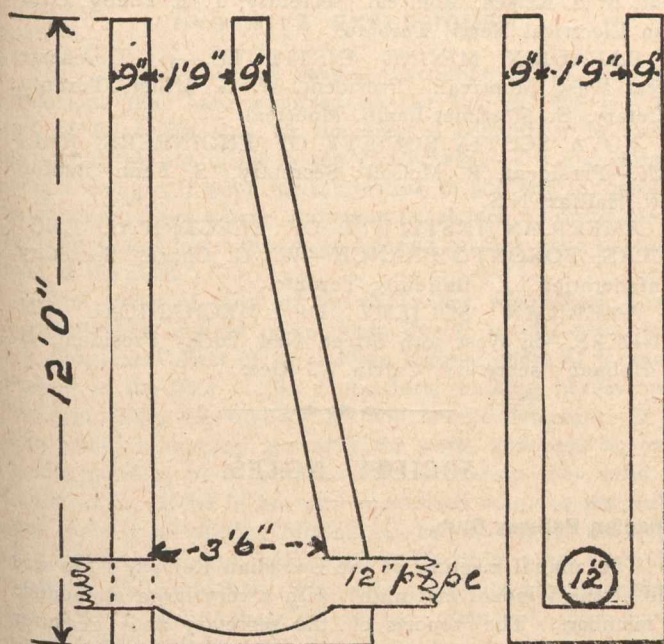


A Page of Costs

ACTUAL, ESTIMATED, AND CONTRACTED.

Cost of Concrete Manhole.

The cost of concrete work is variable. Each unusual condition entering into the work has its own influence. Sometimes it is the cost of material, again it is the cost of erecting forms. Herewith is given an example of actual



Elevation of Manhole.

costs and a detailed statement of how the costs are distributed. From the sketch it will be seen that nothing very unusual in the shape of forms was encountered, the great waste being that the lumber used was so cut up that it could not be used again:—

Lumber for forms (price includes delivery at work),	
300 F.B.M., at \$30 per M.....	\$ 9 00
Labor on forms, 70 hours at 32½ cents per hour....	22 75
Sand and gravel, delivered, four yards at \$1 per yard	4 00
Cement, five barrels at \$2.25 (delivered).....	11 00
Labor, mixing and placing concrete, 13 hours at 22½	
cents per hour	2 92
Total	\$49 67

Total cubic yards concrete in manhole, 4.08 cubic yards, which made the cost per yard of concrete \$12.17 per yard.

Cost of Street Paving in Edmonton, Alta.

Jasper Avenue is being paved with bitulithic pavement with a six-inch concrete base for \$3.45 per square yard. Namayo Avenue and First Street are being paved with carbolinium wood blocks, made by the W. J. Harvey Company, of Vancouver, with six-inch concrete base, at \$3.40 per square yard. The Bitulithic Company, of Winnipeg, have the contract for laying double track electrical railway line on Jasper Avenue, consisting of six inches of concrete, wood block paving and nine-inch concrete girders under the rails; seven-inch 80-pound Lorain Steel Company, rails; track allowance, 18½ feet in width; contract price per lineal foot, \$16.27, including paving. For the same class of construction on First Street, \$11.65 per lineal foot; contract awarded to W. J. Carter, of Edmonton. The same class of construction of Namayo Avenue, but two feet narrower, per lineal foot, \$10.40, W. J. Carter, contractor.

Concrete Bridge.

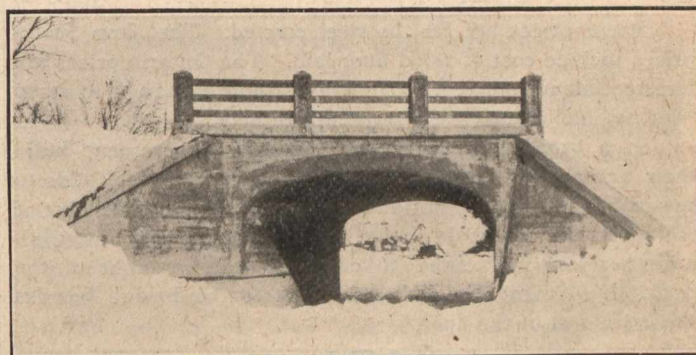
A detailed statement of the cost of a reinforced concrete bridge is given in a report by R. H. Parsons, assistant

city engineer, Ottawa, to the chief engineer, Mr. Newton J. Ker.

The principal dimensions are as follows: Span, 20 feet; length, 46 feet; rise, 4 feet 10 inches; thickness of abutment at springing line, 5 feet 6 inches; thickness of arch ring at crown, 18 inches. The arch is built on a skew of 17 degrees. The arch ring is reinforced with Clinton electrically welded fabric, with 3 by 12 inch meshes and ¾ inch gauge. The reinforcement was placed about three inches above the under surface of the arch at the crown, and is firmly anchored in the abutments by steel rails. The crown of the arch is about eight feet above water level when the water is in the canal. There are four wing walls.

The bed of the creek was excavated until a solid foundation was reached, and on this the forms for the abutments were erected. Considerable trouble was caused by the water from the melting ice and snow, which ran into the trenches, and forced us to pump until the concrete was above the level of the creek bed.

The concrete was mixed in the proportion of 1, 3 and 7 for the main part of the abutment with a fine mixture, 1, 2 and 5 about an inch thick for a facing. The concrete in the arch ring was mixed 1, 2 and 5. The abutments were both brought up to the springing line of the arch and sloped upwards towards the back to form a shoulder for the arch to rest against. The arch itself was built in rings about ten feet wide. Work was carried on continuously on each ring until it was complete. A three-inch layer of concrete was spread over the forms, which had been previously erected, then the Clinton fabric was laid down on this and fastened to the rails in the abutments. The rest of the concrete was then placed in 6 inch layers up to the required thickness. The top of the arch was plastered with cement mortar to make it water tight. In the coping on the parapet walls iron rods were inserted in the proper places to tie the concrete posts for the railing to the coping. The rails were moulded in separate forms, and are 3 inches by 9 inches, and about 9 feet 6 inches long. There are two ¾ inch iron bars about an inch above the bottom of each of them. After the rails had set for a sufficient length of time the forms for the posts were set up, the rails taken out of their forms and the ends inserted in openings cut in the post-moulds in the proper places. These were then filled with concrete



O'Connor Street Concrete Arch.

and allowed to stand several days before the forms were removed. Very little finishing was needed to give the railing a pleasing appearance.

The above work was started about April 1st, 1907, and was completed six weeks later. There was considerable delay on account of bad weather.

Summary of Cost of Concrete Arch on O'Connor Street.

Total cost, including material, labor, excavation,	
etc.	\$4,971 14
Total yardage in arch.....	620 yds.
Average cost per cubic yard.....	\$ 8 02

This is divided in detail as follows:—

Concrete—

Labor	\$ 849 09 or per cu. yd..	\$1 37
Material	2,607 70 or per cu. yd..	4 20

Total . . . \$3,456 79

\$5 57