.4.2 Where alteration requires modification of a portion of the fire protection system, the remainder of the system shall be kept in service and the fire department shall be notified.

16.4.4.3 When it is necessary to shut down the system, the AHJ shall have the authority to require alternate measures of protection until the system is returned to service.

16.4.4.4 The fire department shall be notified when the system is shut down and when the system is returned to service.

16.4.4.5 All required exit components shall be maintained in accordance with this *Code* as deemed necessary by the AHJ.

16.4.4.6 Fire-resistive assemblies and construction shall be maintained.

#### 16.5 Fire Safety During Demolition.

16.5.1 If a building intended to be demolished contains a sprinkler system, such system shall not be rendered inoperative without approval of the AHJ.

**16.5.2** Demolition operations involving the use of cutting and welding shall be done in accordance with Chapter 41.

**16.5.3** Combustible waste material shall not be burned at the demolition site unless approved by the AHJ. Combustible materials shall be removed from the site as often as necessary to minimize the hazards therefrom. (See 16.2.2 and Section 10.11.)

**16.5.4** Where in the opinion of the AHJ the demolition site is of a hazardous nature, qualified personnel shall serve as an on-site fire watch.

#### **16.6 Torch-Applied Roofing Systems.**

**16.6.1 Permits.** Permits, where required, shall comply with Section 1.1.2.

**16.6.2** Torch-applied roofing systems shall be installed in accordance with Chapter 9 of NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*.

#### **16.7 Tar Kettles.**

##### **16.7.1 General.**

**16.7.1.1** The provisions of Section 16.7 shall apply to any type of equipment including, but not limited to, chassis-mounted equipment used for preheating or heating tar, asphalt, pitch, or similar substances for roofs, floors, pipes, or similar objects.

**16.7.1.2 Permits.** Permits, where required, shall comply with Section 1.1.2.

**16.7.1.3** Operating kettles shall not be located inside of or on the roof of any building.

**16.7.1.4 Tar Kettle Location.** The kettle shall be operated in a controlled area. The area shall be identified by the use of traffic cones, barriers, and other suitable means as approved by the AHJ.

##### **16.7.1.5 Kettle Supervision.**

**16.7.1.5.1** An operating kettle shall be attended by a minimum of one employee who is knowledgeable of the operations and hazards.

**16.7.1.5.2** The employee shall be within 25 ft (7.6 m) of the kettle and shall have the kettle within sight.

##### **16.7.1.6 Fire Extinguishers.**

**16.7.1.6.1** Two approved 4-A:40-B:C fire extinguishers shall be provided and maintained within 25 ft (7.6 m) of the operating kettle.

**16.7.1.6.2\*** A minimum of one approved 4-A:40-B:C fire extinguisher shall be provided and maintained on the roof in close proximity to the roofing operations while the roofing material is being applied.

**16.7.1.6.3** Fire extinguishers shall be mounted in an accessible and visible or identified location.

##### **16.7.1.7 Exits.**

**16.7.1.7.1** Roofing kettles shall not block exits, means of egress, gates, roadways, or entrances.

**16.7.1.7.2** Kettles shall not be closer than 10 ft (3 m) from exits or means of egress.

#### **16.7.2 Fuel System.**

**16.7.2.1** Fuel containers shall be constructed and approved for the use for which they were designed.

**16.7.2.2** Liquefied petroleum gas (LP-Gas) containers, hose, regulators, and burners shall conform to the requirements in Chapter 69.

**16.7.2.3** LP-Gas cylinders shall be secured to prevent accidental tipover.

**16.7.2.4** Regulators shall be required on any cylinders.

**16.7.2.5** Where, in the opinion of the AHJ, physical damage to the container is a danger, protection shall be provided to prevent such physical damage.

**16.7.2.6** LP-Gas containers for roofing kettles shall not be used in any building.

#### **16.7.3 Maintenance.**

**16.7.3.1** Roofing kettles and all integral working parts shall be in good working condition and shall be maintained free of excessive residue.

**16.7.3.2** All piping used for pumping heated material to the roof shall be installed in a manner to prevent loss of heated material.

**16.7.3.3** Flexible steel piping shall not be used on the vertical extension of piping systems.

**16.7.3.4** Flexible steel piping shall be limited to those connections that are immediately adjacent to the pump kettle or discharge outlet.

**16.7.3.5** No single length of flexible piping shall exceed 6 ft (1.8 m) in length, and all piping shall be able to withstand a pressure of at least four times the working pressure of the pump.

#### **16.7.3.6 Roofing Kettle Doors.**

**16.7.3.6.1** All roofing kettles shall have doors permanently attached.

**16.7.3.6.2** Roofing kettle doors shall be installed in a workmanlike manner and shall be provided with handles that allow them to be opened without the operator having to stand in front of same.

**16.7.3.6.3** All kettles shall have an approved, working visible temperature gauge that indicates the temperature of the material being heated.

**16.7.3.7** All kettle doors shall be tightly closed and latched when in transit.

#### **16.7.4 Construction.**

**16.7.4.1** The materials and methods of construction of roofing kettles shall be acceptable to the AHJ.

##### **16.7.4.2 Minimum Requirements.**

**16.7.4.2.1** Paragraph 16.7.4.2 shall apply to all roofing kettles or tar pots in excess of 1 gal (3.8 L) capacity.

**16.7.4.2.2** No roofing kettle shall have a capacity in excess of 5 barrels (bbl).

**16.7.4.2.3** Roofing kettles of 2 bbl capacity or less shall be constructed of steel sheet having a thickness of not less than 0.105 in. (No. 12 Manufacturers' Standard Gauge). Kettles of more than 2 bbl capacity shall be constructed of steel sheet having a thickness of not less than 0.135 in. (No. 10 Manufacturers' Standard Gauge). All supports, corners, and the top and bottom of the fire box shall be bound with angle iron or other reinforcements approved by the AHJ. All doors shall be hinged, closely fitted, and adequately latched. Fire boxes shall be of sufficient height from the ground or shall be provided with a system of shields or insulation to prevent heat damage to the street surface.

**16.7.4.2.4** Lids that can be gravity operated shall be provided on all roofing kettles. The tops and covers of all kettles shall be constructed of steel sheet having a thickness of not less than 0.075 in. (1.90 mm) (No. 14 Manufacturers' Standard Gauge) that is close fitting and attached to the kettle with hinges that allow gravity to close the lid.

**16.7.4.2.5** The chassis shall be substantially constructed and capable of carrying the load imposed upon it whether it is standing still or being transported.

**16.7.4.2.6** Fuel containers, burners, and related appurtenances of roofing kettles in which LP-Gas is used for heating shall comply with all the requirements of Chapter 69.

**16.7.4.2.7** Fuel containers that operate under air pressure shall not exceed 20 gal (76 L) in capacity and shall be subject to the approval of the AHJ.

**16.7.4.2.8** All fuel containers shall be maintained in accordance with applicable NFPA codes and standards or shall be at least 10 ft (3 m) from the burner flame or at least 2 ft (0.6 m) therefrom when properly insulated from heat or flame.

#### **16.8 Asbestos Removal.**

**16.8.1 Notification.** The AHJ and the fire department shall be notified 24 hours prior to the commencement and closure of asbestos removal operations.

