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WATER SUPPLY AND POWER AT MEDICINE HAT

A UNIQUE MUNICIPAL DEVELOPMENT COMPRISING WATER SUPPLY AND FILTRATION AND GAS-GENERATED ELECTRICAL POWER IN ONE INSTALLATION.

THE city of Medicine Hat has entered upon an extensive scheme for the supply of water and also of light and power, to be increased in capacity from time to time as the growth of the city demands. The project was undertaken in 1912, and practically completed in the fall of 1913. The accompanying illustrations refer to some of its important features.

The scheme as adopted by the city included a new intake, a mechanical gravity filter plant, systems of low-lift and high-lift pumps, a service reservoir and new lines of water mains, and a power plant with gas-fired boilers

of the West, to great variation in flow and also to considerable turbidity. At Medicine Hat the river level varies over 30 feet, and in seasons of dry weather it is very shallow. Accordingly, the new intake was located in midstream and both intake and pipe line were arranged to avoid troubles from floating ice. The intake pier, the general design of which is shown in Fig. 7, is a low concrete structure with a gently sloping up-stream face carried below the river bed. The inlet is in the outer face parallel to the direction of the current, and covered by a removable screen, carried in grooves as shown.

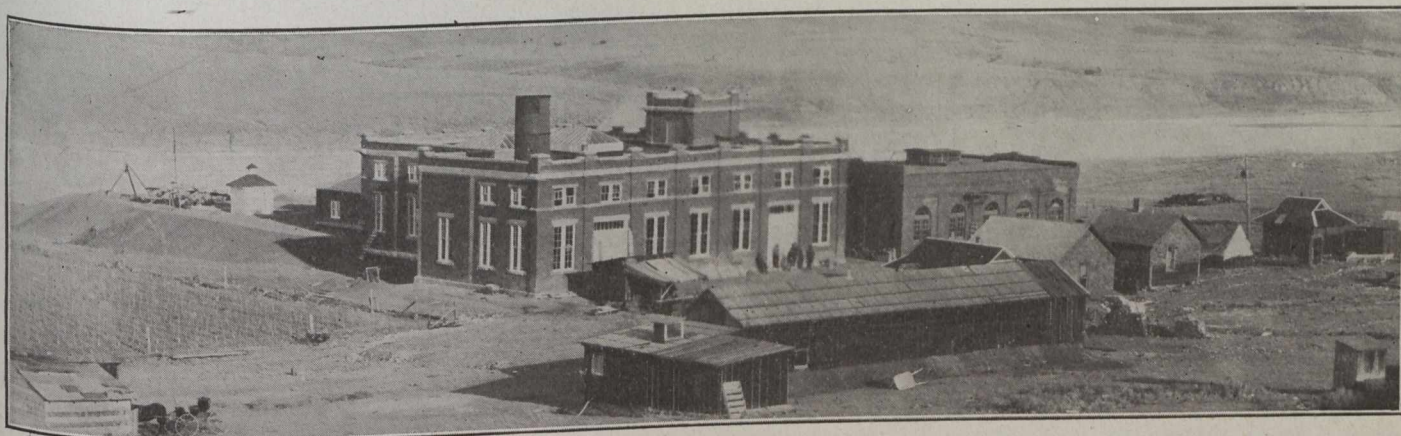


Fig. 1.—General View from Southwest of the Plant at Medicine Hat for the Supply of Water and Power.

to drive a set of turbo-generators for the production of power.

Prior to the installation the city was served by a pumping and filter plant on the bank of the South Saskatchewan River, which is the only source of its water supply, on a site in the business section of the city. Power was derived from a plant farther up the river. Equipped with two 125-kw. alternating current generators with both gas and steam engine drive, the fuel being natural gas. The pumping outfit delivered to a 400,000-gallon standpipe, whose elevation proved insufficient to serve the higher parts of the rapidly extending city. When it was deemed necessary to improve the water supply service it was considered advisable also to add to the supply of power at the same time. The result is a combined power, pumping and filter plant, which has been erected on a site adjacent to the previously existing power plant. The locations of the old and new plants are shown in Fig. 2.

The South Saskatchewan River, from which the city derives its supply, is susceptible like most prairie rivers

This inlet serves a 30-inch cast-iron pipe entering the pier below the river bed and extending in a trench in the river bottom to the suction well on the bank. The cast-iron covered secondary inlet, shown in the intake in Fig. 7, is an emergency opening covered under ordinary conditions, but designed for easy removal by exterior ring handles when necessary. Provision is made for blowing off this cover by back pressure as well. It is for use only if the normal inlet is rendered unfit for service by ice or debris.

All the work in connection with the intake was done during the winter of 1912-13, when the ice on the river had a thickness of 2 feet or more. The excavation, which was sand, gravel and small boulders and very difficult to handle, was taken out with an orange-peel bucket operated from the ice and manipulated when necessary by a diver. The trench from the river bank to the intake location was excavated about 4 feet wide and about 1 foot below grade, surplus earth being hauled away on sleds.

Two-pile bents were driven at about 9 feet centres on each side of the trench, one pile on each side of the