International Journal of Advance Research in Science and Engineering
Volume No.07, Issue No.10, October 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

DEFECTS AND MAINTAINANCE OF ROADS

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ABSTRACT

Pavement failure is defined in terms of decreasing serviceability caused by the development of cracks and ruts. Before going into the maintenance strategies, we must look into the causes of failure of pavements. Failures of pavements are caused due to many reasons or combination of reasons. This paper summarizes the ongoing researches about the defects in Flexible and Rigid pavement and the maintenance in Flexible and Rigid pavements. A well-developed transportation infrastructure is essential for economic, industrial, social and cultural development of a country. Maintenance is set of activities directed towards keeping a structure in a serviceable state during its design life, Maintenance of a road network involves a variety of operations, i.e., identification of deficiencies and planning, programming and scheduling for actual implementation in the field and monitoring. The essential objective should be to keep the road surface and appurtenances in good condition and to extend the life of the road assets to its design life. This paper discusses the possible causes of pavement failures, and recommendbetter ways to minimize and hopefully eliminate the causes of failures in pavements.

KEYWORDS: *DEFECTS, FLEXIBLE AND RIGID PAVEMENT, FAILURE, MAINTAINANCE.*

I.INTRODUCTION

A Road defect refers to the defects as the visible evidence of an undesirable condition in the pavement affecting serviceability, structural condition or appearance. The definition of a "road defect" includes any part of a road, highway, or construction site that does not meet the regulations for a safe road.A road network system is perhaps one of the most important necessities for the economic development of any country, particularly developing countries. Many of developing countries, therefore, invest huge amount on road construction, while many developing countries appreciate the necessity for huge investment in capital development of roads. Only a few give due importance to the road maintenance.Ordinarily the term pavement only means the surface layer. But in the designing of the highways, it means the pavement total thickness including wearing course, base course and sub-base course. It is hard and tough crust constructed over the natural subgrade in order to provide stable and levelled or flat surface for vehicles.For designing purposes and depending on structural function and behaviour, the road pavements types are generally divided or classified into two types:

- Flexible Pavement
- Rigid pavement

The objectives of the study are as follows:

- To identify type and classify defects in pavements.
- To identify the causes of these defects and suggest remedial measures.
- To identify the defects in existing pavement maintenance practices.
- To rectify the identified defects for smooth movement of traffic flow.

The classification of the defects with unit of measure causes and treatment is discussed in following order:-

(a) Cracks:

- Alligator Cracking
- Longitudinal Cracking
- Block Cracking
- Edge Cracking
- Centre Cracking

(b) Rutting and Shoving:

- Rutting Classification
- Shoving

(c) Pot Holes and Patching:

- Pot Holes
- Patch Deterioration and Repairs

Maintenance of highway is classified under the following categories:

- Routine Maintenance
- Periodic Maintenance
- Special Maintenance

II.LITERATURE REVIEW

Zulufqar Bin Rashid1, Dr. Rakesh Gupta emphasised on the parameters influencing the performance of pavements and to identify them. For efficient maintenance of road pavements, the deficiencies in our existing highway system need to be clearly understood. Proper design, regular inspection and maintenance of pavement is of utmost importance and in preserving the investment made on highway system and in providing comfort and safety to the road user.

DR. NDEFO OKIGBO studied the conditions of the roads in Nigeria and their effects to the citizen, government and the economy of the country. Some of the identified causes were; poor design and construction, poor maintenance of already built highways, use of low quality materials in construction, poor workmanship and poor supervision of construction work.Some of the recommendations to remedy the situation are; Use of the appropriate design of the roads, avoiding unnecessary congestion of the roads especially heavy traffics that were not meant for the roads in the first place, prompt maintenance of the roads, application of suitable construction material in the construction.

Mr. DevidasChavade, Mr. Kedarnath worked on the ongoing researches about the defects in Flexible and Rigid pavement and the maintenance in Flexible and Rigid pavements. The essential objective should be to keep the road surface and appurtenances in good condition and to extend the life of the road assets to its design life. Broadly, the activities include identification of defects and the possible cause there off, determination of appropriate remedial measures; implement these in the field and monitoring of the results.

Aaron Steinfield, BenedicteBougler, Dan Empey emphasise on snow removalnad how it is critical for winter highway maintenance operations. However, it is subject to significant risk due to adverse operating environmental conditions such as total visual whiteout, low tire/road traction, difficulty for detecting roadway boundaries and obstacles buried in or obscured by snow.

SurajoAbubakar Wada worked on road detoriation. Road deterioration is a critical situation for road sector because of the high cost for construction of new roads and maintenance of existing roads and routes.Therefore, better funding and management should be provided in order to keep the pavements in good condition and from getting damaged due to the aforementioned distresses.

Woods and Adcox said pavement failure may be considered as structural, functional, or materials failure, or a combination of these factors. Structural failure is the loss of load carrying capability, where the pavement is no longer able to absorb and transmit the wheel loading through the structure of the road without causing further deterioration. Functional failure is a broader term, which may indicate the loss of any function of the pavement such as skid resistance, structural capacity, and serviceability or passenger comfort. Materials failure occurs due to the disintegration or loss of material characteristics of any of the component materials.

III.CONCLUSION

After going through number of researches concluded that defects in flexible and rigid pavement are a problem since long time and there is a need of identification of problems and rectifying them. Thus it is concluded that a research needs to be done so as to see the various alternatives which can be adopted.

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