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Identification and Improvement of Accident Black Spots on N.H.86 District Sagar,Madhya Pradesh

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Abstract - Many developing countries including India have a serious road accident problem. Road accident may involve property damage, personal injury or even causalities. " The location in a road where highest number of road accidents occurs is called a Black Spots" The main objective of this study is to provide safe traffic movement, "Accident are not Natural but they are caused" is a common cliché in the area of traffic safety. This case study based on road accident of National Highway-86 which is from Sagar to Shahgarh (76km) of district Sagar (M.P.). A large number of accidents have been occurring over such a section of 76 km length because in this section have some hazardous location or accidental black spots. The accidents are due to human error and road parameters such as improper design of road section, bad shoulder, and design of junction, sharp curves and other factors. In this study attempts to identify the most vulnerable accident black spots using weighted severity index (WSI) methods and also provide suggestion for improvements of spots. The study includes collection of data and prioritizing the accident prone location by using weighted severity index (WSI) methods. WSI method follows a system of assigning scores based on the number and severity of accidents in that particular location in the last few years. So the main objects of this study identify black spots and improvement in it.

Key Words: *Accidental Black Spot, weighted severity index (WSI).*

1. INTRODUCTION

The problem of accident is very acute in Highway transport, due to complex flow pattern of vehicular traffic presence of mixed traffic and pedestrian, also due to human error or road parameters. Road accidents are the major cause of property damage, death and injuries worldwide. The basic elements in traffic accidents are road Users, vehicles, Road condition road geometry and environmental factor. Road accidents cannot totally prevent/stop, but by using suitable traffic engineering, management measure and better safety plan, so road accident rate can be decrease.

According to The Ministry of Road Transport & Highway {MORTH}-2015, Road accident are now globally recognized as a serious public health problem, the problem much more serious in our country where dose to 5,00,000 road accident caused nearly 1,46,000 deaths and left more than thrice that number injured, during 2015. The numbers of vehicle are increase due to the growth of population and growth of Technology/Automobile, which cause road accident increase, the economic losses due to Road accidents in India are over Rs 100 billion per year.

"The location in a road where the Traffic accidents often occur is called a Black spot". The Identification of location, analysis and treatment of Road accident black spots are widely regarded as one of the most effective approaches to road accident prevention. Black spots become a place on road that is considered to be dangerous because several accidents have happened there, Road accident happened their because of many reasons such as a sharp curves in a straight road, so oncoming traffic is concealed, if designs of junction are not proper on a fast road. Poor warning signs board at a road junction. Accident black spots can be improved by speed restrictions, Proper sign board and improving sightlines straightening bends etc.

In Madhya Pradesh in last year 54947 accidents occur in which 9314 persons died and 55815 Persons injured in 2015. Road accident on National Highways has gone up by 3.2 per cent from 1, 37,903 in 2014 to 1, 42,268 in 2015, Persons killed on National Highways has also gone up by 7.5 per cent from 47,649 in 2014 to 51,204 in 2015. The major causes of road accidents are road condition and its parameter design are not good and also drunken drive careless/rush driving over speeding etc.

The present study aims to identify accidental black spots on a section (sagar to shahgarh) of NH-86 by studying the accidental data provided by Police station during last five years. In this study identification of black spots by using weighted severity index {WSI} and Accident Density method {ADM} and during this study basic causes of accidents were found out and suitable remedial measures were also provided for a particular spots.

1.1 Scope and Objectives

The objectives of the study can be given specifically as the following:-

I. To collect Accident data regarding NH-86 (Sagar to Shahgarh 76 km) from concerned Police stations last five years (20012, 2013, 2014, 2015 & 2016).

II. To find out different methods for hazardous locations. (Black spots)

III. To identify various traffic and road related factor causing accidents.

IV. To carry out analysis of black spots using WSI methods.

V. Identification of each spots also best suited improvement for each black spot.

VI. To carry out detailed analysis of top ranked black spots and provides suggestion for improvement of spots.

2. The Area of Study

The 76 km Stretch of the NH-86 between (Sagar to Shahgarh) in district sagar , Madhya Pradesh was selected for the study. Some feature of this stretch at National highway is given below:-

1) The entire stretch is two line national highways.
2) Road surface is Asphalt.
3) No divider at this stretch/Highway.
4) Speed limit at some Section/Location is 40 km/h.
5) There is no lighting at Junction, Turing and Inter-section.
6) No Toll booth, No Truck lay-By's
7) Hard Solder was not proper at turning and curve.

2.1 Site Investigations

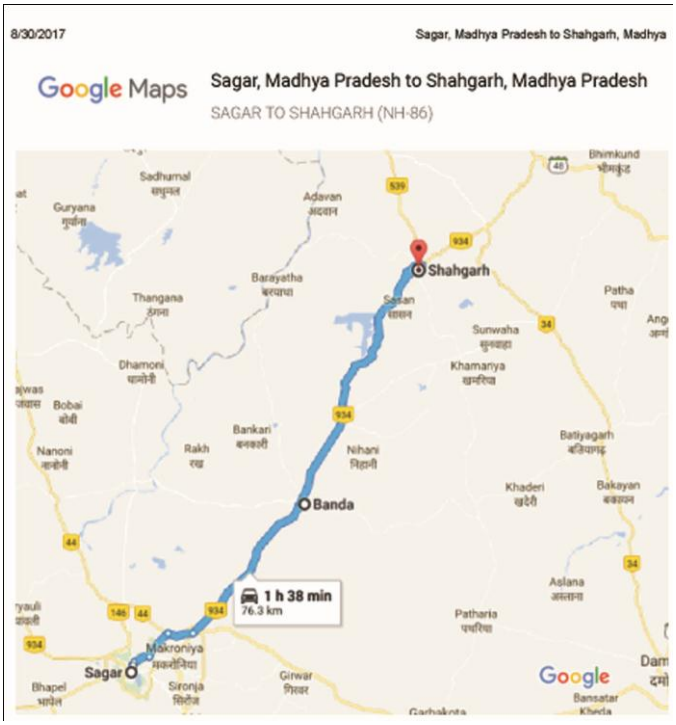
A visit to the site is normally a necessary part of the diagnosis this visit has give a lot of detailed information about characteristic of road such as road section, road Junction, surface and road condition, also information about identified accidental black spots, available traffic volume, traffic obstruction and sign board at road etc.

2.2 Diagnosis

Criteria in the identification Process

The accidental black spots identification process has identified hazardous stretch in three different Types criteria

a. Accident Rate.
b. Accident Frequency.
c. Severity Value.



3. METHODOLOGY

The following steps involved in the methodology for study work are explained in the following section.

3.1 DATA COLLACTION

1) - Primary Data.
2) - Secondary Data.

Primary Data - In this accidental data includes physical survey detailed such as road inventory data (Name of the road, Length of the road, Type of the road, width of the road etc) and signage inventory.

Secondary Data - In this data collection includes the collection of required accidental police record of past five years from the concerned police station

3.2 ANALYSIS OF DATA

3.2.1 Analysis of Primary data

Details of Road Inventory**:-**

- Name of Road – Sagar to Shahgarh –(NH-86).
- Length of Road – 76 km.
- Road Parameters – Double Line (7.0m Wide)
- Drainage System – No.
- Types of Road – The Road is Flexible pavement Types i.e. Bitumen road

Details of Signage Inventory **:-**

Traffic Signs are very impotent elements of National highway because traffic signs guide, warn and inform the drivers for the safely and efficiently movement on road. So in sing inventory we study about different types of signs and their proper position and also maintenance of sign board.

3.2.2 Analysis of Secondary data

Secondary data includes the collection of require accident record/data last five years from concerned Police department. So Road accident Record/data of NH-86 (Sagar to Shahgarh Section) during 2012 to 2016 (last five years) was collected from Office of Superintendent of Police district sagar. Analysis of secondary data using weighted severity index method (WSI) than identified top ranked five accident black spots, in this method scores are assigned to the accident on the number and severity of accidents at that particular location in last five years.

Weighted Severity Index is calculated by the following formula.

(WSI) = (41x K) + (4x GI) + (1x MI)……..

Where:-

K- is the number of person killed.
GI- is the number of grievous injuries.
MI -is the minor injuries.

After calculation we determine the WSI value by we can find that on which point of highway has more WSI value and consider it as accidental black spots. Also we find out causes of accident at their location and how we can improve/ stop it.

4. RESULT

During the current study we will determine the most vulnerable accident spots on National Highway -86 (section Sagar to Shahgarh) District sagar.

5. CONCLUSIONS

The present study was an attempt to find out most vulnerable accident spots at section sagar to shahgarh of national highway-86 Distt. sagar MP. The spots on road where accident are frequently occurred is termed as black spots.The Weighted severity index method was used identify top rank black spots on selected section of national highway as per WSI value. The methodology was found to be effective for the identification, evaluation and treatment of accident black spots if sufficient data is available. In this study get some deficiencies like non availability of parking lane, no guard rails at turn, no sign boards and also no proper road marking and shoulder width and improper drainage system etc. these deficiencies may be reduce, implementation of the suggested improvements will help to increase the overall road safety.

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