

Canadian Pacific Railway Bascule Bridge Over Kaministikwia River.

A large bascule bridge is being built across the Kaministikwia River at Fort William, Ont., for the C.P.R. It is a combination bridge, for the handling of both railway and highway traffic, a lower deck with a double track providing for the railway requirements, while on an upper deck there are two street car tracks in addition to a roadway and foot-path on each side. The double deck feature in bascule bridge construction is said to be unique, and it is reported that there is no other bridge of the bascule construction containing a double deck that is quite as large, although there are

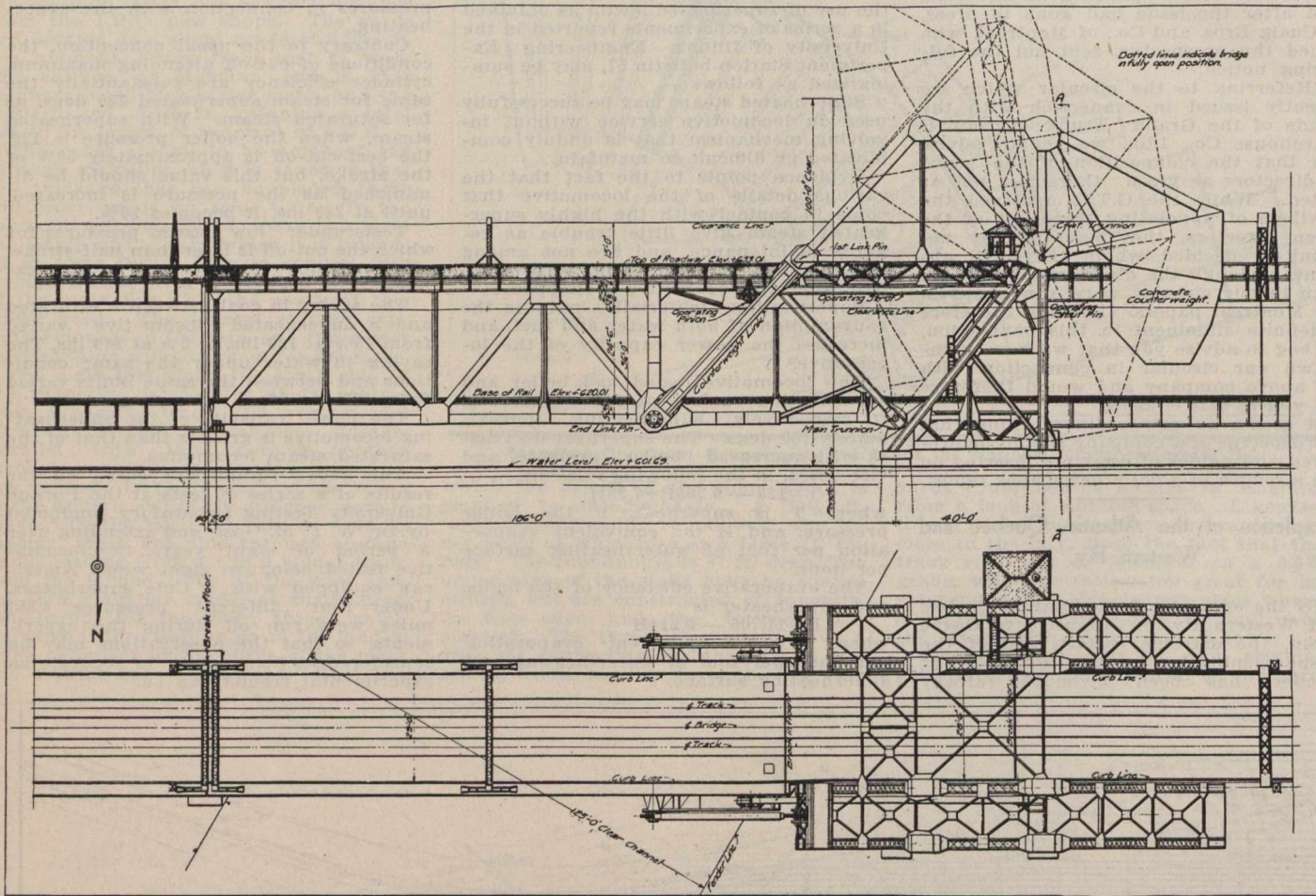
a solid mass of concrete, of such a weight as to maintain the weight of the main span in a state of equilibrium, the only power required to raise the span being that necessary to overcome the friction of the parts.

The operation of the bridge is rather unique. Pinned to the front of the towers on each side are operating struts, on the lower edge of which are long racks each engaging at the outer end with a pinion. This pinion is connected through gearing to an 85 h.p., 490 r.p.m. 550 v. 60 cycle motor fitted with solenoid brakes. These two motors are mounted on the towers,

from white to red, indicating that the bridge is closed to traffic. Similar changes in light occur on the operator's panel.

Until the end locks are withdrawn, the contactors of the operating motors remain open. When withdrawn, these contactors are closed, so that the operator can, as soon as the light signals that the time is proper, energize the main motors through the controllers. The first notch of the controller merely opens the solenoid brakes. This position can be used at any time when it is desired to coast. The starting of the span on its upward movement opens the lock motor contactors so that the latter cannot operate by accident.

The closing of the span is performed by the reversing of the operations out-



Bascule Bridge across the Kaministikwia River.

a couple of single deck bascule bridges under construction that are considerably larger than this one.

The Kaministikwia river, at the point where the railway crosses, has a clear channel of 125 ft., but as the line crosses the river at an angle, a clear span of 186 ft. is required. This leaves the channel perfectly clear when the lift is raised into the open position. The construction of the bridge is rather out of the ordinary, as an inspection of the accompanying illustration will show. The main span is pinioned on a main trunnion at the forward end of the triangular tower. On the top of this tower, a cantilever counterweight arm is trunnioned, the counterweight overhanging the right end of the bridge, the opposite end being connected by a connecting link with pins at both ends to a point along the lower part of the span member as indicated. As the main span swings on the main trunnion, the counterweight cantilever at the same time moves through a similar angle, as the pins are so located as to form a parallelogram. The counterweight on the outer end of the counterweight arm is

as indicated in the illustration. The motors, when operating, revolve the pinion, which moves along the rack on the lower face of the operating strut. This action lifts the spans. As the bridge moves up, the motors move through the same angle, which in the highest position is 80 degs.

At the outer end of the span there are two lock motors of 5 h.p. each at 810 r.p.m. on 550 v. 60 cycle. These operate the locks through worm gearing. There is also a 3 h.p., 3 phase 550 v. motor geared to a crank disc to operate the emergency brake.

When the bridge is closed and ready for traffic, the lock signal switch and the bridge signal switch are both closed, and the contacts in the circuits of the main operating motors and the lock motor are open. To open, the danger signal is first set. The action of so doing energizes the contactor points of the lock motor, causing them to close, when by the closing of the lock motor circuit breaker by the operator, the locks are withdrawn. The lock moving out automatically changes the light in the signal tower

lined, and the signal lights show up in the same reverse order. Air buffers are provided to take up any shock when the span strikes the abutments. If the bridge is travelling too fast, these air buffers will cause the motors to overload and trip the oil switch. The operators cabin, at the top of one of the towers, is fitted with a complete electrical control outfit, including switch board and the necessary attachments.

The structural steel work and mechanism were fabricated and erected by the Canada Foundry Co., Ltd., and the electrical equipment was furnished and installed by the Canadian General Electric Co., Ltd.

Railway Lands Patented.—Letters patent covering Dominion lands in Manitoba, Saskatchewan, Alberta and British Columbia, were issued during June, as follows:—

	Acres.
Calgary and Edmonton Ry.	1,104.00
Canadian Northern Ry.	644.00
Grand Trunk Pacific Ry.	20.47
Total	1,768.47