

Actual work on the scheme started in the fall of 1913 when parties were put in the field, and an administration and engineering staff established, with headquarters in Winnipeg. The final location was made early in the spring of 1914, and the contract for clearing a right-of-way varying in width from 300 to 500 ft., was let to E. J. Bawlf, of Winnipeg, who completed the work that year at a cost of \$79,360. The acreage cleared was approximately 2,600, with a salvage of 7,900 cords of wood, 349,000 lin. ft. of poles and 14,500 fence posts.

The railroad was completed late in 1914 at a cost of \$1,400,000 and will remain as a permanent feature of the



Movable Concrete Plant

work, as the country hitherto practically inaccessible is rapidly filling up with settlers. The road-bed is substantial and well ballasted, and 60-lb. rails were used throughout. The maximum grade is 0.5% and the maximum curvature is 4 degrees. In the construction of the road the following materials were used: 9,671 gross tons 60-lb. steel rails, 65,600 angle bars, 136,300 bolts, 1,160,000 spikes and 285,000 ties. The railroad was built by the Northern Construction Company. The gross mileage of track is 102.

During 1914 the work of constructing a diversion dyke and a canal was started, and completed in 1915. Formerly the Falcon River, which drains a large area of muskeg country to the west of Shoal Lake, emptied into Indian Bay. This water contains a large amount of coloring matter and it was imperative to prevent this from reaching the waters of the bay. In addition to the dyke, a canal was dug across a stretch of land separating Indian Bay from Snowshoe Bay, and the Falcon River now empties directly into Snowshoe Bay leaving the water in Indian Bay pure and colorless. The material for this work was obtained from a borrow pit nearby, and the rock was quarried from outcroppings on the shore of the bay at the end of the dyke site. The work was done with dinky locomotives and dump cars which were run out onto barges, the material being dumped into the water off the end of the barges. The dyke was built by Tomlinson and Fleming, the final payment amount being \$87,327. The channel was dug by C. G. Anderson, at a cost of \$16,007.

The telephone line was constructed by district forces, the cost being reasonable in view of the fact that the book charges include the cost of much necessary temporary work afterwards abandoned.

In the spring of 1915 work on the aqueduct itself was begun. Contracts for the construction were let as follows:—

J. H. Tremblay Co., Limited, Contract 30, 20.15 miles, \$945,945.

Thos. Kelly & Sons, Contract 31, 17.75 miles, \$1,301,485.

Northern Construction Co. and Carter, Halls & Aldinger Co., Contract 32, 18.20 miles, \$1,268,680; Contract 33, 16.10 miles, \$1,137,010; Contract 34, 13.00 miles, \$1,489,520. Total, 85.20 miles, \$6,142,640.

The size of the aqueduct being built under Contracts 30, 31, 32, 33 and 34 varies as follows, according to the slope on which it is being built,—

Section.	Slope of aqueduct.	Inside dimensions of section.
S	0.11	10' 9" x 9' 0"
R	0.279	10' 9" x 9' 0"
B	0.300	8' 9" x 7' 4 5/8"
D	0.382	8' 3 3/4" x 7' 0"
N	0.480	7' 11 1/2" x 6' 8 1/2"
G	0.600	7' 7 1/2" x 6' 5 1/4"
H	0.684	7' 5 1/2" x 6' 3 1/2"
F	0.744	7' 4" x 6' 2 1/4"
L	1.290	6' 7" x 5' 6 1/8"
C	1.537	6' 4 3/4" x 5' 4 3/4"

Excavation work on Contract 30, which for the most part is through open cultivated land, is being done partly by walking dredges and partly by teams and scrapers. The dredge is supported by four pads set at the corners, with intermediate pads operated with chains and winches arranged in such a manner as to shift the weight of the machine onto the intermediate pads and at the same time moving the machine and the corner pads forward; the weight is then transferred to the corner pads and the intermediates moved forward. The machine straddles the excavation and removes the earth by means of a scoop-shaped bucket which is hinged at the end of a boom.

On Contract 31 the excavation was begun with small shovels; two of these are equipped with extra long shovel arms. Where the excavation is deep, and consequently wide, the shovels are set up on steel frame work which is moved along the trench on track laid on both sides of the ditch. Part of the work on Contract 31 is through soft and boggy country and this year the contractors are using dragline excavators at four camps.



Pouring Inverts

On Contracts 32, 33 and 34, draglines are being used for excavation and backfilling of trench material. The machine stands at the end of the ditch and pulls the bucket and excavated material towards the machine. The bucket is then elevated and the whole machine swings and the dump is formed as desired. The machine is carried on rollers on planks mounted on rectangular pads made of heavy timber. The area of the pad depends upon