

SECTION 500 – WATER DISTRIBUTION SYSTEM

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Section 501 – General

The standards and requirements found in this article are for materials and construction of water mains within the Village of New Lenox, Illinois. Specific references made herein for manufactured materials such as pipe, hydrants, valves, and fittings refer to designations for American Water Works Association (AWWA) or to the American National Standards Institute (ANSI). All water main materials shall be made in the USA and identified as such on the material.

Section 501.01 – Specifications

These specifications cover pipe and fittings and items normally used for water distribution systems. Special considerations will be covered with the “Standard Specifications for Water and Sewer Main Construction in Illinois”, latest edition, except as modified herein. In cases of conflict between standards, the more restrictive standard shall apply, as determined by the Village Engineer.

Section 501.02 – Start of Construction

Water main construction shall not start before acquiring and IEPA Construction Permit.

Section 502 – Materials

Section 502.01 – Pipe

All water main pipe materials shall conform to the latest applicable ANSI and AWWA, or other nationally accepted standards. Only the following water main pipe and joint materials are approved for use in the Village of New Lenox, Illinois

1. Ductile Iron water main conforming to AWWA C151, thickness class 52 in conformance with AWWA C150 and provided with push on joints conforming to AWWA C111 with rubber gaskets. All pipe shall be cement lined and in conformance with AWWA C104.

Section 502.02 – Fittings

All fittings shall conform to AWWA C110 and be constructed of ductile iron with cement lining conforming AWWA C104.

Section 502.03 – Valves

Only the following valves are approved for use in the Village of New Lenox.

2. For valves twelve (12) inches and less, Gate Valves manufactured by Mueller, or East Jordan Iron Works C515 conforming to AWWA C509 with mechanical joint fittings and MEGA-LUG retainer glands manufactured by EBAA Iron, Tyler TUF Grip or Ford Wedge Action Retainer, each with Duratron Sac-Nuts installed according to the table on Detail No. 14.
3. For valves greater than twelve (12) inches, Pratt Butterfly Valves conforming to AWWA C504 with mechanical joint fittings and MEGA-LUG retainer glands manufactured by EBAA Iron, Tyler TUF Grip or Ford Wedge Action Retainer, each with Duratron Sac-Nuts installed according to the table on Detail No. 14.

Section 502.04 –Fire Hydrant

Fire hydrants shall be East Jordan Iron Works hydrants (w/PE gland shoe and valve attached), provided with a 6” East Jordan Iron Works auxiliary gate valve conforming to AWWA C509 with an East Jordan Iron Work Valve Box and Valve Box Stabilizer. (See Detail No. 11 and 12)

Section 502.05 – Valve Vault

Valve Vaults shall be precast reinforced concrete conforming to ASTM C478 provided with extrudible preformed plastic gaskets at all joints and an East Jordan Iron Works 1050A frame and cover with “Village of New Lenox” and Water cast into the cover. (See Detail No 14)

Section 502.06 – Pressure Connection

Pressure connections for watermain shall be made through a gate valve that complies with Section 502.03 of the Village Standard and a Mueller ductile iron tapping sleeve of the appropriate dimension. A valve vault that complies with Section 502.05 of the Village Standard shall house the pressure connection. Pressure connections shall be made only in the presence of an authorized Village of New Lenox representative. (See Detail No. 13)

Pressure connections of equal size to the source main, also known as size on size, are typically not acceptable. These type of connections shall be reviewed on a case by case basis.

Section 502.07 – Sampling Station

Water Sampling Stations shall be manufactured by The Kupferle Foundry Company, Model Number Eclipse #88-SS Sample Station Extreme Cold Climate w/ Traffic Breakaway or an approve equal. The material shall be the stainless steel. (See Detail No. 16)

Section 502.08 – Water Service

The following items shall be provided for each water service in the Village of New Lenox:

1. Service Pipe shall be copper type K conforming with ASTM B88, with Flared fittings
2. Allowable diameter service line sizes shall be 1”, 1 ½”, and 2”.
3. Corporation stops shall be as follows:

	Ford	AY McDonald	Mueller
1”	FB8600-4	4701-B	B-25000
1 ½”	FB8600-6	4701-B	B-25000
2”	FB8600-7	4701-B	B-25000

4. Curb stops shall be as follows:

	Ford	AY McDonald	Mueller
1”	B22-444M	6104	B-25124
1 ½”	B22-666M	6104	B-25124
2”	B22-777M	6104	B-25124

5. Service boxes for a one (1) inch service shall be one of the following:
 - a. Mueller H-10300
 - b. Ford EM2
6. Service boxes for a services greater than one (1) inch shall be one of the following:
 - a. Mueller H-10304

Services greater than or equal to one and one half (1-1/2) inches in diameter shall require saddles with two (2) SAC Nuts per saddle. The saddle shall be an epoxy coated ductile iron body with stainless steel straps. The saddle shall be either Smith Blair model 317 or JCM model 404.

Section 503 – Design Requirements

Section 503.01 – Water Distribution System:

The minimum water main diameter for public water main systems shall be eight (8) inches.

Dead end water mains are not permissible, except in cul-de-sacs as referenced later within this document.

The water distribution system shall be extended to farthest limit of property and looped to an existing system (unless directed otherwise in writing by Village Engineer).

Pressure taps are required for all connections to the existing water distribution systems unless otherwise directed in writing by the Village Engineer.

Fire Hydrants shall be spaced at a maximum separation of 350 feet measured along the proposed water main.

Fire hydrants and main line valves shall be installed adjacent to one another within ten (10) feet of the adjacent lot line extended.

Hydrant locations, dimension to the back of the nearest curb, final grade ring elevation. Hydrants shall be placed a minimum of three (3) feet behind the back of curb.

Hydrants shall not be placed in locations where utility crossings require a hydrant depth in excess of seven (7) feet.

A Sampling Station shall be provided for every development. The sampling station shall be staked for location and grade prior to construction.

Horizontal and vertical separation requirements shall be provided in conformance with IEPA regulations.

Proposed water mains within cul-de-sacs shall not be looped and shall be extended to the end of the cul-de-sac and terminated following the auxiliary valve and fire hydrant. The fire hydrant shall be thrust blocked as indicated in the Village's standard detail.

At locations of water main stubs for future connections, a fire hydrant shall be provided immediately before a gate valve and followed by a twenty (20) foot section of water main with the applicable plug and thrust-blocking. A 2" flushing hydrant maybe required at the end of the stub.

The location of the proposed water main shall be located a minimum distance of three (3) feet behind the back of curb and shall be centered between the back of curb and front of sidewalk. The proposed water main shall not be located within the rear or side yards of any proposed lot unless directed by the Village Engineer.

In locations where the proposed development includes a park site to be transferred to the New Lenox Park District, the site shall be provided with a water service for future connections. A meter vault shall be installed on the future stub and all tap-on fees shall be paid by the developer.

Water valves shall be provided so that the maximum services affected by service loss in the event of a main break will not exceed 15 units. In addition, sufficient valving shall be provided to ensure that no more than three valves are necessary in order to isolate a section of water main.

Sixteen inch and larger mains shall include restrained joint pipe for three pipe lengths from each mechanical joint bend.

Section 503.02 – Water Service

Water services shall not exceed one hundred (100) feet in length from the water main to the buffalo box. Splices within the water services shall not be permitted.

Section 504 – Construction Requirements

Section 504.01 – Depth of Cover

Unless otherwise shown on the plans or indicated in the Special Provisions, all pipe shall be installed with a minimum of five and one half (5-1/2) feet of ground cover, measured from the proposed grade to the top of the pipe. In areas subject to subsequent excavation or fill, the mains shall be laid to the grades shown on the plans.

Section 504.02 – Pipe Foundation

The trench shall have a flat bottom conforming to the grade to which the pipe is laid. The pipe shall be laid on sound aggregate bedding, no less than four (4) inches in depth, true to grade and shall have a firm bearing for the full length of pipe. Any part of the trench excavated below grade shall be corrected with trench backfill material and thoroughly compacted. Once installed the pipe shall be bedded in aggregate to a depth of six inches above the pipe. Aggregate bedding shall conform to IDOT gradation CA 7.

Section 504.03 – Handling of Pipe

All pipe shall be handled in such a manner as will prevent damage to the pipe or coating. Damaged pipe and other accessories shall be rejected and replaced to the satisfaction of the Village Engineer. No chains shall be used during the installation of the proposed water main. Any pipe that is scratched during installation shall be sprayed with a dielectric undercoating paint. The methods of handling shall be corrected to prevent further damage when called to the attention of the contractor.

The pipe and fittings shall be inspected by the contractor for defects while suspended above grade.

Dirt or other foreign materials shall be prevented from entering the pipe or pipe joint during the handling or laying operations and any pipe or fitting that has been installed with dirt or foreign material in it shall be thoroughly cleaned. At times when pipe laying is not in progress, and at the end of each working day, the open ends of the pipe shall be closed by a water tight plug to ensure absolute cleanliness inside the pipe. The plugs shall not be removed until the trench has been dewatered to the satisfaction of the Village Engineer.

Section 504.04 – Connections to Existing Mains

Prior to connecting to the existing water main, the location of connection needs to be visually inspected and approved by a representative of Village of New Lenox Public Works. The visual inspection will verify that the connection point is free of all obstructions such as bell joints, mechanical joints, storm sewer, sanitary sewer, gas, electric, and other dry utilities. Pressure connections of equal size to the source main, also known as size on size, are typically not acceptable. These type of connections shall be reviewed on a case by case basis.

A representative from the Village of New Lenox Public Works department must be present at all connections to existing water mains. Connection to existing water mains shall be accomplished without interruption to service. Pressure tapping saddles and valve are to be provided at the point of connection to the existing system. The material removed from the existing main, the “cookie” must be presented to the Village of New Lenox Public Works department representative following the completion of the tap. The connection shall be made in accordance with Standard Detail No. 13.

Section 504.05 – Electrical Continuity

All pipe fittings shall be connected so that electrical current flow will not be reduced. This shall be accomplished through the use of brass continuity wedges.

Section 504.06 – Utility Identification

A wood stake (4 inch by 4 inch by 8 foot) with not less than the top two (2) feet painted blue shall be installed next to each water vault, valve box, buffalo box, and at the end of each main stub. The wood stake shall be maintained in a plumb position until Village acceptance of the utility structures.

When newly poured curbs are installed the contractor shall use a Village approved stamp to indent the wet concrete with a “W” to identify the location of each water service stub and “WV” for water valve vaults. If the developer and/or the contractor fail to indent the curbs as outlined above, the Village will then require that identification medallions or other symbols as approved by the Village Engineer be affixed to the curb.

Section 505 – Filling, Disinfection, and Flushing

Water for all filling, testing and chlorinating shall be drawn from the Village’s system at the proposed point of connection, using the Village’s backflow prevention equipment. This equipment shall be available from the Village after a 48 hour prior notice. Equipment shall be returned to the Village immediately upon completion of the test, whether successful or not. The contractor shall be responsible for providing a two (2) inch flared corporation stop on the new main to connect with the Village’s equipment.

A Flushing schedule shall be subject to the Village’s Water Department’s review and approval.

Water mains shall be flushed and then disinfected by dry gas feed of chlorine in conformance with Article 41-2.14 of the “Standard Specification for Water and Sewer Main Construction in Illinois”, latest edition.

Chlorine shall be introduced into the new main through a two (2) inch corporation stop, the Village’s RPZ, and an existing hydrant. If no hydrant is available; a second two (2) inch corporation stop on the existing main will be used.

Section 506 – Testing and Acceptance

Section 506.01 – Pressure Testing

New mains less than 16 inches in diameter -

Main shall be tested at a maximum pressure of 150 p.s.i. or to the maximum operation pressure of the valves, which ever is lower, for two (2) hours and shall not exceed the allowable leakage indicated by the “Standard Specification for Water and Sewer Main Construction in Illinois”, latest edition.

New mains 16 inches in diameter and greater -

Main shall be tested at a maximum pressure of 125 p.s.i or to the maximum operating pressure of the valves, which ever is lower, for two (2) hours and shall not exceed the allowable leakage indicated by the “Standard Specification for Water and Sewer Main Construction in Illinois”, latest edition.

In both instances the tests shall be performed in accordance with AWWA C600 and C603. If the mains to be tested include cast in place concrete thrust blocking, the test

must be performed a minimum of five (5) days after the installation of the thrust blocking.

Section 506.02 – Bacteriological Testing

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremities until the replacement water throughout its length shows, upon test, a residual not in excess of that carried in the source of supply.

After flushing, water samples collected, at the rate prescribed by the IEPA, from the treated piping system shall show satisfactory bacteriological results. The bacteriological analysis must be performed by a laboratory approved by the Director of the Illinois Department of Public Health.

Should the initial treatment result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the contractor until satisfactory results are obtained.

Section 506.03 – Acceptance

The water main shall be accepted after the following requirements have been met:

1. Written test results for the pressure test must be submitted to the Village Engineer. The original bacteriological test report must be submitted to the Village Engineer.
2. An approved inspection of the water main and its appurtenances has been conducted by the Village Department of Public Works. This inspection may require the hiring of a leak detection service by the developer.