

BOROUGH OF CONSHOHOCKEN AUTHORITY
RULES & REGULATIONS
SECTION 6 - TECHNICAL QUALITY OF PROPOSED WORK

6.1 SEWER SYSTEM

The Engineer's Report, prepared by the Applicant's Engineer, shall contain the following minimum data and shall conform to the format as listed below:

- (a) Description of geographic area to be served.
- (b) Terrain data in sufficient detail to establish general topographic features of the area to be served.
- (c) Minimum and maximum grades proposed.
- (d) Pumping stations required, or proposed
- (e) Intended use of the proposed realty improvements and the characteristics of sewerage expected from such use.
- (f) The effect of proposed sewerage facilities on existing or proposed sewerage systems.
- (g) The estimated average daily flow.
- (h) Description of materials to be used.
- (i) Preliminary cost estimate of proposed sanitary sewer facilities.
- (j) DEP planning module or exemption certificate
- (k) Any other factors which would affect design and use of the sewerage system.

6.2 RELATED TECHNICAL STANDARDS-SEWER

6.2.1 General

All sewers must be designed on a "separate system" basis in which all storm water from roofs, cellars, streets and any other areas must not be connected to the sanitary sewer system. No bypasses or overflows, which allow raw sewage to be discharged from sewers, shall be installed.

The system design and all detail designs must comply with the latest Commonwealth of Pennsylvania Department of Environmental Protection Domestic Wastewater Facilities Manual for the Preparation of Applications, Reports and Plans.

At the request of the Authority Engineer, an applicant shall cause a Pennsylvania certified design professional to certify that the downstream sewers have adequate capacity and shall submit additional flow calculations.

6.2.2 Sewer Design Standards

6.2.2.1 Minimum sewer main diameter shall be 8" unless greater diameter is required by the Authority's Engineer. All sanitary sewers shall be designed to carry four times the average flow estimated for twenty-five years in advance.

6.2.2.2 Sewers and force mains shall be designed to flow with a minimum velocity of not less than two feet per second at full flow based on Manning's formula with $n = 0.013$. Inverted siphons shall not be permitted unless approved by the Authority Engineer.

6.3 SEWER MATERIALS STANDARDS

Materials used in the construction of sewer, and force mains, shall be as follows:

1. Gravity sewer mains shall be constructed of one of the following materials:

a. PVC:

- Piping and Fittings:

4" - 15" diameter: SDR 35 conforming to ASTM D3034. Fittings shall be provided with Table No. 2 socket dimensions.

18-27" diameter: SDR 35 conforming to ASTM F679 with minimum pipe wall thickness T-1.

Pipe Cell Classification: 12454B.

- Joint Design: Conforming to ASTM D3212.
- Joint Material: Elastomeric ring rubber gasket conforming to ASTM F477.

b. Ductile Iron; may only be used with approval from the Authority's Engineer:

- Pipe: Minimum Class 52 with push on joints conforming to AWWA C151
- Fittings: Mechanical joint short body fittings conforming to AWWA C153
- Lining: Pipe fittings and lining shall conform to AWWA C104.

2. Inverted siphons shall consist of not less than two pipes with provisions for rodding and flushing. Flow control gates shall be provided on the chambers.

Force mains and inverted siphons shall be constructed of the following:

- a. Less than 4" Diameter: As approved by the BCA Engineer.
- b. 4" Diameter and Greater: Ductile iron conforming to the following:

Pipe:

Below Grade: Minimum Class 52 with push on joints conforming to AWWA C151.

Above Grade or Exposed: Minimum Class 53 with flanged joints conforming to AWWA C115. Uniflanges are not acceptable.

Fittings:

Below Grade: Mechanical joint short body conforming to AWWA C 153.

Above Grade or Exposed: Flanged conforming to AWWA C110, pressure Class 250.

Lining: Pipe and fittings lining shall conform to AWWA C104.

3. Manholes/Wet Wells/Valve Chambers: shall be constructed in accordance with the following:

- a. All structures shall be precast reinforced concrete. Circular structures shall conform to ASTM C478 and rectangular/square structures shall conform to ASTM C913.
- b. All structures shall be designed to withstand an AASHTO H-20: S16 live truck loading and groundwater level at finished grade.
- c. Joints: Conforming to ASTM C443.
- d. Joint Gaskets: Conforming to ASTM C361. If gaskets are not available due to manufacturer's recommended construction process provide two stands of butyl rubber tape around the entire circumference of each joint. Tape shall be suitable for application at 10 degree F without the supplying of a temporary heat source.
- e. Pipe Connections to Structures:

- New Structures:

Rubber Gasket Pipe to Manhole Seal: Conforming to ASTM C923. Gasket shall be cast integrally in manhole wall.

- Existing Structures: Pipe shall be provided with an elastomeric plastic concrete manhole adapter as manufactured by Fernco or equal.
- All material must be approved by the Authority's Engineer.

f. Castings: Conforming to ASTM A 48, Class 30 B.

g. Brick: Conforming to ASTM C-32.

6.4 PUMPING STATIONS – TECHNICAL STANDARDS

6.4.1 General

1. All pump stations to be dedicated shall be the submersible type provided with emergency generator and automatic transfer switch.
2. All Authority owned pump stations shall be designed based on criteria provided by the Authority Engineer.
3. Provide three (3) copies of the pump station operations and maintenance guide including, but not limited to:
 - a. Certified pump curves.
 - b. As-built plans of the pumping station.
 - c. Suggested maintenance schedule.
 - d. Complete and detailed schematics of all electrical systems and controls.
4. Provide minimum four hours of manufacturer's training to Borough of Conshohocken Authority personnel.

6.4.2 Site Plans

- a. Provide minimum driveway length of 40' from right-of-way line to gate. Minimum driveway width shall be 16'.

6.5 PLANS, PROFILES, AND SPECIFICATIONS OF ALL PROPOSED FACILITIES

6.5.1 Format

Plans shall be of uniform size 18" x 24", 24" x 36" or 30" x 48" with a 1/2"

border on top, bottom and right side, and a 2" border on the left side, the last one for binding. All sheets shall be numbered. Drawing scale shall be 1" = 30' or larger (i.e., 1" = 20').

6.5.2 General

The following is a list of information that must be shown on the plans as a minimum:

- a) Existing and proposed sanitary sewers.
- b) Existing and proposed storm sewers and/or other storm water management utilities either existing or proposed easements
- c) Existing and proposed utilities.
- d) Topography.
- e) Existing and proposed streets.
- f) Tributary areas.
- g) True and/or magnetic north.
- h) Outbound line/property line.
- i) Title, date and scale.
- j) Areas from which sewage is to be pumped shall be labeled clearly.
- k) Pipe profiles.
- l) Manhole and pipe trench details.
- m) Flood way
- n) Municipal boundaries
- o) Any other information the Authority Engineer deems necessary

6.5.3 Elevation

All elevations shall be based on U.S.G.S. datum and tied into a minimum of one U.S.G.S. monument in the Authority's discretion. The Authority Engineer may, upon its sole discretion, approve the use of a local benchmark.

6.5.4 Distances, Grades and Sizes

The distance and stationing between manholes, grades, sewer pipe sizes, elevations and materials shall be shown on the plans. Arrows shall show the direction of the flow. The maximum distance allowed between manholes is 500 feet, or whenever the sewer pipe changes direction, or as required by the Authority Engineer is its sole discretion.

6.6 PROPERTY TRANSFER

1. Applicant shall provide legal description for property to be transferred to the Borough of Conshohocken Authority, if applicable. All property corners to be set with concrete monuments.

2. Applicant shall file easements with County. Minimum sanitary sewer easement width is 25'.

6.7 INSTALLATIONS STANDARDS

- a. Install materials in accordance with the following:
- b. All materials shall be installed in accordance with the details included in the appendices.
- c. All materials shall be as-built and tested in accordance with Section 7 of the Rules and Regulations.
- d. The general sewer main installation notes listed in the appendices shall be incorporated into each drawing set showing sewer main work.
- e. The interior of all pipe shall be thoroughly cleaned before being lowered into trench.
- f. All sewer mains systems shall be watertight with all visible leaks being repaired.
- g. After cutting PVC pipe provided beveled angle on spigot end of pipe.
- h. Unless otherwise approved by the Engineer, no pipe couplings are permitted between gravity sanitary sewer system manholes. For new construction, no changing of pipe materials is permitted between manhole sections.
- i. Under no circumstances shall pipe be laid when trench conditions or the weather is unsuitable for such work.
- j. All gravity sewer mains shall be installed with the aid of a laser.
- k. Within pump station wet wells all bolts and nuts shall be either Type 304 or 316 stainless steel.
- l. Minimum compressive strength for concrete shall be 4,000 psi. Concrete thrust blocks shall be installed on all force main bends greater than 10 degrees and at all tees, wyes, caps, valves, reducers and wherever else required.
 1. Connection to Existing Manholes: Core new opening in manhole, place the pipe stub to the inside face of the manhole and make a watertight seal around the stub with non-shrink grout. Modify the existing channel to accommodate the new pipe.
- m. All work shall be conducted in accordance with both OSHA Regulations and confined space procedures.
- n. All excavations shall be adequately guarded so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Borough and the Authority.

END OF SECTION