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Study the Various Types of Pavement Failure

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ABSTRACT: A good transport system is very important for the social and economic development of any country. For the growth of the country, people developed mainly three modes of transport, which are air, water and road. There are about 67 lakh km of roads in India and due to inadequate maintenance of road, they sacrifice the investments made earlier on the road. In India there are monsoon seasons that affect the quality of the road, in one season too much leakage of water can destroy the pavement, increasing the investment and damaging the investment made before. Reasons such as the growth of the road network, the increase in the cost of materials, the decrease in the availability of skilled labour and many others. The main objective should be to put the road in good condition and extend the life of the road for future use. The purpose of this work is to discuss the causes of road damage and to solve the problem of road and pavement damage..

KEYWORDS: Highway Failure, Maintenance And Repairs

I. INTRODUCTION

A road surface is a structure consisting of layers of treated materials placed over the natural soil, the main task of which is to distribute the load of vehicles on the base. The construction of the pavement must be able to ensure an acceptable driving quality and a surface with sufficient slip resistance..

Types Of Pavements And Their Failure

Type Of Pavements

- Flexible
- Rigid
- Semi-rigid
- Composite

Types Of Pavement Failure

- Cracking
- Deformation
- Deterioration
- Mat Problem
- Problems Associated With Seal Coat

HIGHWAY PLANNING AND DESIGN

Road design is only one element in the overall road development process. Historically, detailed planning occurs in the middle of the process, linking the previous design and project development phases with the subsequent development, construction and maintenance phases. Designers and communities can work together during the first



three stages, design, project development and design, to have the greatest impact on the final design features of a project. In fact, the flexibility of highway design at the detailed design stage is significantly limited by decisions made at earlier stages of design and project development.



Figure – FLOW CHART OF HIGHWAY PLANNING

Types Of Failures And Their Definition :

Potholes

A pit is the most common defect that occurs in most places. This is due to the movement of heavy vehicles and the accumulation of rainwater. If the depth of the pit is significant, cutting, filling, rolling and the number of pits is greater, only the filling of premixed materials is carried out. A hole is like a hole or a bulge in a cavity. road, often paved. Cars driving over it and water entering the ground can cause the pavement to crack, creating holes.



Figure –Potholes

Edge cracking

recent cracks for substantially continuous cracks controlling the edge of the pavement and located within 2 feet of the edge of the pavement adjacent to the unpaved edge. Contains longitudinal cracks \outside the bike lane and within 2 feet of the sidewalk.



Figure – Edge Cracking



Block cracking

This allows for moisture penetration and roughness. The reason is poor structure and an unstable foundation. A sealing coat is applied on top of the carpet to repair the cracked surface



Figure – Block cracking

Longitudinal cracking

Cracks that are approximately parallel to the centreline of the pavement and are not in the wheel path. Longitudinal cracks are unloaded cracks. The location within the lane is significant. This allows moisture to penetrate, which is a structural failure. This is due to an unstable base, poor construction, poor use of materials, poor manufacturing. A surface treatments used to repair this crack.



Figure – Longitudinal cracking

Patching

Patching is the process of filling potholes or excavated areas in the asphalt pavement. Quick repair of pot holes or other pavement disintegration and expensive repair of the pavement. Without timely patching, water can enter the subgrade and cause larger and more serious pavement failures.

A full depth or deep patch is considered a permanent repair, while a thin surface patch or throw and go pothole repair is usually temporary. Materials for patching include hot mix asphalt, asphalt emulsion mixes, stockpile patching mixes, and proprietary patching and modified binders



Figure –Patching Of Pavement

II. CONCLUSION

Engineers have been always with open mind to adopt any material available to them for its use for the construction purposes. It is logical to see that the purpose of highway construction is to provide a firm and even surface for the carriageway or the pavement which could stand the stress caused due to number application stand the stress caused due to number of load application therefore the quality of the maintenance and standardization of maintenance procedure are not always controlled which cause the roads to undergo early and repeated road maintenance

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