



SANTA CLARA COUNTY FIRE DEPARTMENT

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STANDARD DETAILS & SPECIFICATIONS

SUBJECT: Construction Site and Fire Safety

Spec No	<u>SI-7</u>
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SCOPE

This Standard is intended to prescribe minimum safeguards for new building construction, demolition or 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 or demolition as set forth in the 2022 California Fire Code Chapter 33 and current National Fire Protection Association Standard 241.

This Standard addresses the most common elements and conditions associates with construction and demolition operations and is not a comprehensive listing of all applicable California Fire Code regulations nor shall it be construed to be in lieu of other applicable state or federal laws and regulations related to construction site safety.

When the term “shall” is used in this Standard, it means a mandatory requirement. When the term “approved” is used in this standard, it shall mean approved by the Fire Code Official.

REQUIREMENTS

I. Owners Responsibility

- A. The building owner shall designate a person to be the Site Safety Director who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project.
- B. The Site Safety Director shall develop and maintain a pre-fire plan as required and approved by the Fire Code Official.
- C. The Site Safety Director shall be responsible for compliance with the provisions of this standard and also with the following:
 - 1. Training of job site personnel in the use of fire protection equipment.
 - 2. Supervision of the permit system/procedures for hot work operations.



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3. Supervision and coordination of procedures for fire protection system impairments.
4. Safeguards fire protection devices from damage during construction and ensuring they are returned to full operation when the construction around them is completed.

II. Pre-fire Plan

- A. A written pre-fire plan shall be developed for significant or complex construction projects at the discretion of the Fire Code Official. The plan shall be approved prior to proceeding past foundation 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.
- B. The Site Safety Director is responsible for carrying out the provisions of the pre-fire plan and communicating it to all staff personnel and subcontractors. Additionally, the Fire Code Official shall be notified of any change affecting the utilization of information contained in the pre-fire plan. The pre-fire 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 and on-site fire hydrants.
 7. The name and contact phone number of the person(s) responsible for compliance with the pre-fire plan.

III. Fire Safety Requirements

- A. Fire Department Access Roadways shall comply with 2022 CFC section 503.



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1. All construction sites shall be accessible by fire department apparatus by means of roadways having an all-weather driving service of not less than 20 ft. of unobstructed width. The roads and/or bridges shall have the ability to withstand not less than 75,000-pound live loads of fire apparatus and have a minimum 13 ft. 6 in. of vertical clearance. Dead end fire access roads in excess of 150 ft. in length shall be provided with approved turnarounds.
 2. When approved by the Fire Code Official, temporary fire access roadways may be utilized until such time that the permanent roadways are installed. Temporary roadways shall be certified by the project civil engineer, or other qualified engineering professional, to be capable of supporting fire apparatus under all-weather conditions.
 3. The perimeter edges of the fire access roadway shall be contained and delineated by curb and gutter or other approved method. The integrity of the roadway shall be maintained at all times.
- B. Key Boxes: Key boxes and/or approved padlocks shall be required when necessary for access through locked gates or structures.
- C. 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 materials accumulating on site.
- D. Fire Reporting: Instructions shall be provided at the construction site for emergency notification of the fire department via telephone or cellular phone. The street address of the construction site along with the number for the public safety answering point shall be posted adjacent to the telephones at the job trailer(s) and, on large projects, shall be provided to all site personnel.
- E. Premises Identification: The address numbers of the property or project location shall be plainly visible and legible from the street or road fronting the property at the fire apparatus access point or as otherwise approved.
- F. 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 buildings on a daily basis.
- G. Oily Rags: Oily rags and similar material shall be stored in metal or other approved containers equipped with a self-closing and tight-fitting covers.
- H. Temporary Heating Equipment: Temporary heaters, such as those that are Liquefied Petroleum Gas (LPG) fueled, shall be listed/labelled in accordance with the California Mechanical Code and shall be installed, used and maintained in accordance with the manufacturer's instructions (See LPG storage and use



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requirements in the **Hazardous Materials** section below). Heating devices shall be secured properly and kept clear from combustible materials. Refueling operations shall be conducted in an approved manner.

- I. Smoking: Smoking is prohibited anywhere inside or on the roof of new building 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.
- J. Vehicle Parking: All vehicles shall be parked a minimum of 20 ft. from new buildings under construction and not within required fire lanes.

Exceptions:

- 1. Vehicles that are temporarily parked for loading/unloading or other construction related operations. Such vehicles shall not be left unattended.
 - 2. When approved by the Fire Code Official, private vehicles may be parked in parking garages of Type I construction if the automatic fire sprinkler system is in service and vertical openings (between the garage and floor levels of combustible construction) are protected.
- K. Combustible Material Storage: Combustible construction materials shall be stored a minimum of 20 ft. from buildings under construction or undergoing remodel.

Exceptions:

- 1. Materials that are staged for installation on a floor level.
 - 2. When approved by the Fire Code Official, materials may be stored in parking garages of Type I construction if the automatic fire sprinkler system is in service and vertical openings (between the garage and floor levels of combustible construction) are protected.
- L. Site Security: When required by the Fire Code Official, security fencing and/or guard service shall be provided to secure the construction site.

IV. Fire Protection Systems

A. Fire Sprinkler Systems:

- 1. Where automatic fire sprinkler systems are required to be installed in new building, the system shall be placed in service as soon as possible. Immediately upon the completion of sprinkler pipe installation on each floor level, the piping shall be hydrostatically tested and inspected. After inspection



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approval from the fire department, each floor level of sprinkler piping shall be connected to the system supply riser and placed into service with all sprinkler heads uncovered. Protective caps may be installed on the active sprinklers during the installation of drywall, texturing and painting, but shall be removed immediately after this work is completed. For system activation notification, an exterior alarm bell should be installed and connected to the sprinkler water flow device prior to the installation of the monitoring system.

2. 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 fire prevention program superintendent 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.

B. Standpipes:

Where standpipes are required, not less than one standpipe shall be installed prior to construction exceeding 40 ft. in height above or one story below, the lowest level of the fire department access. Standpipes shall be provided with fire department hose connections and outlets at 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 be provided a 2 ½ in. valve outlet for fire department use in an approved location. Where construction height requires installation of Class III standpipe, fire pumps and water main connections shall be provided to serve the standpipe.

Exceptions:

1. Standpipes may be temporary or permanent and with or without a water supply as approved by the Fire Code Official.
2. Fire department connections for standpipes shall be located within 100 ft. of an approved fire apparatus access roadway. If permanent, shall be located within 100 ft. of a fire hydrant.

C. Fire Extinguishers:

Portable fire extinguishers shall be provided and shall be mounted on a wall or post at each usable stairway and such that the travel distance to any extinguisher does not exceed 75 ft. Mounting height to the top of the extinguisher shall not exceed 5 ft. Extinguishers shall not have less than a 2-A:10-B:C rating or as



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otherwise directed by the fire department. The fire prevention program superintendent shall ensure that an adequate number of individuals are trained in the proper use of portable fire extinguishers and shall keep records of the training provided. Fire extinguishers shall also be located in storage sheds and contractor trailers.

D. Fire Alarm Systems:

1. Fire alarm systems shall be maintained operational at all times during building alterations. When an alteration required 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 fire prevention program superintendent until the system is returned to full service.
2. Smoke Detectors and smoke alarms shall be covered, or temporarily removed, in areas where air-borne construction dust is expected and until such time that the dust producing work is completed.

V. Means of Egress Requirements

- A. Minimum Number of Exits: All new buildings under construction shall have at least one unobstructed exit. All exits shall be identified on the pre-fire plan.
- B. Multi-Story Buildings: Each level above or below the first story in new multi-story buildings shall be provided with at least two remotely located usable exit stairs after the floor decking is installed. The stairways may be permanent or temporary, shall be continuous and shall discharge to grade level.
- C. Exit stairs in new and in existing, occupied buildings shall be lighted and maintained clear of debris and construction materials at all times. In buildings under construction, stair designation and floor levels shall be identified at each stair landing with a durable sign.

Exception:

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

- D. Exits and exit stairway locations shall be identified with temporary; placard-type exit signs as required by the Fire Code Official.



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- E. Assembly Points: Designated exterior assembly points shall be established for all construction personnel to relocate to upon evacuation. The assembly points shall also be identified in the Fire Protection Plan.

VI. Building Separation Walls

When fire separation walls and/or enclosed exit stairways are required in accordance with the approved building plans, the wall construction shall be given construction priority and completed to an approved condition immediately after the building is sufficiently weather-protected at the location of the wall(s). Fire doors with approved closing devices and hardware shall be installed as soon as practical.

VII. Special Operation Requirements

- A. 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, pre-site inspection, fire watch and post inspection procedures.

1. Pre-site Inspection:

- a. An inspection of the hot work site shall be conducted by the fire prevention program superintendent or his/her designee prior to hot work operations to ensure:
 - i. The hot work site is clear of combustibles of that combustibles are protected.
 - ii. Exposed construction is of non-combustible materials or that combustible materials are protected.
 - iii. Openings are protected.
 - iv. There are no exposed combustibles on the opposite side of partitions, walls ceilings, floors, etc.
 - v. Fire extinguishers shall be available, fully charged, operable, and have a minimum rating of 2A:20-B:C within 30 ft. of the location where hot work is being performed.
 - vi. Fire watch personnel are assigned, equipped, trained and shall be assigned to no other duties.



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2. **Fire Watch:** The sole duty of fire watcher 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 extinguisher 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 communication of alarm. Fire watch personnel shall be provided with telephone or cellular phone 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 for a minimum of 30 minutes after the conclusion of the work to look out for leftover sparks, slag, or smoldering combustibles.
- B. **Asphalt and Tar Kettles:** Asphalt kettles shall not be located within 20 ft. of any combustible material, combustible building surface or building opening. With the exception of thermostatically controlled kettles, an attendant shall be within 100 ft. of a kettle when the heat source is operating. Fuel containers shall be located not less than 10 ft. from the burner. Ladders or similar obstacles shall not form a part of the route between the attendance and the kettle. Kettles shall be equipped with tight-fitting covers. A minimum 3-A:40-B:C rated portable fire extinguisher shall be located within 25 ft. of each asphalt kettle when the heat source is operating. Minimum 3-A:40-B:C rated portable fire extinguishers shall also be located on roofs during asphalt coating operations.
- C. **Motor Equipment:** Motorized equipment including internal-combustion powered construction equipment shall be used in accordance with the following:
1. Equipment shall be located so that exhausts do not discharge against combustible materials.
 2. When possible, exhausts should 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.

VIII. Hazardous Materials

- A. **Liquefied Petroleum Gas (LPG)** storage shall comply with the following:



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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:
 - a. Portable LPG containers shall not be located in a basement, pit or similar location where heavier-than-air gas might collect unless an approved means of ventilation is provided.
 - b. Heating elements (other than integral heater-container units) shall be located at least 6 ft. from any LPG container.
 - c. 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 LPG container.
 - d. Blower and radiant type units shall not be directed toward any LPG container within 20 ft.
 - e. Heat producing equipment shall be installed with clearance to the combustibles in accordance with the manufacturer's installations instructions.
 - f. Cylinders shall comply with DOT cylinder specifications and shall be secured in an upright position, or designed to be store and/or used in a different configuration.
 - g. Regulators shall be approved for use with LPG. Fittings shall be designed for at least 250 psig service pressure.
 - h. 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 t. in length.
 - i. 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.
2. In addition to the above, for LPG storage/use in buildings undergoing alteration and that are fully or partially occupied, the following shall apply.
 - a. Specific approval must be obtained from the fire department prior to bringing LPG containers on-site.



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- b. 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 LPG.
- c. Containers having a water capacity greater than 2½ lb. (1 quart) shall not be left unattended.

B. Storage, Use, and Dispensing of Flammable and Combustible Liquids

- 1. Storage areas for flammable and combustible liquids shall be kept free of weeds and extraneous combustible material. Open flames and smoking are prohibited in flammable or combustible liquid storage areas. Signs prohibiting smoking and open flames shall be posted.
- 2. Tanks and containers shall be marked with the name of the product and be labeled "FLAMMABLE-KEEP FIRE AND FLAME AWAY."
- 3. 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.
- 4. 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.
- 5. Plans for the installation/use of any aboveground storage tank (containers greater than 60 gallons), including tanks supplying temporary power generator sets, shall be submitted to the fire department for review and permit prior to the proposed tank arriving at the site.

C. Compressed Gas

- 1. Gas cylinders shall be marked with the name of the contents.
- 2. Gas cylinders shall be stored upright and secured in an approved manner to prevent falling.
- 3. When not in use, valve protection caps shall be in place.
- 4. Gas cylinders shall be protected against physical damage.
- 5. When stored, gas cylinders shall be separated from each other based on their hazard classes.



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6. Combustible materials shall be kept a minimum of 10 ft. from gas containers.
7. Gas Cylinders shall not be placed near elevators, unprotected platform edges or other areas where they would drop more than 2 ft. Gas cylinders shall not be placed in areas where they may be damaged by falling objects.
8. Ropes, chains, or slings shall not be used to suspend gas cylinders unless the cylinder was manufactured with appropriate lifting attachments.

DOCUMENT REVISIONS

This document is subject to revision. Please visit the Santa Clara County Fire Department website at www.sccfd.org to verify the most current version.