



# Clark County Department of Building & Fire Prevention

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**Permit Type: 105.7.13**

**Control Number: A.0**

**Effective Date: 11/15/11**

**TITLE: STANDPIPE SYSTEMS**

**SCOPE:** Clark County Department of Building & Fire Prevention requirements for the submittal and approval of standpipe systems in accordance with the Clark County Fire Code and NFPA 14 as adopted.

Other fire protection equipment and systems such as fire pumps, fire sprinkler systems, water tanks, and other fire extinguishing systems shall have separate permits.

For new work in existing buildings, see the "New Work in Existing Buildings" guideline.

**PURPOSE:** To standardize plan/permit requirements required by the Fire Prevention in accordance with the Clark County Fire Code. Permits are valid through the duration of construction. Work must commence within 180 days, and remain active with no period of inactivity exceeding 180 days, or the permit becomes invalid.

**DEFINITIONS:**

**APN:** Assessor's Parcel Number is a unique number given to a piece of land by the Clark County Assessor.

**NFPA:** National Fire Protection Association is a nationally recognized code-developing organization.

**NICET:** National Institute for Certification in Engineering Technologies is a nationally recognized engineer technician certification organization.

**PERMIT FEES:**

Permit fees shall be assessed in accordance with the Permit Fee Schedule as adopted in the Clark County Fire Code. For applications that are expedited, additional fees shall apply.

**SPECIFICATIONS AND REQUIREMENTS:**

An application must be completed for each submittal. A minimum of three sets of plans shall be submitted with the permit application. Plans shall show compliance in accordance with Section 905 of the Clark County Fire Code and NFPA 14, as adopted and amended. All submittals must be legible and readable or the plan shall be issued a correction letter for cause.

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Plans shall address the following:

1. Provide a detailed narrative describing the scope of work to be conducted associated with the plans.
2. Name of owner and occupant.
3. Location, including street address and assessor's parcel number (APN).
4. Name address, phone number, and contractor's license number of sprinkler contractor.
5. Nevada State Fire Marshal registration number.
6. Signature and NICET number, or engineer's seal, of the designer.
7. Point of compass.
8. The plan must show a top view of all areas on a common architectural scale, i.e. 1/8", 3/16", 1/4", etc. All walls and doors need to be shown, and each room must be labeled according to use. The top view must show supply and drain pipe layout, pipe dimensions, attachments, braces, hangers, standpipe hose outlets, hydraulic nodes, and the coverage area from each hose valve to the remote areas of the floor plan. The coverage area shall be shown on plans and be measured along the path of travel from hose valves, around walls and through doors, to the most remote areas of the floor. The 30 feet distance assigned to the hose stream shall not be allowed to bend or turn.
9. The plan must show section views with a riser diagram to describe the locations of mains, lines, and hose valves within the structure. A minimum of one view is required, although additional views may be necessary to determine compliance with NFPA 14. The section view must be drawn to a common architectural scale, i.e. 1/8", 3/16", 1/4", etc. The riser diagram must indicate all components on the riser, including fire department connections; water supply components, including fire pumps and supply lines; interconnecting horizontal pipe; all standpipes on the system; control valves at the base of all standpipes; hose valves fed by the standpipes; and, where required for testing of pressure regulating valves, the drain lines.
10. The plans shall include an isometric view showing the entire system in one view.
11. A graphic representation of the scale used on all plans.
12. Ceiling construction.
13. Full height cross section.
14. Location of fire walls.
15. Location of horizontal exits.
16. Location of partitions.
17. General notes shall be provided, as follows:
  - a. Indicate compliance with NFPA 14.
  - b. Indicate the type of system per NFPA 14, Section 5.2 and the class of the system per NFPA 14, Section 5.3.
  - c. Indicate the minimum and maximum pressure requirements for the system.
  - d. Indicate the minimum flow for the system and for each individual valve. e. Provide a description of hose valves used, detailing the manufacturer, model number(s), and outlet size.
  - f. Manufacturer, schedule and type of piping. g. Manufacturer and type of fittings.
  - h. Type of freeze protection (building heated, dry system, anti-freeze system, heat-trace, etc).

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- i. Indicate the pressure required for the hydrostatic test, being 200 psi or 50 psi about pump churn pressure, whichever is higher.
  - j. Indicate the quantity of hose valves shown on the submittal.
  18. Underground pipe size, length, location with respect to the building, weight, material, and point of connection to city main; type of valves, meters, and valve pits; and depth at which the top of the pipe is laid below grade. Show the locations of fire hydrants used for water supply to the fire department connection(s), indicate the test and flow test results and label the test and flow hydrants.
  19. Provide information regarding the fire pump, as applicable.
  20. Other sources of water supply, including water storage tanks and fire department connections, shall be shown on plans.
  21. Size, location, and piping arrangement of fire department connections, with details of the connection.
  22. Fire Department Connection Signage: A sign shall be provided adjacent to each FDC indicating what systems are being served, what areas of the building are served, and the minimum required pressure and flow at the Fire Department Connection for correct system operation. Provide a detail of this sign on the plan.
  23. Detail of Class I, Class II, or Class III hose valves located in cabinets. The cabinet size, and the placement of items within the cabinet, shall be such to provide a minimum clearance of 6 inches perpendicularly from the face of the valve, a minimum of 1 inch around the circumference of the valve, and a minimum of 6 inches around the circumference of the hose outlet cap.
  24. Type of pipe and fittings.
  25. Pipe type and schedule of wall thickness.
  26. Nominal pipe size with lengths shown to scale.
  27. Type of fittings and joints and the location of all welds and bends.
  28. Type and locations of hangers, sleeves, braces, and methods of securing sprinklers, where applicable.
  29. Show hanger locations, and provide details of hanger installations.
  30. Seismic bracing information shall be provided, including locations, details, and calculations.
  31. Provide details for penetrations of standpipe piping through walls, floors, and other structural members. Show detail to note clearances around the piping and/or locations of flexible connections.
  32. Provide details for all penetrations in rated walls and floors, providing information regarding the method of maintaining fire rating of the wall or floor.
  33. All control valves, check valves, drain pipes, and test connections.
  34. Make, type, model, and size of alarm or dry pipe valve.
  35. Piping provisions for flushing and for testing.
  36. Where the equipment is to be installed as an addition to an existing system, enough of the existing system indicated on the plans to make all conditions clear.
  37. A detail of the hydraulic data nameplate.
  38. Hydraulic reference points shown on the plan, including the top view, section view, and isometric view that correspond with comparable reference points on the hydraulic calculation sheets.
  39. The total quantity of water and the pressure required noted at a common reference point for each system.
  40. Edition year of NFPA 14 to which the standpipe system is designed.
  41. Pressure Reducing Valves: For all pressure reducing valves, including direct-

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acting and pilot-operated valves, which are shown on the plans, indicate the make, model, and setting of the pressure-reducing valve, and provide a detail for each unique installation configuration.

42. Where direct-acting pressure regulating hose valves are provided anywhere in the building, provide a chart on the plans. The chart shall have eight columns, as follows:
- a. Floor Level – Provide numerical designation for all floor levels in the building.
  - b. Static Pressure, Inlet – Indicate the static pressure at the inlet of the hose valve on all floor levels. Provide a supporting hydraulic calculation at zero flow with churn pressure, providing a node at the hose valve on each floor level to indicate the static pressure at each hose valve.
  - c. Residual Pressure, Full Flow, Inlet – Indicate the residual pressure at the inlet of hose valves on each floor. Provide a supporting hydraulic calculation at full standpipe design flow per NFPA 14 (750 or 1,000 gpm), providing a node on each floor level to indicate the residual pressure at each hose valve.
  - d. Residual Pressure, 250-gpm flow, inlet - Indicate the residual pressure at the inlet of hose valves on each floor while flowing 250 gpm. Provide a supporting hydraulic calculation at 250 gpm flow at the most remote standpipe outlet, providing a node on each floor level of the most remote standpipe to indicate the residual pressure at each hose valve.
  - e. Valve Make and Model – Indicate the manufacturer of the valve on all floors, and the model number for the specific valve. Provide supporting manufacturer specifications.
  - f. Valve Setting – Indicate the hose valve setting or bonnet number proposed for each valve. The setting or bonnet number must be associated with the manufacturer specifications for the valve.
  - g. Residual Pressure, Full Flow, Outlet – Indicate the residual outlet pressure at the outlet of the hose valve under the full-flow condition. For PRV installations, the residual pressure is taken from pressure relation charts provided by the manufacturer. For non-PRV installation, the residual pressure is taken by analysis of the equivalent lengths of the fittings and the hose valve.
  - h. Residual Pressure, 250-gpm flow, Outlet - Indicate the residual outlet pressure at the outlet of the hose valve when flowing 250 gpm. This is necessary to establish the residual pressure expected during field inspection. For PRV installations, the residual pressure is taken from pressure relation charts provided by the manufacturer.

### **PERMIT REVISIONS AND RESUBMITTALS:**

Revisions to approved plans are required to be submitted and approved. Revisions will be assessed additional plan review fees. A copy of the previously approved plan shall accompany the revised submittal to facilitate the review. Clearly indicate all changes to the revised plans by clouding the change with a delta number signify the date of plan change. When several changes have been made, the Plans Checker may also require a detailed list of changes.

Re-submittals to address a Letter of Correction will require a full submittal. These plans require a copy of the red lined plan from the previous submittal to facilitate the review. Clearly indicate all changes by clouding the change with the delta number to signify the date of plan change.

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## **PLANS CHECK STATUS INSTRUCTIONS:**

The status of the review can be checked by logging on to:

[www.clarkcountynv.gov/building/fire-prevention](http://www.clarkcountynv.gov/building/fire-prevention)

## **INSPECTIONS THAT MAY BE REQUIRED AND SCHEDULING INSTRUCTIONS:**

If approved, an inspection will need to be scheduled. To schedule an inspection, go to:

[www.clarkcountynv.gov/building/fire-prevention](http://www.clarkcountynv.gov/building/fire-prevention)

A fire inspector will review your site in accordance with the approved plans and this guideline.

Required inspections include hanger inspection, bracing inspection, overhead hydrostatic/visual test, 24-hour air test (dry systems), dry-pipe valve trip test (dry systems), rooftop performance tests, PRV flow tests and final standpipe inspection. All equipment that requires supervision shall be tested with monitoring panels in place and operational.

The Fire Prevention (FP) may witness and accept inspection, testing and maintenance of fire and life safety systems conducted by approved individuals as required by and within the scope and authority of the Clark County Fire Code.

This Guideline does not take the place of the Fire Code and does not take precedence over any Fire Code requirement or position taken by the Fire Chief. When a conflict exists between the requirements of this Guideline and the Fire Code or the opinion of the Fire Chief, the Fire Code or opinion of the Fire Chief prevails.

Technical Assistance, when required by the Fire Chief, will require a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.

Acceptance of Alternative Materials and Methods requires a Technical Opinion and Report prepared by a State of Nevada licensed: qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the Fire Chief and the owner. The Fire Chief is authorized to require design submittals to bear the Wet Stamp and Signature of a professional engineer.