

Fire pump installations are governed by the NYC Building Code (BC) Chapters 9 and National Fire Protection Association (NFPA) 20-2007, as modified by BC Appendix Q. Automatic fire pumps may serve as the water supply for standpipe and sprinkler systems. (NFPA 13 Section 23.2.2 and NFPA 14 Section 7.9.4.1 & 7.9.4.2, as modified by BC Appendix Q.).

Electrical Requirements for Fire Pumps

The power supply for all fire pumps must comply with BC 913 and NFPA 20, as amended by BC Q106. The power supply for a fire pump motor serving the standpipe system (with exception to a limited-service fire pump with emergency generator power) must be taken from the street side of the house service switch. It must have a disconnect switch clearly marked **Fire Pump Power Supply**. (See NFPA 14 Section 9.1.5 (2), and NFPA 20, both as amended by BC Appendix Q).

Requirements for Fire Pumps Discharge Header Serving Standpipes

- A 3-inch Pressure Relief Valve shall be installed in the pump discharge (NFPA 14 Section 9.1.5 (2)(g), as modified by BC Appendix Q).
- Pressure relief valve setting shall be below the shutoff head of the pump and above the required pressure at the highest hose valve (NFPA 14 Section 9.1.5 (2)(g), as modified by BC Appendix Q).
- The relief valve discharge may be piped with visual sight glass to the suction side of the pump, on the pump side of the suction valve (NFPA 14 Section 9.1.5 (2)(g), as modified by BC Appendix Q).

For a manual standpipe, a fire department pumper or portable pump of a capacity to provide required flow and pressure shall be used to verify the system design by pumping into the fire department connection (NFPA 14 Section 11.5.2)

Requirements for Water Sources Supplying the Fire Pumps

- **Automatic Pumps – for Building Occupancies Other Than Group R-2:** At minimum, two 6-inch services from independent street mains (NFPA 14 Section 9.1.5 (2)(a), as modified by BC Appendix Q)
- **Automatic Pumps – for R-2 Buildings Occupancies Only:** See NYC Building Code §903.3.5.1.2 and NFPA 14 Section 9.4, as modified by BC Appendix Q.
- **Automatic Pump Exceptions:**
 - One 6-inch service and suction tank is permitted if the meter and pump valves have tamper switches that are wired to an approved central station of a fire alarm company.
 - If two separate, distinct, and adequate water mains are not available, provide a suction tank with a water supply at the pump's rated capacity and duration as required (NFPA 14 Section 9.1.5 (2)(b), as modified by BC Appendix Q).
- **Domestic Service & Fire Pump:** When a water service supplies the domestic service and the fire pump, a remote-control valve must be placed on the domestic service connection at the point where the connection is taken from the city supply or service main. This remote-control valve must be controlled from a point near the pump control panel. Instead of a remote-control valve, a manually operated valve may be installed to shut off the entire domestic water supply to the building, provided such valve is located in the fire pump room and is properly tagged for identification (NFPA 14 Section 9.1.5 (2)(c), as modified by BC Appendix Q).

Requirements for Rooms Where Fire Pumps are Installed

1. Fire pumps shall be located in rooms that are separated from all other areas of the building and protected in accordance with the NYC Building Code Section 913.2.1.
2. Fire pumps in high-rise buildings shall be physically separated or protected by 2-hour fire-rated construction in accordance with BC 913.2.1 and BC Table 509.

3. Fire pumps in non-high-rise buildings shall be physically separated or protected by 2-hour fire-rated construction or protected by 1-hour fire-rated construction with automatic sprinkler systems provided in accordance with BC 903, BC 913.2.1, BC Table 509.
4. Fire pump room shall be properly heated, lighted, ventilated, and drained. (BC 913.3, NFPA 20 Section 5.12.5 & 5.12.6)
5. Fire pumps shall be placed on concrete pads at least 12 inches above the pump room floor with a clearance of at least 3 feet maintained on all sides from walls or from other equipment in the pump room. (NFPA 14 Section 9.1.5 (2)(f), as modified by BC Appendix Q)
6. Hazardous refrigerants, gas piping, gas meters or gas-consuming devices shall not be located in a fire pump room.
7. Anything that may increase the fire hazard and is not related to fire protection systems should not be in a fire pump room.
8. In accordance with NFPA 20, Section 5.12.1.1.4, Fire pump rooms shall be free from elements not essential to the operation of the pump and related components.

Minimum Fire Pump Capacity Requirements:

- A fire pump serving the standpipe system or combination sprinkler and standpipe system shall be rated for at least 500 GPM. (NFPA 14 Section 7.10 & 9.4, as modified by BC Appendix Q).
- A fire pump serving only the sprinkler system (**sprinkler booster pump**) shall be rated for at least 200 GPM. (NFPA 13 Section 23.2.2.4, as modified by BC Appendix Q)

FIRE PUMP TESTING REQUIREMENTS

Refer to NYC Building Code Chapter 9 and NFPA 20, NFPA 25 and NFPA 14, as modified by BC Appendix Q for full requirements for fire pump testing and standpipe system testing. Where pumps are part of the water supply for a standpipe system, standpipe testing shall be tested to verify system demand while the pumps are operating. The Standpipe flow test shall be in accordance with NFPA 14, as amended by BC Appendix Q.

To facilitate standpipe system testing data collection, when standpipe system testing is being conducted at the same time as the fire pump field acceptance testing (flow testing), the following requirements shall be noted:

- The standpipe hose connections shall have nominal 2½ inch (64 mm) threads conforming to FDNY standards, in accordance with NFPA 14 Section 4.7.2 as amended by BC Appendix Q.
- The standpipe system shall be provided with **at least one** 3-way manifold equipped with 2½ inch valves with hose valve caps at the hydraulically most remote portion of the system in accordance with NFPA 14 Section 7.3.2.2, as amended by BC Appendix Q.

Readings: When pitot tube gauges are used, readings must be taken at each nozzle to verify the required pump capacity. (NOTE: A 45 psig pitot gauge pressure reading for one (1) 1-1/8inch nozzle is equivalent to 250 GPM.) Verify all equipment is in good working order and that there are no kinks in the hoses and there are no valves in the line leading to the controls.

Test Connections: Fire pump installation, regardless of the type of system such fire pump serves, shall be arranged to allow the pump test to be performed in accordance with NFPA 20 Chapter 14. Fire pump flow test shall be conducted through the pump test connection utilizing water flow test devices in accordance with NFPA 20 Section 5.19.

Separate Services: When Fire Pumps required to be tested have two (2) separate water supply services, (i.e., any combination of street connections, or tank(s)), results from the flow test using each supply to operate the pump must be recorded on the Fire Pump Field Acceptance Test Forms. When using the primary water supply, results shall be recorded on the **Pump Test 1** section of the Fire Pump Field Acceptance Test Form, and when using the secondary water supply, results must be recorded on the **Pump Test 2** section of the Fire Pump Filed Acceptance Test Form. Refer to form instructions.