

Soils Strengthening by Fly and Bottom Ash for Road Base Construction

Vsevolod A. Mymrin, Oleg Zwonok

Science and Technology Foundation (CIENTEC), 675 Washington Luiz street, zip code 90010-460, Porto Alegre, Brazil. <Mymrin@CIENTEC.RS.GOV.BR>

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ABSTRACT

The present paper gives the description of the compositions of new construction materials on the base of fly or bottom ash of thermal power stations with different natural soils and liquid or sludge wastes of chemical, petrochemical and other processes. The processes of new materials strengthening are studied. It was established that surfaces of the initial components are dissolved in porous alkaline solutions. The products of the dissolving are amorphous, so no new crystal forms. After 28 days the strength of the samples reached only 2-12 MPa, but after 90 days it grew up till 4-31 MPa. It is possible to increase the strength significantly in all stages of hardening by changing the proportion of initial composition. The material has very high water and frost resistance with coefficients often exceeding the 1.0 level. Developed materials are used for road, airfield, dam base and different foundation construction without traditional binders like cement and without heating. They show very good performance during exploitation in rigorous Russian climate conditions.