

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.
2. The Village of New Lenox shall not allow polywrap on the water main.

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.

3. For valves twelve (12) inches and less, Gate Valves manufactured by Mueller or East Jordan 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.
4. 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 hydrants (w/PE gland shoe and valve attached), provided with a 6” East Jordan auxiliary gate valve conforming to AWWA C509 with an East Jordan Valve Box and Valve Box Stabilizer. (See Detail No. 11 and 12)

The maximum adjustment for a fire hydrant shall be 12”.

Section 502.05 – Valve Vault

Valve Vaults shall be precast reinforced concrete conforming to ASTM C478 provided with extrudable preformed plastic gaskets at all joints and an East Jordan 1045Z frame and cover with “Village of New Lenox” and Water cast into the cover. (See Detail No 14). All valve vaults should be water tight. All visible leaks shall be sealed in a manner acceptable to the Village Engineer.

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. The Village of New Lenox Water Department must be notified 48 hours prior to the connection. (See Detail No. 13)

Pressure connections of equal size to the source main, also known as size on size, are typically not acceptable. These types 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. 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 Compression Quick Joint fittings. Compression fittings with a set screw will not be allowed.
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"	F1000-4-Q-NL	74701Q-1	B25008-1
1 ½"	FB1000-6-Q-NL	74701BQ-1-1/2	B25008-1-1/2
2"	FB1000-7-Q-NL	74701BQ-2	B25008-2

4. Curb stops shall be as follows:

	Ford	AY McDonald	Mueller
1"	B44-444-Q-NL	76104Q-1	B25155-1
1 ½"	B44-666-Q-NL	76104Q-1-1/2	B25155-1-1/2
2"	B44-777-Q-NL	76104Q-2	B25155-2

5. B-Box's for a one (1) inch service shall be one of the following:
 - a. Mueller H-10300
 - b. Ford EM2
 - c. McDonald-5614
6. B-Box's for a service greater than one (1) inch shall be the following:
 - a. Mueller H-10304

7. BBOX Locations

The B-Box location must be (5) feet from the side lot property line. The B-Box must also be located in the parkway unless directed otherwise from the Village Engineer/Water Department. The service box will not be allowed in a driveway or sidewalk. If for some reason the B-Box lands in a driveway, the contractor will need to move it at their own cost.

8. Services greater than or equal to one and one half (1-1/2) inches in diameter shall require saddles with Duratron SAC Nuts installed on all bolts. 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.

9. Each individual residential or commercial unit should have its own dedicated service line. The Village will not allow manifolds/splitters on service lines.

10. Service taps shall be a minimum 18" and no taps shall be allowed within 3' of a bell joint or fitting.

Section 502.09 – Retainer Joints, Capping/Plugging, and Thrust Blocking.

Mechanical joints shall use a Mega-Lug Retainer Gland or Ford Wedge Action Retainer Gland Duratron Sacrificial Nuts (Sac-Nuts) on all of the MJ Bolts.

The end cap plug shall require a restraint type of joint.

Pre-cast concrete blocks shall be used to thrust block fittings, valves, hydrants. Poured concrete thrust blocking shall not be permitted.

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 unless directed otherwise by the Village Engineer, except in cul-de-sacs as referenced later within this document or unless otherwise approved by the Village Engineer.

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 300 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. A 4" by 4" by 8" wood stake with not less than the top (2) feet painted blue shall be placed in the ground marking the end of the water main.

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 or Water Department.

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 (minimum 5' 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 connections at any time, unless directed otherwise by the Water Department. 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

One inch (1") size water services shall not exceed one hundred (100) feet in length from the water main to the buffalo box. One and one-half inch (1-1/2") size water services shall not exceed sixty (60) feet in length from the water main to the buffalo box. Two inch (2") size water services shall not exceed forty (40) feet in length from the water main to the buffalo box. Any service size greater than two inches (2"), must be ductile iron. Under no circumstance will couplings be allowed between the main and the meter.

In rare instances where a service line may exceed the maximum distance, a meter vault (minimum 5' vault) will be required by the Village Engineer/Water Department.

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. To ensure cleanliness in the water main above ground on the job site, the Village Engineer request water tight plugs installed on all pipe.

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 Water Department. 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 types of connections shall be reviewed on a case-by-case basis.

A representative from the Village of New Lenox Water Department must be present at all connections to existing water mains and be given 48 hour notice prior. 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 Water 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

The Village of New Lenox Water Department must be notified 48 hours prior to the start of this process.

A Representative from the Village of New Lenox Water Department/Engineering Department must be present for each instance. If not, the entire process will be restarted at the cost of the contractor.

New and existing valves shall ONLY be operated by the Village of New Lenox Water Department.

Water for all filling, testing and chlorinating shall be drawn from the Village’s system at the proposed point of connection. Filling and flushing is only to be done by Water Department personnel by manipulating the valves to control the flow of water. A 3.0 ft/second flushing velocity is required to properly flush the water main.

A schedule shall be subject to the Village’s Water Department’s review and approval. All new water main (including stubs longer than 20’), hydrants, and valves should be subject to testing.

Water mains shall be flushed and then disinfected by the Continuous Feed Method apart of the AWWA C651-14, latest edition, unless directed otherwise by the Village of New Lenox. Only gas or sodium hypochlorite applications will be allowed.

Chlorine shall be introduced into the new water main through a corporation stop.

The Village of New Lenox Water Department will turn all valves inside the chlorination area to ensure all parts of the valve are being chlorinated.

Whips used for chlorination and sampling must be copper. They should be located every 1,200 feet, plus one (1) at the end of each dead-end line (including stubs longer than 20’). The Village reserves the right to request additional samples at any time.

Failure to abide by these standards or the Village of New Lenox Water Department/Engineering Department discovering errors (valves operated by contractor, steps skipped, etc.) throughout the process will result in the entire process being restarted, monetary fines (decided by the Public Works Director), or the suspension/termination of work inside the Village.

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, whichever 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. The Village has the right to extend the test to four (4) hours.

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, whichever 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. The Village has the right to extend the test to four (4) hours.

In both instances the tests shall be performed in accordance with AWWA C600 and C603.

Section 506.02 – Bacteriological Testing

Retention Time – Treated water must be retained in the pipe for 24 hours.

Following chlorination, a residual must be taken at the end of the line to ensure chlorine levels have not dropped below 25 parts per million. If residuals drop below 25 parts per million, the chlorination must be restarted at the cost of the contractor.

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.

Dechlorination may be required by the Village Engineer. If there is any possibility that the heavily chlorinated water will cause environmental damage, then a neutralizing chemical shall be added to the discharge water by “AWWA C651-05 Method”, or latest edition.

After flushing, water samples collected on two (2) consecutive days, at the rate prescribed by the IEPA, from the treated piping system shall show satisfactory

bacteriological results. These water samples are to be collected by the contractor (overseen by the Water Department/Engineer) and then given to the Water Department for transportation to an approved laboratory. The bacteriological analysis must be performed by a laboratory approved by the Director of the Illinois Department of Public Health. The Village of New Lenox Water Department utilizes the Will County Health Department. All water samples are to be paid by the contractor.

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

Removal of any such fitting after chlorination and sampling may require the process to be restarted at the discretion of the Village Engineer/Water Department.

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.