

# The Canadian Engineer

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## GRADE ELIMINATION AND BRIDGES.

By HENRY GRATTAN TYRRELL.

The subject of track elevation in the United States received but little attention until the year 1888, when the House of Representatives of Massachusetts appointed a commission to investigate and report on the subject of separation of grades for steam railroads and highways. The recommendations of the legislature were that grade crossings be eliminated, and that the expense of such work be borne

65% by the railroad companies  
25% " " State.  
10% " " local town or city.

In the two or three years following, the subject of grade elimination in Chicago was seriously considered, and in 1892 as a preparation for the approaching World's Fair in Jackson Park, Chicago, the Illinois Central Railroad undertook the raising of their tracks from Hyde Park to 72nd Street, Woodlawn, as in this district their tracks cross the principal avenues leading to the Fair Grounds.

In the same year a measure was introduced into the Chicago city council requiring a general raising of all the railroad grades entering the city. The population of Chicago was then about a million and a quarter, and there were 1,600 miles of track within the city limits, with 2,000 to 3,000 level crossings, over which upwards of 1,800 trains passed daily. The ordinance affected about thirty railroad companies, and required the elevation of 150 miles in line and the construction of 700 to 800 subways. So important an ordinance necessitating the expenditure of \$75,000,000 or more, met with very serious opposition, and modifications were made requiring that parts only be elevated immediately, and the whole work spread over a period of years. A superintendent of track elevation was appointed, and portions of the work were soon

commenced. The Chicago and Northwestern Railroad was one of those affected, and in the next few years portions of their various branches were raised, including about four miles of line on the Milwaukee branch between Diversey Boulevard and Balmoral Avenue, which was elevated in 1897. At a number of crossings in Chicago where the track is elevated on banks from 8 to 12 feet high, the streets beneath the tracks have been lowered from 4 to 6 feet, and graded back to the regular street lines. In Chicago and Evanston, it is impractical to depress the grades below the lake level, as provision for pumping would be necessary.

### Evanston Work.—

The method of track elevation used in Evanston is similar to that in Chicago, the country being all flat, and the grades insignificant. The city of Evanston, a residential suburb with a population of 25,000, lies directly north of Chicago, and the boundaries of the two municipalities meet. Two branches of the Chicago and Northwestern Railroad pass through the city, connecting with Milwaukee. In the morning and evening, during the hours of greatest travel, suburban trains run at intervals of three to ten minutes apart,

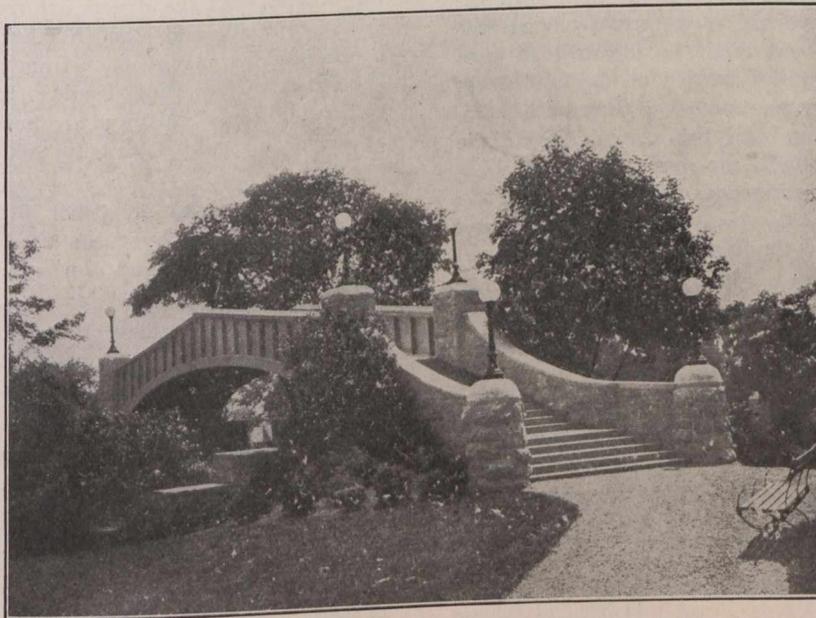


Fig. 1.—Forest Park Entrance, St. Louis.

This is an overhead bridge crossing when railway is depressed. It has a clear span of 50 feet, and spans two lines of track.

averaging twelve per hour. Adjoining the steam railroad, are double tracks of the Northwestern Elevated Railroad, which is likewise elevated on an earth embankment, and where trains make stops at frequent intervals.

Grade removal was greatly needed, not only to avoid accidents, but also to make possible the running of faster trains between Evanston and Chicago. At some of the crossings several persons had been killed, and the fire risk was also increased by the level grades, because where trains are numerous fire engines might be delayed by them, and a few minutes' delay at the beginning of a fire might result in increased fire loss. Gates and flagmen are a partial protection but do not insure safety, as any provision depending on human watchfulness is sure, sooner or later, to prove disastrous.

\*Consulting Engineer, Evanston, Ill. Mr. Tyrrell is a graduate of Toronto University in Civil Engineering of the class of 1886.