

# Orange County Fire Authority

## Community Risk Reduction

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# High-Rise Buildings: Construction Phase



## Guideline H-02

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# High-Rise Buildings: Construction Phase

## PURPOSE

- 1.1 PURPOSE:** High-rise construction sites are challenging to manage and inspect. This guideline is intended to assure that minimum requirements are communicated and that communication between the construction manager and the assigned OCFA inspectors are maintained throughout the construction process. This will allow issues to be resolved in ways that are beneficial to the building owner, developer, and OCFA.

## SCOPE

- 2.1 SCOPE:** This guideline addresses minimum concerns and requirements for high-rise construction sites from an inspector and emergency response perspective. This document may not address all issues that may be encountered at a high-rise construction site. In those instances, the CFC and assigned OCFA inspector should be consulted for guidance.

## REQUIREMENTS

- 3.1 PRE-CONSTRUCTION:** A meeting between the lead OCFA inspector, project manager and job superintendent is strongly recommended to discuss all requirements including the following:
- 3.1.1** Site phasing that may be necessary due to the complexity or size of the site, business and/or construction needs. Phasing should be discussed during the review process for the Fire Master Plan, so that planning for emergency access can be addressed. A phasing plan may be required (see Guideline B-01, CFC 3305.9).
  - 3.1.2** Inspection(s) scheduling will need to be adjusted based on phasing, number of stories, number of devices, specialty systems, etc. A representative who has a basic understanding of the information necessary to schedule the inspection should contact the scheduling office in order to avoid any undue confusion and delays. Additional fees may be due for phased or time intensive inspections.
  - 3.1.3** Inspection Sequencing – A coordinated effort between automatic fire sprinkler, alarm, specialty system contractors is needed to determine the order in which inspection(s) should be completed. For example, the alarm system must be installed and functioning prior to the testing of the smoke control system. Any questions should be discussed with your inspector well in advance of the needed inspection date.
  - 3.1.4** Temporary Certificate of Occupancy (TCO) requirements vary from project to project. At a minimum, fire and life safety systems and monitoring must be operational and acceptance tested. OCFA will not recommend or concur with a TCO issuance from the building department until all testing and inspections necessary for the high-rise shell building has been completed. TCO and Certificate of Occupancy are issued by the building official; OCFA only provides recommendation to their issuance.

- 3.2 ACCESS & WATER:** The following requirements related to emergency access and water apply:
- 3.2.1** The street address of the site shall be posted in a conspicuous location facing the fire department access roadway and if an emergency phone is provided, adjacent to the phone. CFC 3310
  - 3.2.2** Access to the building for firefighting purposes shall be provided at all times. CFC 3311, OCFA Guideline B-01.
  - 3.2.3** A temporary standpipe system must be installed before construction progresses above 40 feet (typically at the time the deck for the 4<sup>th</sup> story is installed). Such standpipe will be provided in the stairwell and within 1 floor of the highest secure deck (standpipe shall be provided in the usable stairway as required below in Section 3.2.5). CFC 3314
  - 3.2.4** At least one usable stairway must be provided. Stairs must extend to the highest level of construction having secured decking or flooring. CFC 3312
  - 3.2.5** At least one approved fire hydrant shall be located within 150 feet of the standpipe fire department connection. CFC 3313
  - 3.2.6** Portable fire extinguishers shall be provided in designated locations throughout the building as directed by the inspector. CFC 3303, 3316
- 3.3 CONSTRUCTION & INSPECTIONS:** The following requirements related to construction and inspections apply:
- 3.3.1** Sprinkler systems must be acceptance tested in accordance with NFPA 13. Additional inspections that may be necessary include dry-walled in areas (e.g. bathroom, elevator, lobby and corridors), and per floor inspections if phasing is necessary. The scheduling office requires the following information for the scheduling of inspections: service request number, type of inspection, number of floors, number of devices (sprinkler heads/alarm components), contact person, and contact phone number.
  - 3.3.2** Fire pump systems must be acceptance tested in accordance with NFPA 20.
  - 3.3.3** Standpipe systems must be acceptance tested in accordance with NFPA 14. All equipment necessary to conduct and complete the acceptance test and meet any water containment or diversion needs shall be provided by the contractor.
  - 3.3.4** Fire alarm systems must be acceptance tested in accordance with NFPA 72. The scheduling office requires the following information for the scheduling of inspections: type of inspection, if a delayed egress device(s) is/are included, number of floors, number of initiating devices, number of devices, contact person, and contact phone number.
  - 3.3.5** Fuel supplies for generators and/or fire pumps are separate inspections.
  - 3.3.6** Special equipment such as medical gas systems, hood/duct, assembly, architectural (including fire command center), require separate scheduling and inspections.
  - 3.3.7** Smoke control – a smoke control rational analysis must be reviewed and accepted by the fire protection engineer from OCFA prior to inspection. OCFA requires the use of a third-party inspector for all smoke control systems. OCFA will complete the final inspections in conjunction with the third-party inspector. (OCFA Guideline Smoke Control)
  - 3.3.8** Integrated systems testing - Integrated systems testing and an integrated systems final test report shall be completed per NFPA 4. An integrated system test plan shall

be developed and provided to the lead OCFA inspector for review prior to scheduling integrated systems testing. The integrated systems test team and additional entities required to be in attendance, must be included as part of the test plan. At a minimum, the integrated systems test team needs to include the integrated testing agent (or owner or their representative) and the installation, testing or maintenance personnel for each integrated system. Test team members shall meet the qualifications detailed in NFPA 4. Integrated systems testing shall be conducted prior to certificate of occupancy and at intervals not exceeding 10 years. CFC Chapter 901.6.2, NFPA 4.

**3.3.9** Fire Master Site Plan final inspection for access, hydrants, fire lanes, signage, etc. is required.

**3.4 MISCELLANEOUS:** In addition to the requirements in Section 3.1 through Section 3.3, the following requirements apply:

**3.4.1** Combustible debris shall not be accumulated within buildings. Waste shall be removed at the end of each work shift. CFC 3303, 3305

**3.4.2** Motor equipment shall be located where exhausts do not discharge against combustible material. Exhausts shall be piped to the outside of the building when possible. Equipment shall not be refueled while in operation. Fuel for the equipment shall be stored in an approved area outside of the building. CFC 3317

**3.4.3** Heating devices must be of an approved type, kept away from combustible material, and attended by competent personnel. CFC 3304

**3.4.4** Smoking is prohibited within the building except in approved designated areas. Suitable signs shall be posted. CFC 3305

**3.4.5** Use and storage of flammable and combustible liquids shall comply with CFC 3306. Permits and/or plans are required for the storage of more than 5 gallons of Class I flammable liquids and/or 25 gallons of Class II combustible liquids, or to install or operate tank vehicles, equipment, tanks, or fuel-dispensing stations where flammable or combustible liquids are stored, dispensed, or used.

**3.4.6** Asphalt kettles shall not be used inside or on the roof of a building. They shall not be located within 20 feet of any combustible material, combustible building surface or building opening and be equipped with a tight-fitting cover, located and maintained according to CFC Section 303 and CFC 3318.

**3.4.7** Cutting, welding or flame producing devices (hot work) are a significant fire risk and are a major cause of fires during construction. Strict adherence to the fire code requirements for hot work shall be followed. CFC 3303.8 and CFC Chapter 35

- Hot work area shall not be located where flammable materials are being used or stored without a fire resistive shield. CFC 3504.1.5, 3504.1.7
- A minimum 2A:20BC extinguisher shall be provided within 30' of any hot work on the same floor. CFC 3504.2.6
- A fire watch shall be provided and remain in place for a minimum of 30 minutes after the hot work has concluded. CFC 3504.2
- Complete pre-hot check as outlined in CFC 3504.3.1

Additional information that may be helpful regarding site construction, phasing, fees, and temporary tanks can be found at [www.ocfa.org](http://www.ocfa.org).

# ATTACHMENT 1

## Definitions

For the purposes of this guideline, certain terms are as follows:

**CFC:** 2022 California Fire Code

**High-Rise Building or Structure:** A building where the highest occupied floor is more than 75 feet above the lowest floor level that provides access to the interior of the building.

**Fire Command Center (FCC):** The principal attended or unattended location where the status of the detection, alarm communications and control systems is displayed, and from which the system(s) can be manually controlled. Also known as a Fire Control Room.

**NFPA 13:** 2022 Edition of the National Fire Protection Association 13: Standard for the installation of Sprinkler Systems.

**NFPA 14:** 2019 Edition of the National Fire Protection Association 14: Standard for the installation of Standpipe, Private Hydrant, and Hose Systems

**NFPA 20:** 2019 Edition of the National Fire Protection Association 20: Standard for Stationary Pumps for Fire Protection.

**NFPA 72:** 2022 Edition of the National Fire Protection Association 72: National Fire Alarm Code.