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A CASE STUDY

The study of rigid and flexible pavement in transportation engineering with special reference to N.H.-1

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ABSTRACT : Rigid pavements are those which posses note worthy flexural strength or flexural rigidity. The stresses are not transferred from grain to grain to the lower layers as in the ease of flexible pavements layers the rigid pavements are made of Portland cement concrete-either plain, reinforced or prestressed concrete. The plain cement concrete slabs are expected to take up about 40 kg/cm^2 flexural stress. As the rigid pavements slab has tensile strength, tensile stresses are developed due to the bending of the slab under wheel load and temperature variations thus the type of stress develop and their distribution within the cement concrete slab are quit different. The rigid pavement does not get deformed to the shape of the lower surface as it can bridge the minor variation of lower layer.

Key words : Soil engineering, Soil mechanics, Flexible pavement, Geotechnical, Construction, Structure

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Geotechnical engineering is an area of civil engineering concerned with the rock and soil that civil engineering systems are supported by knowledge from the fields of geology, material science and testing, mechanics, and hydraulics what are applied by geotechnical engineers to safely and economically design foundations, retaining walls, and similar structures (Subhas Chander, 2007 and Singh and Chowdhary, 2009). Environmental concerns in relation to groundwater and waste disposal have spawned a new area of study called geo environmental engineering where biology and chemistry are important.

Some of the unique difficulties of geotechnical engineering are the result of the variability and properties of soil. Boundary conditions are often well defined in other branches of civil engineering, but with soil, clearly defining these conditions can be impossible. The material properties and behaviour of soil are also difficult to predict due to the variability of soil and limited investigation. This contrasts with the relatively well defined material properties of steel and concrete used in other areas of civil engineering. Soil mechanics, which define the behaviour of soil, is complex due to stress-dependent material properties such as volume change, stress–strain relationship, and strength.

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Types of pavement structure:

Based on the structural behavior, pavement are generally classified into two categories

- Flexible pavement
- Rigid pavement

The cement concrete pavement slab can very well serve as a wearing surface as well an effective base course. Therefore, usually the rigid pavement structure consists of a cement concrete slab, below which a granular base or subbase course may be provided. Providing a good base or subbase course layer under the cement concrete slab, increases the pavement life considerable and, therefore, works out more economical in the long run. The rigid pavements are usually designed and the stresses are analysis using the elastic theory, assuming the pavements as an elastic plate resting over an elastic or a