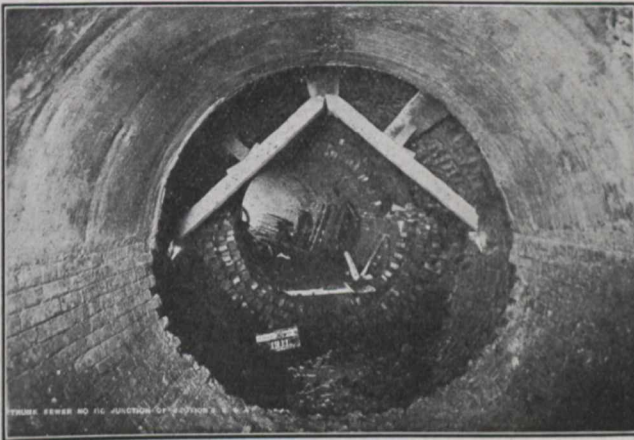


The Canadian Engineer

An Engineering Weekly

TORONTO MAIN DRAINAGE WORKS.

It is a realization of not so much the present needs of a city as her future requirements that leads to the undertaking of most civic improvements. In thus forecasting the future of the city of Toronto some three years ago it was seen that, at her present rapid rate of growth, it would soon be essential to provide some means of sewage disposal to improve the existing and, what had already become, unsanitary conditions prevailing along the waterfront.



High Level Interceptor, A Junction in Tunnel.

Lake Ontario, into which, under the present conditions, crude sewage is being discharged, is the source from which the city's water supply is being drawn. In spite of the fact that a large body of fresh water forms as efficient a natural sewage purifier as can be found, unmistakable evidence of contamination had been discovered in the water drawn from the city taps, although the intake of the waterworks system is located more than two miles distant from the nearest sewer outlet. Three-quarters of the city's sewage emptying as it does into the restricted area of Toronto Bay, overtaxed the oxidizing power of the water to such an extent that nuisances of a disagreeable character were created. The same objectionable conditions prevailed in a less degree along the shores in the east and west ends of the city, injuring their value as sites for recreation parks and summer residences, for which purpose they are so admirably suited. It was therefore decided to relieve these conditions and doubly safeguard that all-important feature—the public health—by constructing a sewage disposal plant and a water filtration plant. It is with the former that this paper deals, a brief description of its design, and method of construction appearing below.

The system as outlined by the experts consulted on the question, Mr. Rudolph Herring, of New York, and Mr. John D. Watson, of Manchester, England, and as approved and finally adopted by Mr. C. H. Rust, City Engineer, included the construction of two trunk sewers—the high and low level interceptors—a sewage pumping station, sedimentation tanks and submerged outfall sewer.

Toronto is at present drained by the combined system, the sewers carrying off both surface water and sanitary sewage. The direction of the flow is generally from north to south, each principal street carrying its own sewer which empties at its foot into the lake or bay. To convey this sewage to one point for the purpose of disposal, it was necessary to construct intercepting sewers, located so as to cross the line of all important existing sewers, at which point each would be relieved.

In order to secure a gravity flow for the major portion of the sewage, the high level interceptor was located as far south as possible, and still retain a continuous grade from the most westerly existing sewer to the disposal plant in the east end of the city. In order to catch all that was left by the high level interceptor, the line of the low level interceptor was located as near the waterfront as possible. This sewer carries the sewage by gravity to the pumping station, where it is raised by pumps to the level of the high level interceptor. The channels of the two sewers join after passing through the pumping station, and the sewage flows into the settling tanks. In its passage through these the sewage leaves behind a percentage of the solids contained therein, the effluent being drawn off through the outfall sewer and discharged into the lake.

The Method of Interception.

To intercept the sewage in the existing sewers, the plan, as adopted throughout the high level and in some cases on



High Level Interceptor, Open Trench Work.

the low level interceptor, was to construct a bellmouth chamber and weir. When a good fall could be obtained into the interceptor, the chamber was located just north of it, and the weir built across the bottom thereof. The sewage is deflected by the weir and conveyed through a vitrified connection pipe into the interceptor. The flow through this pipe can be regulated by a gate, so that an excess of storm water can be excluded and allowed to continue on down the sewer.