

CONSTRUCTION MATERIALS AND CONSTRUCTION

- Material selection- the design of pavement systems requires a laboratory testing programme to characterize the materials in each layer including the sub grade.
- Conventional test procedures
 - ü California bearing ratio
 - ü Plate loading
 - ü Crushing strength
 - ü Triaxial compression
 - ü Modulus of rupture
 - ü Indirect tensile
 - ü Earthwork operations- are those that involve the earth in its natural form, which need to be undertaken before the actual construction of the pavement structure. Thus all the processes pertaining to **grading and construction of the roadbed**, which include **clearing and grubbing, excavation, construction of embankments and finishing operations** for the preparation of highway or runway are earthwork operations.
 - ü Construction of bituminous pavements- The bulk bituminous pavement construction is hot laid. The majority of bituminous pavements fall into five categories, namely **bituminous concrete, plant mix, penetration or bituminous macadam, road mix** and **surface treatment**

PAVEMENT STRUCTURE AND DESIGN

– Definition of Pavement types

Historically, pavements have been divided into two broad categories-flexible and Rigid

Flexible pavement may consist of a relatively thin wearing surface built over a **base** course and **sub base** course and they rest upon the compacted **sub grade**.

In contrast, rigid pavements are made up of Portland cement concrete and may or may not have a base course between the pavement and sub grade.

• Highway, Railroad and Airport Compared

DESIGN OF FLEXIBLE PAVEMENT

- A flexible pavement combines layers of generally different materials in a structural system designed to withstand the **cumulative effects of traffic** and **climate** to the extent that, for a pre-determined period, the foundation or sub grade is adequately protected and **vehicle operating costs, safety** and **comfort of the road users** are kept within tolerable limits.
- Basic inputs required for pavement thickness design include, some measure of **sub grade strength**, the range in **climatic conditions**, the **characteristics of available materials**, and estimate of **cumulative traffic loading**.