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SOME COSTS OF SEWER WORK

SEWER WAS BUILT IN THREE SECTIONS—IN TUNNEL, IN OPEN CUT FOR CONCRETE AND BRICK, AND IN OPEN CUT FOR TILE

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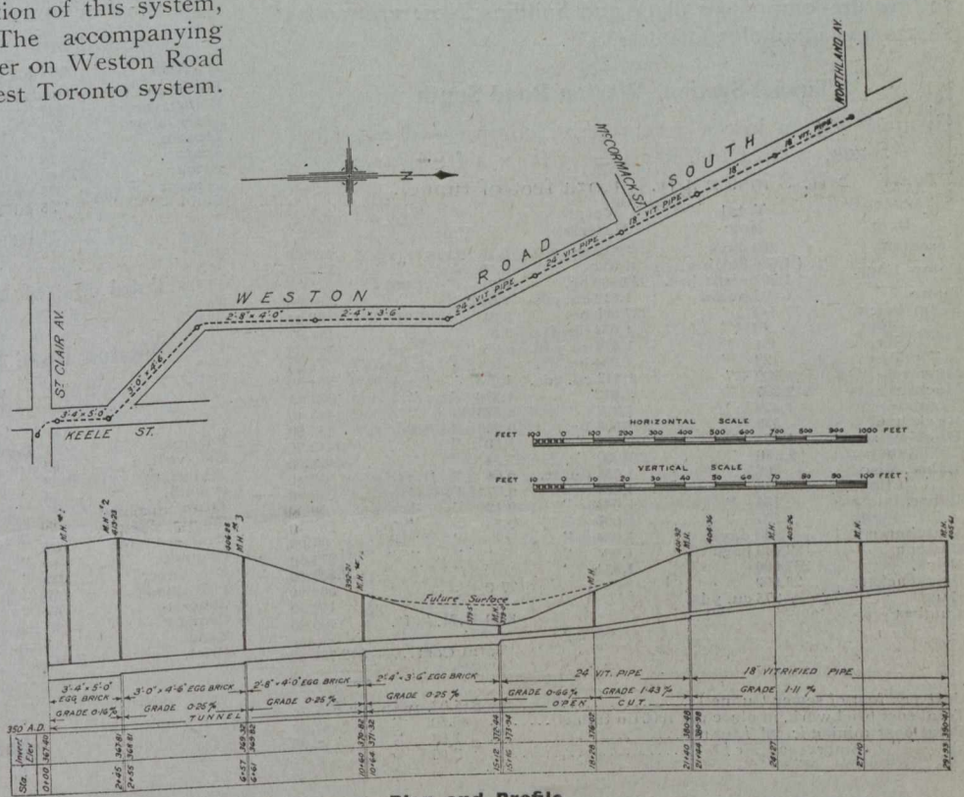
IN former issues of *The Canadian Engineer** a series of articles has appearcd dealing with the "West Toronto Sewer System," lately completed at a cost of $2,000,000.

A general sketch of the system was given, a description of the outlet for storm water to the lake and a description of the stand-by tanks where this storm water is separated from the sewerage. Compressed air, which was used extensively in the construction of this system, was also discussed in this series. The accompanying plan will show the location of the sewer on Weston Road South and its connection with the West Toronto system. As will be seen, it serves a part of the abattoir district and discharges into the Woodville Avenue sewer.

This sewer on Weston Road south is interesting, not because of its costliness, nor because of any great difficulty met with in the work, but because it was constructed in three sections. Part of it was built in tunnel, part in open cut for a concrete and brick sewer, and part in open cut for tile pipe, thus requiring a different organization for each part. The accompanying section shows the reason for this division into three parts. As will be noted, the sewer was built in tunnel where it was far beneath the surface of the ground and in open cut where the street dipped down to cross a ravine, bringing the sewer near the surface of the ground. The lengths of these three sections were as follows: 1,054 feet were built in tunnel; 456 feet were built of brick and concrete in open cut; 625 feet were 24-in. and 851 feet were 18-in. tile pipe built in open cut.

The tunnelled portion of the sewer passes through ground which was found to contain water to the depth of about two feet in the bottom of the tunnel. Compressed air was accordingly resorted to in order to drive it out while the work was being done. From three to ten pounds was found sufficient to accomplish this, but owing to the loose nature of the ground, much air escaped and the necessary pressure was both difficult and costly to maintain. The contractors, Messrs. Jennings and Ross, decided to construct the tunnel from the small or head end since it was nearer to the surface. The tunnel was built in three sizes and all from one heading. A single lock was built in open cut at No. 4 manhole, where the tunnel approached nearest to the surface, and so necessitated the minimum amount of excavating. Another lock was built at No. 3 manhole—this one in tunnel. In this



Plan and Profile.

case, the shaft was sunk after the lock was built. Seeing that the finished sewer would be small, the inner of the three rings of brick was left out temporarily to facilitate the work. When this inner ring was later put in after the other two rings were completed, a small pipe or hole was left through it every 2½ feet along the crown. When the inner ring had set, grout was pumped in through these holes to fill up the small shrinkage crack which necessarily appeared above the inner ring.

Where the street dips down to cross the ravine shown in the section above, the sewer was, as we have stated, built of brick and concrete in open cut. The ex-

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