

A New Binder Mineral for Cement Stabilized Road Pavements Soils

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Abstract : Long-term performance of pavement structures is significantly impacted by the stability of the underlying soils. In situ subgrades often do not provide enough support required to achieve acceptable performance under traffic loading and environmental demands. NovoCrete® is a powder binder-mineral for cement stabilized road pavements soils. NovoCrete® combined with Portland cement at optimum water content increases the crystallize formations during the hydration process, resulting in higher strengths, neutralizes pH levels, and provides water impermeability. These changes in soil properties may lead to transforming existing unsuitable in-situ materials into suitable fill materials. The main features of NovoCrete® are: They are applicable to all types of soil, reduce premature cracking and improve soil properties, creating base and subbase course layers with high bearing capacity by reducing hazardous materials. It can be used also for stabilization of recyclable aggregates and old asphalt pavement aggregate, etc. There are many applications in Germany, Turkey, India etc. In this paper, a few field application in Turkey will be discussed. In the road construction works, this binder material is used for cement stabilization works. In the applications 120-180 kg cement is used for 1 m³ of soil with a 2 % of binder NovoCrete® material for the stabilization. The results of a plate loading test in a road construction site show 1 mm deformation which is very small under 7 kg/cm² loading. The modulus of subgrade reaction increase from 611 MN/m³ to 3673 MN/m³. The soaked CBR values for stabilized soils increase from 10-20 % to 150-200 %. According to these data weak subgrade soil can be used as a base or sub base after the modification. The potential reduction in the need for quarried materials will help conserve natural resources. The use of on-site or nearby materials in fills, will significantly reduce transportation costs and provide both economic and environmental benefits.

Keywords : soil, stabilization, cement, binder, Novocrete, additive

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