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AND FIRE PROTECTION OFFICE  
OF THE STATE FIRE MARSHAL  
Fire and Life Safety Division**

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## **Construction Site Fire Safety**

### **SCOPE**

This standard is intended to prescribe minimum safeguards for new building construction and significant building alteration projects in order to provide a reasonable degree of safety to life and property from fire. This standard is based on the provisions for fire safety during building construction as set forth in the California Fire Code. The building owner and/or general contractor is responsible for compliance with the provisions of this standard and all applicable code requirements.

## **FIRE PROTECTION PLAN**

A written Fire Protection Plan shall be developed for significant or complex construction projects at the discretion of the fire department. The plan shall be approved by the fire department prior to proceeding with civil/grading work for new buildings or commencement of demolition work in alteration projects. The written plan shall be consistent with the fire safety precautions as specified in this standard. The general contractor and/or building owner is responsible for carrying out the provisions of the Fire Protection Plan and communicating it to all subcontractors. The Fire Protection Plan shall include the following:

1. Procedures for reporting emergencies to the fire department.
2. Procedures for emergency notification, evacuation and/or relocation of all persons in the building under construction and on the site.
3. Procedures for hot work operations, management of hazardous materials and removal of combustible debris and maintenance of emergency access roads.
4. Floor plans identifying the locations of exits, exit stairs, exit routes and portable fire extinguishers.
5. Site plans identifying the designated exterior assembly areas for each evacuation route.
6. Site plans identifying required fire apparatus access roadways, on-site fire hydrants, existing service shutoffs (electrical, water, gas, steam, etc.) and site specific information (hazards, security barriers, etc.).
7. The name and contact phone number of the person(s) responsible for compliance with the Fire Protection Plan.

**Owner's Responsibility for Fire Protection:** 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. CFC 3308.1

## GENERAL REQUIREMENTS

**Fire Department Access Roadways:** All construction sites shall be readily accessible by fire department apparatus by means of roadways having an all-weather driving service of not less than 20 feet of unobstructed width. The roads shall withstand the live loads of fire apparatus, and have a minimum 13 feet, 6 inches of vertical clearance. Dead end fire access roads in excess of 150 feet in length shall be provided with approved turnarounds.

When approved by the fire authority, temporary access roadways may be utilized until such time that the permanent roadways are installed. At a minimum, the roadway shall consist of a compacted sub-base and 6 inches of road base material (class 2 aggregate base rock) both compacted to a minimum of 95%. The perimeter edges of the roadway shall be contained and delineated by curb and gutter or other approved methods. The use of geotextile reinforcing fabric underlayment or soils lime-treatment may be required if so determined by the project civil engineer. Provisions for surface drainage shall also be provided where necessary. The integrity of the roadway shall be maintained in all weather conditions.

CCR Title 19, Division 1, 3.05(a); CFC 3310

**Fire hydrants:** Where underground water mains and hydrants are required for the building(s) under construction, they shall be installed, completed, and in service prior to combustible construction material arriving on site. CFC 3312.1

**Premises identification:** The address numbers of the property or project location shall be clearly visible and legible from the street or road fronting the property at the fire apparatus access point or as otherwise approved.

CFC 505.1

**Combustible debris:** Wood, cardboard, packing material, form lumber and similar combustible debris shall not be accumulated within buildings. Such debris, rubbish and waste material shall be removed from the building(s) at the end of each shift of work. CFC 3304.2.2

**Oily rags:** Oily rags and similar material shall be stored in metal or other approved containers equipped with tight-fitting covers. CFC 3304.2.4

**Temporary heating equipment:** Temporary heaters, such as those that are LPG fueled, shall be listed and shall be installed, used, and maintained in accordance with the manufacturer's instructions. Heating devices shall be properly secured and kept clear from combustible materials. Refueling operations shall be conducted in an approved manner.  
CFC 3303

**Smoking:** Smoking is prohibited anywhere inside or on the roof of new buildings under construction or in the project work area of buildings undergoing alteration. A suitable number of 'No Smoking' signs shall be posted to ensure that smoking is controlled. CFC 3304.1

**Vehicle parking:** All vehicles shall be parked a minimum of 20 feet from new buildings under construction.

**Exception:** Vehicles that are temporarily parked for loading/unloading or other construction related operations.

Such vehicles shall not be left unattended.

**Combustible material storage:** Combustible construction materials shall be stored a minimum of 20 feet from buildings under construction or undergoing alteration.

**Exception:** 1. Materials that are staged for installation on a floor level.

## *FIRE PROTECTION SYSTEMS*

**Preplanned Impairment Program:** A impairment coordinator assigned by the building owner shall be responsible for any impairments to the fire protection system. Notification in writing prior to the impairment is required to be reviewed by the fire authority. CFC 3308.6

**Fire Sprinkler Systems:** Where automatic fire sprinkler systems are required to be installed in new buildings, the system shall be placed in service as soon possible.

Immediately upon the completion of sprinkler pipe installation on each floor level, the piping shall be hydrostatically tested and inspected. After inspection approval from the fire department, each floor level of sprinkler piping shall be connected to the system supply riser and placed into service. For system activation notification, an exterior alarm bell can be installed and connected to the sprinkler waterflow device prior to installation of the monitoring system.

For buildings equipped with fire sprinkler systems that are undergoing alterations, the sprinkler system(s) shall remain in service at all times except when system modifications are necessary. Fire sprinkler systems undergoing modifications shall be returned to service at the end of each workday unless otherwise approved by the fire department. The general contractor or his/her designee shall check the sprinkler control valve(s) at the end of each workday to confirm that the system has been restored to service.

**Standpipes:** Where standpipes are required, the standpipes shall be installed when the progress of construction is not more than 35 feet in height above the lowest level of the fire department access. Standpipes shall be provided with fire department hose connections and outlets at readily accessible locations adjacent to usable stairs. The standpipe system shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring. Each floor shall provide a 2 ½ inch valve outlet for fire department use. Where construction height requires installation of a Class III standpipe, fire pumps and water main connections shall be provided to serve the standpipe.

CFC 3313.1

**Fire Extinguishers:** Portable fire extinguishers shall be provided and mounted on a wall or post at each usable stairway. The travel distance to any extinguisher shall not exceed 75 feet and the mounting height shall not exceed 5 feet measured at the top of the extinguisher. Extinguishers shall not have less than a 2A10BC rating or as otherwise directed by the fire department. The general contractor shall ensure that an adequate number of individuals are trained in the proper use of portable fire extinguishers.

CFC 3315.1

**Fire Alarm Systems:** Fire alarm systems shall be maintained operational at all times during building alterations. When an alteration requires modification to a portion of the fire alarm system, the portion of the system requiring work shall be isolated and the remainder of the system shall be kept in service whenever practical. When it is necessary to shut down an entire fire alarm system a fire watch or other mitigation approved by the fire department shall be implemented by the general contractor until the system is returned to full service. CFC 907.8.5

## EXIT REQUIREMENTS

**Exits:** All new buildings under construction shall have a least one unobstructed exit. A horizontal exit shall not be removed on an existing building unless a substitute means of egress has been provided and approved. All exits shall be identified on the Fire Protection Plan.

For new multi-story buildings, each level above the first story shall be provided with at least two usable exit stairs after the floor decking is installed. The stairways shall be continuous and discharge to grade level. Stairways serving more than two floor levels shall be enclosed (with openings adequately protected) after exterior walls/windows are in place. Exit stairs in new and in existing, occupied buildings shall be lighted and maintained clear of debris and construction materials at all times.

**Exception:** For new multi-story buildings, one of the required exit stairs may be obstructed on not more than two contiguous floor levels for the purposes of stairway construction (i.e., installation of gypsum board, painting, flooring, etc.).

Designated exterior assembly points shall be established for all construction personnel to relocate to upon evacuation. The assembly points shall be identified in the Fire Protection Plan.

## FIRE /SMOKE WALLS (partitions, barriers, etc.)

When fire/smoke walls are required, the wall construction shall be completed (with all openings protected) immediately after the building is sufficiently weather-protected at the location of the wall(s).

When existing fire/smoke walls in occupied buildings are demolished and or altered precautions and protection must be taken to ensure the same level of protection is provided during and after construction hours. CFC 703.1

## SPECIAL OPERATIONS REQUIREMENTS

The following procedures and safeguards are required whenever such operations occur:

**Hot Work:** Hot work includes any work involving operations capable of initiating fires or explosions, including cutting, welding, brazing, soldering, grinding, thermal spraying, thawing pipe, torch applied roofing, or any other similar activity. The use of hot work equipment shall be in accordance with the following guidelines, including a pre-site inspection, fire watch and post inspection procedures. CFC 3308.5

1. **Pre-site inspection:** An inspection of the hot work site shall be conducted by the general contractor or his/her designee prior to hot work operations to ensure that
  - (1) the hot work site is clear of combustibles or that combustibles are protected,
  - (2) exposed construction is of noncombustible materials or that combustible materials are protected,
  - (3) openings are protected,
  - (4) there are no exposed combustibles on the opposite side of partitions, walls, ceilings, floors, etc.,
  - (5) fire extinguishers are available, fully charged and operable, and
  - (6) fire watches are assigned, equipped and trained.

2. **Fire Watch:** The sole duty of fire watch personnel shall be to watch for the occurrence of fire during and after hot work operations. Individuals designated to fire watch duty shall have fire extinguishing equipment readily available and shall be trained in the use of such equipment. Personnel assigned to fire watch shall be responsible for extinguishing spot fires and shall be provided with not less than one approved means for notification of the fire department. Hot work conducted in areas with vertical and horizontal fire exposures that cannot be observed by a single individual shall have additional personnel assigned to fire watches to ensure that all exposed areas are monitored.
  
3. **Post-inspection:** The fire watch shall be maintained a minimum of 30 minutes after the conclusion of the work to look out for leftover sparks, slag or smoldering combustibles.

**Asphalt and tar kettles:** Asphalt kettles shall not be located within 20 feet of any combustible material, combustible building surface or building opening(s). With the exception of thermostatically controlled kettles, an attendant shall be within 100 feet of a kettle when the heat source is operating. Ladders or similar obstacles shall not form a part of the route between the attendant and the kettle.

Kettles shall be equipped with tight-fitting covers. A minimum 40-B:C rated portable fire extinguisher shall be located within 25 feet of each asphalt kettle when the heat source is operating. Additionally, a 3-A:40-B:C rated portable fire extinguishers shall also be located on roofs during asphalt coating operations.

CFC 3317

**Motor Equipment:** Motorized equipment including internal-combustion-powered construction equipment shall be used in accordance with the following:

- Equipment shall be located so that exhausts do not discharge against combustible materials.
- Exhausts should be piped to the outside of the building.
- Equipment shall not be refueled while in operation.
- Fuel for equipment shall be stored in an approved area outside of the building. CFC 3316.1

## HAZARDOUS MATERIALS

**LPG storage and use shall comply with the following:**

1. Propane containers may be used in buildings under construction or undergoing major renovation as a fuel source for temporary heating for curing concrete, drying plaster and similar applications in accordance with the following:
  - Heating elements (other than integral heater-container units) shall be located at least 6 feet from any LP-Gas container.
  - Integral heater-container units specifically designed for the attachment of the heater to the container, or to a supporting standard attached to the container, may be used provided they are designed and installed so as to prevent direct or radiant heat application to the LP-Gas container.
  - Blower and radiant type units shall not be directed toward any LP-Gas container within 20 feet.
  - Heat producing equipment shall be installed with clearance to the combustibles in accordance with the manufacturer's installation instructions.
  - Cylinders shall comply with DOT cylinder specifications and shall be secured in an upright position.
  - Regulators shall be approved for use with LP-Gas. Fittings shall be designed for at least 250 psig service pressure.
  - Hose shall be designed for a working pressure of at least 350 psig (unless limited to 5 psig) and shall be a maximum of 6 feet in length.
  - Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas to the main burner and to the pilot in the event of flame extinguishment or combustion failure. Portable heaters with an input of more than 50,000 Btu/hr shall be equipped with either a pilot that must be proved before the main burner can be turned on or an approved electronic ignition system.
  
2. In addition to the above, for LPG storage/use in buildings undergoing alteration and that are fully or partially occupied, the following shall also apply:
  - Specific approval must be obtained from the fire department prior to bringing LP- Gas containers on-site.
  - The maximum water capacity of individual containers shall be 5-gallon water capacity and the number of containers in the building shall not exceed the number of workers assigned to using the LP-Gas.
  - Containers having a water capacity greater than 2 ½ lb. shall not be left unattended.



## **Storage, Use and Dispensing of Flammable and Combustible Liquids**

- Storage areas for flammable and combustible liquids shall be kept free of weeds and combustible material. Open flames and smoking are prohibited in flammable or combustible liquid storage areas.
- Tanks and containers shall be clearly marked with the name of the product and **FLAMMABLE-KEEP FIRE AND FLAME AWAY**. Tanks (containers in excess of 60 gallons) shall also be labeled **KEEP 50 FEET FROM BUILDINGS**.
- Metal containers for Class I or II liquids shall be in accordance with DOT requirements or shall be of an approved design. Discharge devices shall not cause an internal pressure on the container. Individual containers shall not be interconnected and shall be kept closed when not in use.
- Secondary containment or a means of spill control, drainage control, and diking is required for large containers (such as 55 gallon drums) and tanks as approved by the fire department.
- Plans for the installation/use of any aboveground storage tank (containers greater than 60 gallons) shall be submitted to the fire department for review and permit prior to the proposed tank arriving at the site.

### **Compressed Gases:**

- Gas cylinders shall be clearly marked and identified with the name of the contents.
- Gas cylinders shall be stored upright and secured to prevent falling.
- When not in use, valve protective caps shall be in place.
- Gas cylinders shall be protected against physical damage.
- When stored, gas cylinders shall be separated from each other based on their hazard classes.
- Combustible materials shall be maintained a minimum of 10 feet from gas containers.
- Gas cylinders shall not be placed near elevators, unprotected platform edges or other areas where they would drop more than 2 feet.
- Gas cylinders shall not be placed in areas where they may be damaged by falling objects.
- Ropes, chains or slings shall not be used to suspend gas cylinders, unless the cylinder was manufactured with appropriate lifting attachments.