1 RCNY §29-06

CHAPTER 29 SPRINKLER SYSTEMS

§29-06 Installation of Automatic Sprinklers in the Public Halls of Multiple Dwellings Under the Provisions of §187 (Converted Dwellings) and §218, Subdivision 5 (Old-Law Tenements), of the Multiple Dwelling Law, and of the Sprinklers in Cooking Spaces in all Types of Multiple Dwellings Under the Provisions of §33 of the Multiple Dwelling Law.

(a) *Certification from the Department of Environmental Protection.* When it is proposed to supply a sprinkler system by means of a direct connection to a public water supply main, the specifications shall be accompanied by a letter or other approved certification from the Department of Environmental Protection, establishing the fact that the water supply conditions and pressure are such that will meet the requirements of these rules for water supplies for sprinklers.

(b) Type of system required.

Sprinkler system shall be of the automatic wet type.

(c) *Connection to water main.*

The sprinkler system of each building shall have a separate and independent source of supply except as herein otherwise specifically provided. When a sprinkler system is supplied direct from a public water main, it shall be separately and independently connected to the public water main except that one street main supply will be accepted for not more than three contiguous buildings under one ownership where such buildings are separated by fire walls, provided that the supply is brought into the center building of a group of three, and provided further, that the supply shall be adequate for the total number of sprinklers in any two buildings, but not less than 50 percent of the total number of sprinklers in all the buildings in any case. In all other respects, the installation in each building shall comply with these rules.

When one street supply serves more than one building, there shall be submitted to the department evidence that [*sic*] an easement has been created in favor of each building for the continued use of such supply for each building.

A house service water supply connection may be taken from the sprinkler water supply connection to the city main, on the house side of the main shut-off valve for the building provided the diameter of the house service water supply connection does not exceed one-half of the diameter of the sprinkler water supply connection. Only one connection of the domestic water supply to the sprinkler water supply line shall be permitted and no shut-off valve shall be placed on the sprinkler supply line, other than the main shut-off valve for the building on the street side of the house service water supply connection. (§29-06(c) amended by resolution filed with City Clerk February 9, 1956.)

(d) *Water pressure and supply.*

Water supply from public water mains will be acceptable when such supply will provide a minimum static pressure at the highest sprinkler of not less than 15 pounds per square inch

For computation of the required water pressure at the curb level to provide adequate pressure at the highest sprinkler, the following formula shall be used:

Required water pressure in pounds per square inch = 0.434 H plus 15.

Where H = height in feet from the curb level to the level of the highest sprinkler.

When the minimum pressure in the water supply is insufficient to provide the required pressure, but is capable of [*sic*] providing a pressure of not less then five pounds per square inch at the highest sprinkler, an automatic centrifugal booster pump for the purpose of increasing the water pressure will be accepted under the following conditions:

(1) The rated capacity of the pump shall be not less than 250 gallons per minute and shall be sufficient to supply at least 25 percent of the total number of sprinklers, or where there is insufficient pressure in the top story only, all the sprinklers on the top floor, at the rate of 20 gallons per minute per sprinkler. A 2 1/2-inch diameter test tee shall be attached to the discharge pipe from the pump for the purpose of testing its capacity.

(2) There shall be a pressure regulator attached to the pump which shall be set so that the pump will automatically start operating when the water pressure at the highest sprinkler falls below 20 pounds per square inch, and cease to operate when the said pressure reaches 30 pounds per square inch.

(3) The pump shall be attached on bypass properly valved to the sprinkler main on the house side of the main control valve. The intake and discharge pipes to the pump shall be of sufficient size to deliver the required volume of water to the system at the stated minimum pressure.

(4) Drain valves shall be installed on the main between the main (O.S.&Y.) control valve and the intake connection to the pump and on the house side of the discharge connection to the pump. Such drain valves shall be closed by means of screw plugs.

(5) A check valve shall be installed on the main on the inside service between the intake and discharge connections to the pump.

(6) The intake and discharge pipes from the pump shall each be provided with an O.S.&Y. valve.

(7) A variation of not more than two pounds per square inch, in the minimum pressure, in the street supply below the required pressure for the sprinkler system without the introduction of a booster pump or increased size in piping may be accepted by the Superintendent if in his opinion the supply is adequate.

There shall be sufficient actual water volume to supply 25 percent of the heads for a period of 20 minutes at 20 gallons per minute.

(e) *Roof tanks.*

Except as otherwise specifically provided in §29-06 (d), a gravity tank upon the roof will be required when the normal minimum

water pressure from the public water main is insufficient.
The bottom of each gravity tank supplying a sprinkler system shall be elevated at least 20 feet above the roof.
Each gravity tank shall be filled through a fixed water supply pipe of at least one and one-half inch diameter and independent of the sprinkler pipe system, by means of an automatically controlled pump of a capacity at the discharge nozzle of the pump of at least 65 gallons per minute against the total head, including friction. The tank fill line shall be standard weight pipe, galvanized steel, brass or copper [*sic*] pipe. The pump shall be equipped with control apparatus which will automatically start operation when the effective capacity of the tank falls below the minimum reserve supply for the sprinkler system.
A gravity tank, if used exclusively to supply the sprinkler system, shall have an effective capacity of not less than fifteen hundred (1500) gallons. Gravity tanks which serve both the house supply and the sprinkler system shall have an effective capacity of not less than twenty-five hundred (2500) gallons with a minimum of fifteen hundred (1500) gallons reserved for the sprinkler system.
All exposed water supply piping connecting with roof gravity tanks shall be properly protected against freezing by four layers of one inch high-grade hair felt, and each layer of hair felt shall be covered with a layer of heavy tar paper.
Each wrapping shall be securely fastened with heavy twine, and wrapping joints shall have a lap of not less than two inches staggered into the laps of the adjacent layers.
All coverings shall be finally covered with heavy canvas sewed at seams and painted with two coats of waterproof paint.
In lieu of the foregoing, three inch thick fiberglass in a metal shield may be used.
Exposed gravity tanks on the roof shall be protected against freezing by means of an approved enclosure, insulation, heating coil or other means acceptable to the Superintendent.
Gravity tanks shall be supported in accordance with the provisions of §P107.8 of Reference Standard RS-16 of the Administrative (Building) Code.
Gravity tanks shall be provided with emergency outlets in conformity with §P107.8 of Reference Standard RS-16 of the Administrative (Building) Code.

(f) *Pressure tanks.*

Except as otherwise specifically provided in §§29-06(d) and (e), a pressure tank will be required when the normal minimum water pressure from the public main is insufficient. Such pressure tank may be installed in the basement or cellar.
Pressure tanks when used shall be capable of supplying actual water volume as required in §29-06(d) of these rules at a pressure of not less than 15 pounds per square inch Pressure tanks shall be constructed and tested in accordance with the requirements of ANSI/NFiPA 22 of Reference Standard RS 17-10 of the Administrative (Building) Code.
Pressure tanks shall be at least two-thirds filled with water and an air pressure by gauge shall be maintained in the tank of not less than 75 pounds plus the pressure caused by the column of water in the sprinkler system above the bottom of the tank.
At the end of each pressure tank there shall be a glass water-level gauge, and the pressure tank shall also be provided with a pressure gauge and a manhole for access to the interior of the tank.
The filling pump for the pressure tank shall have a capacity of not less than 65 gallons per minute against the total head including friction and air pressure of the tank. The compressor shall be powered by an electric motor which shall be equipped with control apparatus, which will automatically start the motor when the pressure in the tank drops to 75 pounds per square inch and will cut out the motor when the pressure in the tank reaches the total required pressure. The air compressor shall be capable of delivering not less than 10 cubic feet of air per minute.
The filling pipe from the pump or air compressor shall be provided with a relief valve set to open at 15 pounds in excess of the maximum air pressure required in the tank.

(g) *Sprinkler pressure, where required.*

Sprinklers shall be arranged to spray all parts of the public stairways, service stairways, their hallways, landings and soffits.
Sprinkler protection shall be provided also in each closet opening on a public hall and in any permanent telephone booth placed in a public hall, but no sprinkler protection shall be required in any bathroom, water closet [*sic*] compartment or shower room opening upon a public hall.
There shall be two or more sprinklers installed under the soffit of each public stairs spaced not more than fourteen (14) feet apart.
Sprinklers shall be provided over and under the stairway leading from the basement or cellar to the first floor, except that where the under part of the cellar stairway is completely enclosed with fireproof material, sprinklers will not be required under the soffit of such cellar stairway.
Sprinkler protection shall be provided in spaces exceeding three (3) feet in height, above a public hall between the ceiling of the top story and the roof unless such spaces are properly cut off from the public hall by means of fire retarded partitions.
Sprinkler protection shall be provided also on the underside of public stairhalls, stair landings and soffits which are not within stair enclosures except when such surfaces are fire-retarded.
Sprinklers shall not be required in roof bulkheads or in unheated outside street vestibules.
Sprinkler protection shall not be required in any auxiliary stairway extending from the lowest story to the next higher story above, on condition that such stairway is not located under any stairway leading to upper stories nor terminates in a public hall.
Deflectors of sprinklers shall be placed not less than three inches nor more than ten inches below ceilings or soffits.
Sprinklers shall not be located within 12 inches distance of any obstruction such as hanger, lighting fixture, etc.

(h) *Tap sizes required.*

Taps connecting to public water mains shall be equal in size to the main pipe line, except that:

A two and one-half inch tap connecting to the public water main and immediately increased to three inches in diameter, with piping of the same diameter extending into the building, shall be considered the same as a three inch direct connection to the public water main.
A two inch tap connecting to the public water main and immediately increased to two and one-half inches in diameter, with piping of the same diameter extending into the building, shall be considered the same as a two and one-half inch direct connection to the public water main.
A one and one-half inch tap connecting to the public water main and immediately increased to two inches in diameter, with piping of the same diameter extending into the building, shall be considered the same as a two inch direct connection to the public water main.

(i) *Pipe schedules*.

Except as otherwise provided in this section, the number of sprinklers on a given size of piping shall not exceed the following:

Diameter of Pipe	Maximum number of sprinklers allowed
1 inch pipe	2 sprinkler heads
1 ¼ inch pipe	3 sprinkler heads
1 ½ inch pipe	5 sprinkler heads
2 inch pipe	10 sprinkler heads
3 inch pipe	30 sprinkler heads
4 inch pipe	60 No Limit

The sprinkler main shall not be less in size than the sprinkler riser and shall not be less in size than any branch it serves.
Except as otherwise specifically provided in §29-06(h), the total number of sprinklers in a structure shall determine the required size of the tap, service main, risers and branches, but in no case shall the size of the main supply be less than two inches
The following sprinklers will not be counted in computing the size of the taps, mains and risers:
(1) One sprinkler of the required sprinklers placed under the soffits of the stairs in each story when more than one sprinkler is provided.
(2) Sprinklers placed in any closet or telephone booth opening upon a public hall.
(3) Sprinklers placed (in lieu of fire retarding) on the underside of public stairhalls, stair landings and soffits not within the stair enclosure.
The permissible number of heads may at the discretion of the Superintendent be increased by not more than 10 percent.

(j) *Siamese*.

A sprinkler system containing 55 or more sprinklers in one building or fire area, shall be provided with an approved Fire Department Siamese Connection installed in accordance with §27-940 of the Administrative (Building) Code.

(k) *Sprinklers in existing cooking spaces*.

When a sprinkler is installed in the ceiling over an existing cooking space, pursuant to §33 of the Multiple Dwelling Law, the sprinkler shall be connected with the domestic water supply of the building through a pipe of at least one inch diameter, at a point either side of the valve controlling the supply to the plumbing fixture in the cooking space. There shall be at least one sprinkler for every 49 square feet or fraction thereof of the floor area of the cooking space. Such sprinklers shall not be included in the computations for determining the size of the sprinkler piping or the necessity of a Siamese as outlined in §§29-06(i) and 29-06(j).
No sprinkler shall be installed in a cooking space without a written approval from the Department of Buildings. The Superintendent may, however, waive the requirement as to the filing of the plans when, in his opinion, the nature of the alteration may be fully explained in the application.

(l) *Valves*.

Each valve controlling water supply and each valve controlling drainage of system or test flow, shall bear a metal plate securely attached to the valve and indicating clearly the purpose of each such valve.
On the sprinkler main, an outside screw and yoke gate valve, readily accessible, shall be provided near the front wall of the building and located so as to control the water supply to all of the interior sprinkler system. The said outside screw and yoke gate valve shall be sealed in an open position.
If a roof tank is used as a supply for sprinklers, an outside screw and yoke gate valve shall be provided in the piping leading from the tank to the sprinkler system, under conditions similar to those specified for such valves on sprinkler mains.
A check valve of equal diameter to the main shall be installed in all sprinkler mains where a building is supplied by services connected to different street mains, or where a building is equipped with a Siamese connection. Such check valve shall be placed within two feet of the outlet side of the main control valve.

Where a sprinkler system is supplied with both a gravity tank and a street main, a check valve shall be placed in the independent supply pipe to the tank (on the tank side of the pump) and in the main at the outlet end of the main control valve. Such check valves shall be of equal diameter to the supply pipe and the main respectively.
When the sprinkler system has an auxiliary supply in the form of a Siamese connection, a check valve shall be placed in a horizontal position in the down feed from the gravity tank and immediately below the roof.
When a building is supplied through a pressure tank in the cellar or basement, a check valve of equal diameter to the main shall be placed in the sprinkler main on the inside service between the intake and discharge connections to the pump feeding the pressure tank.
Where a sprinkler system is equipped with a booster pump, valves shall be provided in accordance with §29-06(d).
All control valves in supplies to the sprinkler system shall be sealed in an open position in an approved manner.
Where an underground main is used, the main control valve shall be located where readily accessible.

(m)*Drainage*.

All sprinkler pipe and fittings shall be so installed that the system can be thoroughly drained. Where practicable, all piping shall be arranged to drain to the main drain valve. Where this is impracticable, as in the case of sprinkler piping under stair soffits, a three-quarter inch screw plug shall be provided in the lower end of such piping to permit drainage.
Except where otherwise provided in the previous paragraph, sprinkler pipes shall be pitched not less than one-quarter inch in the 10 feet Pipe shall be straightened before installation to prevent pockets which would interfere with proper drainage.
For draining the sprinkler system, a three-quarter inch tee branch with a three-quarter inch plugged valve shall be provided on the sprinkler main on the house side of the main (O.S.&Y.) control valve.
Where a sprinkler system is provided with check valves, the intermediate pipe between check valves shall be so arranged as to properly drain.

(n) *Sprinkler specifications*.

Sprinklers shall be of a type and manufacture approved by the Board of Standards and Appeals and of current issue.
The operating temperature of all sprinklers shall be in the ordinary degree range. Appropriate higher degree operating temperatures shall be required in cooking spaces.
Any sprinkler which has opened or has been damaged shall be replaced immediately with a good sprinkler.
There shall be kept available on the premises at all times at least three extra sprinklers and also a sprinkler wrench for use to replace any fused or damaged sprinklers.

(o) *Pipe specifications- sleeves*.

All piping except underground piping used in sprinkler systems shall be full weight standard steel threaded pipe, well reamed and screwed up tight into fittings without reducing the waterway. Fittings shall be standard weight cast-iron. All fittings and pipes placed inside of tanks shall be of brass or other non-corroding material.
Underground piping shall be of Extra Heavy Cast Iron Corporation pipe with bell and spigot [*sic*] or mechanical joints.
Sprinkler piping passing through floors (other than floors in public halls) of concrete or waterproof construction, shall have properly designed substantial thimbles or sleeves projecting three to six inches above the floor to prevent possible floor leakage.
The space between the pipe and sleeve should be caulked with oakum or equivalent material. If floors are of cinder concrete, thimbles or sleeves should extend all the way through to protect the piping against corrosion.

(p) *Hangers and support of piping*.

All branches shall be adequately supported. There shall be at least one hanger for each length of pipe between sprinklers, with one hanger within 30 inches of the end sprinkler and with hangers not over 12 feet apart.
Vertical piping shall be securely supported at the base and at maximum intervals of every other floor, provided that such maximum intervals are 20 feet or less.
The maximum spacing between hangers on horizontal mains and risers shall be twelve 12 feet
Hangers shall be of a substantial metal type.
Sprinkler risers shall not be located within 12 inches of a window or other exterior wall opening.

(q) *Frost protection*.

When necessary for the protection of a sprinkler system against frost, the Superintendent shall require that the public halls be heated.
Exposed water supply piping shall be protected against frost in accordance with §29-06(e).

(r)*Tests*.

Sprinkler systems when completed shall be subjected to a hydrostatic test at a pressure of not less the thirty 30 pounds per square inch in excess of the normal pressure required for such sprinkler system when in service, except that where a Siamese is required, the test pressure shall be not less than 200 pounds per square inch.
All piping shall remain uncovered in every part until it has successfully passed the test.
The Department of Buildings, in the borough in which the test is to be conducted, shall be notified when such test is to take place. Tests shall be conducted by the contractor or the owner or the owner's representative, in the presence of a representative of the Building Department.
Sprinkler risers shall be provided at the top for testing purposes, with a connection not less than one inch in diameter, with a valve outlet so located that same will be readily accessible at all times. When not in use the valve shall be provided with an iron or brass plug screwed in tight.

(s) *Maintenance*.

Each sprinkler system shall be maintained in good condition and in such manner that it will function effectively in the event of fire on the premises.

The owner is responsible for the condition of his sprinkler system and shall use due diligence in keeping the system in good operating condition.

Sprinkler systems shall be inspected at least once in each six months by the owner, to ascertain that all parts of the system are in perfect working order. A detailed record of each such inspection shall be kept on the premises for examination by the Department of Housing Preservation and Development, the Department of Buildings and the Fire Department.

(t) *Painting*.

When the sprinkler system is given any kind of coating, such as whitewash or paint, care shall be exercised to see that no portion of the automatic sprinklers is covered.

(u) *Alterations*.

No additional sprinklers shall be installed and no part of a sprinkler system shall be altered without a written approval from the Department of Buildings.

(v) *Issuance of approval*.

Before the installation of a sprinkler system is approved and prior to the issuance of a letter of approval, there shall be filed with the Department of Buildings, in the borough in which the work has been installed, a letter from the Department of Environmental Protection indicating the size of the tap and service main and whether same has been installed in an approved manner.