

STANDARD SPECIFICATIONS - SEWER MAINS AND APPURTENANCES

DEVELOPER/ENGINEER PROCEDURES

All Developer/Engineering Procedures as established by Cuyahoga County Department of Public Works (CCDPW) shall be followed, which include: Latest ODOT Specifications, Municipality standards, Uniform Standards For Sewerage Improvements and Uniform Standards Sewer Details, Cuyahoga County Sanitary Engineering Division Rules and Regulations, and Contractor Permit Information. **In the case of conflicts between written specifications and drawings, the written specification shall apply.** One (1) electronic copy in pdf format, and six (6) paper set of detail drawings on 22" x 34" sheets signed by the City Engineer and Design Engineer, (including plan and profile, applicable sewer details, proposed and existing topography and all buried utilities) and specifications of all proposed sewers and shall be submitted for review and approval to: Cuyahoga County Department of Public Works, c/o Permit Department, 6100 W. Canal Rd, Valley View, OH 44125. Upon the Sanitary Engineer's approval of the detail drawings and specifications for construction, the developer/engineer will have eighteen (18) months from the date of the approval of plans to begin construction or plans must be resubmitted to the CCDPW for approval. The cost to record any and all easements and/or plats for Developer's projects for sewer lines, water lines, or pump stations to be dedicated to Cuyahoga County or a given community for ownership, operation and maintenance shall be at the cost of the Developer/Engineer.

COLLECTION SYSTEM IMPROVEMENTS

The CCDPW and/or Municipality shall determine whether or not the County sewer collection and tributary system has available capacity to allow for a development to proceed. Gravity sewers shall consist of a minimum size of eight (8) inch diameter for mainline sewers and six (6) inch diameter for service laterals at minimum slope of 1% (for laterals) and full flow minimum velocities of two (2) fps. The CCDPW shall require sewers and pump stations to be sized and to be installed at depths for the ultimate development of the entire tributary service area. Gravity sewers and service laterals shall be required in place of force mains/pressure sewers when the CCDPW determines it is in the public interest to do so. The requirements herein shall generally supersede any other requirements and any conflict in requirements shall be ultimately determined by CCDPW.

Generally, design shall be in accordance with Ohio E.P.A. regulations, the latest version of "Ten State Standards" and shall conform to the latest Uniform Standards For Sewerage Improvements, Uniform Standards Sewer Details, and ODOT Specifications.

The Developer and/or Engineer shall not allow other new utilities to be installed within six (6) feet horizontally of an installed new sanitary sewer or in the same trench as the sewer except at crossings. Should this occur, the Developer will be responsible for maintaining the sanitary sewer mains and the CCDPW will not permit taps to said line until the other utility lines are relocated six (6) feet away from the sanitary sewer. Sewer lines shall be located within the public road right-of-way, or within an approved easement. Water mains shall be installed with at least a ten (10) feet horizontal and eighteen (18) inch vertical separation from any sanitary sewers per Uniform Standards For Sewerage Improvements. The County also requires eighteen (18) inch vertical separation from any sanitary or storm sewers, measured from out-to-out.

**COLLECTION MATERIAL MINIMUM REQUIRED SPECIFICATIONS AND INSTALLATION STANDARDS
LINE CONSTRUCTION STAKING**

Gravity sanitary sewers and force mains shall be staked prior to the installation of new pipe. A State of Ohio Registered Professional Surveyor shall be required for the mainline staking and offsets. Staking shall be for both line and grade no greater spacing than every fifty (50) feet plus at all fittings and off-set at ten (10) feet. All public gravity sewers shall be installed with the use of a laser to insure that they are installed properly to grade.

MAIN LINE AND SERVICE LATERAL SEWER PIPE

All sewer pipe and laterals shall be buried below the frost line consisting of a minimum of at least three (3) feet of cover over the top of the pipe; for this requirement, the Designer shall consider both the existing grade and any anticipated future grade. All sewers (storm and sanitary) crossing a creek shall have six (6) inches of concrete (3000 PSI) encasement. Depths for sewers mains, laterals and force mains with less than three (3) feet of cover shall be approved in writing by the CCDPW prior to the construction phase; additional requirements for such situations may be mandated by the CCDPW.

Flexible PVC sewer pipe buried with less than thirteen (13) feet of cover shall be solid wall pipe; PVC compounds shall meet the requirements of ASTM F-789, SDR 35, six (6) inch through fifteen (15) inch diameter and ASTM F-679 (eighteen (18) inch through thirty (30) inch diameter pipe), conforming to ASTM D-3034, with joints conforming to ASTM D-3212. Fittings shall conform to ASTM D-3034. Gaskets shall conform to ASTM F-477. Pipe bedding shall conform to the Uniform Standards For Sewerage Improvements.

Flexible PVC sewer pipe buried with more than thirteen (13) feet of cover shall be solid wall pipe; PVC compounds shall meet the requirements of ASTM F-949. Pipe shall meet minimum pipe stiffness rating of PS-115 and shall consist of SDR 26 or thicker walled pipe as needed, as recommended by the manufacturer for the actual buried depth, conform to ASTM D-3034 through fifteen (15) inch diameter and ASTM F-679 for larger sizes. Fittings shall conform to ASTM D-3034. Pipe bedding shall conform to the Uniform Standards For Sewerage Improvements.

Alternate pipe different than those specified above for gravity sewer installations may be used, but piping material shall conform to the latest Uniform Standards For Sewerage Improvements and Uniform Standards Sewer Details.

All new gravity sewers 8-inch and larger shall be CCTV inspected by a CCDPW approved company regularly engaged in this type of work upon completion of installation. Costs shall be paid for by the contractor unless otherwise noted in the specifications. All sewers and laterals in the near vicinity of borings, drilling, and/or jacking of any piping shall also be CCTV inspected by the contractor at his cost to assure that no damage has been done to the piping. A copy of the video(s) and accompanying report(s) shall be submitted to the CCDPW.

All existing sewers, existing sewer laterals, and/or other existing facilities to be re-used shall be located by the contractor and CCTV inspected prior to beginning of construction at the contractor's expense. The CCTV inspection shall be submitted to the CCDPW and approved before the re-use of any existing facilities may be incorporated into the project.

Service lateral pipe shall be six (6) inch diameter consisting of PVC (solid wall pipe) and shall conform to the Uniform Standards For Sewerage Improvements. If the design necessitates a larger service lateral pipe for larger usage customers, the increased size shall be subject to CCDPW approval. Service lateral pipes shall not be installed without a Permit from the County and without calling at least 24 hours in advance for inspection at (216) 443-8209. County service lateral inspections will only be performed during normal County work hours. Service laterals shall only serve gravity drains in the customer's structure, including if possible basement or lower level, such as floor drains, toilet, sink, showers, slop sinks, clothes washer drains, etc. Service laterals which cannot be gravity shall utilize an approved grinder pump system. Service laterals for residential customers shall have a test-tee installed within three (3) feet of the right-of-way line. Service laterals for commercial customers shall have a test-tee installed within five feet (5') of the building foundation exterior, and at the right-of-way line. Service laterals shall not have any bends other than 45-degree or 22.5-degree bends. Ninety (90) degree bends (Horizontal or Vertical) are not acceptable. Test Tees are to be installed behind bends (upstream of) greater than 22.5-degree. One Test Tee should be installed for every one hundred (100) feet of pipe installed and spaced and located to allow access for easy cleaning. All Cleanouts shall be straight cleanouts or Test Tees, no swiping cleanouts. Clean water connections of the sanitary sewer are prohibited, including, but not limited to, storm water drains, yard drains, driveway drains, roof water drains, exterior footer or foundation by gravity or with interior sump pump, etc. In developments where connection to a service lateral will not occur for more than thirty (30) days, the Developer's contractor shall install a watertight cap and lateral 2x2 markers including a metal rod so the ends can be located or unless approved by the Engineer. When a building(s) is abandoned, existing service laterals shall be cut and capped with a watertight cap adjacent to the sewer main. All new lateral riser shall conform to Uniform Standards Detail No. 9A (with two 45 deg bends instead of one 90 deg bend as shown) and the lateral should be installed vertical to the surface. All Test Tees shall conform to the Uniform Standards Sewer Detail. All lateral connections to existing cleanouts and/or Test Tees shall be made at the lowest point in the Cleanout or Test Tee; connections above this point are prohibited. Solvent cement type joints or glued joints are prohibited or unless approved by the Engineer.

Connections of service laterals and/or sewers to existing and/or proposed sewer pipe mains shall be as follows:

a. **To PVC Sewer Mains** - cut out a section of the existing sewer main, install a manufactured PVC wye (with six (6) inch or appropriate size branch) with water tight PVC no-hub couplings, or approved equal, pipe adaptors for connections on sewer mains 18-inch and smaller. Where sewer mains are larger than 18-inch, Inserta-tees maybe used, manufactured by Inserta Fittings Company, or approved equal. In no case shall the connections for other than six (6) inch lateral connections exceed 2/5 the diameter of the main sewer. PVC to PVC piping connections should be completed using a manufactured PVC No-Hub coupling or unless approved by the Engineer. Pipe bedding and installation shall conform to the Uniform Standards For Sewerage Improvements.

b. **To Concrete Sewer Mains** - cut out a section of the existing sewer main, install a manufactured RCP wye (with six (6) inch or appropriate size branch) with water-tight Strongback Fernco type, or approved equal, pipe adaptors and encase wye and Strongback Fernco in concrete for connections on sewer mains 10-inch and smaller. Where sewer mains are larger than 10-inch, core pipe and install a manufactured flexible watertight six (6) inch rubber boot with stainless steel band(s), Model NPC Kor-N-Tee (as manufactured by NPC) or approved equal. Pipe bedding and installation shall conform to the Uniform Standards For Sewerage Improvements. RCP to PVC piping connections should be completed using a Strongback Fernco connection or equal.

c. **To Vitrified Clay Pipe Sewer Mains** - remove one (1) section of existing pipe (joint-to-joint), install a manufactured watertight PVC wye (with six (6) inch or appropriate size branch) with water-tight Strongback Fernco type, or approved equal, pipe adaptors on sewer mains 18-inch and smaller. Where sewer mains are larger than 18-inch, Inserta-tees maybe used, manufactured by Inserta Fittings Company, or approved equal. In no case shall the connections (for other than six (6) inch lateral) connections exceed 2/5 the diameter of the main sewer. Pipe bedding and installation shall conform to the Uniform Standards For Sewerage Improvements.

Service lateral connections to manholes shall use a KOR-N-SEAL or approved equal (connections are only allowed in special cases and only one (1) inside drop per manhole allowed). Service laterals from the public sewer main to the building foundation shall not be installed until the building foundation and basement construction has been completed.

External grease interceptors shall be installed in services for all food service businesses and oil/grit interceptors on all services for customers with floor drains in garage/warehouse type buildings. Interceptors are to be sized as required by CCDPW Rules and Regulations with a minimum effective grease interceptor size of 750 gallons. The customer shall be responsible for maintenance by cleaning/pumping their interceptor on a regular schedule. Interceptors shall be constructed water-tight and shall meet the requirements of CCDPW standards. All seals (water-tight pipe to structure seals, precast concrete top and manhole seals) shall be constructed of grease and oil resistant materials. Grease and oil/grit interceptors shall be field tested for infiltration using a vacuum test at four (4) inches of mercury for five (5) minutes, with less than a one-half (0.5) inch reduction per ASTM C 1613-069.1.1. Grease interceptor openings/cleanouts at the top shall be sealed with ConSeal CS-102, or equal, between metal frames, grade adjustment rings, and top of trap. Two (2) openings each with a minimum of 24 inches diameter for cleaning shall be provided, one over the inlet and the other over the outlet area of the grease interceptor. No internal chimney seal is required. The inlet and outlet pipes shall be cast iron or ductile iron pipe, size from the building foundation to the grease trap shall be six inch (6") diameter minimum with a six (6) inch minimum diameter outlet to three (3) feet outside the tank. There shall be cleanouts installed in the inlet pipe and outlet pipes outside the grease interceptor. Baffles shall be placed such that the interceptor chambers are easily accessible for cleaning.

PRESSURE SEWER/FORCE MAIN PIPE

Pressure sewer/force main pipe shall be designed for a minimum pressure of 150 p.s.i. and shall consist of:

- a. PVC, conforming to AWWA C900, DR 18 (solid wall pipe with PVC compounds meeting the requirements of SDR-26 ASTM D-2241), pipe shall include rubber gaskets or o-rings conforming to the requirements of ASTM D-3139.
- b. Ductile Iron Pipe (DIP) shall have a minimum wall thickness of Class 52, with push-on type joints, cement lined (AWWA C104), and shall meet the requirements of AWWA C150 and C151.
- c. HDPE, conforming to SDR 11 (ASTM F714 and D3035). Pipe joints shall be joined by use of the heat fusion technique of butt fusion resulting in a monolithic pipe. All joints shall be fully restrained and as strong as the pipe in both tension and hydrostatic loading.
- d. Pressure sewer pipe shall be pressure tested per manufacturer's recommendations.
- e. Restrained joints shall be used at a minimum at all joint fittings and at the next pipe joint from each fitting in all directions. Restrained joints shall consist of Meg-a-Lugs, Model Ebba Series 100 or equal as approved by CCDPW.
- f. Thrust blocks shall be used at all change of direction fittings in addition to the restrained joints, and shall be 4,000 psi concrete.
- g. Commercial and non-residential force mains shall have minimum cover of six (6) feet.
- h. Grinder pump pressure sewers/force mains shall be flexible HDPE SDR 11, jointless. The sewer shall be installed with a minimum of six (6) feet of cover.
- i. All high points in force main shall have an air release valve installed in a standard manhole conforming to the Uniform Standards Sewer Details.
- j. Two (2) No. 8 stranded wires shall be buried with all PVC and HPDE pressure sewer pipes located at the 10:00 and 2:00 positions and terminated in valve boxes, along with four (4) inch wide tape noting "SEWER FORCE MAIN BURIED BELOW" buried over pipe twelve (12) inch below finish grade.

GENERAL PIPE REQUIREMENTS & TESTING

All manufacturer's recommendations for unloading, installation, trench preparation, assembly, backfill, pressure or infiltration test, deflection tests, etc. shall be followed unless in conflict with these specifications, the latest version of Ten State Standards, Ohio EPA, or the Uniform Standards For Sewerage Improvements standards. If there is a conflict, the more restrictive requirements shall govern, unless approved in writing by the CCDPW. The use of recycled concrete or slag for bedding and backfill is not approved by the CCDPW.

Installed sanitary sewer pipe eight (8) inch to twenty four (24) inch shall require or air testing conforming with ASTM F-1417; concrete pipe shall be tested per ASTM C-969, ASTM C-1103 or ASTM C-1214; clay pipe shall be tested per ASTM C-828 or ASTM C-1091. Installed sanitary sewer pipe twenty seven (27) inch to forty eight (48) inch shall require weir testing per the Uniform Standards For Sewerage Improvements. All flexible pipe 8-inch and larger shall meet maximum five (5) percent deflection (Mandrel) testing at 60-days from the time of backfilling the sewer trench. All testing above shall be performed by a certified independent agency paid by the contractor and witnessed by a representative (Inspector) of the CCDPW.

SEWER PIPEBACKFILL

Material used for bedding and backfilling along the sides of the sewer and cover to a height of 12 inches over the top of the sewer shall consist of coarse interlocking aggregate No. 57, 6, 67, 68, 7, 78, or 8 and as per Uniform Standard Sewer Details. Slag or recycled concrete is not permitted. Backfill above the pipe shall be premium backfill using Low Strength Mortar (LSM) when within five (5) feet of pavement or within city right-of-way or unless indicated differently in the specifications. All material shall be compacted to 95% Proctor in maximum 12-inch lifts.

MANHOLES

All manholes shall be watertight structures made of precast concrete sections with full depth channels and shall meet the requirements of ASTM C-478 and Uniform Standards For Sewerage Improvements and Details. Chimney seals shall be installed on all new sanitary manholes. All manhole frames and castings shall conform to the Uniform Standards For Sewerage Improvements and Details. All new sanitary manholes shall be vacuum tested in accordance with the procedures of ASTM C-1244. The testing shall be performed by a certified independent agency paid by the contractor and witnessed by a representative (Inspector) of the CCDPW.

GENERAL COUNTY SEWER NOTES

REVISIONS:

SCALE
NO SCALE

DATE: SEPTEMBER 18, 2018

CUYAHOGA COUNTY DEPARTMENT OF PUBLIC WORKS - SANITARY DEPARTMENT DETAIL