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CODE CORNER

ABOUT CODE CORNER

CCFS would like to remind you to check with your local "Authority Having Jurisdiction (AHJ)" for questions and opinions concerning your local Fire and Building Codes. The information contained in this article is supplied as a courtesy by the International Code Council (ICC) and is based on the International Fire and Building Codes and their respective commentaries. Your local codes or ordinances may vary.

Chapter 14: Fire Safety During Construction and Demolition

General Comments

This chapter outlines general fire safety precautions for all structures and all occupancies during construction and demolition operations. In general, these requirements seek to maintain required fire protection, limit fire spread, establish the appropriate operation of equipment and promote prompt response to fire emergencies.

There are 17 sections in Chapter 14. Section 1401 gives the general scope of the chapter and provides the basis for enforcement of its provisions. Section 1402 defines terms specifically relevant to the chapter. The listing, arrangement, fueling and supervision of temporary heating equipment is described in Section 1403. Section 1404 deals with precautions against fire that involve the control of smoking, waste disposal, open burning, spontaneous ignition and temporary electrical wiring. The storage, handling and classification of flammable and combustible liquids, flammable gases and explosive materials are addressed in Sections 1405, 1406 and 1407, respectively.

Sections 1408 and 1409 regulate the need for pre-fire planning, training and maintenance of fire protection systems and emergency notification means.

Access for fire fighting is discussed in Section 1410. Escape by on-site personnel is covered under means of egress in Section 1411. The provision and maintenance of specific fire protection devices such as standpipes, automatic sprinkler systems and portable fire extinguishers is explained in Sections 1413, 1414 and 1415, respectively.

The need to regulate heat sources, such as internal combustion engines and fuel-fired asphalt and tar kettles, is addressed in Sections 1416 and 1417.

Purpose

This chapter contains requirements that are intended to safeguard people from injury or illness and protect property from damage during the construction or demolition processes.

SECTION 1403 TEMPORARY HEATING EQUIPMENT

1403.1 Listed. Temporary heating devices shall be *listed* and *labeled* in accordance with the *International Mechanical Code* or the *International Fuel Gas Code*. Installation, maintenance and use of temporary heating devices shall be in accordance with the terms of the listing.

⚡ *Listing and labeling are used to identify materials, assemblies and devices that are required to bear the identification of the manufacturer, as well as a third-party quality control agency. The quality control agency allows the use of its listing or label based on periodic audits and inspections of the manufacturer's facility. Not all testing laboratories, inspection agencies and other organizations concerned with product or program evaluation use the same means for identifying listed equipment, materials or agencies. Some do not recognize equipment or materials as listed unless they are also labeled. The fire code official must use the same system as the listing organization to identify listed equipment, materials or agencies.*

1403.2 Oil-fired heaters. Oil-fired heaters shall comply with Section 603.

⚡ *The regulations for the devices that are likely to be used for temporary heat are delineated in Section 603.*

1403.3 LP-gas heaters. Fuel supplies for liquefied-petroleum gas-fired heaters shall comply with *Chapter 38 and the International Fuel Gas Code.*

⚡ *Because propane gas is heavier than air, special attention must be given to the way the fuel tank is arranged and connected to the heating device. Tank location and protecting the tanks from damage are just two of the concerns addressed in the International Fuel Gas Code® (IFGC®).*

1403.4 Refueling. Refueling operations for liquid-fueled equipment or appliances shall be conducted in accordance with Section 3405. The equipment or appliance shall be allowed to cool prior to refueling.

⚡ *This section addresses the refueling of liquid-fueled equipment, but Section 3405 addresses proper liquid transfer, container filling operations, filling locations, quantity limits and more. Because hot surfaces can cause ignition of flammable vapors and spills, the appliance must be allowed to cool before refueling.*

1403.5 Installation. Clearance to combustibles from temporary devices shall be maintained in accordance with the *labeled* equipment. When in operation, tem-

porary heating devices shall be fixed in place and protected from damage, dislodgement or overturning in accordance with the manufacturer's instructions.

⚡ *Because conditions change during construction or demolition, temporary heating devices must be monitored and maintained. Materials are constantly being moved, which may reduce the clearances to the device. It may be advantageous for the owner to hire a fire watch to check operating conditions while work is in progress and at the end of work shifts. The fire code official may need to decide what is required.*

1403.6 Supervision. The use of temporary heating devices shall be supervised and maintained only by competent personnel.

⚡ *Temporary installations must be as safe as permanent ones. Having qualified people do these installations is important.*

SECTION 1404 PRECAUTIONS AGAINST FIRE

1404.1 Smoking. Smoking shall be prohibited except in *approved* areas. Signs shall be posted in accordance with Section 310. In *approved* areas where smoking is permitted, *approved* ashtrays shall be provided in accordance with Section 310.



⚡ *This smoking prohibition is out of concern for fire safety, not health or environmental related. Every effort must be made to keep hot smoking materials from igniting building materials or debris. Smoking in occupancies subject to ignition hazards from smoking mate-*

rials should be approved by the fire code official and confined to spaces without significant amounts of combustibles and where approved ash trays or receptacles are provided. Signage indicating "smoking permitted in this area" will encourage the use of the limited area. "No smoking" signs similar to Commentary Figure 310.3 may be used.

1404.2 Waste disposal. Combustible debris shall not be accumulated within buildings. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work. Combustible debris, rubbish and waste material shall not be disposed of by burning on the site unless *approved*.

☞ *Construction sites must be kept reasonably free of accumulations of combustible waste, debris and rubbish. Accumulations are to be removed at the end of each work shift. Combustibles must not be burned unless local environmental authorities are consulted on local open burning regulations. The local fire authority should also be informed of any open burning.*

1404.3 Open burning. *Open burning* shall comply with Section 307.

☞ *Section 307 requires that a permit be obtained for open burning. Other areas of concern are burning location and monitoring. The owner should make documentation of the event available to the fire code official.*

1404.4 Spontaneous ignition. Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a *listed* disposal container.

☞ *Spontaneous ignition, also known as auto-ignition or self-ignition, is defined by Burklin and Purington as "ignition due to chemical reaction or bacterial action in which there is slow oxidation of organic compounds until the material ignites; usually there is sufficient air for oxidation but insufficient ventilation to carry heat away as it is generated." A detailed treatment of the subject appears in the NFPA Fire Protection Handbook. The One Meridian Plaza office building fire in 1991 was allegedly started by spontaneous ignition of oil-soaked rags that were improperly stored during a remodeling operation. This high-rise building in the*

heart of Philadelphia was so seriously damaged in the fire that it was razed in 1999. A listed container for the storage of the oily rags was not used. The fire code official should determine the kinds of oils or solvents used and research their potential for spontaneous ignition (see commentary, Section 304.3.2).

1404.5 Fire watch. When required by the *fire code official* for building demolition that is hazardous in nature, qualified personnel shall be provided to serve as an on-site fire watch. Fire watch personnel shall be provided with at least one approved means for notification of the fire department and their sole duty shall be to perform constant patrols and watch for the occurrence of fire.

☞ *Hazardous demolition operations may need the services of qualified emergency response personnel, such as hazmat technicians or fire fighters, to stand by or actually patrol the area. When such persons are needed, it is essential that they focus on that task only and have no other assignments. A lay person should not be used; it is within the authority of the fire code official to require that professionals be on site. It is critical that such watch personnel be able to contact the fire department immediately in case of an emergency through a reliable means of communication approved by the fire code official.*

1404.6 Cutting and welding. Operations involving the use of cutting and welding shall be done in accordance with Chapter 26.

☞ *Cutting and welding operations account for 9 percent of fires in industrial operations. With accumulations of combustible materials that are common during construction and demolition, additional precautions must be taken. One of the most effective ways to prevent or promptly respond to fires caused by cutting and welding is to have a vigorous "hot work" permit system. Chapter 26 presents these precautions.*

1404.7 Electrical. Temporary wiring for electrical power and lighting installations used in connection with the construction, *alteration* or demolition of buildings, structures, equipment or similar activities shall comply with NFPA 70.

⚡ *Temporary wiring used during construction is, by its very nature, of a lesser class or quality than that which would be installed as permanent building wiring and must, therefore, be monitored for damage, unfinished work or exposed connections. Demolition operations may leave exposed live wiring, so coordination between the on-site electrician and the power company is important. Section 590 of NFPA70 contains requirements for temporary wiring in buildings, including provisions for overcurrent protection, lamp protection, wiring quality and installation, disconnects and time limitations, to name but a few (see also commentary, Section 605).*

SECTION 1405 FLAMMABLE AND COMBUSTIBLE LIQUIDS

1405.1 Storage of flammable and combustible liquids. Storage of flammable and *combustible liquids* shall be in accordance with Section 3404.

⚡ *Storage and use of flammable and combustible liquids require approval of the fire code official for control of hazards and to provide the fire department with vital hazard data for preplanning for incidents involving such materials. A permit is required for storage. See Section 105 and the accompanying commentary for more information on permit requirements.*

1405.2 Class I and Class II liquids. The storage, use and handling of flammable and combustible liquids at construction sites shall be in accordance with Section 3406.2. Ventilation shall be provided for operations involving the application of materials containing flammable solvents.

⚡ *Section 3406.2 contains comprehensive regulations on the proper storage, use and handling of Class I and II liquids. Areas of particular concern are: signage, storage location, ventilation, sources of ignition and dispensing. Class I liquids are more hazardous than Class II because of their lower flash points [$< 100_F (38_C)$] (see commentary, Chapter 34).*

1405.3 Housekeeping. Flammable and combustible liquid storage areas shall be maintained clear of combustible vegetation and waste materials. Such storage areas shall not be used for the storage of combustible materials.

⚡ *Housekeeping in this case concerns ignition sources and added fuel load in the storage area. Easily ignited dry weeds, grass and paper are prohibited in the area. Access to the area by fire fighters can be hampered when combustibles in the storage area ignite.*

1405.4 Precautions against fire. Sources of ignition and smoking shall be prohibited in flammable and *combustible liquid* storage areas. Signs shall be posted in accordance with Section 310.

⚡ *Sources of ignition such as electric arcing, open-flame heating devices and static electricity must be controlled. Smoking must also be controlled by posting "no smoking" signs, providing safe smoking areas and promoting on-the-job awareness of the smoking prohibition as stipulated in Section 310.*

1405.5 Handling at point of final use. Class I and II liquids shall be kept in *approved* safety containers.

⚡ *This section intends that only approved safety cans (as defined in Section 2702.1) of no more than 5-gallon (19 L) capacity with a spring-loaded, self-closing lid and spout covers, designed to safely relieve internal pressure under fire conditions, be used for the storage of Class I and II liquids at construction and demolition sites. The key to the proper storage and handling of flammable and combustible liquids is to keep liquids and vapors away from ignition sources. Restrictions on flammable liquid container sizes, separation distances and active and passive fire protection are based on the extent of hazard presented should an uncontrolled release occur. The key to the proper storage and handling of flammable and combustible liquids is to keep liquids and vapors away from ignition sources. Restrictions on flammable liquid container sizes, separation distances and active and passive fire protection are based on the extent of hazard presented should an uncontrolled release occur.*

1405.6 Leakage and spills. Leaking vessels shall be immediately repaired or taken out of service and spills shall

be cleaned up and disposed of properly.

⚡ *Accidental liquid spills create a vapor release that can quickly travel from the spill point to an ignition source. Because spills need immediate attention to neutralize and remove the hazard, the local fire department should be notified; it is the agency best prepared to deal with the immediate hazards of a spill. Leaks can indicate a developing problem with equipment or piping needing immediate repair. Until repairs are made, the equipment or piping must be taken out of service. If the leak or spill is expected to spread beyond the property lines or contaminate water or air, environmental authorities should also be notified.*

SECTION 1406 FLAMMABLE GASES

1406.1 Storage and handling. The storage, use and handling of flammable gases shall comply with Chapter 35.

⚡ *Chapter 35 deals with the maximum allowable quantities (MAQs), limits for indoor storage, storage containers, ignition sources and limits for outdoor storage. Also refer to Chapter 30 for requirements on compressed gases.*

SECTION 1407 EXPLOSIVE MATERIALS

1407.1 Storage and handling. Explosive materials shall be stored, used and handled in accordance with Chapter 33.

⚡ *Chapter 33 prescribes minimum requirements for the safe storage, handling and use of explosives, ammunition and blasting agents for commercial and industrial occupancies. Its provisions are intended to protect the general public, emergency responders and individuals who handle explosives in connection with construction or demolition operations.*

1407.2 Supervision. Blasting operations shall be conducted in accordance with Chapter 33.

⚡ *Specific requirements dealing with local physical and governmental controls, blasting area security and post-blast procedures are found in Section 3307. Security precautions for explosive materials must conform to the requirements of this chapter and the referenced standards. Any discrepancy that suggests the loss or theft of explosives must be reported to local law enforcement authorities and the Bureau of Alcohol, Tobacco and Firearms (ATF) within 24 hours of discovery (see DOTy 27 CFR;55.30). The ATF may be contacted 24 hours a day at (800) 800-3855. Abandoned explosives, including those not claimed by the consignee within 48 hours of their arrival at a terminal, should be returned to the control of the last licensee (manufacturer or distributor) to possess them before they were abandoned. Local law enforcement authorities and ATF should be contacted if this is not possible.*

1407.3 Demolition using explosives. Approved fire hoses for use by demolition personnel shall be maintained at the demolition site whenever explosives are used for demolition. Such fire hoses shall be connected to an approved water supply and shall be capable of being brought to bear on post-detonation fires anywhere on the site of the demolition operation.

⚡ *The code text does not stipulate the number, size or length of hoses needed; therefore, the involvement of the fire code official is essential to anticipate an incident. The competence of the demolition crew to properly use the hose for fire fighting is not addressed, which suggests that fire brigade training may be in order. Periodic inspections by the fire code official are imperative. As is the case throughout the code, fire protection methods and procedures must be acceptable to the fire code official.*

SECTION 1408 OWNER'S RESPONSIBILITY FOR FIRE PROTECTION

1408.1 Program superintendent. The owner shall designate a person to be the fire prevention program superintendent who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project.

The fire prevention program superintendent shall have the authority to enforce the provisions of this chapter and other provisions as necessary to secure the intent of this chapter. Where guard service is provided, the

superintendent shall be responsible for the guard service.

☞ *Each project must have a fire prevention program superintendent who is in charge of all fire safety efforts, such as prefire planning, on-the-job training of personnel, guard service and the other areas covered in Sections 1408.1 through 1408.7. This person acts on behalf of the fire code official and can enforce the provisions of Chapter 14.*

1408.2 Prefire plans. The fire prevention program superintendent shall develop and maintain an approved prefire plan in cooperation with the fire chief. The fire chief and the *fire code official* shall be notified of changes affecting the utilization of information contained in such prefire plans.

☞ *Prefire plans are developed by the fire prevention program superintendent to assist the site personnel responding to a fire. This plan must be coordinated with the local fire chief and the fire code official. Changes in building operations or equipment that could affect or change the fire department's ground attack of a fire must be reported to the fire department responder immediately.*

For example, if an additional 1,000-gallon (3785 L) propane tank is located alongside an existing tank, the responder needs to know about this situation.

1408.3 Training. Training of responsible personnel in the use of fire protection equipment shall be the responsibility of the fire prevention program superintendent.

☞ *The fire responder is expected to know what fire-fighting and fire protection equipment is on the site and how to operate it. The fire prevention program superintendent is responsible for training the job-site personnel in the proper use of hand-held fire extinguishers, hose lines, fire alarms and sprinkler systems.*

1408.4 Fire protection devices. The fire prevention program superintendent shall determine that all fire protection equipment is maintained and

serviced in accordance with this code. The quantity and type of fire protection equipment shall be *approved*.

☞ *Fire protection and detection equipment must be maintained during construction and demolition. The fire prevention program superintendent must decide what is required to enforce maintenance as required by the code. Approval of the equipment and its maintenance is not, however, transferred to the fire prevention program superintendent, but remains with the fire code official.*

1408.5 Hot work operations. The fire prevention program superintendent shall be responsible for supervising the permit system for hotwork operations in accordance with Chapter 26.

☞ *This issue is also discussed in the commentary to Section 1404.6. Chapter 26 contains an in-depth treatment of hot work, especially Section 2603.3, which deals with hot work permits. The fire prevention program superintendent issues the permits to coordinate a response if a fire should occur in the known hot work permit area.*

1408.6 Impairment of fire protection systems. Impairments to any *fire protection system* shall be in accordance with Section 901.

☞ *Section 901.7 specifically deals with systems out of service because of planned, emergency or accidental impairment. During demolition, portions of the equipment must be kept in service as long as possible. Likewise, equipment on a construction site must keep pace with the new work and be kept in service as much as possible, especially at the end of the work day.*

1408.7 Temporary covering of fire protection devices. Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

☞ *Fire protection devices must be kept in service as much as possible during construction. An example would be that paper or plastic bags must be removed from the sprinkler heads as soon as the painting of the sprinkler piping or the adjacent ceiling is completed.*

Additional information can be obtained from standards, such as NFPA 13 and NFPA 72.

SECTION 1409 FIRE REPORTING

1409.1 Emergency telephone. Readily accessible emergency telephone facilities shall be provided in an approved location at the construction site. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone.

⚡ *The construction site must have an emergency phone located in an approved location. Workers on the site are not expected to know the street address of the site or the fire department emergency number if it is a number other than 911. Therefore, the site address and fire department emergency number must be prominently posted. Typical customized signs are available from safety equipment suppliers or sign companies.*

SECTION 1410 ACCESS FOR FIRE FIGHTING

1410.1 Required access. *Approved* vehicle access for fire fighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

⚡ *Fire-fighting vehicle access is the means by which fire fighters gain access to the construction or demolition site and building for fire suppression and rescue operations until the permanent fire apparatus access roads are constructed. Such access is an integral component of the fire prevention program. The site superintendent or other person responsible for construction and demolition operations is responsible for maintaining and policing fire-fighter access routes, as provided in*

Section 1408. Fire apparatus must be able to get within 100 feet (30 480 mm) of any installed fire department connection supplying water to temporary or permanent fire protection systems over roads that will support the weight of the heaviest vehicle that might respond. The weight requirements are available from the local fire department. All-weather surfaces are required because the responding fire department should not waste time moving snow or trying to get out of mud (see also commentary, Section 503).

1410.2 Key boxes. Key boxes shall be provided as required by Chapter 5.

⚡ *As construction nears completion, some areas may not be accessible to the fire department without the use of a key. In those cases, the fire code official may require a key box as stipulated in Section 506.*

SECTION 1411 MEANS OF EGRESS

[B] 1411.1 Stairways required. Where a building has been constructed to a *building height* of 50 feet (15 240 mm) or four stories, or where an existing building exceeding 50 feet (15 240 mm) in *building height* is altered, at least one temporary lighted *stairway* shall be provided unless one or more of the permanent *stairways* are erected as the construction progresses.

⚡ *Work crews will necessarily be in, and the fire department will need access to, buildings under construction or demolition at the same time that the means of egress elements are being built or destroyed. This situation requires diligence on the part of the fire code official and the construction managers to make sure a means of escape for workers and access for emergency forces is available at all times, and that construction of occupiable areas does not unnecessarily extend beyond the construction of the means of egress. By the time the building is substantially enclosed, all required means of egress should be fully constructed and functional. For a building under construction, these precautions are triggered when the building exceeds 50 feet (15 240 mm) in height or four stories. Any temporary stairways must be lighted. Similarly, the destruction of the means of egress should not precede the demolition of areas occupied by workers.*

1411.2 Maintenance. Required *means of egress* shall be maintained during construction and demolition, remodeling or *alterations* and additions to any building.

Exception: *Approved temporary means of egress systems and facilities.*

∩ *As in any building where people must egress, the required means of egress must be kept clear of construction materials and demolition debris so occupants can exit in an emergency. Temporary means of egress may be provided when the permanent egress system cannot be maintained in accordance with this section.*

SECTION 1412 WATER SUPPLY FOR FIRE PROTECTION

1412.1 When required. An *approved* water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.

∩ *A water supply must be connected to the wet standpipe, and underground water supply and hydrants must be available for the dry standpipes as soon as combustible materials are on the job site. As previously stated in this commentary, the unfinished building is most vulnerable to fire and must be protected as much as possible.*

SECTION 1413 STANDPIPES

1413.1 Where required. In buildings required to have standpipes by Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed when the progress of construction is not more than 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipe shall be provided with fire department hose connections at accessible locations adjacent to usable stairs. Such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or

flooring.

∩ *This section requires the installation of standpipes during construction for any building required by Chapter 9 of the code and the IBC to be equipped with a standpipe system. The requirement for standpipe and hose connections is triggered when construction progresses to a height of not more than 40 feet (12 192 mm) above the lowest level of fire department access.*

While hoses need not be provided, the hose connection must be located adjacent to a stairway. Although thread requirements are not stated, the hose threads must be compatible with those of the responding fire department. Standpipe hose connections must be ready for use on each floor before the installation of the floor deck on the story or level above in order to provide fire fighters with a means of bringing hose lines to bear on a fire on the highest accessible floor level.

1413.2 Buildings being demolished. Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

∩ *When a structure is being demolished and a standpipe system exists within that structure, the standpipe system must be maintained operable and be available for use by the fire department. When a structure or a floor is to be demolished, its standpipe system must also be demolished with the structure; however, the system may not be demolished more than one floor below the floor being demolished.*

The availability and abundance of accessible avenues for vertical fire spread make buildings undergoing partial or total demolition highly susceptible to damage from fire. Even more so than construction sites, demolition projects attract vandals and vagrants who may set fires on the property for warmth or criminal purposes. Furthermore, cutting equipment and portable heating appliances may easily ignite combustible debris created during demolition. Once started, fire will spread rapidly through voids and vertical openings created to remove building service equipment. Standpipes provide fire fighters with a means of deploying hose lines quickly against these rapidly spreading fires.

1413.3 Detailed requirements. Standpipes shall be installed in accordance with the provisions of Section 905.

Exception: Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of Section 905 as to capacity, outlets and materials.

⚡ *Section 905 deals with installation; maintenance and supervision; building height and area; special occupancy application and type as related to standpipe systems in buildings under construction (see commentary, Section 905). Temporary standpipes, whether dry or wet, are subject to the same requirements of Section 905 as permanent standpipes.*

SECTION 1414

AUTOMATIC SPRINKLER SYSTEM

1414.1 Completion before occupancy. In buildings where an *automatic sprinkler system* is required by this code or the *International Building Code*, it shall be unlawful to occupy any portion of a building or structure until the *automatic sprinkler system* installation has been tested and *approved*, except as provided in Section 105.3.4.

⚡ *Section 105.3.4 is very clear in that when the sprinkler system is not tested and approved, the building cannot be occupied by the owner or tenants. In other words "no protection; no people" as one fire code official has put it. A building that has been given construction alternatives (increased travel distance, increased height and area, and reduced fire-resistance ratings) because of a sprinkler system is not safe for people when the system is not functional.*

1414.2 Operation of valves. Operation of sprinkler control valves shall be allowed only by properly authorized personnel and shall be accompanied by notification of duly designated parties. When the sprinkler protection is being 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 period to ascertain that protection is in service.

⚡ *Closed control valves at the time of a fire are a major cause of sprinkler system failure. Only properly trained personnel should be operating these valves under the supervision of the fire prevention program superintendent, if available. The systems must be kept in service as much as possible and especially overnight or at the time of shift changes. If a fire watch is employed, duties should include monitoring these valves. The fire department must be notified when the system is out of service for an extended period of time because it responds to a sprinklered building differently than it does to an unsprinklered building.*

SECTION 1415

PORTABLE FIRE EXTINGUISHERS

1415.1 Where required. Structures under construction, *alteration* or demolition shall be provided with not less than one *approved* portable fire extinguisher in accordance with Section 906 and sized for not less than ordinary hazard as follows:

1. At each *stairway* on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and *combustible liquids*.

⚡ *Portable extinguishers must be rated for the hazards protected. Section 906 and NFPA 10, the applicable standard for portable fire extinguishers, contain information on fire extinguisher ratings. Other circumstances under which the fire code official may require additional extinguishers include: workers using open-flame devices; flammable or combustible liquids; welding or cutting equipment or painting equipment for applying flammable or combustible finishes during both construction and demolition.*

SECTION 1416 MOTORIZED EQUIPMENT

1416.1 Conditions of use. Internal-combustion-powered construction equipment shall be used in accordance with all of the following conditions:

1. Equipment shall be located so that exhausts do not discharge against combustible material.
2. Exhausts shall be piped to the outside of the building.
3. Equipment shall not be refueled while in operation.
4. Fuel for equipment shall be stored in an *approved* area outside of the building.

⚡ *Motorized equipment, particularly equipment powered by an internal combustion engine, must be kept clear of combustibles, must have exhaust arranged so as not to create an environmental hazard, must not be fueled while hot and have fuel stored properly. These issues are similarly addressed in Sections 1403, 1404 and 1405.*

SECTION 1417 SAFEGUARDING ROOFING OPERATIONS

1417.1 General. Roofing operations utilizing heat-producing systems or other ignition sources shall be conducted in accordance with Sections 1417.2 and 1417.3 and Chapter 26.

⚡ *Although licensed and bonded contractors are often required for roofing operations by state or*

local laws or ordinances, the jurisdiction must establish who is authorized to conduct such activities. In addition to the requirements of Section 1417, the applicable hot work requirements of Chapter 26 also apply to certain roofing operations. Since the definition of "Hot work" in Section 2602.1 specifically includes the installation of torch-applied roofing systems, permits for roofing operations utilizing such heat-producing systems that are ignition sources are required by Section 105.6.23. Additional permits for the use of combustible liquids and compressed gas may be also appropriate. Roofing permits are typically required by the IBC as well.

1417.2 Asphalt and tar kettles. Asphalt and tar kettles shall be operated in accordance with Section 303.

⚡ *Section 303 regulates transportation, location, fueling, supervision, construction and fire protection of asphalt and tar kettles (see commentary, Section 303).*

1417.3 Fire extinguishers for roofing operations. Fire extinguishers shall comply with Section 906. There shall be not less than one multipurpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

⚡ *Section 906 generally covers the location and requirements of portable fire extinguishers with a particular reference to asphalt kettles in Table 906.1. Section 303 also has requirements for extinguishers on the kettle, in the proximity of the kettle and on the roof. Fire extinguishers are to be fully charged and ready for service. Many construction sites are littered with building materials and debris. The kettle operator is responsible for maintaining an appropriate distance between the hot kettle and combustible materials.*

Safety & Security—Safety Awareness at Marist ...

All parents are concerned about the well-being of their sons or daughters while they are attending college. Marist recognizes this concern and has employed security measures to assure that our students can enjoy their years here as safely as possible. The following information has been prepared to increase your awareness of the current safety programs that exist at Marist. Portions are also provided in compliance with the Federal Government's Student Right to Know and Campus Security Act.



<http://www.youtube.com/watch?v=dA0iHt5GaHQ>