

Standpipe Systems

SD Applications



STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

A standpipe system serves to transfer water from a water supply to hose connections at one or more locations within a building for firefighting purposes. When installing a standpipe, the minimum requirements for construction documents and shop drawings are outlined in the New York City Building Code (BC) and National Fire Protection Association (NFPA) Codes and Standards. The Building Code typically indicates when and where the standpipe systems are required, while NFPA 14 standards, as modified by BC Appendix Q, provide information on how they are to be installed.

New York City Building Code

Standpipe systems are addressed in NYC BC Chapter 9 and Appendix Q, which modifies NFPA 14 for use in New York City. References herein to NFPA 14 shall correspond to the modifications outlined in Appendix Q. Submitted construction documents for plan examination and approval shall be in accordance with BC 905.1.1, while shop drawings (Working Plans in compliance with NFPA 14-2007 Section 8.1, as modified by BC Q105) – sealed by a registered design professional or stamped as approved by the applicant of record – must be maintained on the job site prior to the commencement of the standpipe system installation, and available to special inspectors and Department inspectors at all times. Installation of standpipe systems shall comply with the special inspection requirements of Chapter 17 of the NYC BC.

New York City Fire Code

NYC Fire Code contains requirements for special occupancies such as high piled combustible storage areas and buildings constructed on streets of substandard width.

This publication is an overview of the requirements for this type of work. There may be additional, applicable Zoning Resolution, Construction Code, Multiple Dwelling Law or Energy Code requirements.

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

FIRST STEPS

- Review PW1 to verify that scope of work [Sec. 11] and work on floor(s) [Sec.1] are consistent with the scope of work stated on the plans submitted for review job description
- Confirm the correct Code. (the Applicant is to state the standpipe system is designed based on Building Code Section 905 and NFPA 14-2007 as modified by BC Appendix Q)
- Lot diagram (indicate block/lot number, dimensions of zoning and tax lot, building, yards, distance to corner street intersection, street names, street status as mapped or improved, street width, zoning use group, building occupancy group, construction classification, number of stories and height in feet, buildings on adjacent lots, distance to nearest fire hydrant, number and location of Fire Department connections, and curb valve.)
- Borough Commissioner Determinations, if necessary

ADMINISTRATIVE

DOB Forms

- [PW1](#)
- [TR1](#) – indicating fire stop, draft stop, fire block systems and standpipe systems
- [ACP5](#) – Asbestos Assessment Report
- [ACP7](#) – Asbestos Project Notification, if a significant amount of asbestos will be disturbed as part of the project

Technical Documents

- Hydraulic calculations for hydraulically calculated systems to substantiate pipe size(s) shown – NFPA 14-2007 Chapter 7 as modified by BC Appendix Q 105

Related Applications

- Sprinkler (SP)
- Plumbing (Water service piping and cross connection control RPZ) (PL)

BIS Required Items

- Check all required related work types have been filed (SP or PL work type)

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

ZONING

- N/A

MULTIPLE DWELLING LAW

- N/A

FIRE CODE

- Standpipe Systems- FC 905
- Sprinkler Systems- FC 903

BUILDING CODE

Identify the Type of Standpipe System - NFPA 14-2007, Section 3.3.12 as Modified by BC Appendix Q 105

- Automatic Standpipe System – A standpipe system that is attached to a water supply capable of supplying the system demand at all times and requires no action other than opening a hose valve to provide water at hose connections.
- Wet Standpipe System – A standpipe system having piping containing water at all times and with a permanent water supply.
- Dry Standpipe – A standpipe system designed to have piping contain water only when the system is being utilized (No automatic water supply).
- Manual Standpipe – Standpipe system that relies exclusively on the fire department connection to supply the system demand.
- Out of Service System – A fire protection system that is not fully functional; or whose operation is impaired or is otherwise not in good working order.
- Combination Standpipe and Sprinkler System – A system where the fire protection piping services both 2½ inch (65 mm) outlets for fire department use and outlets for automatic sprinklers.

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

- Standpipe, Multi-Zone – A standpipe system that is vertically subdivided as required by the construction codes, into zones to limit the maximum operating pressure in the system. Each zone will have its own individual automatic water supply. All zones serving occupied floors located higher than 300 ft. (91.4m) shall be provided with primary and auxiliary water supplies.
- Semiautomatic Standpipe System – A semiautomatic standpipe system is designed for situations where there is danger of serious water damage.

Identify the Class of Standpipe System - NFPA 14-2007, Section 3.3.15 as Modified by BC Appendix Q 105

- Class I system. A system providing 2½ inch (65 mm) hose connections to supply water for use by the Fire Department and those trained in handling heavy fire streams. Class I automatic wet standpipes shall be provided in non-sprinklered Group A buildings having an occupant load exceeding 1,000 persons. Class I standpipes shall be provided in every required stairway for each floor above or below grade.
- Class II system. A system providing 1½ inch (40 mm) hose stations to supply water for use primarily by the building occupants or by the Fire Department during initial response.
- Class III system. A system providing 1½ inch (40 mm) hose stations to supply water for use by building occupants and 2½ inch (65 mm) hose connections to supply a larger volume of water for use by the Fire Department and those trained in handling heavy fire streams.
- Class III standpipe systems shall be installed throughout the following buildings per [BC 905.3.1](#):
 - In buildings two stories or more in height with floor area of 10,000 square feet (929 square meters) or greater on any story;
 - In buildings three stories or more in height with floor area of 7,500 square feet (697 square meters) or greater on any story;
 - In buildings of any area with a floor level having an occupant load of 30 or more that is located 55 feet (16.764 meters) or more above the lowest level of Fire Department vehicle access;
 - In buildings of any area, constructed in accordance with Section 403, with occupied floors located 75 feet (22.860 meters) or more above the lowest level of Fire Department vehicle access.

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

- Required standpipe installations – [BC 905.3](#)
- Dedicated standpipes and the handles of valves serving standpipes shall be painted red and such painting completed and certified in accordance with Sections [BC 905.11.1](#) through [BC 905.11.6](#).
- Standpipe systems required during construction, alteration and demolition operations shall be provided in accordance with Section [BC 3303.8](#).
- Class I standpipe systems may be substituted for Class III systems in buildings equipped throughout with automatic sprinkler systems when the following additional requirements are met per [BC 905.3.1](#), Exceptions:
 - Locked storage cabinets shall be provided on the main entrance floor and at every tenth floor there above so that no occupant would be required to travel more than five floors to reach a cabinet located within 15 ft. of a standpipe riser. All cabinets shall be provided with fog nozzle, spanner wrenches, reducing couplings, and hoses as required.
 - Class I standpipes are allowed in open parking garages with the highest floor located no more than 150 ft. above the lowest level of Fire Department vehicular access.
 - In open parking garages subject to freezing, Class I manual dry standpipes are allowed, provided that hose connections are located as required for Class II standpipes in accordance with [BC 905.5](#).
 - In below-grade stories equipped throughout with automatic sprinkler systems.
 - In portions of first floors or basements, which are completely separate from entrance halls or enclosed stairways leading to upper floors; and in which portable fire extinguishers are adequately installed, standpipe outlets may be omitted, subject to approval of the Fire Commissioner.

Plans

- Construction documents for standpipe systems shall contain plans that include at least the following data and information per [BC 905.1.1](#):
 1. The locations and sizes of all risers, cross-connections, hose racks, valves, Fire Department Connections, sources of water supply, piping, and other essential features of the system;
 2. A floor plan for each group of floors that have typical riser locations and no special features within such group of floor levels, with the indication in title block of such plan indicating clearly the floors to which the arrangement is applicable;

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

3. Riser diagram showing the essential features of the system, including the risers, cross-connections, valves, Fire Department Connections, tanks, pumps, sources of water supply, pipe sizes, capacities, floor heights, zone pressures, and other essential data and features of the system; and
 4. The available water pressure at the top and bottom floors of each zone, and at each floor where the weight pipe fittings change, shall be shown on the riser diagram;
 5. For street pressure-fed systems and fire pumps, a statement from the New York City Department of Environmental Protection (NYC DEP), giving the minimum water pressure in the main serving the building
 6. Indicate notes on plan stating inspection and tests to be performed per BC Chapter 17.
- Indicate Source of Supply
 - Direct Street Water Connection
 - Verify Direct Street connection on riser diagram.
 - Pipe size shall be determined by Hydraulic Calculations per NFPA 14-2007 Sec. 7.8 [Sec. 7.8.1] as modified by BC Appendix Q 105
 - Provide Hydrant Flow Test Letter results from DEP for the proposed work. (Hydrant Flow Test, for the purpose of design, must be performed no more than one (1) year prior to system design per NFPA 14-2007 [Sec. 10.2] as modified by BC Appendix Q 105
 - Fire Hydrant within 100 feet (30.48 m) of the building per NFPA 14-2007 Sec 6.4.5.4 as modified by BC Appendix Q 105
 - Verify the number of required street connections for the Fire Pump as stated in NFPA 14-2007 Sec. 9.1.5 (2) as modified by BC Appendix Q 105
 - Gravity tank capacity
 - Verify the Capacity of water supply [typical 30-minute water supply required] – NFPA 14-2007 Sec. 9.1.5 (4) as modified by BC Appendix Q 105.
 - Provide hydraulic calculation for proposed Standpipe System – NFPA 14-2007 Sec 7.10.1.2 as modified by BC Appendix Q 105
 - Fire pump requirements – BC 913, NFPA 14-2007, Sec. 7.9 and Sec. 9.1.5 (2) as modified by BC Appendix Q 105

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

- A fire pump is a part of a fire standpipe system's water supply and can be powered by electric, diesel or steam. The pump intake is either connected to the public underground water supply piping or a static water source (e.g., tank, reservoir, lake). The pump provides water flow at higher pressure and volume to the standpipe system risers and hose standpipes. Automatic fire pumps shall be provided with emergency power supply for Occupancy Groups B, E, and R-1 – BC 2702.2.20.1, Item 6
- Standpipe zone heights are limited to 300 feet (91.44 m). Fire department connection zone heights are limited to 600 feet (182.88 m) – NFPA 14-2007, Sec. 7.9.1.1 as modified by BC Appendix Q 105
- In buildings with occupied floors less than 300 feet (91.4m) in height above the lowest level of FDNY vehicular access, water supplies may be provided by a public waterworks system, by automatic fire pumps or gravity tanks – NFPA 14-2007, Sec. 7.9.4.1 as modified by BC Appendix Q 105
- All zones must be provided with a primary and auxiliary water supply. A water supply can be primary for one zone only and auxiliary for one other zone only. – BC Q 105 Sec. 7.9.4.2, 7.9.4.3 and 7.9.4.3(1)
- Buildings over 300 feet (91.44 m) in height or in high-rise buildings in Seismic Design category C or D, a secondary on-site water source is required – BC 903.3.5.2

Verify following on drawings

- NFPA 14 Fire Standpipe system piping shall be seismically restrained as required by NFPA 14-2007 as modified by BC Appendix Q.
- Hydraulically designed standpipe system shall be designed to provide min. residual pressure of 65 psi (4.481 bar) – NFPA 14-2007, Sec. 7.8.1 as modified by BC Appendix Q 105
- Drawings must state the maximum pressure in PSI at which the system shall be tested hydrostatically. All new systems, including yard piping and fire department connections, shall be tested hydrostatically at not less than 300 psi (20.7 bar) of pressure for 1 hour, or at 50 psi (3.5 bar) in excess of the maximum pressure where the maximum pressure is in excess of 250 psi (17.3 bar) – NFPA 14-2007, Sec. 11.4.1 as modified by BC Appendix Q 105
- Riser control valves – NFPA 14-2007, Sec. 6.3.2 as modified by BC Appendix Q 105

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

- LL 58/09 Exposed standpipes and sprinkler risers must be painted red. Valve handles must also be painted as follows: Standpipe – Red, Combination Valve Handles – Yellow, Sprinkler – Green. Branch piping should not be painted.
- LL 64/09 Vacant Buildings Being Demolished: Existing standpipes must be dry standpipes and have an air-pressurized alarm. New buildings greater than 75 feet (22.86 m) in height permitted on or after February 4, 2010 require air-pressurized alarm. An electrical permit must be obtained to install the air pressurized alarm system.

Required Signage

- System component – NFPA 14-2007, Sec. 4.10 as modified by BC Appendix Q 105
- Where Class I standpipes as an alternative to Class III, sign stating where the locked storage cabinet is located – [BC 905.3.1](#), Exception 1.1.3
- Stairways without hose connections – [BC 905.4](#), Item 1
- Cabinet equipment identification – [BC 905.7.1](#)
- Riser control valves – NFPA 14-2007, Sec. 6.3.2(1) and (6) as modified by BC Appendix Q 105
- Water supplies – NFPA 14-2007, Sec. 9.1.5(1)(a) and 9.1.5(2)(i) as modified by BC Appendix Q 105

Testing

Standpipe and water supply testing – [BC 901.5](#), NFPA 14-2007 Chapter 10 and 11 as modified by BC Appendix Q 105

ENERGY CODE

- See [Code Notes on Energy Code](#)

ELECTRICAL CODE

- N/A

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

APPLICABLE BULLETINS, DIRECTIVES, PPNs, MEMOS

- [Local Law 58/09](#) – Color-Coding of Sprinklers & Standpipes
- [Local Law 59/09](#) – Daily Inspection of Standpipe during construction and Demolition
- [Local Law 60/09](#) – Cutting & Capping of Sprinklers & Standpipes
- [Local Law 63/09](#) – Hydrostatic Pressure Testing of Standpipes
- [Local Law 64/09](#) – Air Pressurized Standpipe Alarm
- [RCNY 3310-01](#)– Requirements for the Construction or Demolition of Major Buildings
- [BB 2010-014](#) – Color-coding of Sprinklers and Standpipes
- [Memo 11-6-80](#) – Required Standpipe and Sprinkler Systems
- [Letter 2-18-88](#) – Location of Automatic Transfer Switch - Fire Pump Room
- [OPPN #07/91](#), [OPPN #08/91](#) – Forwarding Standpipe Documents to the Fire Department
- [BB 2010-029](#) – This document clarifies the installation standards to be utilized when an existing automatic sprinkler system, that was designed and approved under the 1968 Building Code or prior Code, is to be altered
- [BB 2011-019](#) – This document clarifies the exceptions for existing buildings subject to the retroactive sprinkler requirements of Local Law 26 of 2004 (LL 26/2004)
- [Local Law 5/73](#), [Directive 9 of 1974](#) – Sprinklers in Toilet Rooms
- [Memo 4-30-74](#) – H-2 Occupancy In Lieu of Smoke Detectors
- [Memo 3-9-79](#) – Fire Alarm, Detection & Extinguishing Equipment
- [Memo 11-6-80](#) – Required Standpipe and Sprinkler Systems
- [Memo 12-31-81](#) – Sprinklers, Fire Alarms & Emergency Lighting Apparatus
- [Memo 6-10-82](#), [Local Law 3/181](#)– Sprinkler/Drain Pipes within Stair Enclosures
- [Letter 12-3-85](#) – Sprinkler/Standpipe System in Research Laboratory

STANDPIPE SYSTEMS

APPLICATION WORK TYPE: (SD)

- [Letter 8-14-86](#) – Sprinkler System - RS 17-2 Water Reserve for 20-minute Duration
- [Letter 1-25-88](#) – Combined Standpipe and Sprinkler Risers in Office Buildings
- [Letter 10-7-88](#) – Combined Standpipe and Sprinkler Systems
- [Memo 10-13-88, TPN #20/88](#) – Sprinkler Requirements for Catering Establishments and Banquet Halls
- [Letter 12-12-88](#) – Combined Fire Standpipe and Sprinkler Systems
- [Letter 1-29-90](#) – Plastic Piping (for Fire Sprinkler System)
- [Letter 5-29-91](#) – Water Flow Valves (Flow Detectors) for Sprinkler Standpipe Systems

OTHER AGENCY APPROVALS

- **Department of Environmental Protection:** Hydrant Flow Test Letter required for new sprinkler installation and tap letter required for connection to the public water supply
- **NYC Fire Department:** variance where Fire Code provisions not met or approval for alternate fire suppression systems