

Study of pavements, their types and comparative analysis

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Abstract : Roads are the major channel of transportation for carrying goods and passengers. They play a significant role in improving the socio-economic

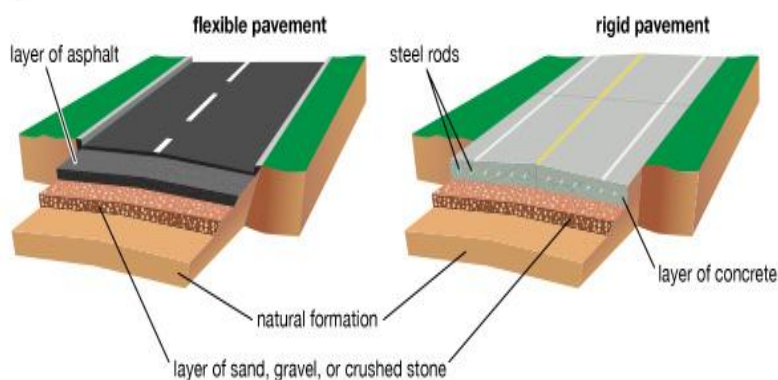


standards of a region. Roads constitute the most important mode of communication in areas where railways have not developed much and form the basic infra structure for the development and economic growth of the country. The benefits from the investment in road sector are indirect, long-term and not immediately visible. Roads are important assets for any nation. However, merely creating these assets is not enough, it has to be planned carefully and a pavement which is not designed properly deteriorates fast. India is a large country having huge resource of materials. If these local materials are used properly, the cost of construction can be reduced. There are various type of pavements which differ in their suitability in different environments. Each type of pavement has it's own merits and demerits.

Key words : Roads, Rigid Pavements, Flexible Pavements, Structure, Concrete etc.

Introduction : Pavement is the durable surface material laid down on an area intended to sustain vehicular or foot traffic, such as a road or walkway. In the past, gravel road surfaces, cobblestone and granite setts were extensively used, but these surfaces have mostly been replaced by asphalt or concrete laid on a compacted base course. Road surfaces are frequently marked to guide

Types of road construction



traffic. Today, permeable paving methods are beginning to be used for low-impact roadways and walkways. Pavement in construction is an outdoor floor or superficial surface covering. Paving materials include asphalt, concrete,



1) **Flexible Pavements:** Flexible pavement can be defined as the one consisting of a mixture of asphaltic or bituminous material and aggregates placed on a bed of compacted granular material of appropriate quality in layers over the subgrade. Water bound macadam roads and stabilized soil roads with or without asphaltic toppings are examples of flexible pavements. The **design of flexible pavement** is based on the principle that for a load of any magnitude, the intensity of a load diminishes as the load is transmitted downwards from the surface by virtue of spreading over an increasingly larger area, by carrying it deep enough into the ground through successive layers of granular material. Thus for flexible pavement, there can be grading in the quality of materials used, the materials with high degree of strength is used at or near the surface. Thus the strength of sub grade primarily influences the thickness of the flexible pavement.

2) **Semi Rigid Pavements:**

The pavements constructed using the waste materials, which are stronger the traditional aggregates may be treated as Semi-Rigid Pavement. A lot of research work has been done in this direction. But the work in terms of real construction is not visible.

3) **Rigid Pavements:**

A rigid pavement is constructed from cement concrete or reinforced concrete slabs. Grouted concrete roads are in the category of semi-rigid pavements. The design of rigid pavement is based on providing a structural cement concrete slab of sufficient strength to resist the loads from traffic. The rigid pavement has rigidity and high modulus of elasticity to distribute the load over a relatively wide area of soil.

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Rezqallah H. Ramadhan*, Hamad I. Al-Abdul Wahhab†



6) Accuracy of Ground-Penetrating Radar for Estimating Rigid and Flexible Pavement Layer Thicknesses

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