A Study on Roadway Condition, Traffic Condition on the basis of Accident Data - A review

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Abstract - *With the evolution of the road industry and growing traffic on roads, construction materials have also been evolved and more unconventional ingredients have been incorporated. The construction and maintenance of roads consume large amounts of quarried aggregates. The use of secondary (recycled), instead of primary (virgin), material helps in reducing demand of extraction. The inclusion of such materials entails several secondary and tertiary materials. Several waste by-products and materials have been investigated, assessed, evaluated for utilizations and practiced in the field. Some recycled materials have been proven to possess preferable properties over the other and have performed satisfactorily in the field. However, there are numerous concerns regarding such incorporation based on both laboratory experimental, and field observations which have turned out to be of the essence for further in-depth studies. It is believed that magnificent preservation of natural and precious resources would be attained from the inclusion of secondary and tertiary materials in road construction.*

Key Words - Road safety, accident analysis, black spot

1. INTRODUCTION

Road accident takes away the life of 3398 peoples every day. This is global humanitarian disaster, and it is man-made (Global Road Safety Partnership Annual Report (GRSPAR-2014).

Road safety is most important problem in our society. By Year -2014 rate of death in road accident is 2.24 million per year and about 50 million peoples were injured every year. About 50 % of all road death are among pedestrian, cyclist or motorcycle riders. In 2014 Indian roads were at their dead list claiming more than 16 lives every hour on average. Over 1.41 lakh people died in crashes, 3% more than the number of fatalities in 2013.

If the current trends of road accident continue than it is predicted to be third leading contributor to global burden of diseases and injury by 2020.now traffic accident are at 8th position globally. India having more number of fatalities recorded by road accidents in the world had earned the dubious distinction. Road safety is emerging as major social concern around the world especially in India (Shivkumar and Krishnaraj, 2012). Accidents are somewhat a drain on the national economy and may lead to disablement, damage to the health and property, death, social suffering and general environmental degradation.

To minimize the no of crashes by any kind and a road safety is the severity expected to occur on the entity during a specific period. Accidents and the fatalities on road are also the result of reciprocity of a number of factors. Road users in India are heterogeneous in nature, ranging from pedestrians, cycles, rickshaws, animal- driven carts, hand carts ,bullock carts and tractor trolleys, to various categories of two wheelers or three wheelers, cars, buses, trucks, and multi-axle commercial vehicles etc., The vehicle population has been steadily increasing because of changes in lifestyle of society. There are development in vehicle population with limited road space used by a large variety of vehicles has increase the need and urgency for a well thought-out policy on the issue of road safety. In India growth of vehicle population is directly proportional to the rate of accident.

Road accidents are a human tragedy, which is directly related to high human suffering. They impose a huge socio-economic cost in terms of injuries, untimely deaths, and loss of potential income. The ramifications of road accidents can be colossal and negative impact of road accident is felt not only on individuals, their health and welfare, as well as on the economy. Consequently, it has become an issue of national concern. Road Safety is a multi-sectored and multi-dimensional issue. It includes the development as well as management of road infrastructure, provision of safer vehicles, urban land use planning, legislation and law enforcement, provision of health and hospital services, child safety, mobility planning, etc In other words, its having spans engineering aspects of both, roads and vehicles on one hand and the provision of health and in post-crash scenario hospital services should available for trauma cases.

2. OBJECTIVES:

Expansion in the road network, growth in motorization and a rising population of a country contribute towards increasing numbers of road accidents, road numbers of registered motor vehicles in the country and the country's population have rising at a compound annual growth rate (CAGR) of 3.4 per cent, 9.9 per cent and 1.6 per cent, respectively, during the decade 2002 to 2011. During the same period, the number of road accidents in the country increased at a CAGR of 2.1 per cent. also the number of road accident fatalities and the number of persons injured in road accidents in the country between 2002 and 2012 increased by 5.8 per cent and 2.4 per cent, respectively. Very little work has been done in India to analyze accidents on two-lane roads.

The main objectives of the study work are:-

(i)To study the annual, monthly, daily and hourly variation in accident rate on selected Stretch of urban two-lane road.

(ii)To study the effect of traffic volume, traffic density and traffic capacity of roadway on accident rate on urban Two-lane road.

(iii)To study the maintenance of road surface and cross-sectional element on rate of accident.

(iv)To develop an accident prediction model based on AADT, road condition, road side Features.

3. Review of Related Literature:

While working on this case study there are many paper had been gone through, here are some of them which describe the categories and some of the factors which are mostly responsible for the accident and traffic jams and helps to reduce their effect. They are-

Mr. Gunanithy.s, Prof. S.Nagarajan: This work is mainly focused on to give the detailed survey of power generation mechanism through renewable energy resources by making an analysis on the Roller mechanisms that will worker as a speed breaker. Some software is also used for modeling of mechanism and analysis of power generation so that the cost will low and material is to be low weighted. This also gives full explanation of working principal of project The study gives an alternative way to generate electricity by using roller mechanism (as a speed breaker) without any fuel or fossil fuel consumption.

Sajib k.mistry, R. karim, k.sakib & M.H kamal; this case study is based on smart highway system (SHS) to ensure road accident and let the people knows further condition of road by using wireless sensor network. The smart highway system is design on the basis of wireless sensor network with three main components' vehicle detector/ indicator sensor, information passing sensor and a station/ sink node. The mechanisms help us to reduce road accident. This work will help in the growth of country by reduce traffic jams and road accident

N. N. Ghuge, Aarti sathe, varsha patil, Anagha warankar: The aim is to generate electricity through speed breaker mechanism. That will help to reduces uses of non-renewable resources like fossil fuel, which are used for generating electricity. A speed breaker is replace by cylinder roller which will rotate when vehicle pass over through it. And one end of roller is connected motor with connecting. This mechanism helps to produce electricity

Anshu Adwani, Kirti H. Madan, Rohit Hande: In this study, author proposed a system to deal with present situation of road problem like W.A.L.T (Weather, accident, landslides, traffic) by using of digital sensor that will displayed acquired data on active LED display with XBee and GSM technology

The case study proposed for monitoring the accident on road. Landslide and water overflow on over bridge is detected with the help of different sensors. So that road user will easy selected fastest root without any delay.

Monika Másilková : This study is to analyze the health and social consequences of road traffic accidents. The selected method of data processing was textual analysis of documents the theme of the consequences of road traffic accidents has been, and still is, on the front burner. Despite the fact that many states have gradually introduced harsher sanctions and measures to reduce traffic accidents, many people continue to die in traffic accidents and even more people suffer permanent consequences. Finally, a road traffic accident is a burden on the economy of a state. According to the literature, health consequences can be generally defined as all injuries associated with traffic accidents that result in long-term or permanent harm. Social consequences of accidents include the change of the quality of life of an individual, and the change in the social, family and professional life of an individual after a traffic accident, including changes in attitudes towards life.

Limbachiya and Leelawat (2000) found that recycled aggregate had lower relative density and water absorption capacity is less to fresh aggregate. According to their test results, there was no effect with the replacement of 30% coarse recycled aggregate used on the strength of fresh aggregate.

Sagoe, Brown and Taylor (2002) stated that the difference between the characteristic of fresh recycled aggregate and natural aggregate is relatively narrower than reported for laboratory crush recycled aggregate mixes.

Mandal, Chakaborty and Gupta (2002) found that the compressive strength was somewhat increase when the amount replacement of recycled increased. They concluded that the properties and characteristic of recycled aggregate has sufficient deficiency when compared to the fresh aggregate. There must be some influences that cause the reducing of compressive strength of recycled aggregate.

According to Tavakoli (1996) the strength characteristics of recycled aggregate were influenced by the some inorganic impurities, the ratio of coarse aggregate to fine aggregate, and the ratio of top size of the aggregate in the in the recycled aggregate. There are some methods used to improve the strength of the recycled aggregate. From the obtained result, recycled aggregate had the same engineering and durability performance when compared to the fresh aggregate.

4. PROPOSED METHODOLOGY

Selected road for the study:-

1. Sendhwa To Barwani Road (58 km)

2. Sendhwa to Julwania road (25km)

3.   Sendhwa to Khetia road (58km)

4.   Sendhwa to Palasner road (22km)
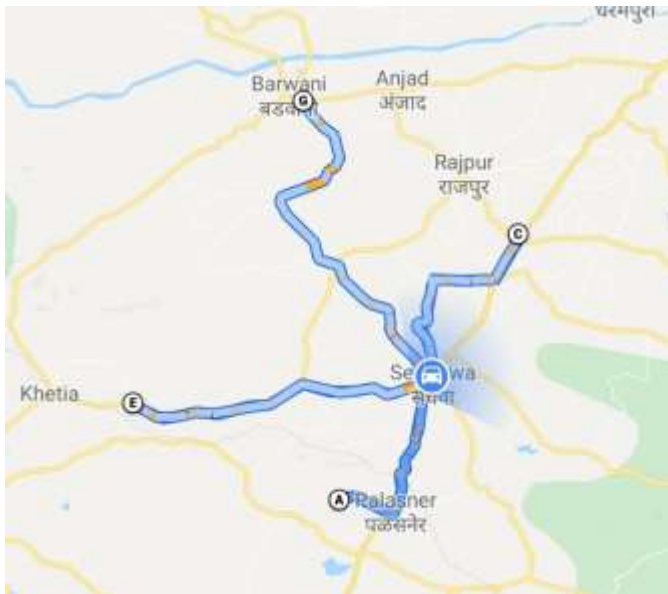
5. EXPECTED OUTCOMES

There Are Following Are Outcome Expected From TheStudy:-

   I.   Determination of accident rate and frequency of accident

  II.   Annual variation in accidents.

 III.   Monthly Variation in Accidents.

  IV.   Hourly variation in accidents.

   V.   Number, Category Of Vehicle Involve In Fatalities.

  VI.   To establish Relation between the traffic volume and accident.

 VII.   To compare trend of accident, injuries and fatalities.

VIII.   Identification of road side feature involve in accident.

  IX.   Identification of road surface conditions along the black spot.

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