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Street Railway Permanent Track Construction

Description of Various Types in Service in Edmonton, Alberta—Review of Factors Determining Design of Rails, Rail Joints, Bonding, Track Drainage, Base and Paving—Maintenance and Special Work

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THROUGHOUT the rapidly changing conditions of the past thirty years, the street railway engineer has endeavored to keep pace with public desire for better and speedier transportation by constructing tracks capable of carrying the ever-increasing loads.

The advent of the popular "jitney" and the tendency of the older cities to make omnibus extensions to the present transportation equipment, leaves little doubt but that if the present street railway systems are to remain in existence, they must be developed along lines of speed combined with safety. It is not necessary that any change be made suddenly; in fact, that is improbable, as there are millions of dollars of capital invested in street railway equipment throughout this country, which must be worked off gradually before the system can be altered to a lighter and faster service.

Street railway tracks that will carry the present-day traffic and its heavy equipment without affecting the adjoining pavement must be carefully designed and well constructed, but there is every reason to believe that the maximum loading has been reached and that future designs will provide for lighter and speedier car traffic.

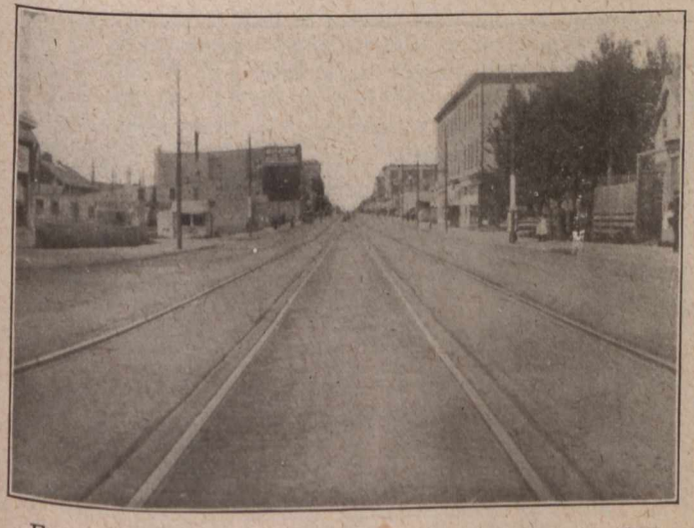

FIG. 1—NAMAYO AVE., EDMONTON, CONSTRUCTED IN 1908 (SEE FIG. 7)

The important feature of track design is to distribute the weight of the car and its load over an area which is capable of carrying that load without appreciable movement. Consideration will first be given to some factors governing the choice of rails, and methods of fastening and bonding them together.

The type of rail having been determined, the means of distributing the loads to the subsoil should then be considered. By describing the different types of construction in actual service in Edmonton, an idea may be obtained of the advantages and disadvantages of the various methods employed.

Rail

The choice of a rail for any particular location should be governed by its present and probable loading, and by the class of street over which it is to be laid. The first consideration should be to determine what part of the total traffic of the system this section of the road will probably carry in this way, classifying the loading into light, medium and heavy traffic.

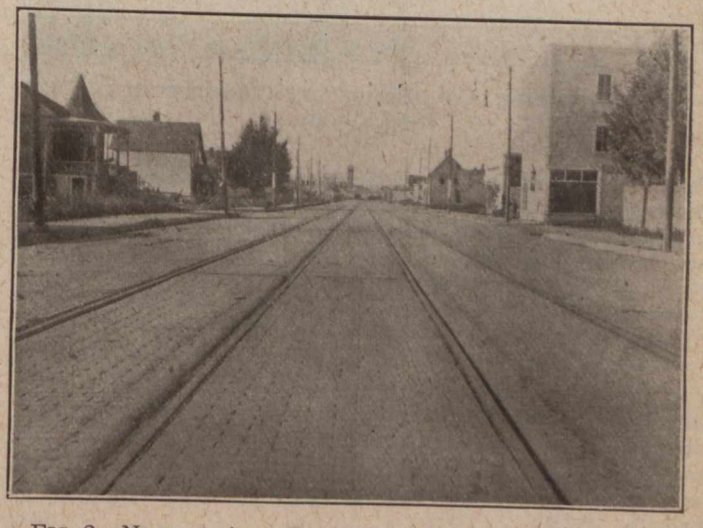

FIG. 2—NAMAYO AVE., EDMONTON, CONSTRUCTED IN 1910 (SEE FIG. 8)

In Fig. 6 is shown a section of a 4¼-in. tee rail, weighing 60 lbs. to the yard. This section has been in use in the city of Edmonton in paved streets for several years, and from a carrying standpoint, may be considered satisfactory for light traffic, provided special attention be paid to the rail joints.

The difficulty of accommodating a pavement to a low section, and especially a tee section, makes the use of the latter doubtful, and in endeavoring to obtain sufficient height, considerably more metal is used than is actually required to carry the load, in order that the web will be stiff enough to hold the head to gauge. The temptation to use the low section is due to the fact that standard 4¼-in. 60-lb. and 5-in. 80-lb. A.S.C.E. sections may usually be obtained in quick shipments, and the costs are 10 to 15% less than some of the high tee or grooved rail sections.

The tracks on Jasper Avenue in Edmonton are laid with 7-in. tee rails, 80-lb. Lorain section, held together with tie