

Fig. 3 shows the connection of the Pape Avenue Storm Sewer with the Danforth Avenue Storm Sewer. Fig. 4 shows cross-sections of the new Pape Avenue sewer.

The usual borings were taken along the line of sewer, and very hard blue clay was found at the elevation of the sewer, up to a point about 500 feet north of Danforth Avenue (north being toward Bee Avenue; see Fig. 1). North of this point, wet sand was found; therefore, two designs were adopted, one with circular base for good ground and the other with a square base to be used where soft ground was encountered.

Construction

Work was commenced at the corner of Pape and Lipton Avenues, station 3+00, where shaft No. 1 was sunk and tunnels carried north and south. The excavated

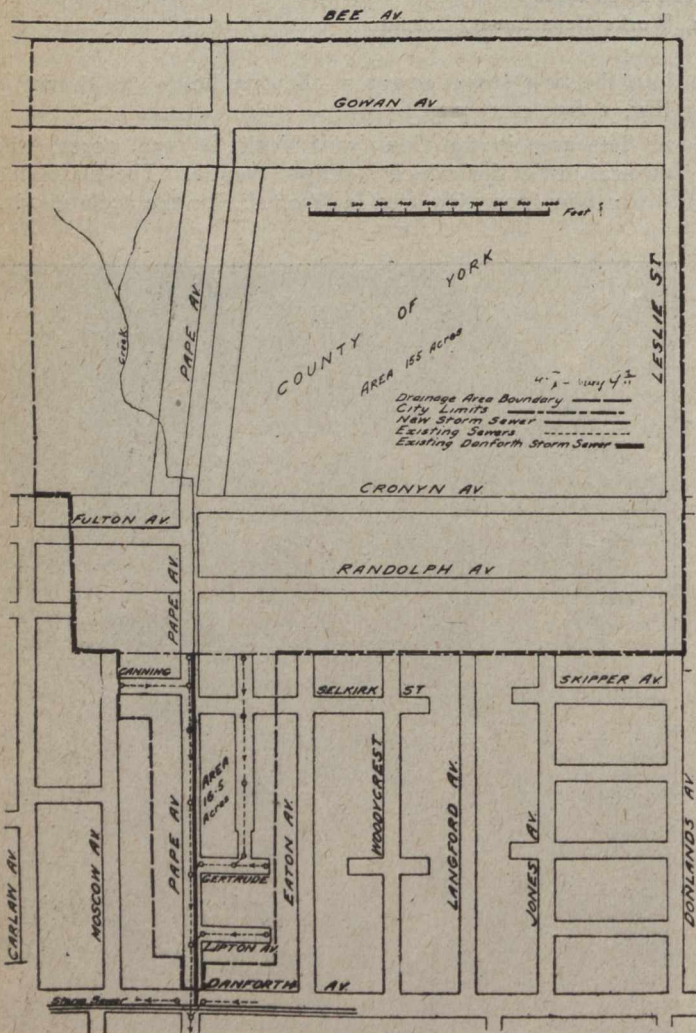
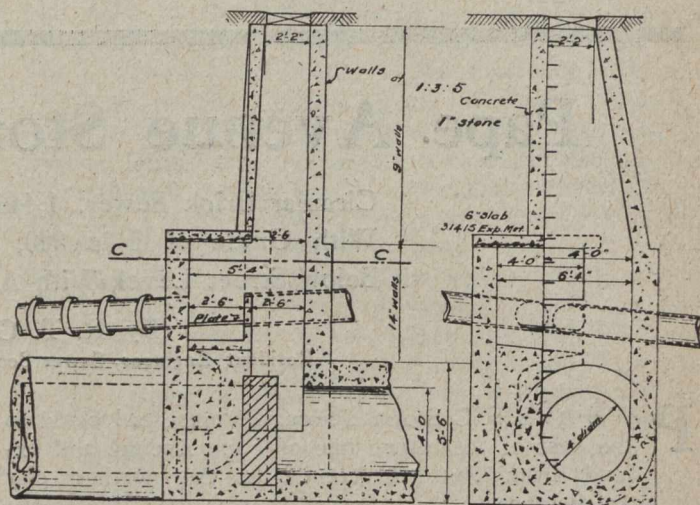


Fig. 1—Plan of Drainage Area

material was conveyed to the shaft in cars, hoisted by a derrick, dumped into wagons and carted to a city dump for use as "fill." The construction material was carried into the heading on the same cars. The clay was so hard that it necessitated the use of dynamite. Very little timbering was required, but if the clay was exposed to air for any length of time, it would shell off in large pieces, so two or three crown planks were used for protection of the workmen.

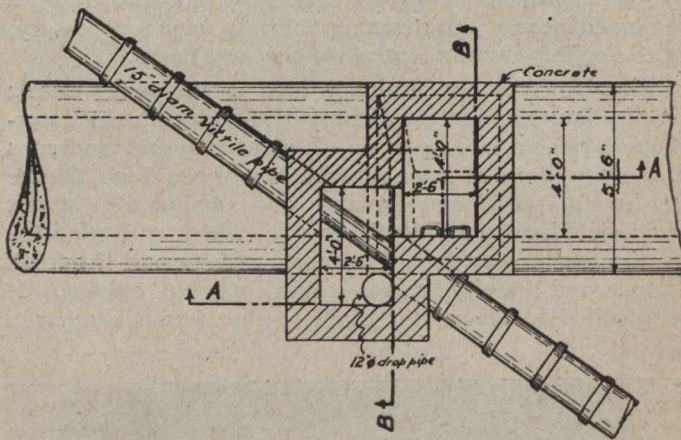
After the south heading had been driven to the end, a drop connection was made in tunnel with the existing storm sewer on Danforth Avenue.

In the north heading it was found to be too expensive to continue operation after station 4+95 was reached, as the ground changed very rapidly from the hard clay to wet sand. It is said that at one time a creek ran southeasterly across Pape Avenue at that point. The remainder of the work, 950 lineal feet, was carried on from



Section A-A

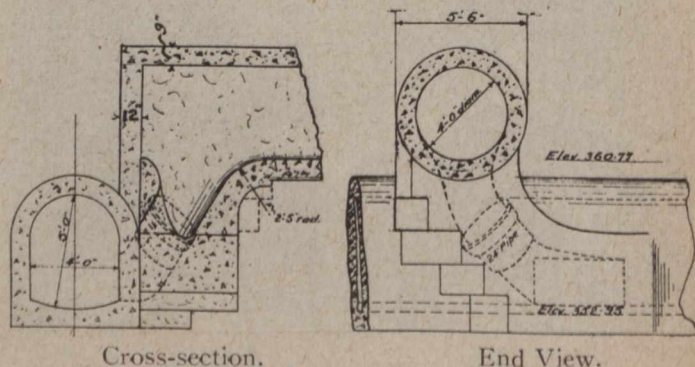
Section B-B



Section Plan C-C

Fig. 2—Overflow Chamber on Gertrude Place

station 8+85 where shaft No. 2, 12 ft. x 10 ft., was sunk; but on reaching the elevation of the arch of sewer, it was found that the sand was very wet and that it would be almost impossible to do any tunnelling without the aid of compressed air. It was decided to install an air compressor, and the shaft was enlarged to 65 ft. x 10 ft., to allow for the construction of locks. In the last seven feet of excavation, tongued and grooved sheeting was used,



Cross-section.

End View.

Fig. 3—Connection of Pape Avenue Storm Sewer with Danforth Avenue Sewer