

Expandable road platforms of the highways

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Abstract: In the process of using the road to predict the grounds density, moisture and crack by freezing need to determine water flows that go underground from atmospheric precipitation in the roadway and its sides in autumn and winter months until the roads are completely frozen during moisture gathering. Therefore, in this article is presented the methods to determine the water flows from atmospheric precipitation that go underground in roadside.

Keywords: grounds, moisture, moisture gathering, freezing of the landbed, roadside, filtration coefficient

Implementation of water and heat management measures at the expandable road platform will solve issues as ensure the same frost and settling on the road as well as the achievement the same stability of the landbed across the width of the roadway.

It should be noted that in seasonal frozen areas during the use of the road the density and moisture of the ground are changed. In general, this process is divided into four main stages: autumn crack; frozen crack in winter; crack in spring and summer during the melting and its drying by reduction its size.

In the process of using the road in summer times the density of grounds may relatively decrease than the density in construction period.

The decrease of the ground density occurs if the sum of size squeeze bigger than autumn crack + expansion by freezing in winter + ground melting in spring + drying in summer. The decrease of grounds size continues during approximately 5-10 years, then the process is stopped and so-called "household density" constant density occurs. Operational layer of the roadside in 1-moisture drawing grounds crack by freezing in winter, usually, melting in spring and drying in summer narrowing size is not exceeded the sum of ground subsidence. That is why by the end of summer grounds density reaches construction period density value. Every year this phenomenon occurs during the operation of the facilities. Operational layer of the roadside 2-3-moisture drawing the ground density which In the process of using the road is decreased relative to volume of "household" density.

Based on the above mentioned, mainly the density of roadside is decreased in the process of using the road according to operational layer of the roadside in 2-3-moisture drawing

During expanding the roads and if their use period not less than 5-10 years, the density of current roadside will be equal to "household" density.

The same ground density value remain the same even after completion of road expandable period in summer. During the summer months, without being constant as mentioned before, the ground density decreases in the process of using the road. When the ground density changes, its freezing crack will also change.

Annually routine condition will change the ratio of grounds freezing crack value which is under the landbed of new constructed roads. As a result, the roadbed can withstand any freezing on the width of the roadway.

This situation can be traced back to the stability of the roadbed. During each year, the ratio between the modulus of elasticity of an existing roadbed and the modulus of elasticity of an expandable roadway varies. As a result, landbed of current width of roadway and new constructed will be stable. The main problem with the design of the road construction in the expansion of the tracks is the resistance to the same freezing across all parts of the roadway, the stagnation and the same stability.

Frost resistance, sedimentation and stability testing of the landbed are carried out for 3 years. These are the following years: the first year after the road is expanded; the year of achieving the maximal value of the freezing of ground crack on the extended section; the year of detection of "household" density of grounds on the extended section of the road.

During the these years, the following are defined: epiuras of moisture and density of the ground prior to freezing of the roadway; epiuras ground moisture on the width of roadway and density and its freezing crack in winter period; epiuras on roadside melting on the width of roadway ground moisture and density and its freezing crack in spring; the overage value in the spring and summer months, during the construction of the roadway and during the autumn period; the values of strength and deformation characteristics of the ground for the width of the roadway at different times of the year. In calculations, the density of the current track can be regarded as equal to the "household" density, but not less than the threshold.

As a result of data water and heat management measures of roadside designed according to obtained data at the expandable road platform will solve issues as ensure the same frost and settling on the road as well as the achievement the same stability of the landbed across the width of the roadway.

The construction of the road should be performed taking into account the grounds on the roadside which mentioned in the table.

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