



# Corona Fire Department

## Automatic Fire Sprinkler Plan Review and Inspection Guideline per 2016 California Fire Code

### PURPOSE

The purpose of this document is to provide a guideline that identifies the common information and requirements necessary for the review and approval of commercial fire sprinkler plans. It is not intended to be a reproduction of the requirements in the 2016 editions of NFPA 13 and 24, but to provide a basis for plan design and submittal.

### SCOPE

This guideline is applicable to all new commercial fire sprinkler systems required by code within the City of Corona. It shall also apply to any other commercial sprinkler system being installed to mitigate a code deficiency. Tenant improvement plans shall conform to this guideline. All fire sprinkler plans shall be submitted for review and approval prior to commencement of any work on the system. This guideline is based on the requirements from NFPA 13, 2016 edition; NFPA 24, 2016 edition and the 2016 edition of the California Fire Code.

### GUIDELINES

1. A minimum of four (4) sets of detailed plans including a minimum of two (2) sets of hydraulic calculations are required to be submitted for review and approval. The plans shall include a minimum of the following:
  - a. Site location NFPA 13, 23.1.3(2)
  - b. Vicinity Map NFPA 13, 23.1.3(2)
  - c. Occupant Name NFPA 13, 23.1.3(1)
  - d. Owner Name NFPA 13, 23.1.3(1)
  - e. Contractor Name and C-16 license number NFPA 13, 23.1.3(33)
  - f. Occupancy Group 2016 CBC Chapter 3
  - g. Occupancy class of each area or room NFPA 13, 23.1.3(7)
  - h. Elevations and Full Height Cross Section NFPA 13, 23.1.3(4)
  - i. Methods for protection of nonmetallic pipe NFPA 13, 23.1.3(4)
  
2. The plans shall show the following water supply details:
  - a. The minimum water supply required NFPA 13, 23.1.3(36)
  - b. The connection to the public or private water supply NFPA 13, 24.1.2
  - c. Fire Department Connection (FDC) NFPA 13, 23.1.3(44)
  - d. Indicator Valve(s); OS&Y, PIV, etc. NFPA 13, 8.16.1.1.1.1
  - e. The transition from underground to first flange above finished floor for overhead system piping; identify contractor point of connection NFPA 13, 24.1.6.1
  - f. Hydrant test/fire flow data NFPA 13, 23.2.1
  
3. The design criteria used for the sprinkler design shall be provided on the plans. The design criteria shall include a minimum of the following:
  - a. Occupancy Classification; rooms and areas NFPA 13, 23.1.3.7
  - b. Hazard classification NFPA 13, 5.1, 23.3.2(5)
  - c. Sprinkler design density and area of sprinkler operation NFPA 13, 8.5.2.2

- d. Allowable area of coverage per sprinkler head NFPA 13, 8.5.2.2
  - e. Whether or not the system will be used for high-piled storage; if so, see the High-Piled Combustible Storage Guideline, CFC Chapter 32, NFPA 13 Chapters 12 -22.
  - f. Whether or not HVLS (High Volume, Low Speed) fans will be installed NFPA 13, 11.1.7
    - 1. The maximum fan diameter shall be 24 ft. HVLS fans shall be shown on ALL reflected ceiling and Fire Sprinkler plans.
    - 2. The HVLS fan shall be centered approximately between four adjacent sprinklers.
    - 3. The vertical clearance from the HVLS fan to sprinkler deflector shall be a minimum of 3 ft.
    - 4. All HVLS fans shall be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system in accordance with the requirements of NFPA 72.
4. **Underground plans are required to be approved prior to approval of overhead plans.** When the underground plan is submitted with the overhead plan for review and approval, the applicant shall notify the building department at the time of first plan submittal. The scope of work on the plans shall specify that both the underground and overhead systems are being submitted for review and approval. The underground plan shall include:
- a. Valves; size, type, manufacturer, model # and evidence of UL listing NFPA 13, 24.1.8.2
  - b. Detector Check Assembly per Corona City Standard – see Public Works department for details
  - c. Hydrants; public and private, proposed and existing, within 300' of project site, NFPA 13, 23.1.3(43)
  - d. Materials, including size, type, manufacturer, model # and evidence of UL listing for
    - Joining methods NFPA 13, 10.3
    - Thrust blocking NFPA 13, 10.6.1
    - Joint restraint NFPA 13, 10.6.2
    - Depth of bury NFPA 13, 10.4
    - Piping NFPA 13, 10.1.1
5. The following system components shall be shown on the plans for automatic fire sprinkler systems:
- a. Piping; size, type, manufacturer, and evidence of UL listing NFPA 13, 23.1.3(18)
  - b. Hangers; size, type, manufacturer, method of hanging/securing, location, and evidence of UL listing NFPA 13, 23.1.3(22)
  - c. Earthquake bracing and protection of piping, including seismic load calculations NFPA 13, 9.3
  - d. Provisions for main and auxiliary drains, inspectors' test valve. NFPA 13, 23.1.3(23)
  - e. Joining of pipe and fittings; size, type, manufacturer, model #, and evidence of UL listing NFPA 13, 23.1.3(21)
  - f. Valves; size, type, manufacturer, model #, and evidence of UL listing NFPA 13, 23.1.3(23)
  - g. Sprinklers; size, type, manufacturer, model #, K-factor, temperature and evidence of UL listing NFPA 13, 23.1.3(12)
  - h. Any special conditions or areas where exceptions are proposed for consideration NFPA 13, 23.1.3(8)
  - i. Alarms; exterior bell location, size, type, manufacturer, model #, and evidence of UL listing NFPA 13, 23.1.3(26)
6. Show spacing/locations of:
- a. sprinkler heads NFPA 13, 8.5
  - b. hangers NFPA 13, 23.1.3(22)
  - c. earthquake bracing NFPA 13, 9.3
  - d. fire rated construction features. NFPA 13, 23.1.3(6)
  - e. HVLS fans NFPA 13, 11.1.7 \*
- \* HVLS fans shall be shown on all reflected ceiling plans and fire sprinkler plans.
7. Hydraulic Calculations shall provide the following:
- a. Summary Sheet NFPA 13, 23.3.2
  - b. Detailed work sheets NFPA 13, 23.3.3
  - c. Peaking of gridded systems NFPA 13, 23.3.5.1(20)

- d. Hydraulic reference points NFPA 13, 22.3.3(3)
- e. Designed to 90% of available supply, maximum LOCAL ORDINANCE
- f. Graph showing water supply curve, sprinkler system demand, hose demand (if required), in racks (if required) NFPA 13, 23.3.4

8. Additions/Remodels/Tenant Improvement plans shall show enough of the existing system(s) to make all conditions clear. Copies of "reference only" plans with approval stamps from the City of Corona may be requested. NFPA 13, 23.1.3(30)

9. Hydrostatic tests are required for alterations, modifications, or additions to the automatic fire sprinkler system in accordance with the provisions of NFPA 13, Sections 25.2.1.4, 25.2.1.5 and/or 25.2.1.6.

**10. The following General Notes shall be completed and placed in blue/black line on the plans:**

- a. **Scope of Work:** \_\_\_\_\_
- b. **Point of connection:** \_\_\_\_\_
- c. The system shall be designed and installed in accordance with NFPA 13, 2016 edition and any amendments as adopted by the City of Corona.
- d. Only new fire sprinklers shall be employed in the installation of the fire sprinkler system.
- e. Sprinkler plans shall be approved prior to the installation of any pipe. A set of approved plans shall be maintained at all times at the construction site.
- f. **Hydrostatic Testing:** *New Construction:* Hydrostatic test shall be witnessed by the Corona Fire Department – 200 psi for 2 hrs per NFPA 13, 23.2.1.1. *Tenant Improvements:* Modifications affecting 20 or fewer sprinklers shall not require testing in excess of system working pressure, per NFPA 13, 25.2.1.4. *Residential:* Hydrostatic testing may be at static pressure. Where additions or modifications are made to an existing commercial system affecting more than 20 sprinklers, the new portion shall be isolated and tested at not less than 200 psi for 2 hours, per NFPA 13, 25.2.1.5. Modifications that cannot be isolated, such as relocated drops, shall not require testing in excess of system working pressure, per NFPA 13, 25.2.1.6.
- g. Underground piping shall be hydrotested for 2 hours at 200 psi, prior to bury.
- h. The fire sprinkler system shall be hydrotested as a complete installation.
- i. All underground mains and lead-in connections shall be flushed in accordance with NFPA 13 and/or NFPA 24 prior to connection to the overhead system, and shall be witnessed by Fire Department.
- j. Thrust blocks shall be inspected prior to bury.
- k. Fire Department Connection shall be UL listed, located 18" to 24" above grade, and positioned near the street address of the building.
- l. Post Indicator Valve shall be situated no higher than 36" above finished grade, 40' from building.
- m. Installation and components shall comply with the 2016 editions of NFPA 13, 24 and 2016 CFC.
- n. All HVLS fans shall comply with the requirements of NFPA 13, Section 11.1.7.
- o. All valves shall have a permanently affixed sign indicating its function, and address, where required.
- p. All fire sprinkler control valves shall be locked in the open position.
- q. A stock of spare fire sprinklers of each style, type and temperature rating along with a spare head wrench shall be located at the main system riser or other approved location.
- r. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, remote supervising station as defined in NFPA 72 or, when approved by the Fire Marshal, shall sound in a constantly attended location.
- s. All fire sprinklers shall be installed at a minimum distance of 4" from any wall and a minimum distance of 6' between any two fire sprinklers.
- t. All products used in this installation shall be listed by a nationally recognized testing laboratory for service in a fire protection system or products shall be subject to acceptance by the Corona Fire Department, prior to installation.
- u. The installer shall perform all required acceptance tests in the presence of the fire inspector.
- v. Fire Department inspection fees will be paid prior to scheduling inspections.

- w. Inspections shall be scheduled a minimum of 24 hours in advance. Cancellations or changes to schedule made less than 24 hours prior to scheduled appointment shall forfeit fees. Call (951) 736-2220 to schedule inspections.
- x. All work related to tests and inspections shall be completed prior to the arrival of the Fire Inspector.
- y. Locations of inspector's test valves shall be field verified for all new and existing systems.
- z. Certificate of materials for all O/H tenant improvements and new construction for NFPA 13, NFPA 13R and NFPA 13D systems shall be required at the time of final inspection, per NFPA 13.
- aa. Certificate of materials for all U/G tenant improvements and new construction shall be required per NFPA 24.