

CITY OF WILMINGTON
SANITARY SEWERS
POLICY FOR EXTENSIONS AND CONNECTIONS

1. The following is the guide for procedures to follow before the City accepts a new sanitary sewer line or connection into the sewer system. It does not replace existing federal, state, or local laws or ordinances, but is a guide to those rules.
2. Initial conference with the City Director of Public Service-the developer or owner should discuss:
 - a) General location, and
 - b) Nature and size of facility that will generate the wastewater flow
3. If the facility is non-residential, the developer provides:
 - a) Type of Business,
 - b) Standard Industrial Code (SIC),
 - c) Processes, materials, and chemicals to be used. (Proprietary information will be kept confidential), and
 - d) Estimated quantity of water and wastewater concerned.
4. If non-residential, the Service Director will inform the developer of the applicable pre-treatment requirements of the City Sewer Ordinance.
5. If a sanitary sewer extension (new sewer line) is required in addition to a connection, then the developer provides to the City:
 - a) Detailed plans and specifications by a registered Professional Engineer. These are governed by City Engineering Standards, as well as Ohio EPA and Ten-State Standards. Professional engineers are generally familiar with these standards; copies may be obtained from the Service Director's office for a nominal charge.
 - b) An engineering estimate of the quantity of wastewater flows proposed, including average and peak flows for the current proposal and any planned expansions to the facility. Flow estimates must show the rationale for calculation of quantity.
 - c) Copies of any correspondence between the Ohio EPA and the developer.
6. For a sanitary sewer extension, the City provides to the engineer retained by the developer:
 - a) Available details on locations and elevations of sewers and manholes.
 - b) Estimated existing wastewater flow at the point of new connection. The developer's engineer uses this information to complete Item #7 b) below.
 - c) Other information as necessary on the existing sewer system, if available from City files.

7. For a sanitary sewer extension, the engineer retained by the developer provides to the Ohio EPA and the City:
 - a) Detailed engineering plans and specifications, including any lift stations and pumps. Gravity sewers, lift stations and force mains are to follow City design standards, Ohio EPA rules and Ten State Standards. (OEPA requires four copies of plans.)
 - b) Completed OEPA Application for Permit to Install, including all associated forms such as the Sanitary Sewer Data Sheet and the Pump Station Data Sheet. forms are available from the Ohio EPA.

8. For a sanitary sewer extension, the City will, after review and if standards are satisfied, provide a “recommendation for approval” letter to the Ohio EPA, with copies sent to the developer and the developer’s engineer.

9. The Ohio EPA completes it’s review process and grants final approval after receiving the City’s approval recommendation.

10. The developer pays to the Ohio EPA any review fees required by state code concurrent with applying for the Permit to Install, as directed by the OEPA.

11. The developer finances and constructs the sewer under City inspection. Materials, construction, and testing must meet City of Wilmington standards. Copies of standards are available from the Service Director’s office for a nominal charge.

12. All new sewer lines must be tested per City standards. The developer provides and pays for all equipment, materials and personnel to do the testing. Tests must be observed by City inspector(s), who are provided at a charge to the developer.

13. The developer provides surveying, legal descriptions, and documents for the following:
 - a) Utility easement to the City, along with recording at the Clinton County Recorder’s office.
 - b) Dedication of the sewer line and associated structures/equipment to the City.

- Note: Dedication requires action by City Council.

14. After satisfaction of all technical and construction standards, and dedication acceptance by Council, the City takes over responsibility for, and maintenance of, the new sewer line.

SANITARY SEWER

1.0 MATERIAL SPECIFICATIONS

Item 1 – Sewer Pipe and Fittings:

- A. PVC Pipe: Gravity Sewer Pipe
 - 1. Pipe Material
 - a. Standards: 4” through 15” – ASTM D3034
18” through 27” – ASTM F679 (wall thickness T-1)
 - b. Type: SDR 35
 - 2. Fittings: PVC
 - 3. Joints: Conform to ASTM D3212
 - 4. Size Range: 4” to 15”
 - 5. Stiffness: 50 psi, min. at 5% deflection
 - 6. Marking: @ 5’ intervals Max., with nominal pipe size, schedule, plastic material specification, plastic type and grade.

Item 2 – Manholes:

- A. Precast Reinforced Concrete Manholes
 - 1. Materials: ASTM C478, with eccentric cone sections, conforming to City of Wilmington Standard Drawings. The minimum diameter of manholes shall be 48 inches.
 - 2. Adjusting Rings: Precast Concrete
 - 3. Steps: Steel Reinforced Polypropylene Plastic Steps.
 - 4. Joint Gaskets: Premium flexible O-Ring rubber gaskets conforming to ASTM C443.
 - 5. Resilient Connectors: ASTM C923, Press Wedge
 - 6. Inverts: Fill with Class A Concrete to form a smooth invert. The flow channel through manholes should be made to conform in shape, slope and smoothness to that of the sewers.
 - 7. Manholes shall be installed at the end of each line, at all changes in grade, size and alignment, and at all pipe intersections.
 - 8. Manholes shall be installed at distances not greater than 300 feet.

Item 3 – Frame and Cover

A. Frame and Cover:

1. Material: Cast Iron, ASTM A48:
2. Manufacturer: East Jordan Iron Works
3. Designation: Cover shall have “Sanitary Sewer” cast in raised letters,
4. Vent Holes: eight @ $\frac{3}{4}$ ” diameter.

Item 4 – Force Mains

A. Force Mains

1. Material: PVC Pipe, SDR 26, ASTM C1784
2. Joints: Bell and spigot push on type with rubber ring gasket retained in a groove in bell.
3. Gaskets: Conform to ASTM D1869

2.0 TESTING PROCEDURES

2.1 GO – NO GO MANDREL FOR SMOOTH LINE PLASTIC PIPE 5% DEFLECTION TESTING

Whenever the contractor installs a sewer, he shall be responsible to perform deflection testing on the pipeline installation not less than 30 days after the installation has been completed. This testing shall be accomplished by pulling an approved mandrel through every completed pipeline. Deflection shall be limited to 5%. Any line failing this mandrel test shall be removed, then relaid if the pipe is not damaged, or replaced with an acceptable new pipe at the contractor’s expense, then retested. The cost of deflection testing shall be borne by the contractor and shall be incidental to the bid item.

2.2 LOW PRESSURE AIR TEST

After completing the backfill of a reach of sewer main with its connected laterals, the contractor shall conduct a low pressure air test using suitable equipment, preferably pneumatic plugs and a single control panel with gauges.

Before proceeding with the test, seal test the pneumatic plugs by inserting one in each end of a length of pipe and inflating to 25 psig. Pressurize the sealed piped to five psig. The plugs shall hold against this pressure without bracing and without movement of the plugs.

If the plugs check out satisfactorily, insert a plug in each end of the main sewer at the manhole. Close the ends of the laterals at the property line with pneumatic plugs or other suitable means. Brace plugs if necessary to insure against blowing out.

Provide a pressure relief valve at the compressor set at ten pounds to protect the sewers from excessive pressure.

Introduce low pressure air into the sealed sewer at the high end until the pressure registers four psig more than the ground water pressure. Hold this pressure in the sewer for at least two minutes to allow the air pressure to stabilize. After the stabilization period, set the pressure in the sewers at 3.5 psig more than the ground water pressure and shut off the air supply. The portion of the sewer being tested will be termed “acceptable” if the time required for the pressure to drop one pound is greater than the time shown in the NCPI Air Test Table.

NCPI AIR TEST TABLE

Minimum Test Time For Various Pipe Sizes			
Nominal Pipe Size, In.	T(Time) min/100 Ft	Nominal Pipe Size, In.	T(Time) min/100 Ft
3	0.2	21	3.0
4	0.3	24	3.6
6	0.7	27	4.2
8	1.2	30	4.8
10	1.5	33	5.4
12	1.8	36	6.0
15	2.1	39	6.6
18	2.4	42	7.3

2.3 MANHOLE VACUUM TESTING

1. Each manhole shall be tested immediately after assembly and prior to backfilling.
2. All lift holes shall be plugged with an approved non-shrink grout.
3. No grout shall be placed in the horizontal joints before testing.
4. All pipes entering the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole.
5. The test head shall be placed at the inside of the top cone section and the seal inflated in accordance with the manufacturer’s recommendations

6. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches. The manhole shall pass if the time is greater than 60 seconds for a 48" diameter manhole, 75 seconds for a 60" diameter manhole, or 90 seconds for a 72" diameter manhole.
7. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is being drawn. Retesting shall proceed until a satisfactory test is obtained.

2.4 OWNER INSPECTION

The owner reserves the right to check the installation for alignment, grade, and tightness by means of photography, television, or other appropriate means. Any portion of the sewer not conforming to the specifications for these requirements shall be repaired at the contractor's expense. The inspection shall be at the owner's expense.

3.0 ADDITIONAL SPECIFICATIONS

3.1 MANHOLE FRAME – CHIMNEY SEALING

Manhole Frame-Chimney Seal – An internal rubber seal, as specified, shall be installed on all sanitary manholes located where ground water infiltration may be an important factor. A rubber seal extension, to cover any additional heights of chimney not covered by the seal itself, shall be used as directed. The internal rubber seal and seal extensions shall be manufactured by Cretex Specialty Products, or approved equal. The standard drawings showing these seals and seal extensions and the minimum cone dimension criteria needed for their use are attached to the back of these specifications.

The sleeves and extensions shall have a minimum thickness of 3/16 inches and shall be extruded or molded from a high grade rubber compound conforming to the applicable requirements of ASTM C923, with a minimum 1500 PSI tensile strength, maximum 18% compression set and a hardness (durometer) of 48+or-. The bands used for compressing the sleeve and extension against the manhole shall be fabricated from 16 gauge stainless steel conforming to ASTM A240 Type 304. Nuts or bolts used on this band shall be stainless steel conforming to ASTM F593 and ASTM F594 Type 304.

The internal seal shall have a double or triple pleat with a minimum unexpanded height of eight (8) inches for the double pleat and ten (10) inches for the triple pleat and shall be capable of vertical movement of not less than two (2) inches when installed.

All costs for furnishing and installation of the internal seal and extension shall be included in the unit price bid for sanitary manhole.

4.0 DESIGN FEATURES

4.1 INVERT DROP IN MANHOLE

When a smaller sewer discharges into a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An appropriate method for securing this result is to place the 0.8 depth point of both sewers at the same elevation. When a larger sewer discharges in a smaller, the invert of the smaller should not be raised to maintained the same energy gradient. The minimum invert drop in a manhole shall be 0.10 feet.

4.2 ILLEGAL CONNECTIONS

Roof drains, foundation drains, and all other clean water connections to the sanitary sewer are prohibited. There shall be no physical connection between a public or private potable water supply system and a sewer or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable water supply.

4.3 HORIZONTAL SEPARATION

Sanitary sewers and force mains should be laid with at least a 10-foot horizontal separation from any water main.

4.4 VERTICAL SEPARATION

Sewers (or force mains) may be laid closer than 10 feet to a water main if it is laid in a separate trench and the elevation of the crown of the sewer (or force main) is at least 18 inches below the bottom of the water main. If it is impossible to maintain the 18 inch; vertical separation when the sewer is laid closer than 10 feet to the water main, the sanitary sewer should be constructed of (or encased in) water main type materials which will withstand a 50 psi water pressure test for a distance of ten (10) feet on both sides of the water main.

If a force main is laid closer than 10 feet to a water main, in no case should the force main be laid such that the crown of the force main is less than 18 inches below the water main.

4.5 CROSSING UTILITIES

Refer to the rules for vertical and horizontal separation.

4.6.2 PARALLEL INSTALLATION

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten foot separation, the reviewing authority may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.

4.6.3 CROSSINGS

Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.

4.6.4 EXCEPTION

The reviewing authority must specifically approve any variance from the requirements of Sections 4.6.2 and 4.6.3 when it is impossible to obtain the specified separation distances. Where sewers are being installed and Section 4.6.2 and 4.6.3 cannot be met, the sewer materials shall be water main pipe or equivalent and shall be pressure tested to ensure water tightness.

4.6.5 FORCE MAINS

There shall be a least a 10 foot horizontal separation between water mains and sanitary sewer force mains. There shall be an 18 inch vertical separation at crossings as required in Section 4.6.3.

4.6.6 SEWER MANHOLES

No water pipe shall pass through or come in contact with any part of a sewer manhole.

4.6.7 SEPARATION OF WATER MAINS FROM OTHER SOURCES OF CONTAMINATION

Design engineers should exercise caution when locating water mains at or near certain sites such as sewage treatment plants or industrial complexes. Individual septic tanks must be located and avoided. The engineer must contact the reviewing authority to establish specific design requirements for locating water mains near any source of contamination.

GENERAL NOTES

1. DOWNSPOUTS AND FOUNDATION DRAINS ARE TO BE CONNECTED TO CURB UNDERDRAIN, UNLESS OTHER DRAINAGE METHODS ARE APPROVED BY THE ENGINEER.
2. DRAINAGE THROUGH THE CURB IS PROHIBITED.
3. UNDERDRAIN SHALL BE CONNECTED TO A CATCH BASIN OR TO A NATURAL DRAINAGEWAY IN A MANNER APPROVED BY THE ENGINEER.

SPECIFICATIONS FOR SEWAGE LIFT STATION

CITY OF WILMINGTON

1. 480 VOLTS/3 PHASE
2. MERCURY FLOAT SWITCH TO CONTROL
 - a. Low level
 - b. High level
 - c. Alternate the pumps
3. STAINLESS STEEL GUIDE RAIL SYSTEM
4. 20 AMP ELECTRIC OUTLET FOR UTILITY USE
5. ALUMINUM HATCH FOR ENTRY
6. MUST PASS 3" SOLIDS
7. CHECK VALVE – LEVER AND WEIGHT RUBBER SEAT SWING TYPE.
8. EACH PUMP DISCHARGE LINE SHALL INCLUDE PIPE NIPPLE AND BALL VALVE TO ACCEPT ½ INCH PRESSURE GAUGE.
9. STEPS MUST CONFORM WITH CITY OF WILMINGTON SPECIFICATION 900-6.
10. EACH PUMP SHALL HAVE AN HOUR METER.

ACCEPTABLE MODELS ARE:

1. FLYGT SUBMERSIBLE – MODEL CP.
2. GORMAN RUPP SUBMERSIBLE – MODEL JSV3B20
3. GORMAN RUPP ABOVE GROUND STATION W/DUPLEX T4A3-B PUMPS, VALVES, PIPING AND CONTROLS.