SECTION .0900 - DISTRIBUTION SYSTEMS

15A NCAC 18C .0901 SIZE OF THE WATER MAINS

Water distribution mains shall be sized to provide a minimum pressure at all points within the distribution system of not less than 20 pounds per square inch (gauge) during periods of peak demand (fire flow), but in any case water mains shall not be less than two-inch standard nominal diameter. Fire hydrants shall not be installed on water mains of less than six inches diameter or on water mains or water systems not designed to carry fire protection flows. Systems not designed for fire flows shall have the capacity to maintain a pressure of at least 30 pounds per square inch (gauge) throughout the system during periods of peak flow.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Amended Eff. March 31, 1980;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. November 23, 2015.

15A NCAC 18C .0902 NUMBER OF RESIDENCES ON A WATER MAIN

(a) No more than 20, or the equivalent of 20 residences shall be connected to a two-inch diameter water line, unless the main is looped or otherwise supplied from two connections with mains of adequate capacities.
(b) A looped two-inch main shall serve no more than 40 residences, or the equivalent water demand of 40 residences. A two-inch diameter main shall not exceed 1000 feet in length.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Amended Eff. January 1, 1978;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. November 23, 2015.

15A NCAC 18C .0903 DEAD-END WATER MAINS

Where installation of dead-end water mains cannot be avoided, a hydrant or a valve of adequate size for flushing shall be installed at the terminal end of the line. The flush valves shall have an above-ground discharge and shall be protected from contamination.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. November 23, 2015.

15A NCAC 18C .0904 PIPE LAYING

(a) Trenching, pipe laying, and backfilling shall be accomplished in a manner to prevent damage to and misalignment of the pipe. Water mains shall be buried to a depth below the frost line or to a depth sufficient to provide a minimum of 30 inches cover, whichever is greater. In cases where it is impracticable to provide 30 inches of cover taking into consideration feasibility and cost, a deviation may be approved on a case-by-case basis, if supported by data from the design engineer including consideration of pipe material, cover material, land cover, land use, land slope, the depth of the frost line, and the location of other utilities.
(b) To allow for construction and repair, a minimum distance of 12 inches shall be maintained between the outside of the water main and the outside of other utilities.
(c) If an engineer demonstrates it is impractical to maintain the separation distances required by this Rule, taking into consideration feasibility, cost, and the factors set forth in this Paragraph, a deviation may be approved on a case-by-case

basis if supported by data and alterative construction criteria submitted by the design engineer. Data and alterative construction criteria submitted by the design engineer to justify the deviation shall describe:

(1) the rationale for determining that separation criteria described in Paragraphs (a) and (b) of this Rule are impracticable;
(2) the extent of the deviation from separation criteria in Paragraphs (a) and (b) of this Rule;
(3) a consideration of pipe materials, pressure ratings, type of joints for water main and non-potable water line, and soil conditions;
(4) the ability to provide adequate work space to repair or replace pipe segments or other utility infrastructure without causing damage to or otherwise compromising the integrity of pipes; and
(5) the rationale for determining that the deviation will not result in unreasonable risk to public health.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. November 23, 2015;
Amended Eff. July 1, 2019.

15A NCAC 18C .0905 TESTING NEW WATER MAINS

New water mains shall be tested for leakage and any necessary repairs and re-testing shall be accomplished as specified in AWWA standards.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Pursuant to G.S. 150B-21.3A, rule is necessary without substantive public interest Eff. November 23, 2015.

15A NCAC 18C .0906 RELATION OF WATER MAINS TO NON-POTABLE WATER LINES

(a) For the purposes of this Rule, sewer shall mean any existing or proposed gravity or force main used to convey sanitary or industrial process waste.

(b) Lateral Separation of Sewers and Water Mains. Water mains shall be laid at least 10 feet laterally from existing or proposed sewers, unless local conditions or barriers prevent a 10-foot lateral separation, in which case:

(1) the water main shall be laid in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the sewer; or
(2) the water main shall be laid in the same trench as the sewer, with the water main located at one side on a bench of undisturbed earth and with the elevation of the bottom of the water main at least 18 inches above the top of the sewer.

(c) Crossings. A water main that crosses a sewer shall be laid a minimum vertical distance of 18 inches from the outside of the water main and the outside of the sewer, either above or below the sewer, with preference to the water main located above the sewer. One full length of water pipe shall be located so that both joints will be as far from the sewer as possible.

(d) Water Mains and Storm Sewer Pipes. Pipes carrying storm drainage shall be separated from water lines in accordance with Rule .0904 of this Section.

(e) Water Mains and Reclaimed Water Distribution Lines. Water lines shall be located at least 10 feet horizontally from or at least 18 inches above water pipes carrying treated and disinfected wastewater in reclaimed water distribution lines. Crossings shall be made in accordance with Paragraph (c) of this Rule.

(f) Special Conditions. If an engineer demonstrates it is impracticable to maintain the separation distances required by this Rule, taking into consideration feasibility, cost, and the factors set forth in this Paragraph, the deviation may be approved on a case-by-case basis, if supported by data and alternative construction criteria provided by the design engineer. Data and alternative construction criteria submitted by the design engineer to justify the deviation must describe:

(1) the rationale for determining that separation criteria described in this Rule are impracticable;
(2) the extent of the deviation from separation criteria in this Rule;
(3) a consideration of pipe materials, pressure ratings, type of joints for water main and non-potable water line, and soil conditions;

(4) the ability to provide adequate work space to repair or replace pipe segments or other utility infrastructure without causing damage to or otherwise compromising the integrity of pipes; and
(5) the rationale for determining that the deviation will not result in unreasonable risk to public health.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
Readopted Eff. July 1, 2019.

15A NCAC 18C .0907 VALVES

(a) Valves should be installed on all branches from feeder mains, and between mains and hydrants according to the following schedule:
(1) three valves at x (crosses),
(2) two valves at T's (tees), and
(3) one valve on single hydrant branch.

(b) All valves installed in water distribution systems shall meet the appropriate AWWA Standards C 500-71 (adopted in 1971), C 504-74 (adopted in 1974), and C 507-73 (adopted in 1973) of the American Water Works Association, Inc., that are incorporated by reference including any subsequent amendments or editions. Copies are available for public inspection as set forth in Rule .0102 of this Subchapter. All valves must be installed in such a manner as to be readily accessible, preferably, the use of an appropriate valve box and cover.

History Note: *Authority G.S. 130A-315; 130A-317; P.L. 93-523;*
Eff. January 1, 1977;
Readopted Eff. December 5, 1977;
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