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SOME IDEAS IN SEWER WORK

THAT HAVE BEEN FOUND TO INCREASE THE EFFICIENCY OF THE WORK DONE BY THE SEWER SECTION OF THE TORONTO DEPARTMENT OF WORKS.

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IN the natural course of events, in sewer construction in the city of Toronto, a few ideas have been developed which, although not entirely new, are greatly in advance of methods formerly used. Although these new schemes have not entirely eradicated the faults which they are intended to correct, they have proved efficient in 99 per cent. of the cases where they have been used. Accordingly, they have been universally adopted in the city. The more important of these developments are detailed herewith.

Canvas Covers.—In the case of tile-pipe sewers in wet trenches it was found almost impossible to prevent leaky joints. The universal practice is to place a rope of gaskets around the spigot end of a pipe, and when this pipe is pushed home into the socket of the pipe previously laid, the gasket is pushed into the back end of the joint, thus sealing the opening. The remainder of the joint is then filled with neat cement. In a wet trench this cement will be washed out unless measures are taken to prevent it. In some cases grass ropes, sods, clay ropes, pieces of burlap, etc., are wrapped around the joint; but they require a great deal of labor and prove successful only where there is a small amount of water present.

The necessity thus presented itself of finding a method which would require less labor and be efficient in all cases, including the most difficult; that is, in running-sand trenches.

Canvas covers were designed, were tried out, and upon proving successful were put into general use. These covers, made of medium weight canvas, are turned under on each side, making a $\frac{3}{4}$ -inch hem through which No. 14 soft iron wires are passed. One side is fastened (by tightening the wire) behind the collar of the pipe before it is lowered into the trench, and the other side is turned inside the collar. (See Fig. 1.) When the next pipe is

ready to be placed, this side is pulled out, and when the joint is made, is fastened over the spigot end. Thus the joint is completely covered and protected. (See Fig. 2.) A different width and length of cover is required for each size of pipe. Fig. 1 shows how efficient are these covers. These covers were invented and designed by Mr. Worthington, chief sewerage engineer, Toronto, as was also the template described below.

Template.—In Toronto, as in many other places, the Works Department requires 3 inches of concrete around all sizes of tile pipe over 12 inches in diameter. It has been found difficult to get the pipe-layer always to trim the sides of the trench so as to get a uniform 3-inch thickness of concrete. Most of these men are foreigners and do not clearly understand when the inspector requests them to trim the trench properly. A collar or template goes over the pipe behind the bell and always shows clearly the width of trench required to give the necessary 3 inches of concrete around the pipe. The body of the template consists of four pieces of wood, each $2\frac{3}{4}$ inches wide by $\frac{7}{8}$ inch thick, the length depending upon the size of the template which, of course, depends upon the size of pipe. Two of these pieces are straight, for the sides.

The two others, for the top, are cut so as to form a semi-circle. A light angle-iron $\frac{1}{8}$ inch x $\frac{7}{8}$ inch is placed around the inner side and the outside is covered by a $\frac{1}{8}$ -inch steel strap $\frac{3}{4}$ inch wide. This outer strap is raised at the top to form a handle.

Service Supports.—Where a trench is opened in a built-up street, there are always numerous gas and water services crossing the trench. These must be supported. If they are not, a sag will invariably occur when the weight of the back-fill comes on top of them. When these services are of iron, a low spot is formed and probably they will pull out at the main, thus causing a leak. In



Fig. 1.—Showing Canvas Cover in place on bell end of pipe, ready for spigot end of next pipe. This view shows the efficiency of these covers. Note the water in the trench, kept out of pipe by the covers over the joints in background, which are concealed under 3 inches of concrete.