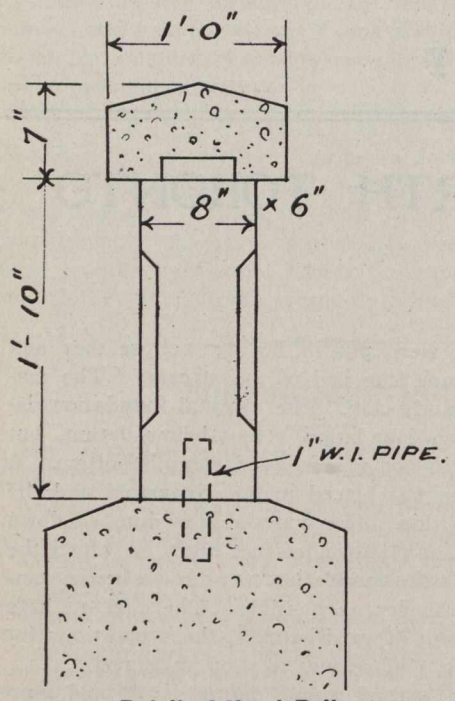
When the abutments were about 4 feet above datum, cracks began to show. These cracks occurred especially where a mark had been made in the surface as with a hoe, or a footprint. As it was thought that the rather heavy rains, experienced about this time, might have softened the ends of the abutments, levels were taken every other day for a while, but these did not indicate enough settlement to account for the cracks.



Detail of Hand Rail.

Tests made of each car load of cement delivered on the work showed good results as to soundness and setting powers. The use of wet concrete was stopped and when a drier mix was used an improvement occurred. The use of gravel without any stone was probably a contributory cause.

The abutments were carried up to within 6 inches of the springing and then the ribs for the centering were put into place. There were ten ribs, made up from 2-inch by 6-inch lumber. No wedges were used. The lagging was 2-inch planed lumber, and was covered with wax paper. The arch was put in all on the same day.

The caps for the posts at the end of the wings and abutments were cast separately with a 1-inch pipe dowel to bond with the mass of concrete. The railings on the parapets were cast separately with two lugs at one end, such as would just give distance between the railway posts. Forms were set up for the large post tops, and two 2-inch by 4-inch scantlings were fastened across in such a way that the small posts could be hung on small pieces of 1-inch board with the bottoms just at the level of the sills of the spandrel walls. Another sill was then formed over the tops and when these set, the railings were securely held.

The forms for the outside walls were removed in one week and the arch forms in four weeks. The face was filled with a grout of 1 cement to 1 sand and all rough places filled with mortar.

The backing was put in by wheel scrapers.

The cost of the construction work when reduced to unit prices were as follows:

Material Delivered at the Works.

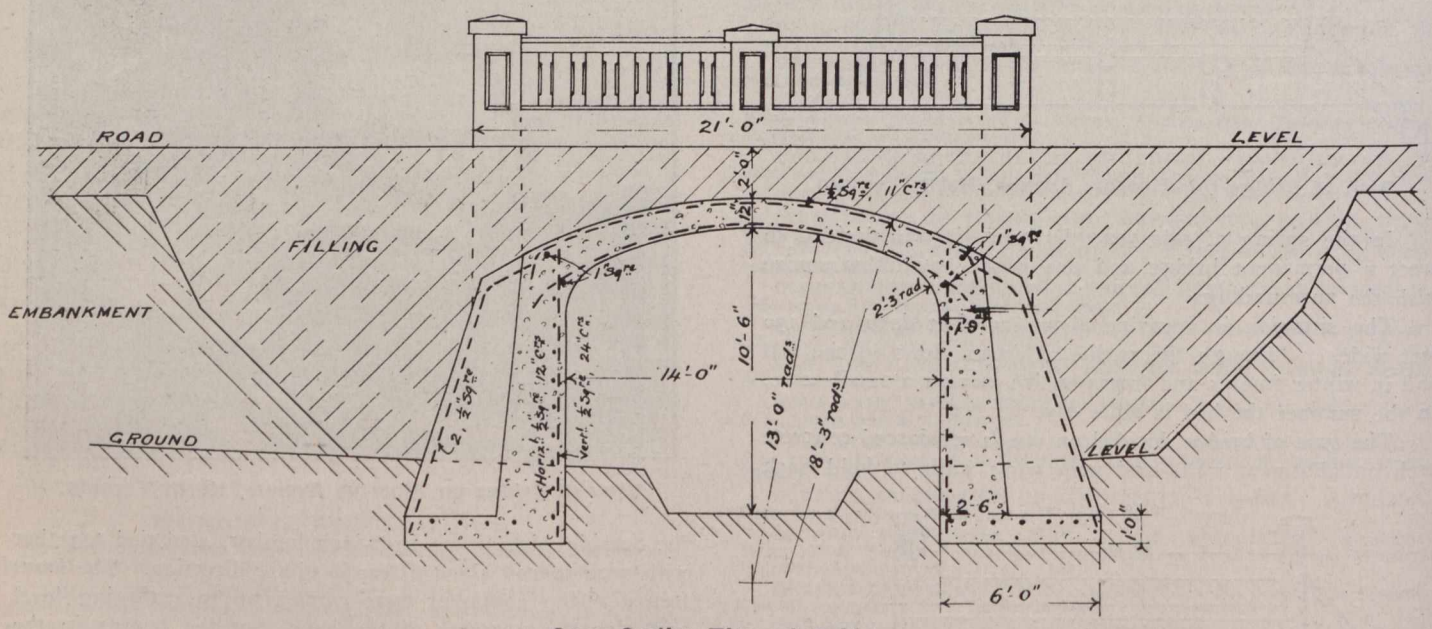
Stone, 2 in., per cubic yard	$ 2.30
Gravel, per cubic yard	2.10
Steel, per lb.	.045
Lumber for forms, per M	38.00

Labor for Work.

Concrete, per cubic yard	$ 1.10
Forms, per cubic yard of concrete	1.25
Earth excavation, per cubic yard	.29

NIPISSING CENTRAL RAILWAY.

The Nipissing Central Railway Company was incorporated under the Dominion Charter in the year 1907. The following is abstracted from the annual report of the chief engineer: It owns and operates a line of electric railway between Cobalt and Haileybury, having a total length of 5.15 miles. The railway is located, in part, on its own right-of-way, and elsewhere on the streets and highways of the Township of Bucke, and the Town of Haileybury. Agreements were entered into with each of the above municipalities, providing for the operation of an electric street railway.



Cross Section Through Bridge.

The T. & N.O. Railway Commission having purchased the capital stock of the Nipissing Central Railway on June 21st, the Nipissing Central Railway was placed under the management of the general officers of the T. & N.O. Railway. The affairs of the two railways are kept quite separate. There is a local superintendent and cashier in charge of the Nipissing Central Railway, reporting to the appropriate officials of the T. & N.O. Railway.

Route.—The Cobalt terminus is at the foot of Argentite Street. The location is in a general north-easterly direction from Cobalt, on private right-of-way on the west side of the