



## THE IMPORTANCE OF STUDYING THE PHYSICAL PROPERTIES OF SALINE SOILS ON HIGHWAYS

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**ANNOTATION:** This article provides information about the basic parameters of physical properties of the saline soils in roadside of highways, the key and rational indicators which are determined by the experiments and by calculating respectively in the evaluation of soil physical states, the density of solid particles, the basic parameters of density and moisture of the soil in natural condition.

**Key words:** soils, physical properties, density, roadside, stability

In the evaluation of soil physical states, the key and rational indicators are used which is determined by the experiments and by calculating respectively. The density of solid particles is the basic parameters of density and moisture of the soil in natural condition. The density of the soil in dry condition (soil skull), soil porosity, porosity ratio, moisture level and density in clay condition are the rational indicators. They are calculated based on key indicators.

Usually, soils consist of hard particles with a certain mass and water as well as the air which is mass of zero. In some cases, air can be replaced by water (in soil saturated with water) or vice versa, the air in the place of water (in dry soil). Let it be, the mass of the mineral particles in any tested sample is  $M_c$ , volume  $V_c$ , the size of the cavities in the soil  $V_0$ , the mass of the water in these pits  $M_w$ . The quantities and proportions of these components directly determine the physical state of the soil.

When compulsory protective action from moisture of the working surface is prevented, strong and middle saline soils are more useful as protrusion, as well as working surface materials in regions of the II type of moisturizing. In moisturized saline soil areas, the roadside should be designed with compliance to requirement of soft based protrusion. When evaluating the state of



the soil water saturation level, humidity content named indicator is used. The humidification value can be changed from 0 (dry soils) to 1 (soil saturated with water). If this indicator is between 0 and 0.5 - the soil is poorly moistened; if it is from 0.5 to 0.8 - moistured, from 0.8 to 1, the soil is considered water-saturated. Soil density levels depends on their moisture content in many respects. The humidity which gives possibility of gaining the greatest value of the density of soil skull in effect of unchanged (standard) density is called optimal moisture of the soil. The values of this indicator are set using experiments for each type of soil. The values of optimal moisture content in fine-grained and powdered sand are 8 ... 14%; in sandy soils 9 ... 20%; in normal soils 12 ... 20%; and in clay soils vary from 16 to 30%.

Special soils are: muddy; lessing soil; clay, quaternary soils, shale, spiny sand, artificial soil (industrial waste).

Soft soils include joined soils which are naturally strong to move less than 0.075 MPa (in testing with rotating tool) or when loaded at 0.25 MPa the sedimentation module is more than 50 mm / m (deformation module less than 5.0 MPa).

When test data missed, it is recommended to include muddy, clay (including lessing soils consistency level more than 0.5), and the moisture soils containing chlorine salts.

Powder-gray soils with more than 50% (0.05-0.005 mm) dust particles, light and average soluble salts and calcium carbonate, should be included into the lessing soils. Lessing soil has the ability to maintain steep sloping with the same composition, in its natural state with a high porosity, low dampness. Low moisture-free soils when moistured is drown, it is easy to get wet and washed, and when soil saturated with water you can switch to the flowed state.

On plots with high moisture, engineer-geological explorations are carried out in accordance with the special program specified in the technical assignment. The program and the technical assignment will be developed jointly by design and exploratory organizations. The materials obtained during the exploration, generally it gives the possibility to implement the followings:

- quantitative assessment of the stabilization of the base;



- forecasting the value and duration of the base in consolidation process.

In general, these materials should evaluate the possibility of using high moisture layer as a protrusion material.

The program can be edited after receiving the actual data of exploration works from the design organization.

The project documents provide for the control of geotechnical controls on protrusion studies and status of protrusions during the construction and after completion (during warranty period)

Engineer-geological explorations may include the following types of works:

- exploration and collecting, analyzing and summarizing data from previous years;
- Receiving and decoding material for aerospace materials;
- recognizable checking with aerovisual and route transmissions;
- crossing rock caves;
- geophysical study of the area;
- field surveys;
- hydrogeological research;
- stationary observations;
- Study of soil and water in laboratory conditions;
- prediction of possible changes in geological conditions;
- processing of materials;
- Creating (conclusive) a technical report.

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