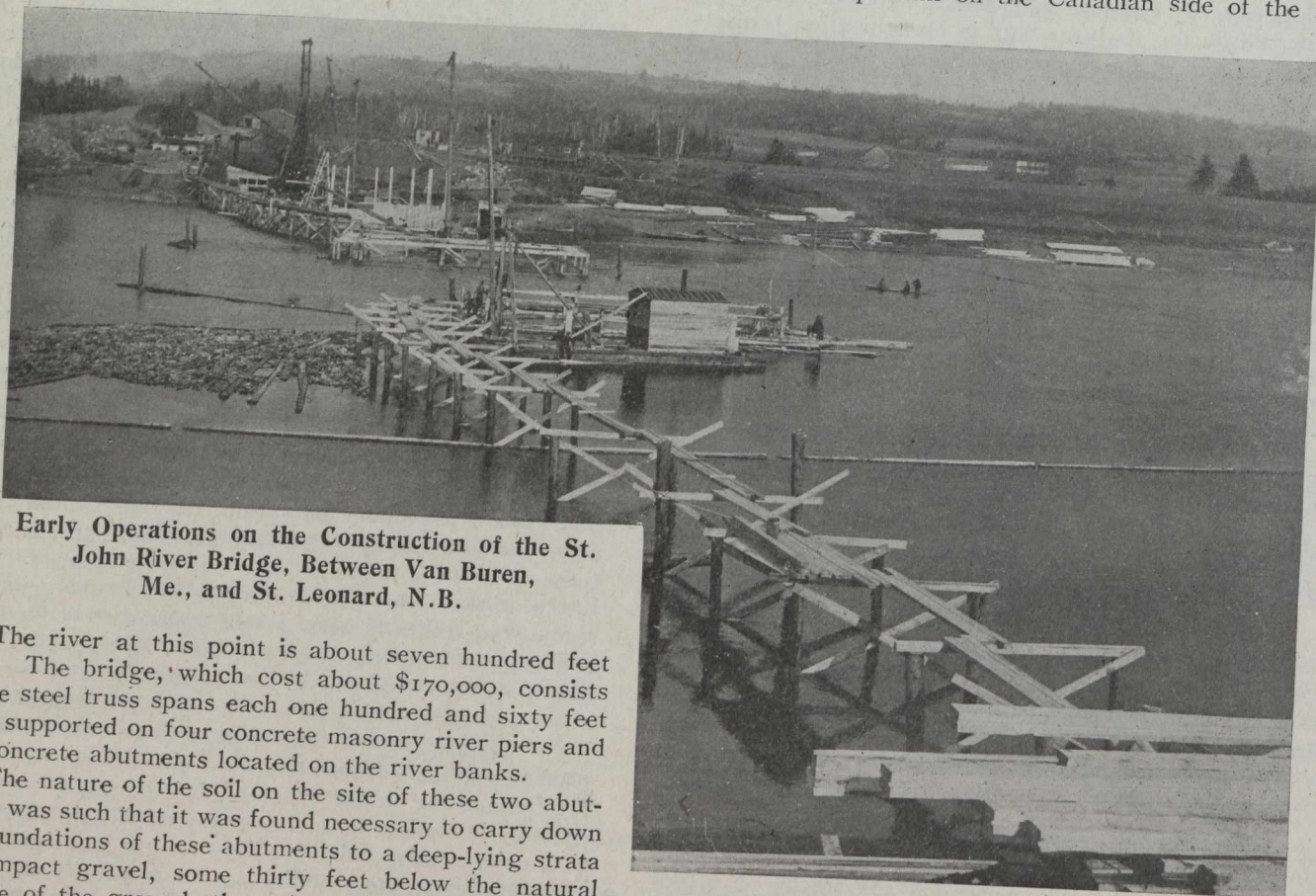


FOUNDATIONS FOR RAILWAY BRIDGE OVER THE ST. JOHN RIVER, N.B.

THE Van Buren Bridge now being constructed over the St. John River between Van Buren, Maine, and St. Leonard, New Brunswick, is of international interest since it is designed to link up the Bangor and Aroostook Railroad of Maine with two Canadian roads, the Canadian Pacific and the National Transcontinental, and thus provide an outlet to United States markets for lumber from the rich Canadian timber lands of New Brunswick, and permit the clearing and improvement of large areas of good land.

piles resulting from the horizontal component of the earth pressure back of the abutment. To provide further resistance to these earth pressures the piles in the outer line under the toe of the abutment were driven on a batter of one to five. All in all, this foundation construction has proved to be exceedingly satisfactory and economical. Fig. 1 shows the elevation of one of the abutments and the concrete piles, together with the nature of the soil.

The execution of this pile work presented more than usual difficulties. The site was a remote one; pile driving equipment had to be hauled on wagons over dirt roads and country bridges for some three miles and lowered down a steep bank on the Canadian side of the river.



Early Operations on the Construction of the St. John River Bridge, Between Van Buren, Me., and St. Leonard, N.B.

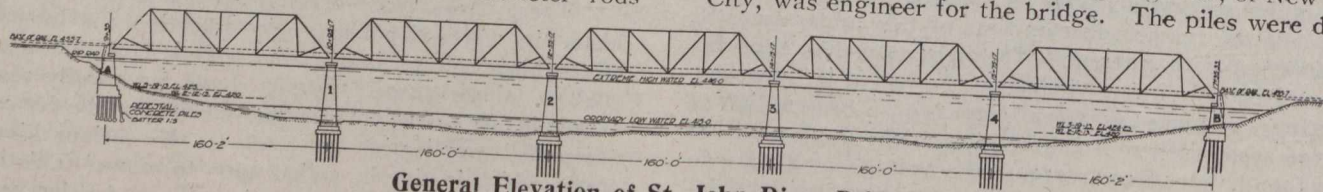
The river at this point is about seven hundred feet wide. The bridge, which cost about \$170,000, consists of five steel truss spans each one hundred and sixty feet long, supported on four concrete masonry river piers and two concrete abutments located on the river banks.

The nature of the soil on the site of these two abutments was such that it was found necessary to carry down the foundations of these abutments to a deep-lying strata of compact gravel, some thirty feet below the natural surface of the ground, through water-bearing sand and quicksand. To carry down these foundations to such a level by the use of piers would have proved a slow undertaking, and the engineer of this structure therefore decided to use Pedestal concrete piles for these foundations.

Pedestal concrete piles about twenty feet long, spaced on three-foot centres, were driven over the entire area of the base of each abutment. Piles were of the molded-in-place type with a sixteen-inch diameter shaft and an enlarged foot, or base, about three feet in diameter, which rested on the compact gravel. The stem of each pile was reinforced with four three-quarter inch diameter rods

After the piles were driven for this abutment the driver had to be lowered and the outfit loaded on scows and transported to the United States side. On this side the abutment was located so near the edge of the river that a timber pile trestle had to be constructed to partially support the driver in installing the piles. To remove the plant, all the equipment had to be hauled up a very high and very steep bank and hauled another three miles to the nearest railroad siding. The work, however, was rapidly and efficiently executed.

Mr. W. J. Wilgus, consulting engineer, of New York City, was engineer for the bridge. The piles were driven



General Elevation of St. John River Bridge.

wired together every twelve inches. These rods strengthen the shaft of the pile as a column and also took care of possible eccentric thrusts that might come on the

by the MacArthur Concrete Pile and Foundation Company of New York, and their eastern Canadian representatives, the Douglas-Milligan Company, Montreal and Toronto.