

## Steel Falsework used in Erection of Quebec Bridge

The erection of the 500-foot South anchor arm of the 2,800-ft. double-track railroad and highway bridge across the St. Lawrence river at Quebec has been finished, and that part of the superstructure is now completed except for some of the field riveting, which will not be done until a portion of the work on the 1,800-ft. channel span has reached a finished stage and conditions of a permanent character have been developed in these trusses. The 500-ft. span has two trusses, 98 ft. deep at the shore end 315 ft. deep at the river end, in vertical planes 67 ft. apart, and weighs about 12,500,000 lbs. Both lower and upper chords are curved to form parabolic segments, and the lower chord is now supported on steel falsework about 150 ft. and 54 ft. above low water level at the shore and river ends, respectively. When the bridge is completed there will be under full live and wind load a maximum vertical pressure of about 28,000 tons on the river pier, while at the anchorage there may be a maximum upward reaction of 7,000 tons.

During the erection of the bridge many of the stresses in the truss members which may eventually receive these extreme amounts were reversed and the total weight of the structure was carried directly by the piers and by the falsework between them.

The falsework, exclusive of a wooden structure, designed simply to temporarily carry the material tracks, consists essentially of two parallel lines of steel viaducts, one line concentric with each truss. It has a total weight of about 1,200 tons, and a height of from 127 to 160 ft. All field connections were made with turned bolts, and it was designed to facilitate its removal from the south side of the river and its re-erection for the other anchor arm on the north side of the river.

The falsework consists of two parallel rows of rectangular 9 x 9-ft. steel towers, 50 ft. apart, with their centers coincident with the panel points of the trusses. The towers are braced together longitudinally and transversely, so that two pairs of single towers make one large

tower separated from the next by an open panel, except at the river end, where six towers are placed together making the large tower double. The falsework is equal to standard railroad viaduct work in point of careful design, strength, standard construction, quality of material, rigid inspection and workmanship. Each tower is built with four vertical posts, two of which, nearest the river, are extended from about 10 to 80 ft. higher than the others to carry on each side of the bridge a 12-ft. gauge traveler track, with its center line 18 ft. clear of the truss center. These extended posts are braced to the main towers with outside inclined posts forming a reversed batter and intersecting the tower at about the middle of the short posts.

The posts have rectangular cross-sections made with pairs of 12-in. or 15-in. channels with their flanges turned in and latticed. All posts are made in three sections spliced with mill butt joints and single outside cover plates, four in all, field-bolted to gusset plates and also bolted to

### Canadian White Company, Limited

SOVEREIGN BANK BUILDING, MONTREAL, CANADA  
WINNIPEG OFFICE: BANK OF BRITISH NORTH AMERICA BUILDING

## ENGINEERS AND CONTRACTORS

FOR

Steam and Electric Railroads; Electric Light and Power Plants; Building Construction; Water and Gas Works; Docks, Harbor Works, etc., etc.

**CORRESPONDENTS**  
J. G. WHITE & COMPANY, INC., New York City  
J. G. WHITE & COMPANY, LIMITED, London, England  
WARING-WHITE BUILDING CO., London, England

**One Grade "The Cement of Quality" The Highest**

Tests of

## NATIONAL Portland Cement

BY

The City Engineer of Toronto for 1903-4

Note the High Grade of National. Compare it with others.

Year.	No. Samples Tested.	Soundness Fajji Test.	Specific Gravity	Residue in No. 100 Sieve	Setting Time in Minutes		Tensile Strength in pounds per square inch.									
					Initial	Final	Neat.					3 (Sand) to 1 (Cement)				
							1 dy.	7 dy.	28 dy.	3 mos.	1 yr.	1 dy.	7 dy.	28 dy.	3 mos.	1 yr.
1903	20	O.K.	3.135	2.1	162	345	307	701	783	827	*	74	214	299	367	*
1904	44	O.K.	3.150	2.0	132	342	300	744	848	914	938	86	262	354	401	427

\* Tests for 1 year were not completed when records closed. 1905 report not yet issued.

**THE BEST IS THE CHEAPEST**

### The National Portland Cement Company

Limited  
Head Office and Mills: DURHAM, ONTARIO