

ensure stability of the roadbed is the use of reinforcing layers while simultaneously draining surface and ground water from the roadbed. At the same time, a wide range of geosynthetic materials and the proven effectiveness of their reinforcing properties have not yet found mass recognition, and construction of additional railway tracks is carried out by a typical method through cutting ledges on the slopes of embankments of existing tracks.

The selection of initial data and methods of calculation-theoretical substantiation of new structural and technological solutions in design of additional tracks, a critical analysis of their completeness and sufficiency were carried out.

As a result of the experimental studies carried out and based on the monitoring data of the implemented solutions, graphical dependences of the distribution capacity coefficient and elastic moduli of ordinary soils and soils reinforced with geosynthetic materials were obtained. The use of reinforcing layers in soil structures can reduce the overall deformation of the structure and reduce the magnitude of vertical stresses. Dependences of the temperature-humidity regime were obtained for objects with provided (including filtration ground) drainage and for flooded places. The presence of a combined drainage system, which ensures the collection and removal of surface and

ground water, increases the overall stability of the drained subgrade of the railway track and reduces its deformability from deeps and subsidence by 30 %. Theoretical calculations are confirmed by field data obtained from the results of monitoring of already built facilities.

With intensive moisture saturation of soils of the embankment (on a weak base and with water saturation), the use of reinforcing layers is not a sufficient condition to ensure a stable soil structure. To ensure stability of the roadbed under such conditions, it is necessary to provide additional solutions aimed at eliminating moisture.

To ensure stability of weak foundations of the additional track, including on permafrost soils, additional structures can be used as the first layer in contact with the foundation soils, in particular, the «flexible overpass» structures according to the utility model of Far Eastern State Transport University No. 22157, «two-stage armo-drainage system» under the patent of Far Eastern State Transport University No. 2618108.

## 2.9.2 – Railway track, survey and design of railways.

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*The list of titles originally edited in Russian is published in the first part of the issue.*

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Topical transport problems in 21<sup>st</sup> century. Works of the 1<sup>st</sup> international scientific and practical conference [April 20–21 2022] [Aktual'nye problemy transporta v XXI veke: Trudy I mezhdunarodnoj nauchno-prakticheskoy konferencii [20–21 aprelya 2022]]. Eds. T. N. Borisova [et al]. Novokuznetsk, SibGIU, 2022, 258 p.

Transport and transport technological systems: Works of International science and engineering conference: In 2 vol. [Transportnye i transportno-tehnologicheskie sistemy: Materialy Mezhdunarodnoj nauchno-tekhnicheskoy konferencii: v 2 tomah]. Ed. P. V. Evtin. Tyumen, TIU, 2022. ISBN 978-5-9961-2978-2.

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