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**EMBANKMENTS AND FOUNDATIONS—TORONTO-SUDBURY
BRANCH C. P. R.**

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(To be read at a meeting of the General Section, 1911.)

The Toronto-Sudbury Branch of the C. P. R. was constructed in the years 1905-1909, and as the standards were of a very high type they may contain some points of interest. No curves over four degrees were allowed, and the grades were limited to 3/10% compensated. These grades were successfully maintained, with the exception of a pusher grade of 8/10%, for some miles near Tottenham mile 37. This difficulty will eventually be obviated when traffic demands it, by the substitution for freight purposes of 8 miles of 3/10% track for the present 3 miles of 8/10%. Velocity grades were allowed within the limits of 10 and 30 miles per hour for freight trains.

The intention of the company was to insure a thoroughly solid road bed, rather than to keep initial expenses at a minimum, and as the greater part of its 225 miles ran through a rock and muskeg country, there was frequently some difficulty in attaining this result. This article, however, will deal only with the district between miles 22 and 182, north from West Toronto, from Bolton to Byng Inlet, as this was the part with which the writer became personally familiar during his four years' experience on the work.

The line may be divided into two sections, viz., the earth district and the rock district; the first running from mile 22 to 92, and the second north from mile 92 to mile 248.

On the south, or earth section, little difficulty was encountered either with foundations or embankments. Eventually all streams and gulleys will be bridged either by steel viaducts, or by concrete