

THE TOWN OF HILLSBOROUGH
BOARD OF WATER AND SEWER COMMISSIONERS

APPENDIX A

Specifications for Hillsboro Municipal Water System

ARTICLE I

Construction Standards

Section 1. Requirements: Construction of water mains will be in accordance with the specifications and requirements stated here in.

Section 2. Reference Drawings: Owner/Developer will submit a print to show the layout of work. The print will show the location of the Owner's service pipe, cross-connection control device and shut off value as approved by the commissioners.

Section 3. As Built Drawings: Owner/Developer shall, at the completion of work, provide the Board of Water and Sewer Commissioners, with as built drawings indicating the location of the water main and all appurtenances. The as built drawings shall be to an accuracy shall be to an accuracy of plus or minus of one (1.0) foot in plan view.

Section 4. Water Main - General: Owner/Developer shall furnish all materials, labor, tools and equipment, and perform all work and incidentals necessary for the installation of the ductile iron water main and appurtenances (pipe, tees, bends, valves and hydrants). All materials shall be subject to inspection and approval of the Inspector or Commissioners. The above mentioned material shall be subject to rejection at anytime.

A. All materials shall be carefully inspected before being installed. All pieces found to be defective, as determined by the Commissioners or inspector, shall be pulled out in such manner not to damage it and shall be removed from the jobsite by Owner/Developer by the end of the first working day there after.

Section 5. Storage of Pipe: All water pipe stacked on the jobsite must have 4"x 4" timbers below the stack to prevent

dirt and debris from entering the pipe, and between each tier. Chocks shall be nailed at each end to prevent movement of the pipe. For safety and convenience, each size pipe should be stacked separate. Pipe on tiers shall be alternated -bell-plain end; bell -plain end, etc.

ARTICLE II

Execution

Section 1. Installation: Installation of all buried piping shall be in accordance with American Water Works Association (AWWA); Standard C600, "Installation of Ductile Iron Pipe and Their Appurtenances".

Section 2. Dewatering: Owner/Developer shall provide for dewatering, if necessary, to provide a stable and dry trench during periods of construction.

Section 3. Laying of water pipe: Water pipe shall be laid on a six inch (6") bedding of sand or crushed stone (1/2" to 3/4") and surrounded with a minimum twelve inch (12") layer of compacted sand or other select materials which are approved by the Inspector or commissioners.

A minimum of three feet (3') for compaction around the pipe must be done, however, the Commissioners or inspector can require more as needed. Whenever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, the amount of deflection allowed shall not exceed that required for making a satisfactory joint and shall be subject to the approval of the Inspector or commissioners.

The interior of the pipe, fittings and valves shall be kept clean and free of debris at all times during storage and installation or the materials may be rejected by the Inspector or Commissioners.

At all times the open ends of pipe shall be closed by temporary water tight plugs or by other approved means. If water is in trench, at time of installation, the plug shall not be removed until all danger of water entering the pipe has been eliminated.

Section 4. Depth of Bury and Location: The water mains and service lines will be located a minimum of six feet (6') from the top of the pipe to finish grade. In the event of conflicts with existing sanitary sewers or sewer lateral crossings the water main will be offset above these lines by minimum of eighteen inches (18").

State regulations requires water mains and sewer mains which run parallel, to have a ten foot (10') horizontal separation.

Section 5. Pressure Testing: A pressure test of all main lines is required before any main line will be accepted by the Commissioners.

A. After the pipe has been inspected it will have a hydrostatic pressure test of at least one hundred fifty (150) psi (or 1.5 x the working pressure if the working pressure exceeds one hundred (100) psi). The pressure shall hold for one hour and shall be witnessed by the Inspector or Commissioners.

B. Service lines longer than one hundred (100) feet will also be pressure tested.

Section 6. Disinfection: All water mains larger than two inches (2") must be disinfected by the contractor. A water sample from the water main constructed shall be tested for bacteria by a certified lab, with the results sent to the Board of Water and Sewer Commissioners, before said water main can be used. For more information, refer to AWWA standards C601.

Section 7. Flushing Main Lines: Contractor must get prior approval to flush lines from Inspector or Commissioners. Flushing rate should be at least 2.5 F.P.S. and flushing shall continue until discharge is clean and colorless.

Section 8. Mechanical Fittings and Accessories: Fittings, valves and hydrant will be stored off the ground in such a manner that they will not collect dirt, rain or be damaged in any way.

Section 9. Retaining Glands: Retaining glands or a combination of poured concrete thrust blocks and retainers must be used on all mechanical fittings. A torque wrench must be used on all fittings to insure proper torque.

A. Torque Force is: 70 lbs on set screws.

B. Torque Force is: 75-90 lbs on all glands.

Section 10. Main Line Valve Location: All main line valves at pipe intersections (including hydrant valves) shall be placed within two feet (2') of the tees.

A. Large valves shall have blocking under them to help support the valve.

Section 11. Operation of Valves: No Owner/Developer, contractor or employee there of shall operate any valves or curbstops without the explicit permission of Inspector or Commissioners.

Section 12. Hydrants: Hydrants are to be buried at a depth of no less than six feet (6') and to be secured by retaining glands or thrust block or both.

Section 13. Service Lines: Corporations will be installed at either the two o'clock or ten o'clock position on the pipe circumference.

An "S" loop must be provided in the tubing nearest the Corporation, set no higher than the water line.

Section 14. Service Line Length and Size: A service which is longer than sixty feet (60') from the main shall be at least one inch (1") to provide adequate flow.

Section 15. Curb Valve Location: Curb valves will be set on the street line in town streets and curb boxes shall not be in sidewalks or driveways.

ARTICLE III

Material Specifications

Section 1. Water Mains: Pipe shall meet or exceed current AWWA C151 specifications for ductile iron pipe. Double cement lining, seal coating inside and bituminous outside coating shall meet or exceed, AWWA C104. Maximum length shall be twenty feet (20').

Push on joints to conform for current AWWA II, pipe is to be furnish complete with gaskets and lubricant.

- A. Class 52 pipe is required for 6"-12" diameters
- B. Class 51 pipe is required for 14"-24" diameters

Section 2. Valves: For sizes "3" thru "12" gate valves

shall be double disc with non-rising stem and conform to or exceed current AWWA C500 specifications.

Valves to be Metropolitan pattern to be supplies with accessories. Acceptable make A.P. Smith (3473) Met (MJ) or (MJxPE), or of equal quality and style.

Resilient seat valves, where specified on drawings shall meet or exceed AWWA C509 specifications. Acceptable make Waterous Series 500, U.S.Pipe Metroseal, or of equal quality and style.

Section 3. Valves Boxes: Base: 48 inches, Top: 5 1/4 x 24" or 26" with top flange (screw type not acceptable), Cover: Marked "WATER". Acceptable makes: E.J.P. or Q.W.P. or equal style and quality.

Section 4. Fittings: Fittings shall be ductile iron with mechanical joints and accessories and shall conform to or exceed current AWWA, C110 specifications fittings will be new, unused and free from rust, coated and cement lined.

A. Ductile Iron - Class 350

B. Mechanical joints and accessories shall meet AWWA C111 standards.

C. Double cement lining, inside seal coating and bituminous outside coating shall meet AWWA C104.

D. Retainer glands shall be used to retain joints as necessary. Thrust blocks are acceptable, but not preferred. Anchor tees are acceptable for use on hydrant branches.

Section 5. Water Services: (copper tubing) Tubing shall conform to or exceed ASTM specification B-88.

A. Sizes 3/4" and 1" - American made type "K" soft in 60' coils

B. Sizes 1 1/2" and 2" - American made type "K" soft 20' straight lengths, No 1 1/4" Services will be accepted

C. No Plastic Tubing.

Copper tubing shall run from main line, or service line to inside foundation with a shut off and a back-flow prevention device.

Section 6. Brass Fittings: All brass fittings shall meet or exceed AWWA C800 specifications. All corporations and curb stops shall be ball valves stop and waste valves are not accepted.

A. Acceptable makes: Ford compression fittings, or of equal quality and style.

Section 7. Hydrants: Acceptable makes: Smith H205, or of equal quality and style, with the following features:

- A. Direction to Open Left.
- B. Breakable Flange (Traffic Model).
- C. Valves Opening 5 1/4".
- D. Two (2) - 2 1/2" NST hose nozzle and One (1) - 4 1/2" NST pumper nozzle.
- E. Operating nut and nozzle caps NS #7 Pentagon, 1 1/2" Flat to point.
- F. Depth of trench 6'.
- G. Six inch (6") mechanical joint connection (with accessories), For 710" OD ductile iron pipe.

Section 8. Back Flow Prevention Devices: The Owner Service Line shall be designed, installed, and maintained in such manner as to prevent contamination from liquids, solids, or gases from being introduced into the water supply through cross-connections or any other piping connections to the system.

A. Before any device for the prevention of backflow or backsiphonage is installed, it shall be consistent with the degree of hazard at the service connection and have first been certified by a recognized testing laboratory acceptable to the Commissioners. Devices installed in a building water supply system for protection against backflow shall be maintained in good working condition by the Owner or persons responsible for the maintenance of the system.

B. The Commissioners or inspector may inspect routinely such devices and if found to be defective or inoperative shall require the replacement thereof. (RSA 148:)

Section 10. Cross-Connections: No Cross-Connections shall be permitted. Any physical connection or arrangement between two

otherwise separate piping systems, one of which contains potable water, and the other, water of unknown or questionable safety, or steam, gas, or chemicals, whereby there may be a flow from one system to the other. No physical cross-connection shall be permitted between public or private water systems containing portable water and any other system containing water of questionable quality or containing contaminating or polluting substances. (RSA 148:26)

Section 9. **Alternate Items:** The Board of water and sewer commissioners and/or inspector, reserve the right to require a sample for evaluation of any item supplied. Alternate items must receive prior approval of the Commissioners or Inspector.

Section 10. **Expenses:** All expenses incurred by the department, relative to the project's construction and inspection shall be born by the Owner/Developer.

Section 11. **Written Notice:** Notice intent to start construction must be delivered, in writing to the Commissioners, two working days prior to date of start.

ARTICLE IV

Inspection

Section 1. Inspector a duly authorized employee of the Board of water and sewer commissioners shall be permitted to enter all properties for the purpose of inspection, observation, measurement and verification pertinent to design, construction and testing.

Section 2. The Inspector and/or Board of Water and Sewer Commissioners shall order any other means of testing and/or inspection necessary to ensure compliance.

ARTICLE V

Responsibilities

Section 1 It shall be the responsibility of the Owner/Developer for material or debris which has washed or flowed into or been placed in water-courses, ditches, gutters, drains, catchbasins, or elsewhere as a result of the construction

operations. Such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, etc., kept in a neat, clean and functioning condition.

Section 2. The Owner/Developer shall be responsible for the satisfactory operation of the entire water system and shall make good and repair, without expense to the Municipal Water System, any part of this work which is imperfect or which may become clogged or inoperative due to lack of protection during construction, defective material, or poor workmanship for a period of two (2) years from the acceptance of the work as being complete by the Board of Water and Sewer Commissioners.

ARTICLE VI

Enforcement

Section 1. Penalties for Violations: Any person, firm, partnership, or corporation found to be violating or in violation of the specifications of this appendix and/or code shall be fined in the amount not exceeding five hundred dollars (\$500.00) for each violation. Each day in which any such violation shall continue shall be deemed a separate offence.

Section 2. Liability for expenses, loss or damage: Any person violating any of the provisions of this chapter shall become liable to the town for any expense, including reasonable legal expenses, loss or damage occasioned by the town by reason of such violation.

ARTICLE V

Enactment

Section 1. This code becomes effective upon adoption by the Board of Water and Sewer Commissioners, this 28 day of June, 1989, after recording and publication as provided by law by, the Board of water and sewer commissioners of the Town of Hillsborough, Hillsborough County, State of New Hampshire at a duly held session of the Board of Water and Sewer Commissioners, of the Town of Hillsborough.

Voted and adopted this date:

Eugene Edwards
Eugene Edwards, Chairman

Walter Crane
Walter Crane

Donald Mellen
Donald Mellen
Water and Sewer Commissioners
Town of Hillsborough

Recorded this 29 day of June 1989

Shirley Hare
Shirley Hare, Town Clerk, Town of Hillsborough