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BRIEF CHARACTERISTICS OF THE ORIENTATION OF THE SCIENTIFIC RESEARCH ACTIVITY OF THE DEPARTMENT OF RAILWAY ENGINEERING AND TRACK MANAGEMENT

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Abstract

The staff of the Department of Railway Engineering and Track Management (DRETM) focus their research on several areas. Since the 1990s, the quality control diagnostics of the implemented construction works of the structural subballast layers on the modernized sections of the Railway of the Slovak Republic has been carried out, and the obtained findings are presented e.g. in [1] and [2]. Following these diagnostics, the research of the DRETM is also oriented on the verification of the long-term functionality and durability of the railway line structure from the aspect of traffic and non-traffic loads. With regard to the effect of traffic loads, since 2012, attention has been paid to the transition zones between the objects of the railway substructure (bridges, tunnels, underpasses, etc.) and the earth body. The necessary diagnostics of the track geometry quality [3] and the diagnostics of the quality of the construction layers [4], has been carried out at the locations of the transition zones and their downstream sections. At present, several experimental sections are being implemented on selected sections of the modernized line of the trans-European corridor No. Va to monitor the dynamic response of the structural layers of the railway line to the traffic load, which should result in concrete designs of the optimal structures of these transition zones. As far as the non-traffic load is concerned (the effect of climatic factors), the motive for solving the given problem is the necessary adjustment of the dimensioning parameters in relation to the long-term observed change of climatic conditions, which are also manifested on the territory of the Slovak Republic. Given that the intensity of winter periods is changing, it is necessary to respond to this fact by revising the dimensioning of the protective layers of the track bed. The proposed modification of TNŽ 73 6312 [5] is presented at the STRAHOS 2022 expert seminar and also e.g. in [6]. In addition, a several of papers dealing with the application of various thermal insulation materials to the structural subballast layers and their influence on the mitigation of frost action on the construction of the railway track bed have been published in relevant foreign scientific journals [7], [8] and [9].

Keywords

Railway line; dimensioning of the construction layers; non; non-traffic loads; transition zones

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