CITY OF LIVERMORE FIRE SPRINKLER GUIDELINES

Please note: All plans are submitted through the City of Livermore Building Department located at 1052 S. Livermore Ave. (925) 960-4410

The following are guidelines to assist you in preparing and submitting sprinkler drawings:

1. All sprinkler and fire main installations shall meet all requirements of the 1997 UBC and UFC and UBC Standards, 2001 California Building and Fire Codes, and Livermore Ordinance. Please be aware that the 1997 UBC Standard adopts the 1991 NFPA 13 with changes, and the California State Fire Marshal has adopted the 1999 NFPA 13.

2. Solid web wood joists 16 inches or greater require sprinklers in every joist channel in accordance with 1997 UBC Standard 9-1 and Livermore Ordinance.

3. Sprinklers are required in all concealed spaces including spaces less than 6 inches and non-combustible concealed spaces in accordance with the Livermore ordinance.

4. Minimum sprinkler designs are 0.18 gpm per square feet/3,000 square feet for buildings up to 14 feet roof height, 0.45 gpm per square feet for buildings with 14 to 24 feet roof height and 0.60 gpm per square feet/3,000 square feet for buildings with a roof height exceeding 24 feet, unless modified by the Fire Marshal due to special hazards or conditions. No reduction in the 3,000 square foot design area is allowed for use of quick response sprinklers.

5. All sprinkler plans shall include the water flow information on the plans, the person who provided the information, and the date and location of the flow test. Waterflow request form completed by the Fire Department is also acceptable.

6. Sprinklers shall be standard ½ inch or 17/32-inch orifices unless the Fire Marshal and building owner accept special sprinklers based on special conditions. Extended coverage sprinklers shall not be used.

7. A State of California Title 19 fire sprinkler inspection within the past five years is required.

8. Storage of ordinary combustibles higher than 12 feet, storage of plastic materials higher than 5 feet, and solid or slatted shelves more than 4 feet total width (aisle to aisle) require special fire sprinkler protection and a Fire Code High Piled Combustible Storage Permit from the Fire Department.

9. Complete pipe hanger and earthquake sway brace details shall be shown on the drawings. Attachments to trusses shall be approved by the truss manufacturer. Calculations for all hangers including fastener type and size for all pipe sizes showing weight of water filled pipe plus 250 pounds shall be submitted to the Building Department with the sprinkler plans. Calculations for all earthquake bracing shall be provided. Fire protection plan check will not be completed if structural details are not provided.

   a. Earthquake sway braces attached to wood shall use minimum ½-inch bolt, nut and washers. When attached to wood joists with approval by engineer of record, provide solid blocking on both sides of the attachment perpendicular to the joist. Reference 1997 UBC, 1998 CBC, CA 35, 3505.10; iii.

   b. Earthquake sway braces shall not be attached to wood nailers on top of steel trusses. Use Tolco 825 or other attachment listed for seismic application.

   c. Earthquake sway braces attached to concrete shall use minimum ½ inch x 4 ½ inch Hilti Kwik Bolt II with minimum 3 ½-inch embedment or other fastener listed by ICBO for seismic application.

   d. Earthquake sway braces shall not be fastened with beam clamps.

   e. Hangers shall be bolted to the side of Z purlins and C channels, **not** to the bottom.

   f. Structural review and approval form completed and stamped by engineer of record and truss manufacturer **MUST** be submitted with the sprinkler plans.

   g. Hangers attached to 2" by 6" wood structure shall be attached with minimum 3/8" bolt, nut and washers (do not use lag screw or drive screws). Bolt hole shall be a minimum of 4" from bottom of wood. Hangers shall not be attached to wood smaller than 2" by 6" (nominal size). The maximum pipe size that can be hung from a 2" by 6" is 2" pipe.

10. Approved Livermore-Pleasanton Fire Department supervision of all fire sprinkler system water flow alarms and control valves shall be complete and in service prior to final inspection of all fire sprinkler systems for shell buildings and tenant improvements.

11. All new buildings require a sprinkler water flow alarm indication inside the building and outside the building.

12. All sprinkler risers shall be inside the building or in a sprinklered enclosure on the building exterior. No exposed fire protection risers are permitted. If an enclosure is used, it shall have prior approval from the City Planning Department.

13. A weld inspection is required before the pipe is installed.

14. All exterior exposed pipe shall be insulated. Examples include loading dock canopies, gas station island canopies, etc.

15. Plans for fire sprinkler alarms, fire sprinklers, underground fire mains, storage racks, high-piled combustible storage, hazardous materials, and any other fire protection items shall be approved by the Fire Prevention Bureau prior to installation.

16. Plans and permits are required for all fire sprinkler installations regardless of size, including Title 19 inspection corrections. Plans shall be drawn to standard engineering scale dimensions. Contractor must have current Fire Department operating permit.

17. All locations with more than one fire sprinkler riser require a check valve on each riser (including rack sprinklers and wet pipe hose stations, etc).

18. Listed flexible couplings are required at the top and bottom of all drops to mezzanines, rack sprinklers, column sprinklers, hose stations, coolers, freezers, spray booths, ovens and other parts of the building or equipment which can be expected to move differently from the roof sprinkler piping in the event of an earthquake

19. See attached sheets for underground fire main installations, light hazard sprinkler installations, and Building Department structural approval form.

20. Also, see City web site for copy of Fire and Building Department ordinances.

21. Also, see City Standard detail book for double detector check valve assemblies, fire hydrants, bollards, etc. These standards apply to both private and public water mains and other devices.

22. Fire sprinkler plans for tenant improvements shall show information required by NFPA 13 including which walls are new or existing, which walls are ceiling height, which walls are roof height, adequate fire sprinkler protection on both sides of all new and/or existing walls, sprinkler design and maximum spacing. A complete section view showing details of construction and sprinklers in all concealed spaces, all new and existing fire sprinkler piping in the area involved, and complete hanger details are required. Plans lacking sufficient detail of existing field conditions will not be reviewed until the information is provided.

23. The Contractor shall provide enough information to allow the plan reviewer to determine whether or not the proposed sprinkler design would meet the design criteria for the new tenant space. This requires the Contractor to follow one of the following options:

Calculate the tenant space in accordance with the current criteria for the tenant space. Calculations shall extend from the tenant space to the city water main in the street.

Add new fire sprinklers within the new tenant space below the ceiling on a one for one basis; i.e., provide no more than one new fire sprinkler below the ceiling in the tenant space for each existing "shell" sprinkler above the ceiling. Add any extra sprinklers to new branch lines connected to the mains. New branch line sizing to match existing branch line sizing pattern. For any new branch line with more than 3 (three) sprinklers, connect to both mains of the existing gridded system.

Evaluate the capability of the existing sprinkler system and compare the capability of the existing sprinkler system to the requirements for the new occupancy. For example, if the existing sprinkler system was designed to provide a density of 0.60 gpm per square foot and the new occupancy has a required density of 0.18 gpm per square foot, it would be possible to add 2 new tenant sprinklers below the ceiling for every existing "shell" sprinkler above the ceiling. When two (2) new tenant improvement sprinklers are added, only ½" orifice fire sprinklers can be used.

The Contractor shall identify the method of selected and shall document the capability of the existing system on the plan. The Contractor shall also show the location and size of the existing mains and branch lines on the plan.

Spacing criteria are as follows: the maximum fire sprinkler spacing in all buildings shall not exceed 130 square feet per sprinkler (and shall be less if required by NFPA 13 or the fire sprinkler listing) except that an individual office of 168 square feet or less may be protected by one sprinkler (located per the small room rule per NFPA 13).

The orifice size of the tenant sprinklers shall be ½" or 17/32" unless approved by the Fire Marshal. Extended coverage sprinklers shall not be used. Small orifice (7/16" or less) fire sprinkler shall not be used.

Items 24 and 25 apply to Residential Single Family Homes only.

24. Residential detached garages associated with a single family residence, design criteria shall be as follows: Maximum sprinkler spacing is 150 square feet per sprinkler, calculate 4 (four) sprinklers, minimum pressure to be 7 psi, sprinklers to be 200 degree F quick response, 7/16" orifice and a K-factor of 4.2.

25. The sprinkler densities listed in the ordinance for residential sprinklers are not intended to supersede the manufacturer's data.

    The manufacturer's data may require higher flow rates for sloped ceilings and the flow rates required by the manufacturer shall be used in the calculations. The number of sprinklers to be calculated shall be per the ordinance.

Questions about plans for fire sprinklers, fire mains and hood and duct systems that have been reviewed and returned to the contractor with corrections may be directed to Glenn Peterson at 510-482-2704.

All other fire related questions should be directed to Scott Deaver, Fire Marshal at 925-454-2330.