

Automatic Fire Sprinkler Plan Guidelines

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 NFPA 13 and 24, but to provide a basis for plan design and submittal.

SCOPE

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, 2010 edition, NFPA 24, 2010 edition and the 2010 edition of the California Fire Code.

GUIDELINES

A minimum of 4 sets of detailed plans including a minimum of 3 sets of hydraulic calculations are required to be submitted for review and approval. The plans shall include a minimum of the following:

- Site Location NFPA 13, 22.1.3(2)
- Vicinity Map NFPA 13, 22.1.3(2)
- Occupant Name NFPA 13, 22.1.3(1)
- Owner Name NFPA 13, 22.1.3(1)
- Contractor Name and C-16 license number NFPA 13, 22.1.3(33)
- Occupancy Group 2010 CBC Chapter 3
- Elevations and Full Height Cross Section NFPA 13, 22.1.3(4)

The plans shall show the following water supply details:

- The minimum water supply required NFPA13, 22.2.1
- The connection to the public or private water supply NFPA 13, 23.1.6
- Fire Department Connection (FDC) NFPA 13, 8.17.2

- Indicator Valve(s); OS&Y, PIV, etc. NFPA 13, 8.16.1.1.1.1
- The transition from underground to first flange above finished floor for overhead system piping; identify contractor point of connection NFPA 13, 23.1.6.1
- Hydrant test/fire flow data NFPA 13, 22.2.1

The design criteria used for the sprinkler design shall be provided on the plans. The design criteria shall include a minimum of the following:

- Occupancy Classification; rooms and areas NFPA 13, 22.1.3(7)
- Hazard Classification NFPA 13, 8.5.1
- Sprinkler design density and area of sprinkler operation NFPA 13, 8.5.2
- Allowable area of coverage per sprinkler head NFPA 13, 8.5.2.2

Whether or not the system will be used for high-piled storage; if so, see CFC Chapter 23, NFPA 13 Chapters 12 and 13

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 fire 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:

- Valves; size, type, manufacturer, model # and evidence of UL Listing NFPA 13, 23.1.8.2
- Hydrants; public and private, proposed and existing, within 300' of project site NFPA 13, 22.1.3(43)
- Materials, including size, type, manufacturer, model # and evidence of UL Listing for:
 - Joining methods NFPA 13, 10.3
 - Thrust blocking NFPA 13, 10.8.2
 - Joint restraint NFPA 13, 10.8
 - Depth of bury NFPA 13, 10.4
 - Piping NFPA 13, 10.1.1

The following system components shall be shown on the plans for automatic fire sprinkler systems:

- Piping; size, type, manufacturer, and evidence of UL listing NFPA 13, 22.1.3(18)
- Hangers; size, type manufacturer, method of hanging/securing, location, and evidence of UL listing NFPA 13, 22.1.3(22)
- Earthquake bracing, including seismic load calculations NFPA 13, 9.3.5
- Provisions for main and auxiliary drains, inspectors' test valve. NFPA 13, 22.1.3(23)
- Joining of pipe and fittings; size, type manufacturer, model #, and evidence of UL listing NFPA 13, 22.1.3(22)
- Valves; size, type, manufacturer, model #, and evidence of UL listing NFPA 13, 22.1.3(23)
- Sprinklers; size, type, manufacturer, model #, K-factor, temperature and evidence of UL listing NFPA 13, 22.1.3(12)
- Any special conditions or areas where exceptions are proposed for consideration NFPA 13, 22.1.4
- Alarms; exterior bell location, size, type, manufacturer, model #, and evidence of UL listing NFPA 13, 22.1.2

Show spacing/locations of:

- Sprinkler heads NFPA 13, 8.5
- Hangers NFPA 13, 22.1.3(22)
- Earthquake bracing NFPA 13, 9.3.5.3, 9.3.5.4
- Fire rated construction features NFPA 13, 22.1.3(6)

Hydraulic Calculations shall provide the following:

- Summary sheet NFPA 13, 22.3.2
- Detailed work sheets NFPA 13, 22.3.3
- Peaking of gridded systems NFPA 13, 22.4.4.2.2

- Hydraulic reference points NFPA 13, 22.3.3(3)
- Designed to 90% of available supply, maximum graph showing water supply curve, sprinkler system demand, hose demand (if required), in racks(if required) NFPA 13, 22.3.4

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 may be requested.

A hydrostatic test is required if the alteration, modification, or addition to the automatic fire sprinkler system involves one or more of the following:

- The addition or relocation of five (5) or more sprinkler heads.
- The addition of ten (10) or more new fittings.
- The addition of twenty (20) or more feet of pipe.