



Oakland Fire Department
Fire Prevention Bureau
250 Frank H. Ogawa Plaza
Oakland, CA 94612

Fire Protection Systems Guide

1. Oakland uses the following codes (with California and local amendments):
 - 2001 California Building Code + Oakland amendments
 - 2001 California Fire Code & Applicable Standards
 - TITLE 24 California Rules and RegulationsDetailed requirements for fire extinguishing systems are enumerated in the California Building Code Section 904.1.2. Where, in any specific case, different sections codes specify different materials, methods of construction or other requirements (i.e. code variances), the most restrictive shall govern. The following NFPA standards with CA and local amendments are currently adopted:
 1. *NFPA 11-1994 Foam Extinguishing Systems*
 2. *NFPA 11A-1994, Medium- and High –Expansion Foam Systems*
 3. *NFPA 12-1997, Carbon Dioxide Fire Extinguishing System*
 4. *NFPA 12A, 1992, Halon 1301 Systems*
 5. *NFPA 2001-1996, Clean Agent Fire Extinguishing Systems*
 6. *NFPA 13-1999 as amended, Installation of Sprinkler Systems*
 7. *NFPA13D-1999, Installation of Sprinkler Systems in One- and Two- Family Dwellings and Mobile Homes (Installed in Congregate Living Health Facilities)*
 8. *NFPA 13R-1999, Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height*
 10. *NFPA 14-2000, Standpipe and Hose Systems*
 11. *NFPA 15-1996, Water Spray Fixed Systems*
 12. *NFPA 16A-1994, Closed-head Foam-water Sprinkler Systems*
 13. *NFPA 17-1994, Dry Chemical Extinguishing System*
 14. *NFPA 20-1996, Centrifugal Fire Pumps*
 15. *NFPA 22-1996, Water Tanks for Private Fire Protection*
 16. *NFA 24-1995, Private Fire Service Mains (except as noted in Section 904.1.2, Exception 2)*
2. C-16 Contractor's License required to install sprinklers.

In the State of California, as of January 1, 1990, Assembly Bill No. 3841 specifies that "installations of all fire protection systems...shall only be performed by a contractor holding a fire protection contractor classification." See also 1992 Contractor's License Law Rules and Regulations, page 78, Section 7026.12.
3. Hose Valves. Fire Department hose valves must be located at hose stations adjacent to exterior doors at locations inside building such that all portions of the building are within 100 feet of a hose valve plus 30 feet of throw. Use National Standard hose threads. Provide 2-1/2" x 3" hose adapters on 2-1/2" hose valves

per Ordinance No. 11485. The fire department apparatus will supply the combined hose valve and sprinkler system at 150 psi throttled pressure at the FDC. Hydraulic calculations must be provided for the fire sprinkler system supplied by EBMUD city mains or private on-site water supply. Hydraulic calculations will also be required for the standpipe system or pipe scheduled in accordance with NFPA 14.

4. Fire Hydrants to be used for pumper supply shall have at least one 2 1/2" and 4 1/2" pumper connection, wet or dry barrel.
5. Fire Department Connections should be located within 40 feet from the street on each street of access. If located within 10 feet of the corner, one FDC may serve both streets. It is preferable for check valve to be located as near to the fitting as possible. In this way, the piping will be wet and possible leaks or mechanical damage would be discovered prior to a fire emergency. Inlets should be provided with threaded metal caps and chains, or "sensible" caps. Plastic plugs are not acceptable.
6. Locations for permanent and temporary Fire Department Connections and hydrants must be approved by the Fire Prevention Bureau prior to start of work. This applies to multi-level buildings per 2001 CBC Section 904.6.
7. Where asbestos-cement or plastic underground fire main is used, each piece must bear the U.L., F.M. (or nationally-recognized) testing lab label. Use ductile iron transition piece from the base of the riser up to five feet out of the building wall or foundation.
8. Oakland is located in Earthquake Zone 4 per UBC. Plans should clearly show earthquake features, such as earthquake bracings for mains, restraining hangers for ends of branch lines, flexible connections for risers, clearance through floors and under footings. Fire pump and tank installation plans submitted should include structural earthquake calculations in accordance with C.B.C. Volume 2 Standards, i.e. turning moment calculations to verify the stability of installations.
9. Permanent signs should be provided at sprinkler system components, including a nameplate at each system control valve, indicating area served. For hydraulically calculated systems, a DATA PLATE should indicate basis of design (discharge density over designed area of discharge, including flow and residual pressure demand at the base of riser).
10. Wafer Valves are designed to be installed between flanges. Two wafer valves may not be installed back to back. Clearance must be provided between butterfly valves and adjacent equipment to allow the valve to fully open without obstruction. This may require the use of "spool flange" pieces. Note that "lever-lock" butterfly valves are no longer approved. Butterfly valves may not be installed in the intake of a fire pump.
11. Automatic sprinklers are required at the top of rubbish chutes, in the terminal room, and chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Sprinkler heads shall be accessible for servicing. Ref.: 2001 CFC 1003.2.2, 2.
12. Parking garages should be provided with occupant use 1-1/2" fire hose, with adjustable fog nozzles, when any portion of the parking area is more than 75' from street as measured along route Fire Department would lay fire hose, or garage is multi-leveled. Ref.: 2001 CFC Table 1004-A.
13. Where sprinkler branch lines or piping less than 2 1/2" is exposed to freezing, such as exposure protection and canopies, indicating cold weather valves must be provided. (May be omitted for 6 heads or less). If practical, it is a good practice to locate Inspector's Test valve downstream of cold weather valve. A permanent sign should be provided at the riser indicating locations of cold

- weather valves.
14. Backflow preventers are no longer routinely required by EBMUD for separate fire services, unless there is a cross connection, or on site water supply, or the Fire Department Connection is in the vicinity of an open body of water. They do ask for a single check valve downstream of the detector check valve. For specific details contact EBMUD (835-3000). (Also, see item 19 below.)
 15. Properties with on site water supplies large enough to be useful for exterior fire fighting (generally, 2500 gallons or larger) shall have outside wall hydrants or other approved fittings.
 16. Fire fighting operations include the use of hose nozzles that incorporate a shutoff feature. Where pressure-regulating valves are used for hose outlets such as in high rise buildings, units must be listed as able to control the maximum pressures under both flow and no flow conditions. (Shown starred in U.L. list, under code WTX).
 17. Residential or Quick-Response fire sprinklers are required for residential buildings, and are recommended for light and ordinary hazard occupancies.
 18. Subject to approval of submitted plans, under certain conditions Oakland permits use of combined domestic and fire water supply service. These are only for small or partial systems under 3,000 sq. ft. Hydraulic calculations must be provided showing system will meet performance criteria including friction loss through the meter without exceeding EBMUD'S or the manufacturer's recommended maximum intermittent flow. (Also, see item 19 below.)
 19. Backflow prevention devices, satisfactory to EBMUD and the Plumbing Department must be provided where combined Fire and Domestic Water Systems are approved by the Fire Prevention Bureau. In general, for "Small" non-circulating sprinkler systems, back-flow prevention should consist of an approved double check valve assembly or an approved backflow preventer (listed by a recognized listing agency, i.e. IAPMO, ICBO, U.L., FM or equivalent, installed where the sprinkler main ties into the domestic. "Small" systems are those of copper piping smaller than 2" at the point of the connection, or of materials other than copper smaller than 1 1/2" at point of connection, provided system does not rise 40 ft. or more from the point of connection.
 20. There are also special practices for particular sprinkler applications. Contact the Fire Prevention Bureau for guidelines on:
 - a. Mobile homes and residential buildings 2 units or less.
 - b. Apartment buildings.
 - c. Small exposure protection systems.
 21. Review and approval of fire sprinkler or standpipe plans are required prior to start of work. The sprinkler review process does not constitute review of other construction details, such as walls, exits, or other features requiring a Building Permit from the CEDA, a city agency
 22. Plan submittals - submittals should be made to Oakland Fire Department, Fire Prevention Bureau, 250 Frank H. Ogawa Plaza, Oakland, CA 94612, Attn: Mr. Philip Basada, P.E.
Submit 2 sets of plans, calculations, and material submittals accompanied by plan check fees, and return shipping label or stamped self-addressed envelope. One copy of micro filmable plans and calculations will be retained for our files. Maintain 1/8" minimum engineering lettering height. One stamped set of approved plans should be maintained at each job site, by the contractor, and be available for Inspector's review. Arrangements for flush test and hydrostatic tests should be made at least 72 hours in advance by calling 238-3851, preferably between 7AM - 9AM. Ask for your District Inspector.

23. To obtain water test information, visit the counter, or call 238-3851 between 2:00 and 4:00 PM. To expedite request, have the California Coordinates from a Thomas Bros. Map (or similar) and the correct street address ready. Indicate Hydrant Number and water flow information on plans. If test data were obtained from the water district (EBMUD), please indicate the name of the person and business phone.
24. Contractors are required to provide a verifiable C-16 contractor's license and obtain a City of Oakland Business Tax Certificate at the time of plan submittal. Contact the Business Tax Division to obtain your Oakland Business Permit at 250 Frank H. Ogawa Plaza, Phone no. (510) 238-3704.