Department : **Civil**

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Group No: **10**

Guided By

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Project Title

DESIGN OF FLEXIBLE PAVEMENT BY USING IRC GUIDELINE IRC-37 2012

Abstract:

The Aim of this study is compare different types of flexible pavement design to in major roads in India. The design was based on available literature on perpetual pavements that suggests the use of Mechanistic- Empirical Design (MED) philosophy wherein limiting pavement responses are used to evaluate a proposed design. Pavement types vary from flexible pavements through semi - rigid to rigid concrete pavements. Flexible pavements will transmit wheel load stresses to the lower layers by grain-to-grain transfer through the points of contact in the granular structure. A typical Flexible pavement consists of four components: surface course, base course, sub base course, soil sub grade. The rigid characteristic of the pavement are associated with rigidity or flexural strength or slab action so the load is distributed over a wide area of subgrade soil. Indian Roads Congress Method: Indian Roads Congress Method is based on an empirical method. From the design chart the total pavement thickness could be read for a given CBR value and cumulative standard axle load. The design procedure of the pavements based IRC: 37-2012 guidelines Selection of a trial pavement including the number of layers and thicknesses of all layers overlying the sub grade. Selection of design loading (traffic) and determination of vertical stress (i.e., tire contact pressure) and radius of the tire contact area. Determination of the elastic parameters of asphalt which include flexural modulus and Poisson's ratio. Determination of the cemented base and cemented sub base elastic parameters of the sub grade elastic modulus and Poisson's ratio. Using the IITPAVE software to calculate the Actual Horizontal Tensile Strain in Bituminous layer and Actual Vertical Compressive Strain on sub-grade. The required data are collected from SH-41 office Adalaj toll tax which includes previous year's traffic data, CBR value and VDF. Using the data, the cumulative design traffic in standard axles is calculated for the design life. The traffic data have been analyzed to find annual and monthly variation of traffic. Finally using the cumulative standard axles and effective CBR value, the pavement has been designed for period of 20 years, using IRC 37:2012 guidelines of flexible pavement design. The latest design method of IRC: 37- 2012 is mechanistic approach of design and incorporates the use of nonconventional kinds of materials also in the base and sub-base. The stretch of SH-41 between Unjha to Siddhpur is taken for the study.

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