

UDC 630\*383:625.7

**M. T. Naskovets**, PhD (Engineering), assistant professor, head of department (BSTU);  
**A. I. Drachilovski**, PhD student (BSTU)

### IMPROVEMENT OF ROAD CONSTRUCTION, RAISES TRANSPORTATION AND PERFORMANCES OF FOREST ROADS

The paper deals with increasing the bearing capacity of forest grounds motor roads, arranged on the soft ground. Analyzed the current and new ways of underlying device layers in the form of decking geosynthetic layer and cross members.

The article questions of increase of bearing ability of the bases of the forest roads arranged on weak ground are considered. Are analysed modern and new ways of the device of spreading layers, in the form of floorings from a geosynthetic layer and cross-section elements are developed.

**Introduction.** In developed and applied in practice technical solutions forest roads in the course of their operation on waterlogged and marshy terrain enough regularities of distribution of loads on vehicles and mass suits road construction, which shows the relevance of the problem. In order to do a thorough study of the uniformity of the transmission voltages from affecting the subgrade vertical static and dynamic loads. Based on the research necessary to develop the conceptual approaches to stabilize the work load of the underlying layers, arranged on the soft ground.

The main part. In the design, construction and maintenance of forest roads should be possible to take into account the nature of the interaction of the road structure with a weak base, and the patterns of distribution of wheel loads on their depth.

**Main part.** A comprehensive study of the practice unit of embankments on the grounds of low bearing capacity soils possible to distinguish the following characteristic variants of mutual contact of their surfaces (Fig. 1). The first is the most common option would be the formation of the interacting surfaces on the border lines with different types of curved shape (Fig. 1, *a*). This is due to the fact that in the process of backfilling and compaction on soil-spotted it is chaotic introduction into the soil of a weak base. In this case, the lower the load bearing capacity of the latter, the greater the depth of penetration of particles in it paved the mound, and accordingly, the probability of mixing.

In this case, the action passes logging trucks and environmental factors is a gradual accumulation of strain and partial destruction of the pavement and subgrade, resulting in a reduction-zheniyu vehicle speeds for hauling wood. Delete the entry in the thickness of the mineral soil or peat soil consistencies weaker possible by a device on their boundary additional layers. In this case, considerable importance is the way in which on-time mound interacts with the surface of the subsoil, ie, it is necessary to consider the fact, as the surface of the foot in contact with the underlying embankment foundation soil.

The most effective communication can be achieved when the load transfer is provided from the mound to the bottom lines of compressive stresses – isobars. [1].

Significant influence on the curvature of the normal stress at the interface of the structural layers embankment and foundation will provide ground, lying at the bottom. In particular, the weaker the base, the greater the curvature of the normal stress.

Reduce the influence of the soil and divide the layered substrate systems, eliminating mixing of particles can be achieved through the introduction of various layers of geotextile material (Fig. 1, *b*) with varying degrees of stretching and flexibility. The looser the soil, the stronger must be the geotextile. When weak peat soils are moist, stiffness of underlying layers should be increased by the introduction of brushwood lining (Fig. 1, *c*) or transverse wooden elements forming a layer of flooring (Fig. 1, *d*).

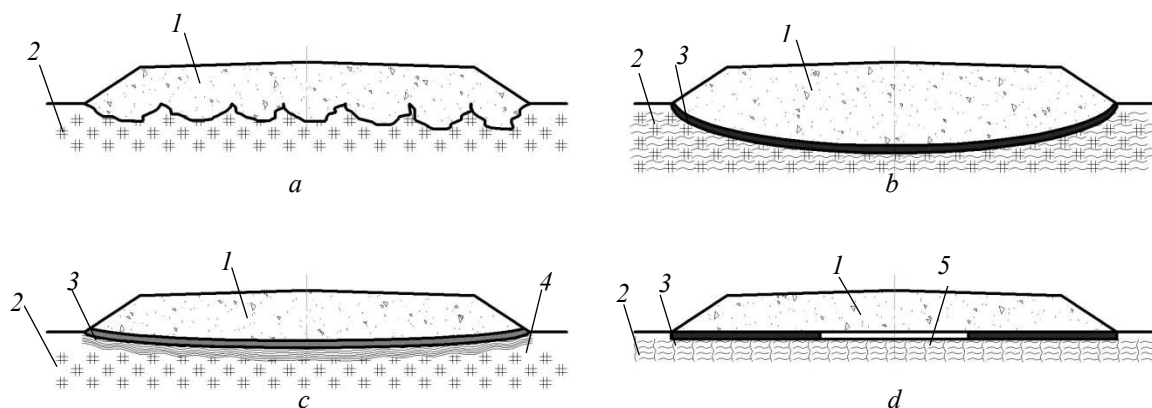


Fig. 1. Options contact with the surface of the base of embankments:

1 – barrow; 2 – weak base; 3 – geotektilny material; 4 – brushwood lining; 5 – wooden cross member

Based on the above developed and offered for the practical application of these devices means forest roads with the underlying layers containing geotextile and cross the wooden elements:

– A device of the forest road on the soft ground, which reinforce the roadway or track road through the formation of the floor of the vertex parts of trees without crowns, interwoven with synthetic material, followed by backfilling of his ground;

– A device of road construction on soft ground, which is mounted perpendicular to the axis of the road deck of the vertex parts of trees with crowns by placing crowns with sequential interleaved on both sides of the road axis and fixing the vertex parts of flexible connections;

– A device Slany in the marshes, including dumping of bulk layer of soil on the sub-base in the form of a dilute floor of the transverse and longitudinal elements of the rolling synthetic layer.

Let us examine each of these methods separately.

A device of a forest road on weak soils, which reinforce the roadway or track roads by building floor with his subsequent backfilling with soil, based on the fact that the floor is formed by stacking the width of the road along the axis of the strip of flexible plastic and vertex parts Trees without crowns, and the vertices of the tree without a crown placed on a raised alternately even or odd strip of flexible plastic material close to them, and then change the position of the bands on the opposite and to lay the next vertex of the tree without a crown butt in the opposite direction. [2]

The width of the bands in the deck can be various according to their strength, moving load, and placements. For example, when laying the flooring into the base-tion, in the case of single-lane temporary road unit 3 m wide, in the field of movement of wheels (kolesoprovodah) bands can be two or three, and mezhkoleynom space – one.

Using the vertex parts without crowns as underlayment to be placed at the base of the road, helps distribution of the quantity of the specific pressure on a large area of weak ground when subjected to wheel load, and reduce soil sifting through the flooring. The combination of the reinforcing properties of vertex parts contributes to distributing power and strength deck.

The way the unit road construction on soft ground (Fig. 2), which is mounted perpendicular to the axis of the road deck of the vertex parts of trees with crowns by placing crowns with sequential interleaved on both sides of the road axis and fixing the vertex parts of flexible links, we conclude that ca yuschiysya that the pre-trimmed crown by

laying them on soft ground and placed close to each other to form a space between a number of stacked vertex parts that reinforce the bond of two flexible bands, which turns round the vertex of the trees so that each vertex part from his butt is on top of a flexible tape, and from the crown – under it, with the top deck formed produce dumping ground subgrade and pavement suit. [3]

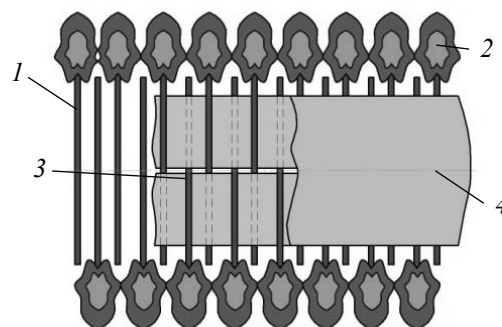


Fig. 2. Road construction in the marshes:  
1 – vertex of the tree, 2 – crown;  
3 – geosynthetic material; 4 – subgrade

It is known that during construction of road structures using vertex parts of trees with crowns major difficulties concern implementation of the ground branches into contact with the ground. At the same time after digging into a subsoil there is a problem of breaking off the bed in case of removal. This is why pruning crowns by lying on soft ground is an effective method.

It should be noted that the formation of the space between some lying vertex parts allows to reduce their number and location of crowns close to each other makes it possible to reduce the length of the vertex parts. All this helps to reduce the overall consumption of wood. In its turn, the proposed coverage of vertex parts by flexible bands provides efficiency of flooring and its quick removal.

The basic structure of the wood flooring distributes stress from repetitive load, increases effective road exploitation, its operation due to the stabilizing properties.

Construction of flooring in the swamps (Fig. 3), includes the dumping of bulk layer of soil on the sub-base in the form of a dilute floor of the transverse and longitudinal elements of the rolling synthetic layer, it is characterized by the fact that the sub-base is covered by rolling a flexible synthetic material directly on top of a soft base ground and then runs along the length of the synthetic material on either side in the place of installation of transverse elements, symmetrical axis of the road located on the axis, at a distance equal to the sum of half the width of the space and width of inter-track road, which gives birth to the vertex part

alternately wooden elements to cross flooring by the synthetic material vertex and the butt of cross elements so that they have over synthetic material from the edge to the slots under it in the gap between the slots, no ledge at the edge of synthetic material, the width of the slots is equal to half the length of arcs respectively or vertices, or the butt of cross elements.

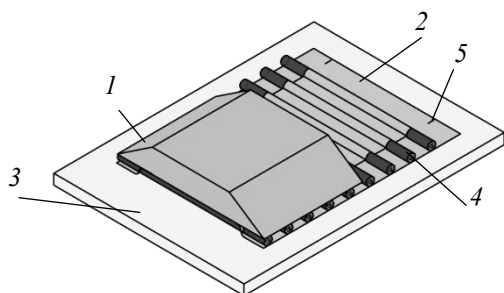


Fig. 3. Flooring scheme in marshes:  
1 – base; 2 – bed; 3 – layer of synthetic material,  
4 – slots; 5 – wooden cross elements

The construction of proposed road structure is efficient on soils with low bearing capacity.

**Conclusion.** During the road construction in the course of development of wetland forests, local materials of lower quality are often used. In this case the stability of soil bed is provided by an

introduction into the construction a flexible layer of geosynthetic material in combination with hard wooden flooring cross elements. This layer serves as a reinforcement layer and the separation membrane, and cross elements fix the construction.

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Received 14.03.2012