

ARTICLE 17. STANDPIPE SYSTEMS

Sub-Article 1. General Provisions Governing Standpipe Systems

(16.1.1). §C26-1381.0 Standpipe and Yard Hydrant Systems Required.-

a. Standpipe systems, as provided in this article and in accordance with the rules of the board shall be installed in:

1. Structures erected before January first, nineteen hundred thirty-eight, over eighty-five feet high, previously without a standpipe three inches or more in diameter.
2. Structures constructed after January first, nineteen hundred thirty-eight that exceed seventy-five feet in height.
3. Structures more than one story high and with more than ten thousand square feet of net floor area.

b. The following structures are exempted from the requirements of this section, provided that such structures, when fifty feet or less in height, used for an occupancy not deemed highly hazardous by the superintendent, shall be equipped with either a standpipe system, a wet or dry sprinkler system in accordance with article sixteen of this title, or with at least one two and one-half gallon hand fire-extinguisher for each twenty-five hundred square feet of floor area and at least one forty-gallon portable chemical fire-extinguisher for each ten thousand square feet of floor area:

1. Structures included within the provisions of section C26-751.0;
2. Structures of a maximum height of two stories or twenty-five feet and twenty thousand square feet or less in area, the occupancy of which structure is not deemed highly hazardous by the superintendent;
3. Structures of a maximum height of six stories or seventy-five feet used for an occupancy not deemed highly hazardous by the superintendent and provided throughout with an approved, automatic sprinkler system, with two approved sources of supply;
4. Structures used exclusively for school purposes in which pupils are trained in rapid dismissal by means of regular, supervised fire drills, and which are five stories or less in height, provided that where such structures have towers exceeding five stories in height, such tower portion of such structures shall be equipped with a dry-line standpipe system.

c. Nothing contained in the exemptions specified in this section shall nullify any of the standpipe requirements of article thirteen of this title.

d. Yard hydrant systems shall be installed in amusement and exhibition parks, and in enclosures, oil storage plants, lumber yards, ship yards, and in other industrial plants over fifteen thousand square feet in area, when deemed necessary by the superintendent.

(16.1.2). §C26-1382.0 Construction and Maintenance of Standpipe Systems.-Standpipe systems when required shall be constructed and maintained in accordance with the rules of the board, except that standpipe systems in theatres and similar occupancies shall first comply with article thirteen of this title.

(16.1.3). §C26-1383.0 Approval of Devices and Materials for Standpipe Systems.-No device, valve, or fitting may be used in a required standpipe system unless such device valve or fitting is of a type approved by the board for such use. Devices, valves and fittings tested and classified or approved by any nationally recognized testing laboratory which possesses adequate equipment, experience and competency in this field may be approved by the board without additional test, but the board may require tests made under its supervision as a condition of approval. Devices,

valves and fittings tested and approved by the board prior to January first, nineteen hundred thirty-eight, shall be approved.

(16.1.4.1). §C26-1384.0 Plans and Diagrams for Standpipe Systems.-

a. Application and approval of plans for standpipe systems.-

1. No standpipe system may be installed, extended or altered until an approval of the proposed work has been given by the superintendent.
2. Applications for approval of standpipe work shall be made on forms issued by the superintendent and shall be accompanied by plans indicating the proposed work.
3. The superintendent shall notify the applicant in writing of the approval or disapproval of the application and plans and in the case of disapproval shall list all criticisms and objections or changes which may be required to bring the plans into conformity with the provisions of this title and the rules of the board. When the applicant has fully corrected the plans and satisfactorily answered any objections, three sets of the fully corrected plans shall be filed for final approval. One set of plans, certified by the superintendent, shall be returned to the applicant.
4. A certificate of approval of each standpipe plan approved shall be forwarded to the fire commissioner by the superintendent.
5. If a structure is equipped with an approved automatic sprinkler system, the plans shall include a statement to such effect.
6. The equipment shall be installed in accordance with such approved plans, unless amended plans are filed at a later date by the owner, or his duly authorized agent. When such amended plans are approved, the installation shall be made in accordance with them.

(16.1.4.2). b. Scope of Plans for Standpipe Systems.-Plans for standpipe systems shall:

1. Be drawn to a scale of at least one-eighth inch to one foot and indicate clearly all information required by the superintendent.
2. Give the correct address of the property, name of the owner of such property, the name and address of the applicant, and the compass bearing.
3. Show the floors and the sub-divisions of such floors, a longitudinal section or cross-section with story heights, and the essential construction features of the structure.
4. Show the location and size of the water supplies, the approximate location and correct size of all feed mains, risers and connections and any valves placed therein; such plans need show only the essential features of the equipment.
5. Bear a notation, signed by the applicant, stating that the equipment will be installed as shown on the plans and in accordance with this article.

(16.1.4.3). Amendment of Plans for Standpipe Systems. Equipment shall be installed in accordance with such approved plans unless amended plans are filed by the owner, or his agent, and approved. When such amended plans are approved, the installation shall be made in accordance with them. (In City Building Code only)

(16.1.4.4). c. Diagram of Standpipe Systems Required.-In every structure equipped with a required standpipe system, a diagram of any system in which there is a fire pump or more than three risers shall be posted in the pump room or some other suitable location within the structure, where such diagram will always be readily available for fire department use. This diagram shall show clearly the location and number of each riser, valve, pump, tank and Siamese hose connection in the system and such other information as may be required at any time by the superintendent.

(16.1.5.1). §C26-1385.0 Tests of Standpipe Systems.-

a. Acceptance Tests and Approval of Standpipe Systems.-Every standpipe system shall be subjected to an acceptance test as provided in this section and shall have satisfactorily met the prescribed requirements before acceptance and approval by the superintendent. The test shall demonstrate to the satisfaction of the fire commissioner that such system will sustain a hydrostatic pressure sufficient to produce a pressure of at least one hundred pounds per square inch at the top story hose outlet, and at least three hundred pounds per square inch at the Siamese hose connection, or lowest level pump supply connection to the risers. The test shall be conducted at the owner's risk, by his representative and before a representative of the fire department. The fire commissioner shall notify the superintendent in writing of the results of the test.

(16.1.5.2). b. Periodic Tests of Standpipe Systems.-Upon order of the superintendent but at least once in five years, every required standpipe system shall be subjected to a hydrostatic pressure test and to a flow test to demonstrate its suitability for fire department use. The test shall be conducted at the owner's risk, by his representative and before a representative of the superintendent who shall be notified at least forty-eight hours before such test is to be made.

Sub-Article 2. Standpipe Risers

(16.2.1). §C26-1386.0 Number and Location of Standpipe Risers.-

a. The number and location of standpipe risers shall be such that any point of a structure, except a penthouse or bulkhead less than twenty-five hundred square feet in area, shall be within one hundred twenty feet, measured horizontally, of a riser. In portions of first floors or basements which are occupied as stores or salesrooms, and which are completely separated from the entrance hall or enclosed stairways leading to the upper floors, standpipe protection may be omitted at the discretion of the superintendent, provided such other fire appliances as he may specify are installed. Standpipe protection may also be omitted at the discretion of the superintendent from transformer vaults, high tension switchboard rooms and other locations where the use of such protection would be dangerous to life.

b. Any space or room which houses equipment of such nature that, the use of water would be hazardous to life or ineffective, shall have a conspicuous sign on each door opening on such space or room stating the nature of the use and the warning: "Use no water."

c. Standpipe risers shall be so located that wherever practicable, the hose outlets are within stairway enclosures or fire towers. Where in the opinion of the superintendent such location is impracticable, such outlets shall be located as near such enclosures as possible. It shall be unlawful to place risers in any shaft containing a gas pipeline.

(16.2.2). §C26-1387.0 Size of Standpipe Risers.-Standpipe risers in structures or parts of structures one hundred fifty feet or less in height shall be at least four inch standard iron pipe size; in structures more than one hundred fifty feet in height, such risers shall be at least six inch standard iron pipe size.

Sub-Article 3. Standpipe System Piping

(16.3.1). §C26-1388.0 Layout of Piping for Standpipe Systems.-

a. The arrangement of such standpipe system piping as risers, cross-connections and branches shall be as straight and direct as practicable.

b. It shall be unlawful to cover or conceal any portion of a standpipe system without written approval of the superintendent. The superintendent may require inspections or tests before granting such approval.

(16.3.2). §C26-1389.0 Cross-connections in Standpipe Systems.-

a. Standpipe systems installed in structures less than two hundred fifty feet in height, which systems have more than one riser, shall have all risers cross-connected below the street level, except as otherwise provided in this section, so as to permit water to supply every riser under normal conditions.

b. Standpipe systems, in structures having more than one riser, and required under subdivision g. of section C26-1407.0, to have one or more intermediate tanks, shall be so designed and installed that the risers supplied from each tank will be cross-connected below or in the story of the lowest hose outlets supplied from each required tank. Horizontal check valves shall be installed in the run of each riser continuing into a higher required tank section, in such manner as to permit all upper sections of the system to be fed from the section below and to prevent any lower section of the system from being supplied from a section above it.

c. Upper level cross-connections shall be provided with control valves which may be of approved remote control type, so arranged that risers supplied by intermediate tanks may independently be shut off from such supply.

d. Cross-connection shall be at least as large as the largest riser supplied through such cross-connections.

e. Where there is no cellar, cross-connections may be hung from the ceiling of the lowest story.

f. Water delivered into the standpipe system from any tank, fire pump or Siamese hose connection, shall be available at any hose valve in the standpipe system under normal conditions.

Sub-Article 4. Pipes, Fittings and Valves for Standpipe Systems

(16.4.1). §C26-1390.0 Pipes for Standpipe Systems.-

a. Pipes for standpipe systems shall, when the maximum working pressure at the pump is six hundred pounds or less, be lap-welded or seamless, standard, full weight, mild steel or genuine wrought iron pipe. When maximum working pressure at the pump exceeds six hundred pounds, such pipe shall be extra strong, mild steel or genuine wrought iron, lap-welded or seamless pipe.

b. Such steel and wrought iron pipe for standpipe systems shall be made in accordance with the specifications of the A. S. T. M., D., A 120-34 T, and A 72 33.

c. Cast iron underground pipe shall be made in accordance with the specifications of the American Water Works Association, nineteen hundred eight, or shall be other pipe approved by a recognized standard testing laboratory, as indicated in section C26-1383.0.

d. The name of the manufacturer and, in the case of cast iron piping, the pressure to which the pipe was tested, shall be permanently and legibly indicated on each length of pipe used in standpipe systems.

e. Only new pipe may be used in standpipe systems.

(16.4.2). §C26-1391.0 Fittings for Standpipe Systems.-Fittings used in standpipe systems shall be malleable cast iron, or cast steel, free from imperfections, and if of cast steel shall comply with the tentative American standard for steel pipe flanges and flanged fittings, approved by the

American Standards Association, June nineteen hundred twenty-seven. Cast iron underground fillings shall be made in accordance with the specifications of the American Water Works Association, nineteen hundred eight. Other such fittings shall be made as indicated in section C26-1383.0.

(16.4.3). §C26-1392.0 Supports of Standpipe Risers and Piping.-Piping in standpipe systems shall be securely and rigidly supported risers shall be supported at the base on piers or equivalent foundations or supports and at alternate floor levels by approved clamps and supporting members. Horizontal runs of risers, cross-connections branches and similar piping shall be supported by approved hangers at intervals of ten feet or less.

(16.4.4). §C26-1393.0 Protection of Standpipe Systems from Freezing.-All parts of standpipe systems exposed to frost shall be protected from freezing, by methods prescribed by the superintendent.

(16.4.5). §C26-1394.0 Protection of Standpipe Systems from Fire Damage.-Sections of standpipe system piping and hangers subject to damage from fire which might make the system inoperative shall be protected from such damage, by methods prescribed by the superintendent.

(16.4.6). §C26-1395.0 Identification Markings on Standpipe Systems.-

a. Connections from risers or branch lines from risers shall be legibly marked on each story with the identification marking used on the approved plan or diagram.

b. All portions of standpipe system piping shall be painted red.

(16.4.7.1). §C26-1396.0 Valves for Standpipe Systems.-

a. Standpipe riser control valves.-

1. Indicating valves shall be provided to permit any riser or other section to be shut off while the remaining risers or sections continue in use. Such indicating valves shall be flanged, if two and one-half inches or larger in size. In single riser systems supplying hose outlets more than one hundred fifty feet above curb level, such valves shall be installed at approximately one hundred fifty feet above curb level and, at points above such level, at vertical intervals of approximately one hundred fifty feet or less.

2. Riser control valves shall, where practical, be located within a required stair enclosure, readily accessible for inspection, repair and fire department use. Where located outside of a required stair enclosure such control valves shall be of such type and so installed as to be operated from either the ground floor or from the fire pump room, and operating devices shall be grouped, suitably housed and kept locked with a fire department lock and key. The door of the housing shall be suitably marked to indicate the purpose of the device. Instructions for operating the valve control devices shall be clear and complete and in letters easily read. The instructions shall be permanently secured to the inner face of the door or painted thereon. Remotely controlled valves shall be hydraulically operated or operated by electrical motors.

3. Each riser control valve shall be so designed and installed as to permit of its operation at the valve location.

4. The position of each remote control valve, whether open or closed, shall be indicated at its remote control point and also at the valve.

5. Valves shall be readily accessible for inspection and repair. If a manually operable shut-off valve is placed so that its operating means is more than seven feet above a floor or stair landing, an approved ladder, securely fastened at the top, bottom and at intervals of ten feet, or less, shall be provided for access to the valve.

(16.4.7.2). b. Check Valves in Standpipe Systems.-

1. Check valves two and one-half inches or larger shall be flanged, cast iron or cast steel body, having non-ferrous metal seat rings and bearings. Swing type valves shall be installed horizontally in pipe from each Siamese hose connection, and in piping from each tank, pump and city water connection.

2. Check valves other than those in Siamese connection lines shall be provided with a flanged, indicating shut-off valve, bolted to the outlet of such check valve. Check valves on discharge lines from tanks shall have an indicating shut-off valve on each side of such check valve. When a shut-off valve is placed on each side of a tank check valve, one of them may be of the remote control type and when used shall be on the downstream side of such check valve.

(16.4.7.3). c. Standpipe Valve Markings.-Each control valve shall be conspicuously marked with the number assigned to it on the diagram required by subdivision c. of section C26-1384.0. This marking shall be in white figures two inches high on a metal disk at least three inches in diameter with a red background, and securely attached to the valve.

(16.4.7.4). d. Sealing of Standpipe Valves.-Each manually operated shut-off valve shall be sealed in its normal position. If the normal position be the closed position, a metal placard stating such fact shall be conspicuously attached to the valve.

(16.4.8.1). §C26-1397.0 Siamese Hose Connections for Standpipe Systems.-

a. Siamese Hose Connections Required.-

1. One Siamese hose connection shall be provided for each six inch riser and one such connection for each two four inch risers or fraction thereof; except as otherwise herein provided and except that when more than four such Siamese connections would be provided on this basis, the superintendent shall accept four as a minimum. When a system is required to have more than two Siamese hose connections, such connections shall be distributed along the accessible exterior walls of the premises at such locations as the superintendent may direct.

2. Structures facing on more than one street, equipped with a single riser, shall have at least two Siamese hose connections, one on each street front, unless the superintendent direct otherwise.

3. A building forty-five feet or less in height, other than a theatre with a stage, shall not be required to have a Siamese connection, except when such building is one of a group of buildings and has cross-connection to the standpipe equipment of one or more of the other buildings of such group.

(16.4.8.2). b. Check Valves on Siamese Hose Connections.-It shall be unlawful to use any Siamese hose connections unless such connections have a clapper valve in each inlet branch, or unless such connection is at the shore end of a standpipe system also supplied by a Siamese hose connection of the type specified for fireboat use.

(16.4.8.3). c. Siamese Hose Connection Threads.-Siamese hose connections for fireboat use shall have at least two three and one-half inch branches with fire department female threads. All other Siamese hose connections, except those of the shore end type, shall have at least two three inch branches with fire department female threads.

(16.4.8.4). d. Shore and Siamese Hose Connections.-

1. A shore and Siamese hose connection shall be of a design approved especially for this service. Its hose connections shall have three inch male threads. In lieu of a check valve,

each branch shall have an approved long stem valve permitting the valve to be placed within the structure or to be otherwise protected against freezing.

2. It shall be unlawful to use any Siamese hose connections for fireboat use in any standpipe system whose water supply is from the city water mains.

(16.4.8.5). e. Location of Siamese Hose Connections.-Siamese hose connections shall be placed between eighteen and thirty-six inches above the sidewalk level. Such connections shall be of the flush type or shall be installed in a wall recess of ample size to permit the convenient attachment of fire department hose.

(16.4.8.6). f. Marking of Siamese Hose Connections.-

1. Each Siamese hose connection shall be provided with caps painted red, and shall have the word "STANDPIPE" in letters one inch high and one-eighth inch deep cast in the body or on a non-ferrous metal plate secured to the connections.

2. When the Siamese hose connection is to be used for supplying water to the fire pump, such purpose shall be clearly indicated by an appropriate sign.

(16.4.8.7). g. Cross-connection of Siamese Hose Connections.-Each Siamese hose connection shall be connected to a riser or to a cross-connection. Such connection shall be through at least five inch pipe, except that four inch pipe shall be sufficient when such pipe supplies a single four inch riser system. Such pipe shall run as directly as practicable to the riser or cross-connection. It shall be unlawful to extend any Siamese hose connection through a sidewalk unless permission therefor has been obtained from the superintendent. Such Siamese hose connection when extended through a sidewalk shall be of iron pipe size brass pipe equal in strength to standard full weight steel pipe.

(16.4.8.8). h. Drip Valves on Siamese Hose Connections.-A three-quarter inch automatic drip valve shall be placed inside the structure between the Siamese hose connection and the check valve, except that on a fireboat Siamese hose connections a one-half inch open drip without a shutoff may be used.

(16.4.9). §C26-1397.1. Hose Outlet Valves on Standpipe Systems.-

a. On each floor served by a riser, a two and one-half inch hose outlet valve shall be provided for fire department use. Such hose outlet valves shall be readily accessible from a stairway landing on or from a floor, and shall be between five and six feet above the landing or floor, except as provided in section C26-1386.0.

b. At the top of the main riser there shall be provided, thirty-six inches above a flat roof, a three way manifold, equipped with three two and one-half inch hose valves. Such manifolds are exempted from the requirements of section C26-1398.0, but each such hose valve shall be provided with a regulation two and one-half inch fire department cap secured to the manifold by means of chain and swivel.

c. Where the manifold is located elsewhere than within a heated stair enclosure, the control valve shall be located in a horizontal run of piping below the main roof with a long stem extending through the roof and equipped with a wheel handle at its upper end at least twelve inches above the roof. Between the control valve and the manifold there shall be provided within the heated space a one-half inch open drip extending to a sink or a three-quarter inch approved type automatic wall drip.

Sub-Article 5. Hose for Standpipe Systems

(16.5.1). §C26-1398.0 Quality, Material, Size and Length of Hose for Standpipe Systems.-

- a. Each hose outlet valve shall be equipped except as hereinafter provided, with one or more lengths of two and one-half inch, "flax line," unlined linen fire hose, factory coupled, of sufficient length so that every point of the floor area served by the riser is within twenty feet from the end of the nozzle. The maximum length of hose which shall be permitted at any hose outlet valve is one hundred twenty-five feet.
- b. Two and one-half inch cotton, rubber-lined, or rubber hose shall be used in ship-yards, oil storage plants, lumber yards, amusement or exhibition parks, or other enclosures, when deemed necessary by the superintendent.
- c. In Class 1 and 2 office buildings, hotels, multiple dwellings, clubhouses, hospitals, churches, museums, libraries, schools or other structures of non-hazardous occupancy, one and one-half inch "flax line," unlined linen hose, factory coupled, of maximum lengths as prescribed for two and one-half inch hose, may be used. A two and one-half inch by one and one-half inch brass or bronze, non-swivel, reducing coupling shall be attached to the two and one-half inch hose valve.
- d. Branch connections of one and one-half inch piping may be made from required standpipe risers to hose stations, in addition to required two and one-half inch valve hose stations, located away from the risers; provided the branch connection is equipped with an approved shut-off valve, sealed open by an easily broken seal, at the point of connection with the riser. A sign indicating the purpose of the branch and of the shut-off valve shall be permanently secured at or to each shut-off valve. Hose stations of such branches shall have one and one-half inch hose valves with not more than one hundred twenty-five feet of hose at any such hose station.
- e. Where "flax line" unlined linen fire hose, factory coupled, is specified in this section, other types of fire hose may be used provided such other hose is factory coupled and is approved by the board as adequate to withstand accepted tests for standpipe hose relating to pressure, durability, tensile strength, flexibility, alternating high and low pressure, friction loss, and tests for exposure to water, heat and handling.

(16.5.2). §C26-1399.0 Length of Hose for Standpipe Systems.-Hose lines shall be made up of twenty-five or fifty foot lengths, only one of which lengths may be a twenty-five foot length, except that when more than twenty-five feet and less than fifty feet of hose is required, the hose shall be in one section of the required length.

(16.5.3). §C26-1400.0 Nozzles.-

- a. Two and one-half inch hose, except hose for yard hydrants, shall be equipped with a smooth bore nozzle having a one inch or one and one-eighth inch discharge orifice. One and one-half inch hose shall be provided with a five-eighth inch smooth bore nozzle. Nozzles shall be at least fifteen inches in length.
- b. Hose for use on yard hydrant outlets shall be equipped with a smooth bore one and one-eighth inch Underwriters' play-pipe.

(16.5.4). §C26-1401.0 Threads.-Threads on hose valves, pressure reducers, hose couplings and nozzles shall conform to the fire department standards.

(16.5.5). §C26-1402.0 Pressure Reducers.-

- a. When the normal hydrostatic pressure at a two and one-half inch hose outlet valve exceeds fifty-five pounds per square inch, each such valve shall be equipped with an adjustable type pressure reducer which as installed shall be so adjusted that the flowing pressure on the

downstream side will be approximately fifty pounds per square inch, when the discharge is at the rate of two hundred gallons per minute. The flowing pressure on the downstream side of any hose outlet valve, or, where there is a reducer, on the downstream side of the reducer shall not exceed fifty pounds per square inch.

b. When one and one-half inch hose is used, an adjustable type of pressure reducer shall be provided on each two and one-half inch hose outlet valve where the hydrostatic pressure exceeds eighty-five pounds per square inch and shall be so adjusted that the flowing pressure on the downstream side will be approximately eighty pounds per square inch.

(16.5.6). §C26-1403.0 Hose Rack.-The hose at each outlet shall be kept upon an approved hose rack, firmly supported and placed between five and six and one-half feet above the landing or floor.

(16.5.7). §C26-1404.0 Hose Cabinet.-

a. The hose on its rack may be kept in a cabinet equipped with a single swinging door which shall have a large panel of clear wired glass. Such door shall be unlocked at all times. Each such cabinet shall be readily accessible.

b. At the discretion of the superintendent, such cabinets may have solid metal doors when located in the entrance hall of a structure, where architectural treatment makes such disposition preferable.

c. All hose cabinets shall be permanently marked across the door panel "FIRE HOSE" in red letters at least two and one-half inches in height.

Sub-Article 6. Water Supply for Standpipe Systems

(16.6.1). §C26-1405.0 Primary Water Supply for Standpipe Systems.-Every standpipe system shall have a primary water supply constantly available at every hose outlet or made available automatically when the hose valve at any outlet is opened, or when a control station functions. Such primary water supply may be from one or more gravity tanks, as provided in subdivision d. of section C26-1407.0, or from pressure tank or tanks as provided in subdivision e. of section C26-1407.0, or from a direct connection to a city water main or a private yard underground water main or, in buildings not exceeding seventy-five feet in height, an automatic pump, as provided in sections C26-1420.0 through C26-1427.0.

(16.6.2). §C26-1406.0 High and Low Risers and Cross-Connections in Standpipe Systems.-When gravity or air pressure tanks are used for the primary water supply, the standpipe system may use separate riser systems serving, respectively, low and high parts of the structure. Separate gravity tanks or pressure tanks may supply such separate risers, but in every case the standpipe system shall be designed so that any hose outlet of the entire system is supplied through the required cross-connection from every Siamese hose connection and from every fire pump located at or below the street level.

(16.6.3). §C26-1407.0 Recognized Methods of Providing Water Supply for Standpipe Systems.-The following provisions shall be met in the use of the respective recognized methods of providing required primary water supply for standpipe systems; permitted combinations of two or more of these recognized methods shall be made and in making such combinations the Siamese hose connection shall be considered as a source of supply:

(16.6.3.1). a. Direct Connections of Standpipes to the city water system.-

1. A direct connection to a city water main shall be acceptable as the primary supply to a standpipe system provided the department of water supply, gas and electricity certifies that such main is capable, between five a.m. and eight p.m. on a normal working day, of

maintaining a flowing pressure of at least fifteen pounds per square inch at the highest hose outlet when a street level hydrant supplied by the main and located within two hundred fifty feet of the structure is discharging through a two and one-half inch open hydrant butt at the rate of at least five hundred gallons per minute; except that in any building forty feet or less in height and twenty thousand square feet in area a four inch direct connection to a street main fed two ways or one four inch direct connection to each of two street mains on two street fronts, each main so fed that the shutting off of one will not interfere with the supply of the other, shall be acceptable as a primary supply to a standpipe system provided there is sufficient pressure in the street main or mains to maintain a minimum of twenty-five pounds per square inch static pressure at the highest hose outlet and provided further that evidence establishing the fact that such water main conditions and pressures are available, is certified to by the department of water supply, gas and electricity and submitted to the superintendent.

2. Each service, supplying directly a standpipe system or a fire pump, shall be equipped, under the sidewalk, with a control valve in a flush sidewalk box of approved type located within two feet of the front wall of the building or as otherwise provided in the rules of the board. The purpose of each such control valve shall be clearly indicated by the words "Standpipe Supply Control" cast in the cover of such flush sidewalk box.

(16.6.3.2). b. Private Yard Main.-A private yard main may be used as the primary water supply for a standpipe system when approved by the superintendent as meeting the conditions of subdivision a. of this section.

(16.6.3.3). c. Supplementary Water Supply Required for Standpipe Systems.-Where a gravity or pressure tank furnishes the primary supply to a standpipe system comprising more than two six-inch required risers or more than four four-inch required risers, either a fire pump of at least seven hundred fifty gallons per minute capacity, or additional tank capacity at the rate of thirty-five hundred gallons for each two or less six-inch risers above two and for each four or less four-inch risers above four, shall be provided as a supplementary supply. Where a fire pump is provided, such pump may be manually operated.

(16.6.3.4). d. Gravity Tanks in Standpipe Systems.-Gravity tanks may be used subject to the following conditions:

1. The minimum quantity of water reserved for standpipe service shall be thirty-five hundred gallons.
2. The bottom of a tank shall be at least twenty-five feet above the highest hose outlet, other than a roof hose outlet, which such tank supplies, except as otherwise provided in this section.
3. Each standpipe system having more than two risers shall be supplied from either one tank of a standpipe reserve capacity of five thousand gallons or from two tanks each of a standpipe reserve capacity of at least thirty-five hundred gallons.
4. Where a group of two or more separate and distinct structures is operated under a single control, a single gravity tank may be accepted as the primary water supply for the several standpipe systems of such group, provided the tank has a capacity of at least five thousand gallons, and that the capacity is at least that required for the largest structure of the group, and is provided with a dead riser carried from the bottom of the tank to an underground header or cross connecting system and has in each building unit a post indicator type control valve at such place as the superintendent may direct.

5. Where the roof of a structure is designed in a pyramid or tower form, the tank shall be elevated as high as practicable within the pyramid or tower, provided that in no case shall the bottom of such tank be less than twenty-five feet above the highest hose outlet in any room or space, except a room or space occupied solely by water tanks, elevator machinery, an elevator machine repair shop or ventilating fan equipment. In all such cases such auxiliary fire-extinguishing appliances as may be required by the superintendent shall be provided in each such room or space.

(16.6.3.5). e. Pressure Tanks in Standpipe Systems.-In the discretion of the superintendent one or more pressure tanks located at or above the level of the highest hose outlet, other than roof outlets of any risers directly supplied from such pressure tanks, may be used instead of gravity tanks as the primary water supply, provided the conditions of paragraphs one, three and four of subdivision (d) of this section, as to quantity of water are met and provided there is provided an air compressor with suitable automatic control and of sufficient capacity to build up air pressure of at least seventy-five pounds per square inch in the tank within three hours and to maintain thereafter air pressure between seventy and eighty pounds per square inch.

(16.6.3.6). f. Fire Pumps as a Primary Source of Supply for Standpipe Systems.-One or more fire pumps may be accepted as the primary water supply of a standpipe system, provided at least one pump rated at least two hundred fifty gallons per minute, serving the entire system, has automatic control, and provided the installed fire pump capacity is at least seven hundred fifty gallons per minute.

(16.6.3.7). g. Maximum Permissible Pressure at Standpipe Hose Valves.-The maximum pressure at the lowest hose valve supplied with water by a gravity or pressure tank or automatic pump shall be one hundred fifty pounds.

(16.6.3.8). h. Additional Water Supply for Standpipes in Structures Over Two Hundred Fifty Feet High.-The primary water supply to the standpipe system shall be supplemented, in structures which exceed two hundred fifty feet in height, by one or more fire pumps according to the following schedule:

(16.6.3.8.1). 1. Standpipe Systems in Structures Two Hundred Fifty to Four Hundred Fifty Feet High.-For structures between two hundred fifty and four hundred fifty feet in height and equipped with not more than three risers, at least one seven hundred fifty gallon pump or two five hundred gallon pumps; for such structures equipped with more than three risers, pumps with a total capacity of at least one thousand gallons per minute.

(16.6.3.8.2). 2. Standpipe Systems in Structures Over Four Hundred Fifty Feet High.-For structures over four hundred fifty feet in height, at least two fire pumps each of seven hundred fifty gallon capacity shall be provided.

Sub-Article 7. Tanks in Standpipe Systems

(16.7.1). §C26-1408.0 Construction and Support of Tanks.-Tanks for standpipe system supply shall be constructed and supported in accordance with the provisions of this title.

(16.7.2). §C26-1409.0 Combination Sprinkler and Standpipe Tanks.-Tanks used to provide the required primary water supply to a standpipe system may also be used as a supply for an automatic sprinkler system in a structure, provided the capacity of the tank is at least five thousand gallons greater than the required supply for the sprinkler system. When such combined service is used, the connection which supplies the standpipe system shall be to the uppermost portion of such tank and shall be run on the outside of such tank unless such connection is made

of standard full weight iron pipe size brass pipe, without couplings or other connections inside the tank.

(16.7.3). §C26-1410.0 Means of Filling Tanks.-

- a. Tanks shall be filled at the rate of at least sixty-five gallons per minute independently of any standpipe riser which may be supplied. Pipes used to fill tanks shall be of sufficient size to deliver at least sixty-five gallons per minute into such tank. It shall be unlawful to use required fire pumps for filling purposes, except in case of emergency.
- b. Where there is sufficient pressure in the city water main to fill tanks at the required rate during all hours of each day, and a filling pump is not provided, the connection to the city water supply shall be made near the point where the city water service connection enters the building.

(16.7.4). §C26-1411.0 Combination Domestic and Standpipe Tanks.-

- a. One automatic tank filling pump may be used for filling both sprinkler, standpipe and domestic service tanks, provided such pump will deliver the required volume and pressure of water into each tank.
- b. A gravity tank may be used both for the domestic supply and the standpipe system, in which case an automatic pump of the capacity specified in section C26-1410.0, shall be accepted as the means of filling. When such combined service is used, the connection to the domestic supply shall be run on the outside of the tank, or, if run inside, shall be of iron pipe size brass pipe, without couplings and such connection shall be made at a sufficient height above the bottom of the tank so that the required capacity is reserved for standpipe use.

(16.7.5). §C26-1412.0 Emergency Drains on Standpipe Tanks.-

- a. Each standpipe tank shall be provided with a drain of at least:
 1. Two-inch diameter for a tank of not more than five thousands gallons capacity;
 2. Three-inch diameter for a tank of more than five thousand gallons and not more than ten thousand gallons capacity;
 3. Four-inch diameter for a tank of more than ten thousand gallons capacity.
- b. Each such drain pipe shall be controlled by a manually operated outside screw and yoke type valve located so as to be readily accessible from the roof. The drain shall be so arranged that no damage will result from the discharge of water through it.

(16.7.6). §C26-1413.0 Heating of Standpipe Tanks.-

- a. Tanks located where water is subject to freezing shall be equipped with a tank heater of sufficient capacity that the temperature of the water will remain forty degrees Fahrenheit or more.
- b. Where both the standpipe supply and domestic water supply are combined in a single tank, heating of such tank will not be required in structures, including hotels, multiple dwellings and hospitals, where the domestic supply is to be drawn upon during all hours of each and every day of the week.

(16.7.7). §C26-1414.0 Strainer.-

- a. Every standpipe supply tank shall be provided with a brass or bronze strainer at the discharge to risers or to pump supply lines.
- b. Each strainer shall have clear openings with an aggregate area equal to or more than the required area of the pipe into which the tank discharges.

(16.7.8). §C26-1415.0 Filling Pipes for Standpipe Tanks.-The filling pipe to a standpipe supply tank shall discharge above the overflow level of the tank and shall be of at least two-inch

standard pipe size. Any portion of a filling pipe normally below the water level and without the tank shall be of brass or bronze, without couplings.

(16.7.9). §C26-1416.0 Overflow Pipes for Standpipe Tanks.-Each gravity standpipe supply tank shall be provided with an overflow at least one pipe size larger than its fill pipe. The top of the inlet to the overflow pipe shall be at least one inch below the bottom of the spider rod holes in a steel tank and at least one inch below the bottom of the flat cover joists of a wood tank; but in no case shall be less than three inches below the top of the tank. Such pipe shall discharge at the nearest convenient point where water damage will not result. Portions of an overflow pipe run within the tank shall be of iron pipe size brass or bronze pipe, without couplings.

(16.7.10). §C26-1417.0 Access to Standpipe Tanks.-Easy access to the top of each tank shall be provided by means of a steel or wrought iron gooseneck ladder, substantially constructed of flat iron side bars at least two inches by one-half inch, or channel iron stringers at least two inches by one-quarter inch, spaced at least fourteen inches apart, with runs round or square at least five-eighths of an inch thick, spaced at most twelve inches on centers; the ladder shall be rigidly braced, and shall not tip outward from the vertical at any point. When ladders exceed forty-five feet in height, a body iron and an iron platform at least fourteen inches square, rigidly secured to the stringers of the ladder, shall be provided near the top of the tank.

(16.7.11). §C26-1418.0 Tanks on Theatre Structures.-Tanks on theatre structures shall also comply with the requirements of article thirteen of this title.

(16.7.12). §C26-1419.0 Tank Alarms for Standpipe Systems.-Gravity tanks not filled by an automatic pump shall be equipped with a closed circuit, local, high and low water level electrical alarm system. All pressure tanks used to provide the required primary water supply of a standpipe system shall be equipped with a closed circuit, high and low air pressure and high and low water level electrical alarm systems.

Sub-Article 8. Fire Pumps for Standpipe Systems

(16.8.1). §C26-1420.0 Capacity of Standpipe Fire Pumps.-A standpipe fire pump shall be capable of delivering its rated capacity in gallons per minute through the highest hose outlets to be supplied with a minimum pressure of one hundred pounds per square inch at the pump and at least fifty pounds per square inch at the highest outlet below the roof; except that where a fire pump is provided to supply only a portion of the total height of the structure, the required fifty pounds per square inch shall apply at the highest outlet which such pump supplies.

(16.8.2). §C26-1421.0 Classification of Standpipe Fire Pumps.-Fire pumps and accessories, including control devices, pipe, fittings, valves, Siamese hose connections and tanks shall be classified as to their required working pressures and capacities according to the conditions in the standpipe systems in which they are used.

(16.8.3). §C26-1422.0 Approval of Power Supply for Standpipe Fire Pumps.-The type of fire pump and prime mover used in a standpipe system shall be suitable for the required service in a standpipe system provided for fire department use. If the prime mover employs steam or is an internal combustion engine or employs some other form of power other than an electric current supplied by a public utility, the consent in writing of the superintendent shall be secured before its installation is authorized.

(16.8.4). §C26-1423.0 Water Supply to Standpipe Fire Pumps.-

- a. Any required fire pump shall draught from two independent city water mains in different streets, fed two ways, with control valves at intersections with other mains. The connection

from city water mains to pumps shall be at least six-inch pipe size, arranged as required by the department of water supply, gas and electricity.

b. In the event that two separate and distinct city water mains are not available as a supply to fire pumps, there shall be provided either of the following sources of supply:

1. A suction tank or tanks suitably located and of sufficient capacity to furnish each pump with at least one-half hour's supply at the rated capacity of such pump, or

2. One or more Siamese connections reserved exclusively for fire pump supply. Where a building faces on but one street, one such Siamese connection shall be provided. If a building faces on two or more streets, the number and locations of the fire pump Siamese connections shall be as required by the superintendent but in no case shall he require more than one Siamese connection on each street front. The purpose of the fire pump supply Siamese connection shall be indicated by a conspicuous sign permanently secured to each such Siamese connection.

c. Either a single independent connection to a city water main of adequate capacity, or a suction tank adequate to supply each pump for at least fifteen minutes at the rated capacity of such pump, shall be provided in conjunction with fire pump Siamese connections.

d. Suction tanks shall be filled by a six-inch connection to the city water main, controlled by an automatic, ball float valve in the suction tank.

e. A six-inch by-pass shall be provided so that pumps may be fed directly from the city main.

f. When a city water main supplies both the domestic service and the fire pump, a remote control valve shall be placed on the domestic service connection at the point where such connection is taken from the city service main. Such remote control valve shall be controlled from a point near the pump control panel.

(16.8.5). §C26-1424.0 Standpipe Pump Rooms and Location.-

a. Fire pumps shall be installed at ground level or below, in rooms of ample size and of three-hour fire resistive construction throughout; such rooms shall be properly heated, ventilated, lighted and drained. The pump room shall have access to the street level by a direct opening to a street or a court or by a cut-off passageway or stairway having a fire resistive rating of at least three hours. Fire pumps shall be placed on concrete foundations at least twelve inches above the pump room floor level and a clearance of at least three feet shall be maintained on all sides of the foundation from walls or from other equipment in the pump room. It shall be unlawful to install other machinery or mechanical equipment in a fire pump room, unless the structure is of Class 1 construction.

b. It shall be unlawful to place in a fire pump room, or in any space housing a fire pump, any refrigerating equipment using noxious, irritating or inflammable refrigerant, gas piping or gas consuming devices or any other equipment which, in the opinion of the superintendent, may make difficult or impossible the operation of a fire pump.

(16.8.6). §C26-1425.0 Installation of Standpipe Fire Pumps.-

a. The installation of a fire pump, its controls and accessories, shall conform to the regulations of the National Board of Fire Underwriters, issued in nineteen hundred thirty-three. The controls of such pumps shall also include a variable speed control, starting at one hundred pounds and stepping up in fifty pound steps.

b. Each automatic fire pump shall be provided with a closed cylindrical cushion tank with a capacity of two hundred fifty gallons. There shall be a four-inch nozzle at the bottom of such tank connected to the standpipe supply line between such pump and its discharge check valve.

(16.8.7). §C26-1426.0 Test Equipment for Standpipe Fire Pumps.-With every required fire pump sufficient two and one-half inch rubber lined fire hose shall be provided to permit the required test of the fire pump to be made. Such hose and play pipes, play pipe holders, spanners and washers shall be kept properly in a suitable place satisfactory to the superintendent.

(16.8.8). §C26-1427.0 Combined Use of Fire Pumps for Standpipe and Automatic Sprinkler Systems.-A fire pump which furnishes the primary or the supplementary required water supply either to a standpipe system or to an automatic sprinkler system shall be accepted as furnishing the corresponding required primary or supplementary water supply to the other system, if such pump is in the same premises; provided that in every such case of combined use, suitable relief valves shall be installed so as to prevent such water pressure on the automatic sprinkler system, as may result from any required operation of the pump for the standpipe system, from becoming greater than one hundred seventy-five pounds per square inch.

Sub-Article 9. Yard Hydrant Systems

(16.9). §C26-1428.0 Yard Hydrant Systems.-

a. Shipyards, oil storage plants, lumber yards, amusement or exhibition parks or other enclosures, when deemed necessary by the superintendent, shall have one yard hydrant and hose for each twenty thousand square feet of area; such hydrant shall be connected directly with a city water main that complies with the requirements of subdivision (a) of section C26-1407.0. The maximum distance between hydrants shall be two hundred fifty feet. Hydrants and sufficient rubber lined hose with a smooth bore one and one-eighth inch Underwriters' nozzle shall be placed in a hose house painted red, with the words "FIRE HOSE" in six-inch white letters on the door. Where the area of such enclosure is more than forty thousand square feet or where the city water service fails to comply with subdivision (a) of section C26-1407.0, a gravity tank of at least fifty thousand gallons capacity, elevated so that the bottom of the tank is at least seventy-five feet above the yard or twenty-five feet above the highest structure in the yard, shall be provided; or there shall be provided a fire pump with a capacity of at least one thousand gallons a minute, and a suction tank of at least sixty thousand gallons capacity. When a gravity tank supplies both sprinklers and yard hydrants, such tank shall comply with the provisions of subdivision (a) of section C26-1342.0. When approved in writing by the superintendent, suction supply may be from a city water main, provided such main is capable of supplying adequate volume and pressure.

b. The superintendent may permit suction from a river or well if the required quantity of reasonably clean fresh water may be obtained thereby, except that where river suction is proposed and the standpipe primary water supply is taken from a city water main, approval shall also be obtained from the department of water supply, gas and electricity. The superintendent may require, in addition to yard hydrants, one monitor nozzle with remote control for each forty thousand square feet of area or fraction thereof, when, in his opinion, an unusual hazard may exist. Monitor nozzles shall be located as required by the superintendent.

c. Standpipe risers may be connected to yard hydrant systems when such systems are provided with gravity tanks in accordance with this section or when they are supplied in accordance with subdivision (a) of section C26-1407.0.

d. Yard hydrant systems connected to city water mains shall be provided with post indicator valves located in an accessible position. Post indicator valves shall be sealed or locked open and be painted red.

e. Special fire-extinguishing equipment, in addition to that prescribed by this section, shall be prescribed by the superintendent for all oil storage plants, oil refineries, fireworks plants and other plants deemed by the superintendent to present unusual fire hazards and also in rooms or spaces housing electrical equipment when such fire-extinguishing equipment is deemed necessary by the superintendent.

Sub-Article 10. Standpipe Signal Systems

(16.10.1). §C26-1429.0 Standpipe Telephone Systems.-

- a. In every structure two hundred fifty feet or more in height a telephone system shall be provided for fire department use in operating the standpipe system.
- b. Such telephone system shall permit communication by permanent telephones in the pump rooms, on the ground floor, and in gravity tank rooms, with all other floors by means of permanent or portable telephones on each of such other floors.
- c. Permanent wall telephones provided with six inch gongs at each instrument shall be placed in the pump room, first floor and each gravity tank room. All other floors shall be provided with jacks, protected by break-glass boxes, or with permanent telephones.
- d. Details of the equipment required by this section shall be as required by the rules of the board.
- e. At least three portable telephones with jack connections shall be provided for each installation, unless permanent telephones are installed at every required location. The portable telephones shall be kept in a cabinet located in the main hall of the ground floor and shall be provided with a lock capable of being opened with a fire department standard key. Such cabinet shall be kept locked at all times. The panel of the cabinet door shall be conspicuously marked "Portable Telephones for Fire Department Use".

Sub-Article 11. Approval of Special Types of Standpipe Systems

(16.11). §C26-1430.0 Approval of Special Types of Standpipe Systems.-Structures or portions of structures may, in the discretion of the superintendent, be equipped with special standpipe systems approved by any nationally recognized standard testing laboratory and complying with the requirements of section C26-1383.0, and approved by the board, in lieu of the types of systems otherwise prescribed in this article, provided such systems are installed and operated in accordance with the approved designs and specifications for such systems and the rules of the board.

Sub-Article 12. Elevators for Fire Department Use

(16.14.1). §C26-1431.0 Elevators for Fire Department Use in Completed Structures.-In every completed structure over one hundred fifty feet in height a competent elevator operator shall be available at all times to assist the fire department in obtaining access to any floor of the structure served by elevators.

(16.14.2). §C26-1431.1 Elevators for Fire Department Use in Incompleted Structures.-In structures in course of erection where the work has progressed to a height of more than one hundred fifty feet, at least one elevator used for carrying passengers or employees shall be kept in readiness at all times for fire department use, and a competent elevator operator shall be available at all times unless the elevator is equipped with such devices that it can be safely operated by the fire department.

(16.15). §C26-1431.2 Standpipe Systems in Structures in Course of Erection.-

a. In structure under erection for which a standpipe system will be required, provision shall be made for the use of standpipes by the fire department whenever the construction has progressed so that floors are in place above the seventh story or more than seventy-five feet above the curb level. The standpipe equipment thus provided may be a temporary installation.

b. A temporary standpipe system shall be one which may be used for water supply during the construction operations. Temporary risers shall be at least four inches in diameter for structures of less than four hundred fifty feet in height and at least six inches in diameter for structures four hundred fifty feet or more in height. There shall be as many risers as will be required for the permanent system. Each such riser shall have a Siamese hose connection at the street level and be equipped on each floor enclosed in exterior walls with hose outlets equipped with two and one-half inch hose valves. The installations shall be made so that each riser, cross-connection and branch line shall be watertight when work is not being done on the system. The location of the Siamese hose connection shall be placarded, kept free from obstruction, and indicated by a red light.

Sub-Article 13. Existing Standpipe Systems

(16.16). §C26-1432.0 Existing Standpipe Systems.-

a. Standpipe systems approved by the superintendent or by the fire commissioner as conforming to the rules and regulations in force at the time of such approval, may remain unaltered despite this title, except that where substantial additions in height or area are made to the structure, this title shall apply if deemed advisable by the superintendent.

b. And except that all such systems shall be provided with:

1. a gravity tank reserve water supply of at least twenty-five hundred gallons for standpipe use, sufficiently elevated to give a hydrostatic pressure of at least five pounds at the highest hose valve under the main roof unless a city water service connection has been accepted in lieu of a tank;
2. at least one gate valve on the downstream side of the tank check, unless a gate valve has been installed on either side of the check;
3. hose and hose valves in good serviceable condition;
4. hose valve wheels within six and one-half feet of the floors or stair landings or of steps within two feet on a horizontal plane;
5. a three inch by three inch Siamese hose connection with approved caps, painted red with the word "STANDPIPE" cast in the body or on metal plates secured to the riser or secured to the face of the structure behind the connection;
6. five-eighth inch smooth bore nozzles where the hydrostatic pressure at the hose valve is less than ten pounds;

c. And except that the caps of all Siamese hose connections and the interiors of all check valves which have been in the standpipe system ten years or more shall be cleaned of all rust or other accumulations and the insides and outsides of the bodies of such valves shall be thoroughly painted with rust-resisting paint;

d. And except that in all such systems it shall be unlawful to use automatic hose valves, and that such systems shall also comply with the following:

1. section C26-1393.0,
2. section C26-1394.0, except in sprinklered structures
3. subdivision h of section C26-1397.0,

4. section C26-1402.0,
5. section C26-1410.0, except that tank filling pumps and pipes sufficient to deliver at least forty-five gallons per minute into the tank shall be approved
6. section C26-1411.0,
7. section C26-1412.0,
8. section C26-1413.0,
9. section C26-1415.0, except that existing one and one-quarter inch or larger pipes shall be approved if at least forty-five gallons per minute is supplied through it to the tank,
10. section C26-1416.0, except that existing overflow pipe in good condition and at least as large as fill pipe shall be approved,
11. section C26-1417.0,
12. section C26-1419.0, except that existing high and low water level alarms in good and operative condition need not be replaced,
13. section C26-1431.0.