

"Construction of the Precast Reinforced Concrete Submerged Sewer Outfall at Lakewood, Ohio,"  
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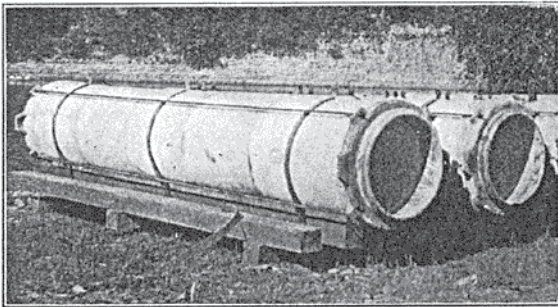
Construction of the Precast Reinforced Concrete Submerged Sewer Outfall at Lakewood, Ohio

There was recently put in service a reinforced concrete pipe outfall sewer at Lakewood, Ohio, that is laid under the water of Lake Erie. This line is laid just east of where Rocky river empties into the lake, and carries the treated sewage from the Imhoff tanks recently completed to take care of the sewage of the city of Lakewood. This line is the first built of its kind.

The outfall from where it connects with the land section to the outer end is 1,500 ft. long, consisting of 1,100 ft. of 36-in. pipe and about 200 ft. each of 30-in. and 24-in. pipe, with 4-in. holes about 9 ft. on centers, through which the sewage is diffused. In case the flow becomes too great to pass out through these holes, there is provided a flap valve with weights on the end pipe.

*The Pipe*

The pipe for this line was manufactured at a plant established near the freight yard of the Nickel Plate railroad at Rocky river. It was made in short sections and hauled to the water's edge and assembled into 22-ft. 2-in. lengths; each sec-



BUILT-UP SECTIONS OF 36-IN. PRECAST REINFORCED CONCRETE PIPE FOR SUBMERGED SEWER OUTFALL AT LAKEWOOD, OHIO.

tion consists of three pieces of pipe 4 ft. long and two pieces 5 ft. 1 in. long. The latter have special cast iron flanges molded in, one to form the bell end of the completed long section and the other the spigot end. The spigot end casting has a groove, in which a lead pipe is placed to act as a gasket. Some of the completed long sections are here illustrated.

The short lengths were assembled on timber cradles, as shown, and after being bolted together the joints between the short sections were made. The long sections were then ready to be laid. The 30-in. and 24-in. pipe were built up in the same way as the 36-in.

The reinforcement used was triangle mesh of the American Steel and Wire Company. The concrete was 1 part cement, 1½ parts sand and 2½ parts stone. The pipe was designed to stand an internal pressure of 20 lbs. to the square inch.

*Placing the Sections*

The 22-ft. 2-in. sections were taken out to the place where they were to be laid on derrick scows, lowered into place, and a diver connected them together on the bottom of the lake. About five sections, or a little over 110 ft., was the average length laid per day.

This work was under the direct charge of Mr. E. A. Fisher, city engineer, and Mr. R. Winthrop Pratt, consulting engineer. The pipe was manufactured by the Lock Joint Pipe Company, of Ampere, N. J., and was laid by the American Construction Company, of Cleveland, Ohio.