

COMPARATIVE ANALYSIS OF HIGHWAY DESIGN

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ABSTRACT: In this paper, a way for comparative analysis of highway design is done by using design methods. The target these projects work to highway design condition properly clear and good highways facilities provide. The materials are used made pavement soft aggregates and some hard stone, soil and gravels. The different layers are properly analysis to the design highways. New highways design construction and its maintenance is one of the most vital applications of civil engineering. These are not my academic curriculum but also the main my training and project work.

Keywords: Flexible Pavement Design, Geometric Design, Rigid Pavement Design, planning and development.

I. INTRODUCTION

For most of the various phases like traffic, and transportation studies and analysis, planning of road net-work alignment, design of road geometrics, materials, pavement design, and construction and maintained highway traffic. Design and Construction of the road in high altitude and difficult terrains also from part of highway engineering. Highway engineers must take into account future traffic flows, intersection, structural design of pavement thickness, and pavement maintenance.

II. PLANNING AND DEVELOPMENT

Highway planning involves estimate current and future traffic loads on a road net-work. Analyze all possible civil impacts of highways systems. Planning is considered as a pre requisite before attempting any programmed in the present era.

III. Flexible Pavement Design

For Flexible pavement is typically composed several layer of materials. Each layer receives loads from the above layer, spreads those outs and passes the loads next layer. A flexible pavements surface layer is constructed of hot mix asphalt. The term flexible is used because of the asphalts ability to bend and deform slightly,

the return to its original position as each traffic load is applied and removed. Factors such as these are taken into consideration during the design process so that the pavement will last for the designed life without excessive distresses. The service life of the flexible pavement typically designed in the range of 20 to 30 years.

The components of a typical Flexible pavement structure consist of:

- (a) Prepared soil sub grade
- (b) Granular sub base cum drainage layer
- (c) Granular base course
- (d) Bituminous binder and surface course

IV. Rigid Pavement Design

The rigid pavement generally made of portland cement concrete and therefore called 'cc pavement'. Most common materials used for the design and construction of rigid pavement are high quality plaine cement concrete meant for the pavement. The cc pavement slabs made of PQC are expected to sustain up 45kg/cm² of flexural stress.

Rigid pavement must be design to endure frequently repeated traffic loading. The typical

designed service life of a rigid pavement is between 30 to 40 years, lasting about twice as long as a flexible pavement.

Three main type concrete pavement commonly used are:

- (a) Jointed plain concrete pavement
- (b) Jointed reinforced concrete pavement
- (c) Continuously reinforced concrete pavement

Rigid pavement are generally used in constructing airports and majors highways. They commonly serve as heavy duty industrial floor slabs, port and harbor yard pavemnts,heavy vehicle park or terminals pavements.

Prestress pavements allow for a thinner slab thickness by partly or wholly neutrizing thermally induced stresses or loadings.

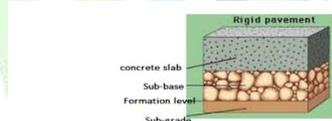
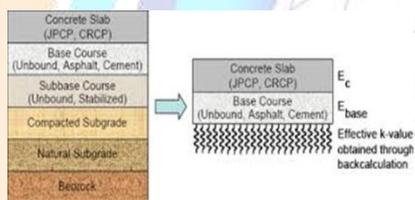


Fig-1: rigid pavement design



Fig-2: Flexible pavement design

V. Geometric Design

Geometric Design of a highway deals with the dimensions and layout of the highway such as

horizontal and vertical alignments, sight distance and intersections. Highway engineer who design the geometry of highways must also consider environmental and social effects of the design on the surrounding infrastructure.

Some of these design considerations include:

- Design speed
- Design traffic volume
- Number of lanes
- Level of service (LOS)
- Sight distance
- Alignment, super elevation, and grades
- Cross section
- Lane width
- Horizontal and vertical clearance

These factors are made of the highway design.

Intersection design:

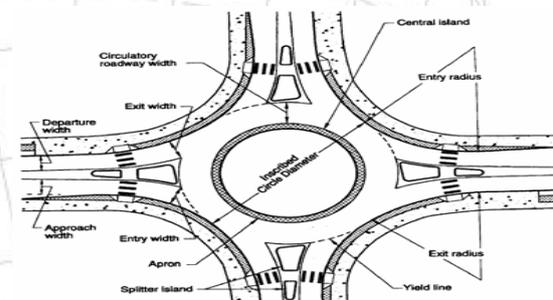


Fig-3: intersection of road

An intersection is an at-grade section junction where two or more roads meet or cross. Intersection may be classified by number of segments, traffic controls, and lane design.

VI. Conclusion

Most road projects today involves modifications to exist roads, and the planning, operation, and highways design to the projects. The design method are used improving highways and the developed the road condition. The flexible, rigid, and geometric designs are improving the highways quality and developed.

VII. Future Scope

In this project, the planning and development and the design method are used made to the strong highways for the future.

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Area of interest includes Highway design.

