

located on all summits, there being 9 of them on the entire line. There are 4 gate valves at approximately uniform distances, but located in sags wherever possible. There is also a gate valve in the cast iron pipe on the intake side.

The buildings, intake works, manholes, etc., for the line were built by the bridge and building department of the Canadian Pacific Railway, under the superintendence of Geo. Armstrong, bridge and building master. The contract for ditching, laying and backfilling was awarded to the J. A. Broley Co., of Fernie, B.C. The contractor

The pipe was prepared for driving by filing the spigot end so as to allow the pipe to enter the sleeve easily. This filing also prevented the end of the pipe from splintering, and the fibres from turning back and causing leaks. After filing, a little gear grease was applied to the spigot to aid in driving; the sleeve end of the pipe was also carefully inspected to see that no lumps of pitch adhered to the wood, as this is also a possible source of leakage.

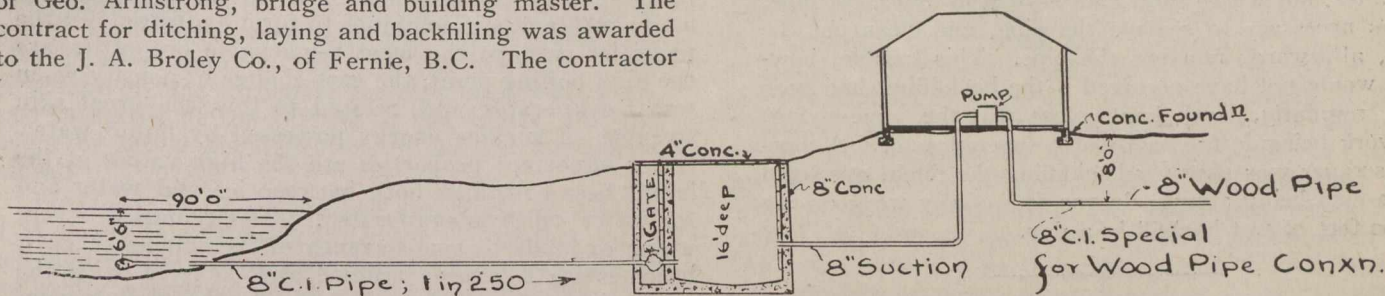


Fig. 1.—Section Showing General Arrangement of Plant and Piping.

started work on the ditch close to Rock Lake and worked toward town. Harvesters' cabooses, drawn by horses, were used as cook and sleeping quarters. An Austin drainage excavator fitted with caterpillars was used for ditching. At the start it was not very successful, owing to the presence of quicksand, which filled in before the pipe could be placed. As a result it was decided to leave all bad places to be finished by hand. When the machine

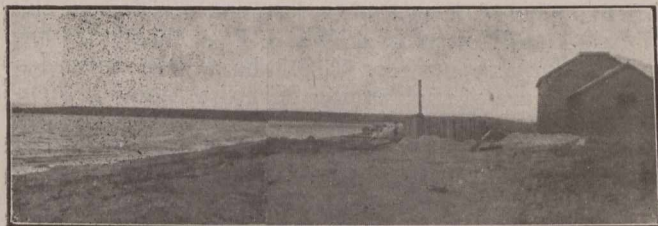


Fig. 2.—Rock Lake and C.P.R. Pumping Plant.

reached higher ground it made better progress, although a great many delays were caused by the bucket chains breaking by being wedged against stones, which were quite numerous in places. As the pipe was so easily laid in the dry places it was often put in during overtime

The longest stretch of pipe laid in one day was 1,629 feet. The number of men actually engaged in driving was as follows: 1 foreman; 1 man filing and greasing spigots of pipe (part of time and tamping part of time); 2 men on surface dropping in pipe (sometimes having to carry pipe for short distances); and 3 men in the ditch driving pipe and removing material left by machine. The men in the ditch also attended to the tamping when held up for pipe or other reasons.

The pipe was driven by a dolly made of a tamarac tie about 5 feet long and ironed on each end to prevent brooming. It was suspended from a chain attached to a plank across the ditch. The pipe was protected by a plug of fir inserted in the sleeve while driving.

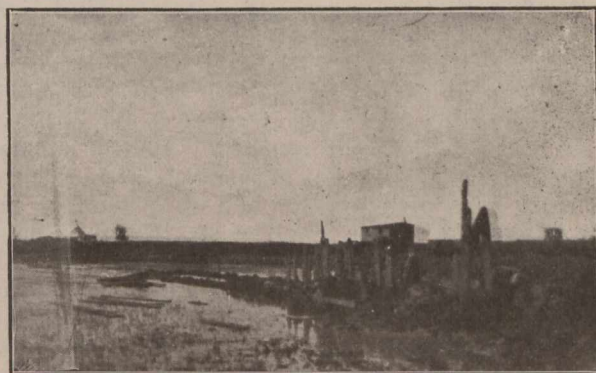


Fig. 4.—Pipe Line Construction Through Water Covered Land.

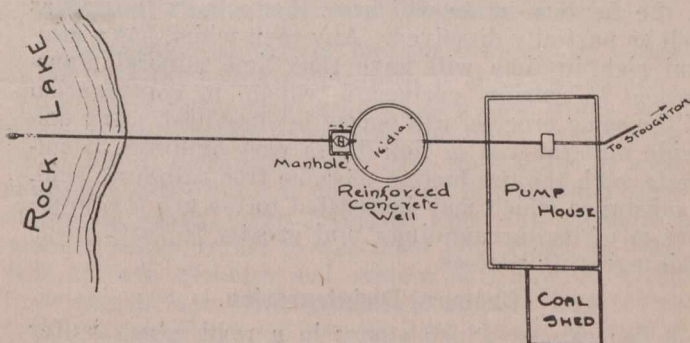


Fig. 3.—Plan of Intake and Pumping Plant, Rock Lake.

after supper, the men working on the wet spots during the regular day. When the machine was digging in sandy soil which was not too closely packed it could make 800 feet a day, but sometimes breakdowns to machinery from the above unavoidable causes would reduce this to one-half the amount.

The wet places were dug by hand, sheet piling being used to hold the bank up. Several methods were used by different foremen, but the best results were obtained by digging holes from 8 to 12 feet long according to the conditions, leaving a space of 2 or 3 feet between. This space was afterwards tunnelled out. By this method less sheet piling was required and as the pipe was laid, the water was dammed in the tunnel reducing pumping to a great extent; generally an ordinary diaphragm pump being all that was necessary—although larger pumps had to be used in several cases.

Where sloughs with water on the surface were encountered the method of procedure was to build a puddle dam about 6 feet on each side of the centre line, and then to pump out the space between, by gasoline pumps. In