

TRUNK SEWER DESIGNS AND ESTIMATES

Designs

Units of sewage flow derived as indicated have been applied to the appropriate areas within the different drainage sections. Tabular statement of the computations are included upon accompanying sheets.

In selecting sizes to accommodate the anticipated flow, it has been necessary at times to follow quite flat gradients in order to adequately serve outlying areas and at the same time secure discharge into the river. Pumping has been avoided although drainage from the extreme north end of Earl Street can be from ground level only.

In the pipe sizes velocities have been held generally to a minimum of 2 feet per second with the sewer flowing full. In the Tuscarawas Trunk, this has been decreased to 1.5 feet per second. A coefficient of roughness, $N = 0.015$, has been used throughout.

Although it would be desirable to increase the minimum velocity, such cannot be effected without resort to pumping. Pertinent to the matter of velocities in these sewers are the following facts:

- 1: The sewerage system of Massillon is free from connected inlets which would discharge street washings and sediment;
- 2: The industrial wastes of Massillon include but little solid matter; wash water predominates.
- 3: The city is now accustomed to the use and care of sewers on flat grades.

These facts are held to warrant the velocities employed.

Pipe sections of the trunk sewers have been proportioned for an excess 50 percent beyond the computed requirements. In other words, they are designed to run about 0.6 full at the maximum rates of flow. In the case of the Tuscarawas, or main collector trunk equalization of flow has permitted reduction of the ratio between capacity and total flow.

The computation tabulations attached show the facts of velocity and capacity at different points indicated.

River crossings, where called for have been planned as three pipe inverted siphons - vitrified pipe encased in concrete and provided with cleanout sumps. Additional fall has been allowed at these points to maintain velocities during low flow. For present needs it will be found desirable to seal one of the siphon pipes,