

## ***FIRE PROTECTION SYSTEMS***

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**Compliance:** Appropriate fire suppression systems shall be incorporated into any new or remodel project as required to suit specific functional areas, including wet sprinkler systems, pre-action dry pipe systems, standpipes, chemical systems, and special systems such as kitchen systems. The design, installation, and placement of all fire protection systems shall comply with the publications listed in *Codes, Standards and Regulations* within these Design Guidelines. These publications are to be viewed as providing minimal requirements for fire protection.

**Sprinkler System Requirements:** Automatic fire suppression systems shall be installed through all new buildings and all buildings that are completely renovated. Partial systems that are installed with areas of major renovation must be designed in accordance with NFPA 13 to ensure adequate water supply, system performance, fire alarm system interface, system supervision, and the potential to be expanded should future projects be undertaken at the subject site. For the purpose of this section, "completely renovated" shall be defined as renovation projects in which 75% of the gross floor area of the building is affected by the scope of the project. When there are multiple, phased renovation projects planned to occur in a building, the total affected floor area shall be considered the sum of all such project areas.

**Design Water Pressure:** All fire protection systems shall be sized using water supply tests performed not more than one year prior to construction.

**Wet vs. Dry Pipe Systems:** Wet pipe systems are to be used unless the system is to be located in areas where freezing may occur. Dry pipe systems are allowed in these areas only. If, due to building remodeling, an area served by a dry pipe system is no longer exposed to freezing temperatures, the fire protection system serving this area shall be converted to a wet pipe system.

**Other Systems:** Other more specialized types of sprinkler systems such as pre-action, combined dry pipe / pre-action, and antifreeze systems shall not be installed without special approval (i.e. without an approved request for variance). The use of a pre-activation system in computer rooms will not require a variance. Fire suppression systems shall not contain ozone-damaging substances such as Halon.

**Water Service:** Each building shall be provided with a fire protection water service that is completely separate from the water service.

**Fire Department Connection:** A freestanding fire department connection (FDC) shall be connected to the automatic fire suppression system within each building. The location of the FDC shall be subject to approval by the NU Fire Marshal. The ball drip valve associated with the FDC shall be located in the basement of the building or within a shallow sump depressed within the lowest floor of the building such that the line outside of the building remains completely free of water. A wall mounted FDC is permitted when the building does not have a basement. FDC's shall be identified with approved, permanently marked weatherproof metal or rigid plastic identification signs. Signs shall be affixed to the building at a clearly visible location directly adjacent to the FDC. The FDC shall not be obstructed by vegetation, landscaping or site furnishings.

**Post Indicator Valves:** Each Post Indicator Valve (PIV) shall be identified regarding the building it serves by means of weatherproof metal or plastic sign, which can either be affixed to the PIV, hung from the PIV by means of a durable, weatherproof chain, or, in the case of building-mounted PIVs, affixed to the building directly adjacent to the PIV. In no case shall a Post Indicator Valve be allowed to be obstructed or obscured by vegetation, landscaping or site furnishings.

**Double Detector Check:** Each fire protection water service shall incorporate a double check valve assembly at the building service entrance.

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***Fire Pumps with Associated Jockey Pumps, Ancillary Equipment, Electrical Service, and Controls.*** Installation of this type of equipment shall be required only when the utility water pressure cannot meet NFPA flow and pressure requirements at the hydraulically most remote area with no additional hydraulic safety factors applied.

***Flow Switches:*** Flow switches shall be installed as required by code and shall interface directly with the building fire alarm system. Each flow switch shall include an adjustable time delay feature. Activation of any flow switch shall activate a visual alarm device, located within 10 feet of the Fire Department Connection, at an elevation of 90-120 inches above grade. This device shall not be obscured by building elements vegetation, landscaping or site furnishings.

***Sprinkler Zones:*** Each zone of an automatic fire suppression system shall not cover more than one floor of a building.

***Inspector's Test Connections:*** Each zone of each sprinkler system shall incorporate an inspector's test connection (ITC). If the sprinkler system is a wet type system, the ITC shall be located at the riser. Each ITC shall discharge outdoors. Any drain that is used for this purpose shall be capable of accepting the full flow of water under system pressure without creating water damage to the surroundings. In order to facilitate routine inspection, ITC's shall not require the use of ladders or temporary hoses.

***System Main Drain:*** A main drain for the fire protection system shall be provided. The drain must be arranged such that no water remains in the line following a drain down of the system.

***Standpipe Systems:*** In those cases where a standpipe system is required, a combined sprinkler/standpipe system shall be installed. Hose cabinets and hoses shall not be installed with these systems. Combination Extinguisher & Fire Department Valve Cabinets shall be installed. The recessed or semi-recessed cabinets shall be installed at each mid-landing of each floor.

***Special Systems:*** The design and installation of special fire suppression systems such as inert gas and chemical systems are to be closely coordinated with, and are subject to approval by FP&C

***Fire Extinguishers:*** Fire extinguishers and recessed or semi-recessed cabinets shall be provided in all buildings in accordance with applicable NFPA requirements.