

# The construction of linear soil structures with the use of geosynthetic materials in the severe hydro geological conditions

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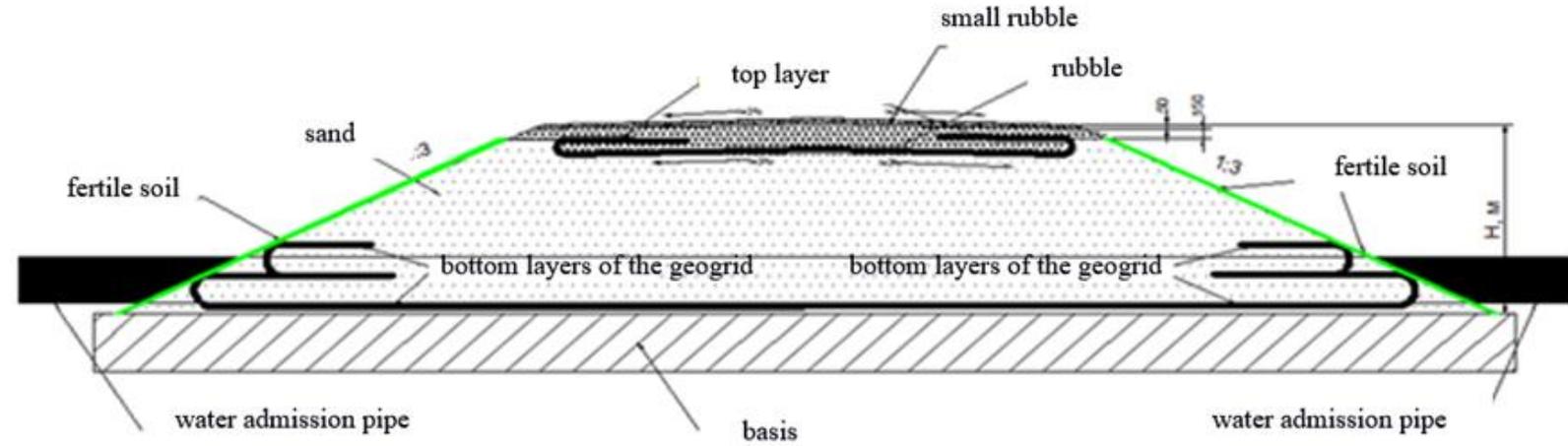
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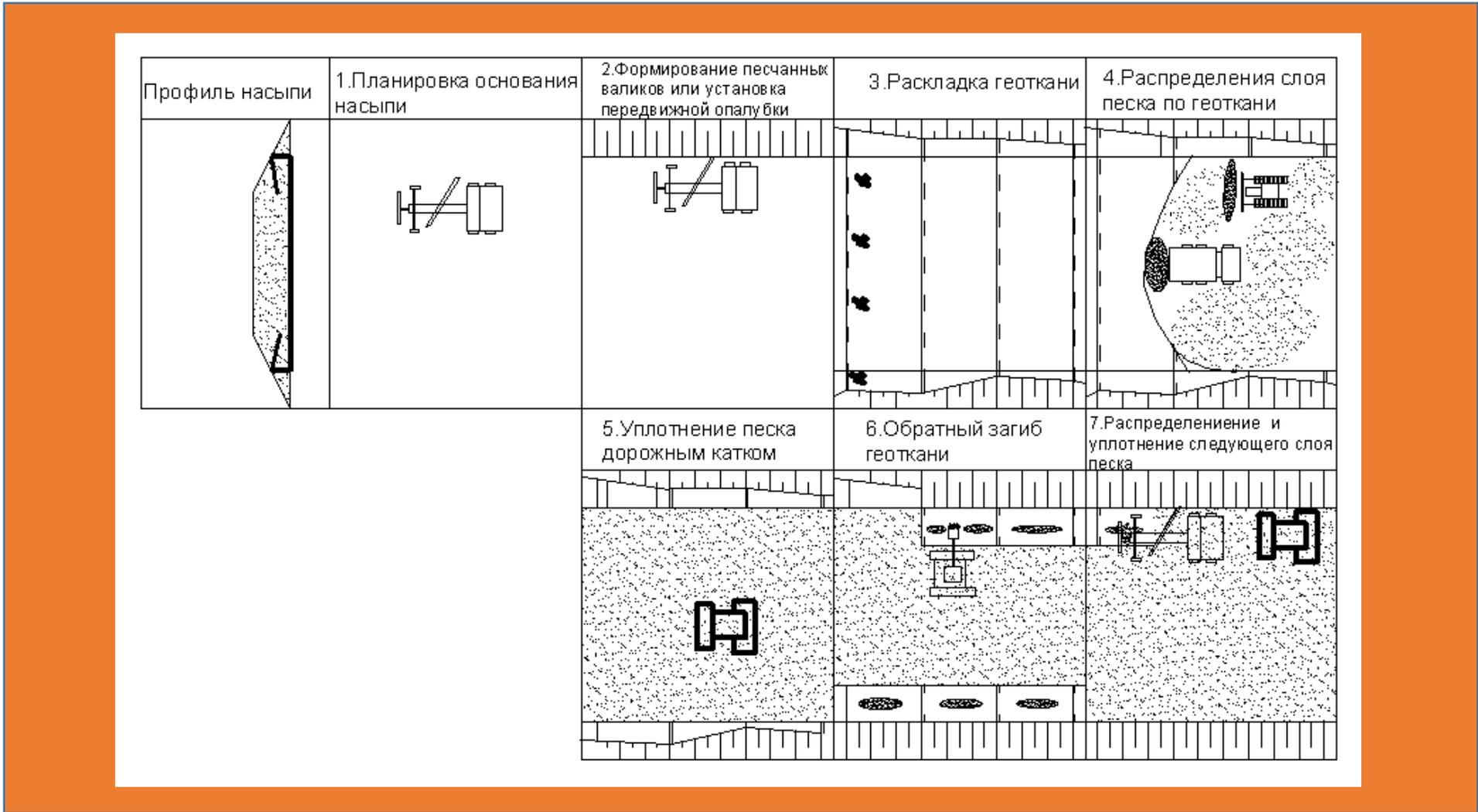


**A significant part of the earth roads is represented by the road embankments. The construction of the road embankments with the use of extensive methods, such as the substitution of soft roadbed soils for sand and rubble, or the track laying, is characterized by high energy and material consumption, and causes a serious harm to the environment.**

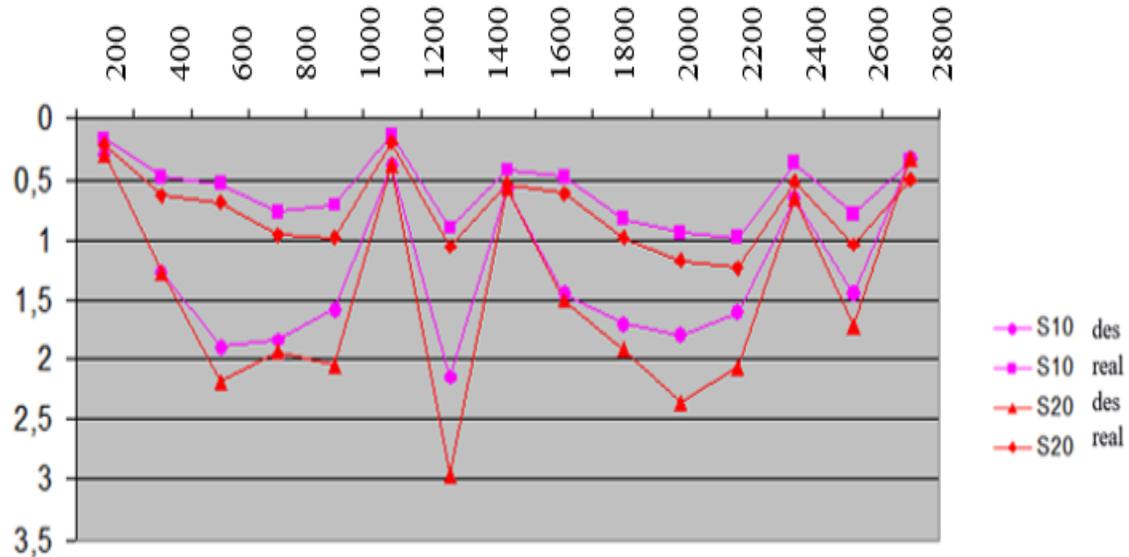


**In these cases, the change in a hydrodynamic regime is noticed, territories are occupied with the swamp, and a large number of technogenic soils are formed. This led to the development of the "environment-friendly" technologies, the so-called "biopositive" design solutions with the use of modern building materials.**

# The schema of the biopositive structure erection on the earth road in the complicated hydro geological conditions



# Monitoring



**Embankment settlements monitoring included several cycles. The first cycle of surveys - sequential, as the road was being constructed, that lasted 20 days. The following 8 cycles were carried out immediately on a culverts alongside the section. It is vital to say that the first 10 months are characterized by the intensive development of the settlements. Then the increment of settlement decrease and after 20 months, since the commencement of the road construction, they are equal to no more than 2 cm/month, that indicates the consolidation process completes. It should be noted, that when the construction was finished, the soil structure (road embankment) was immediately put into operation.**

# Conclusions

**The proposed biopositive structure with the use geosynthetic materials has been developed and implemented in order to minimize the impact on the environment during the construction of road embankments. Moreover, the geosynthetic material has been selected in such a way to provide the greatest efficiency and processability of construction. The monitoring data confirm the reliability and durability of the biopositive structure.**

**The obtained results allow to conclude that the application of the biopositive structure and technology is the most environmentally safe method of construction of earth roads in the complicated hydro geological conditions.**