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New Intake and Sedimentation Basin at Sarnia

Infiltration Scheme Abandoned—One of Nineteen Concrete Basins Used for Screen House and Others for Sedimentation—Wooden Form for Intake Structure Sunk to Depth of 47 Ft. and Filled with Concrete—Further Improvements Proposed

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IN 1914 a large sum of money was spent by the city of Sarnia, Ont., on an infiltration scheme and pumping station at Point Edward, about two miles from the city. After the work had been completed, it was found that sufficient water could not be obtained for the ordinary needs of the city. The infiltration system consisted of 19 reinforced concrete basins, each about 25 by 25 by 25 ft., inside dimensions. The first four basins were built as units on top of the ground, and excavation proceeded inside each basin, the structure gradually settling to its final position. The walls of these basins were 2 ft. thick. The sixth basin (see Fig. 7) was placed 25 ft. away from the fourth basin, and concrete slabs were placed on edge from basin No. 4 to basin No. 6, thus forming basin No. 5. From this point to basin No. 18 this method of providing alternate basins with slabs for the sides was followed. Basins Nos. 18 and 19 were built as units. Thus there are 19 basins, each approximately 25 ft. square inside. A reinforced concrete roof was placed over the basins from end to end, but no bottom was built in the basins, the

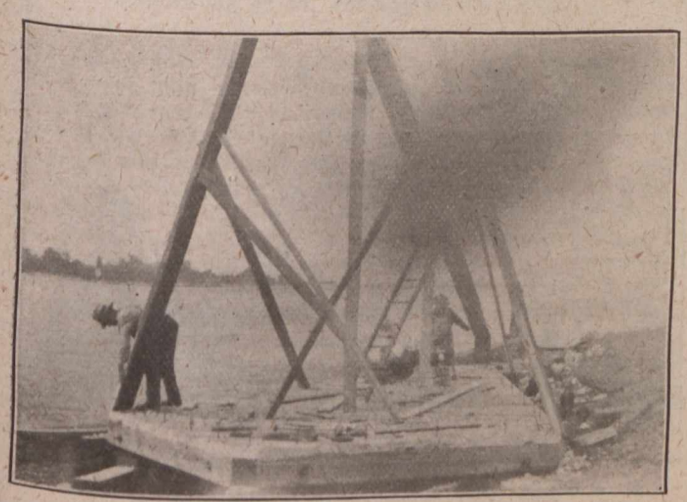

FIG. 1—HEAVY TIMBER FOUNDATION FOR INTAKE STRUCTURE

total length of which is 523 ft. The distance from basin No. 1 to the shore of the St. Clair River is about 110 ft.; from basin No. 19 to the river is but 50 ft. Fig. 7 indicates the general lay-out of the infiltration basins, pump-house, etc.

In the fall of 1918 the writer was appointed consulting engineer to report on the changes necessary to provide an adequate supply of pure water for present and future needs. He recommended that a direct intake be extended into the river opposite basin No. 14, and that basin No. 14 be converted into a screen house (provided with a superimposed building), and that openings be cut in all the cross-walls of the basins in order to convert them into a sedimentation basin, and to allow of a continuous flow from end to end—that is, from basin No. 19 to the pump-house.

Basin No. 14 was provided with a concrete floor, and was divided into compartments, as shown in Fig. 8. Two intake pipes, each 24 ins. in diameter, were laid from the

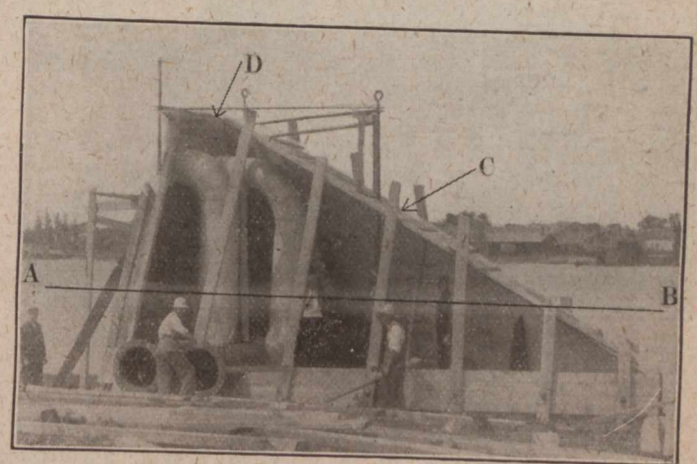

FIG. 2—SIDE VIEW OF INTAKE STRUCTURE, WITH PIPES IN PLACE

river into basin No. 14, one of these being into compartment A and one into compartment B. A 24-in. valve, with extension spindle, and provided with a pedestal on the floor above, was placed on the end of each intake pipe. Thus, by operating these valves, the water can be let direct into compartment A or B.

Coarse screens, each 4 ft. wide by 19 ft. high, were placed in steel channel gains between compartments A and C and between B and C. Both of these screens are in two sections, each section being 9½ ft. high. Duplicate gains are provided between the compartments. The screens are substantially built of channels and angle-iron frames, with ⅜-in. vertical rods at ¾-in. centres, and are interchangeable. The screens were galvanized after they were fabricated.

From compartment C the water runs through a 30-in. sluice-gate into a 30-in. reinforced concrete pipe, which discharges in basin No. 19. Openings 19 ft. wide by 6 ft. high were cut through the cross walls of all the basins except basin No. 14, thus providing a long sedimentation basin with a uniform flow from basin No. 19 to basin No. 14, and from basin