

CHANGEABLE FATE OF COVERED TRAM TRACK APPLICATIONS

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SUMMARY

This paper deals with general development of covered tram track, considering different approaches and needs changing in time. The use of a classic track structure, in which the flat bottomed rails protruded above the level of sleepers, caused considerable problems in the urban traffic. The breakthrough came with grooved rail in the 1850s, since then a rapid increase in spread of tram systems in the world followed. This solution is still used in places where other forms of traffic do not cause obstruction for tram movement, or where the space reserved for trams also serves to other modes of mass transit, like buses. Another idea was to remove general traffic from space dedicated to urban transit, but to allow usage of these lanes, with vehicles appearing less frequently than cars, by emergency vehicles like ambulances or firetrucks. The issue described in the paper is an interesting example of the variability of fate observed in the processes of improving certain specific technical solutions in mass transit.

Keywords: *Tram track, Urban transport, Track superstructure.*

1. INTRODUCTION

The moment of the birth of the classic railway is considered to be the year 1825, in which on September 27th the ceremonial opening of the recognized railway line from Stockton to Darlington in England took place. In this branch of transport relatively quickly, after a period of trial and error and testing of various types of solutions, a type of road superstructure for rail vehicles - i.e. track - developed in the form of two iron rails attached to transverse sleepers, which were covered with natural, usually crushed rock aggregate. In the classical railways as well as in many realizations of high speed railways, this solution is used successfully to modern times [1]. In the early years of the development of this track system, technological possibilities, especially in the field of metallurgy, limited the available rail lengths to several meters, which was due to the fact that the early rail profiles were cast rather than rolled. Experiments were conducted with the shape of the rail profile itself, using solutions in the form of a flat iron, iron angle or mushroom. A profile similar to the one known today appeared around 1831, but experiments concentrating on further search for the optimal shape of this part of the railway superstructure were and still are ongoing.

In some specific places, such as engineering structures (bridges and viaducts) and at intersections in one level of the railway route with roads (presently called rail-road crossings), another type of track superstructure was needed. While in the first of these cases quite different structural solutions were developed, in the second - it was limited only to filling the space between and outside of the rails protruding above sleepers with the appropriate type of 'cover'. Also here the solutions developed in the beginning of the history of railways have become for many years a standard that we use with minor modifications to this day.

The situation is slightly different in the case of tramway communication. Its origins in the world date back to 1832, when horse trams were launched in New York, although early trials can be traced down to even earlier dates, like the interurban Swansea and Mumbles Railway which started passenger services in 1807. The New York streetcar is only 7 years later than the beginnings of the classic railway. In this case, however, the development of the track structure proceeded in a different, much more diverse way.