

# **CITY OF WARRENVILLE STANDARD SPECIFICATIONS**

## **WATER MAIN, SANITARY SEWER AND STORM SEWER**

### WATER MAIN

1. Water Main Piping shall be class 52 Ductile Iron conforming to AWWA C-151 and ANSI A21.51 with cement mortar lining conforming to AWWA C-104 Joints shall be push-on joint conforming to AWWA C-111
2. Fittings shall be ductile iron, 250 psi pressure rating, cement mortar lined with restrained push-on joint or mechanical joint with MEGALUG retainer glands, or approved equal.
3. Water Main Bolts shall be stainless steel ASTM 304.
4. Restrained Joints - All fittings shall have restrained joints. All water main piping in casing shall have restrained joints. Restrained joints shall be push joint with a field lock gasket or a mechanical joint with MEGALUG retainer glands, or approved equal. All bends, tees, and dead end piping must be restrained a minimum of 24' in both directions of the fitting. Thrust cement blocking of all fittings, hydrants, and dead end piping is required.
5. Pressure connections - Pressure tapping sleeves shall be all stainless steel.
6. All valves shall be resilient wedge gate valves installed in a precast concrete vault. Valves shall be Mueller, Waterous, or Clow manufacture. All bolts shall be stainless steel.
7. Valve vaults shall be pre-cast concrete units. For water mains 8-inch diameter or less, the vault shall be 48-inch inside diameter. For water mains 10-inch diameter and greater, the vault shall be 60-inch inside diameter.
8. Frames and lids shall conform to Neenah Foundry R-1712 or approved equal and the word "WATER" shall be cast in the cover.
9. Casing - Spacers All joints within the casing shall be restrained. Spacers shall be installed on all pipe in casing. Spacers shall be bolt on style with a shell made in two sections of heavy t-304 stainless steel. Casing shall be filled with pea gravel or sand and sealed at both ends.
10. All ductile iron pipes and fittings are required to be encased in 8-mil polyethylene conforming to AWWA C-105.
11. It shall be the responsibility of the contractor to obtain and supply certification for all materials. Shop drawings shall be submitted to and approved by the City before installation.
12. Depth of bury for water main to be 5'-6" (minimum).
13. Installation shall conform to "Standard Specifications for Water and Sewer Main Construction in Illinois" latest edition.

## FIRE HYDRANTS

1. Hydrant shall be FM approved and UL listed, shall conform to AWWA C-502, and shall have breakaway safety flanges.
2. Hydrants shall be Mueller Centurion, Waterous WB67-250, or Clow Medallion.
3. All bolts shall be stainless steel from and including the breakaway flange to the inlet on the hydrant shoe.
4. All hydrants shall have a bronze cross arm / top plate.
5. Connecting piping shall be six-inch (6") diameter.
6. Main Valve opening shall be five and one quarter inch (5-1/4") in diameter, compression type, with a brass drain valve.
7. Nozzles shall have threaded male ends conforming to "American National Standard Fire Hose Connection Screw Threads. The hydrant shall have two nozzles of 63 mm which are 2-1/2" and one pumper nozzle of 114 mm (4-1/2") with caps and chains.
8. Hydrants shall have a minimum working pressure of 175 psi.
9. Hydrants shall open in a counter-clockwise direction, as indicated by an arrow and the word "OPEN" on the dome.
10. Hydrants shall be painted a high visibility red, factory applied paint. Hydrants shall have a six-inch (6") auxiliary valve with box on the inlet piping. Valve shall meet water main piping specifications for the City of Warrenville. Auxiliary valve attached to hydrant shall have stainless steel bolts at the flange inlet.
11. Connection of six-inch (6") piping shall be restrained joints from the tee at the water main to the inlet of the hydrant with field lock gaskets for push joint and MEGALUG retainer glands, or approved equal for mechanical joint.

## WATER SERVICES

1. Brass shall be Mueller or Ford. All brass is preferred to have compression fittings. Compression fittings must be of the stainless full circle ring retainage. No set screws are allowed. Flair fitting are acceptable.
2. B-Boxes shall be of the arch pattern design with a telescoping one-inch (1") iron pipe upper section, a 33" to 36" stationary rod, pentagon nut access, enlarged base for 1-1/2" roundways and larger, manufactured in the USA.
3. Tapping saddle at minimum shall be epoxy coated ductile with two stainless steel bands. All stainless steel saddles are acceptable. Manufactured in USA.
4. All repair clamps shall be full circle stainless steel.
5. Depth of bury for water services to be 5'-6" (minimum) to 6'-6" (maximum).

## SANITARY SEWER

1. All sanitary sewer and sanitary sewer service pipe shall be SDR 26 ASTM D-2241 and fittings shall meet the requirements of ASTM D-3212 or equivalent. Note: This is a pressure rated pipe.
2. Sanitary sewer services shall be a minimum of 6-inches in diameter.
3. Sanitary sewers shall be air and mandrel tested.
4. All sanitary sewers shall be televised. Copies of DVDs and reports shall be provided to the City.
5. Sanitary sewer manholes shall have openings for the pipe connections cast into the wall of the structure. Rubber gasketed coupling (boot) with stainless steel bands / retainers shall be per ASTM C-923.
6. When connecting to an existing manhole, the hole must be cored and a rubber gasketed coupling (boot) with stainless steel bands / retainers shall be per ASTM C-923. The bench shall be removed and repoured, if necessary.
7. When connecting a new sanitary service to an existing sanitary sewer main without an existing wye, contact Public Works to determine which one of the two following methods shall be used:
  - a. A section of the main shall be cut out to install a new wye. Connection between the existing sanitary sewer and the new wye shall be made with non-shear mission couplings with two stainless steel bands to a point where the coupling cannot shift.
  - b. Core the existing main and make the connection with an INSERTA TEE connection or an approved equal
8. Sanitary manholes shall be pre-cast concrete units. For sanitary sewers 18-inch diameter or less, the manhole shall be 48-inch inside diameter. For sanitary sewers 21-inch diameter and larger, the manhole shall be 60-inch inside diameter.
9. Frames and lids shall conform to Neenah Foundry R-1712 or approved equal and the word "SANITARY" shall be cast in the cover. The lid shall be a self-sealing solid lid with watertight gasket and concealed pickhole.
10. All commercial buildings shall have an inspection manhole.
11. Manhole sections and adjusting rings shall be sealed with butyl rope.
12. Sanitary manholes shall have a poured concrete bench.
13. Rungs / steps shall be installed in manholes unless specifically prohibited.
14. External chimney seals will be required with all sanitary manholes.
15. No ground water will be allowed to enter the sanitary sewer during or after construction.

## STORM SEWER

1. All storm sewers 18-inch diameter and less shall be PVC SDR26 with pipes and fittings meeting ASTM D-3032.
2. All RCP storm sewers shall be installed with rubber gasket joints.
3. The minimum storm sewer size allowed in the public right-of-way will be 10-inch diameter unless conditions warrant a smaller size.
4. On private property, storm sewer installed to drain an existing depressional area shall generally be six-inch or eight-inch (6" or 8") diameter, unless a larger size is supported by calculations.
5. Storm manholes and catch basins shall be pre-cast concrete units. For storm sewers 21-inch diameter or less, the manhole shall be 48-inch inside diameter. For storm sewers 24-inch through 42-inch diameter, the manhole shall be 60-inch inside diameter. For storm sewers 48-inch diameter and larger, the manhole shall be 72-inch inside diameter.
6. Rungs / steps shall be installed in manholes unless specifically prohibited.
7. The minimum size structure shall be a 2-foot diameter precast concrete inlet, unless conditions warrant a different structure.
8. Frames and lids shall conform to Neenah Foundry R-1712 or approved equal and the word "STORM" shall be cast in the cover.
9. Allowable curb and parkway castings for inlets and catch basins:
  - a. When a barrier curb is present, use a Neenah R-3275 frame and grate (for B-6.12 curb and gutter, widen gutter section to accommodate larger grate).
  - b. For some slope conditions when a barrier type curb is present, a Neenah R-3065-L frame and grate may be used (for B-6.12 curb and gutter, widen gutter section to accommodate larger grate).
  - c. When roll curb is present, use a Neenah R-3501-P frame and grate.
  - d. In lawn areas, use beehive type grate, Neenah R-4340-B.
  - e. In lawn areas where a lot of trees are present, in public right-of-way and in ditches, use stool type grate, Neenah R-4342.
  - f. When applicable in parking lots or lawn areas, use round grate Neenah R-2502-A.

**Round grates will not be allowed in the street.** Equivalent substitutions may be permitted, if approved by Public Works.