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Road Safety Audit on National Highway 40 From Nandyal to Kurnool

Shubham Shivaji Nandudkar[1], Shubham Vilas Morbale[2], Vinayak Deelip Naratavadekar[3], Sanket Ganpati More[4], Prof. R. V. Savyanavar[5]

[1,2,3,4] B.Tech Students of Civil department Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.
[5] Prof of Civil department Dr. A. D. Shinde College of Engineering, Gadhinglaj, Maharashtra India.

Abstract
India has a road network of an estimated 3.3 million km, which carries nearly 65 percent of freight and 85 percent of passenger traffic. The road traffic is estimated to be growing at an annual rate of 7-10 percent, while the vehicle population is growing at a rate of 12 percent per year. A Road Safety Audit (RSA) qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. The Road Safety Audit consists of safety principles to the design of a new or a rehabilitated road section, to prevent frequent occurrence of accidents or to reduce their severity. In this project we have taken a stretch on NH-40 from Nandyal to Kurnool. Road safety audit is carried with the help of field survey reports on road merger or di- verger, road curves, truck or bus lay by, culverts, institutions, median, road intersections. This study follows MANUAL ON ROAD SAFETY AUDIT (IRC:SP:88-2010). The scope of study is to identify the accident prone areas, minimize accidents on the road and need for costly remedial work is reduce.

Keyword – RSA

INTRODUCTION

1.1 GENERAL

In todays world road and transport has become an integral part of every human being. Everybody is a road user in one shape or the other. The present transport system has minimized the distances but it has on the other hand increased the life risk. Every year road crashes result in loss of lakhs of lives and serious injuries to corers of people. In India itself about eighty thousand people are killed in road crashes every year which is thirteen per cent of the total fatality all over the world. The accident is of three types due to their effects or seriousness, fatal accident, injury and property damage only. Man behind the wheel plays an important role in most of the crashes.in most of the cases occur either due to carelessness or due to lack of road safety awareness of the road user. Hence, road safety education is as essential as any other basic skills of survival.

Road traffic safety refers to methods and measures for reducing the risk of a person using the road network being killed or seriously injured. The users of a road include pedestrians, cyclist, motorists, their passengers, and passengers of on road public transport, mainly buses and trains. Best- practice road safety strategies focus upon the prevention of serious injury and death crashes in spite of human fallibility. Safe road design is now about providing a road environment which ensures vehicle speeds will be within the human tolerances for degree of safety shall be ensured when transporting goods by road. It is of vital importance to monitor and validate the road transportation safety, including comprehensive checks on drivers, vehicle and safety processes. Road safety is a complex issue and there are a high number of factors and indicators involved in the accidents. The problem itself is underestimated in many countries, especially in developing countries where the issue is challenging.

In India transportation is heavily dependent on the road network. In 1990s, India was among the top nations with raising economics due to urbanisation. It has influenced in the rise of traffic volume on road. National highways of India are only 2% of the total road network but carries about 40 percent of the total road traffic. It influenced in increase of the total worlds vehicles and road accidents. Through, India has only 1% of the total worlds vehicle which accounts for 16% of the total worlds accidents deathson road traffic accidents which are

generally unintended and preventable are a common risk every day to life that can happen to almost every one, any- where. The problem of road traffic accident is increasingly becoming a threat to public health and national development in many developing countries. Road traffic accident contributes to poverty by causing deaths, injuries, disabilities, grief, loss of productivity and material damage.

Statistical projection show that during the period between 2000 and 2020, fatalities related to traffic accidents will decrease with about 30%in high income countries. The opposite pattern is expected in developing countries, where traffic accidents are expected to increase at a fast rate in the years to come. A study done in Calcutta India, Reported that there are some host (human) factors (such as the behaviour of drivers, pedestrians and cyclist behaviours) and seasonal factors (weather and time) that contribute to fatal road traffic accidents . Overall, most traffic accident occurred on main roads (highways) and in the majority of cases pedestrians were found to be at fault during crossing the road.

1.2 NEED OF STUDY

India has the second largest road network in the world with over 3 million km of roads in which 60% are paved. On the whole, the facilities for roads users are not up to the mark, leading to the high toll of the death victims. Road safety is emerging as a major social concern in the country in the country. The statistics are mind boggling with an average rate of 100,000 persons dying in road accidents.

According to the report, the number of road traffic deaths across the world was unacceptably high at 1.24 million per year and another 20 to 50 million sustain nonfatal injuries as a result of road traffic crashes. The report says that only 28 countries, representing 449 million people (7% of the worlds population), have adequate laws that address all five risk factors speed, driving under influence, helmets, seat belts and child restraints, India has poor record on all the above five fronts.

Following are some of the facts related to India:

1. 85% of all road accident deaths occur in developing countries and nearly half in the Asia-Pacific region.
2. India accounts for about10 percent of road accident fatalities.
3. An estimated 1,275,000 persons are grievously injured on the road every year. Social cost of annual accidents in India has been estimated at Rs.660000.
4. Professionalism in driver training is absent, proportion of untrained drivers is continually on the rise and a positive driving culture is lacking.

1.3 SCOPE OF STUDY

This study includes identification of the deficit of traffic signs/markings, geometrical deficit and other road accessories in the existing scenario of accident occurrence, and identify the need of speed regulation / alternate measures of traffic management to access the existing section with respect to the standard IRC/HCM. . Identification of the Black spot by using an accident data and prioritizing the hazardous zone for intervention

1.4 SUMMERY

This chapter contains small introduction about study, need of study, objective of study and scope of the work

OBJECTIVES

Identify engineering defects and suggests interventions. Identify and recommend facilities that can be used to extend medical support to accident victimes quickly as possible. Identify and evaluate how technology can be used to reduce road accidents.

CONCLUSION

Road and transportation has become an integral part of every human being. The tremendous growth of both road network and road traffic in India has minimized the distances but it has on the other hand increased the life risk. This accident situation in general is serious. From the study carried out in the Nandyal to kurnool on NH-

40 for road safety audit, the following conclusion are summarized after carrying out different surveys and physical observations ofthe situations pertaining to the different typical conditions and completing the detailed analysis as shown in above chapters

From this study we have collected required data of study area. We have given some suggestions regarding to discrepancies from the accident data

- fatality is 20% of the total accidents .
- grievous injury is 29.9% of the total accidents.
- minor injury is 50% of the total accidents .
- motor cycles ,autos, cars are mostly involved in the accidents.
- motor cycles involved 25% of total accidents.
- autos involved 22% of total accidents.
- cars involved 22% of total accidents.
- buses and trucks are involved 7% of accidents in each of total accidents.
- heavy trucks involved in 10% of total accidents.
- tractors involved in 4% of total accidents.
- bicycles involved in 3% of total accidents.
- the maximum accidents involved in 2016.
- the minimum accidents involved in 2012.
- the age limit for the maximum accidents is 30-34

LITERATURE REVIEW

1.1 GENERAL

Review of literature is important in any research work. Many researchers have carried out research work in the area of road accidents and safety. Some of them have analysed accident data in different ways. Some of them have done Identification of Black spot zones. Some of them have worked on Road safety audit and proposed strategies for road safety. In the present chapter literature review is carried out covering the different issues related to the road safety.

1.2 REVIEW OF RESEARCH PAPERS

Some of the literature in which analysis of accident data has been carried out and suggestions for road safety is given is briefly discussed here. They found some conclusion due to their research work.

Parikh V. and Dr. Jain A.M. (2014) has carried out a Road Safety Audit: Develop- ment of an accident model for Urban area on Narol-Naroda National Highway of Ahmedabad city and developed an accident model for urban area. The paper is having a main two goals, first is to carry out a road safety audit on a selected corridor of urban area and second is to develop an accident model taking time of accident as a main parameter. To achieve both of the goal- Accident data, Classified Volume count survey, spot speed survey, Road Inventory Survey has been carried out and remedial measures are given for the corridor. The linear regression model is developed, for that total accidents, fatal accidents, major accidents and minor accidents are considered as dependent variable and accidents per month respected to time is considered as independent variables. After conducting Road Safety Audit they have concluded that there is a deficiency in geometric design of corridor, absence of traffic police, not working traffic signal, unauthorized parking at intersection. Based on accident data majority of accidents occurred at the Narol circle, Isanpur, Ghodasae, C.T.M and

Expressway cross road. There are no traffic signals provided at any those five intersections, no provision of service lane and parking lane from Ghodasar to Jasodanagar road. The heavy volume of auto is parked at narol circle, Insanpur intersection and expressway Tran Rasta, this reduction in the available road space for the through traffic congestion and ultimately leads to accidents at various critical locations. There is a need of tapering at entrance of service lane.

A. Shalon Hakkert and Victoria Gitelman (2014) has done survey on Thinking about the history of road safety research: Past achievements and future challenges in this they have done survey on the

development in road safety thinking and road safety research over the last century. This paper is giving the details about general evolution of safety thinking as it ap- plied to road user behaviour, vehicle and road design. From a historical consideration, a major change observed more recently both in road safety research and in road safety activities con- cerns the emphasis shift from segmented research focused on single areas such as the driver, the vehicle and the road, towards a systems view. Moreover examining various developments that have occurred over years regarding road user behaviour, vehicle design and infrastructure,a clos interrelation between road safety research abilities and road safety interventions applied can be observed. In terms of future research, a shift in modality towards more vulnerable road users and their needs, more attention to safety implications of denser cities, greater use of public transport, inter-modality and coordination between the spatial development and the transportation system, can be foreseen.

Joshua Reid Jones et. Al. (2013) presented the result of field data collection con- ducted by the Utah Local Technical Assistance Program (Utah LTAP) in conjunction with the Utah Department of Transportation. The first step of the research was data collection from 18 road safety audits conducted throughout the state of Utah. The purpose of this research was to provide quantification to the RSA process that would increase the benefits gained from implementing the RSA recommendations. Benefits derived from the implementation of RSA recommendations were found by assessing the change of risk from before and after safety improvements. The RSA quantification tool was developed to analyse projects in both urban and rural settings. The tool showed the different project alternatives. The quantification tool will be able to analyse the potential risk during the field observation and after the safety recom- mendations are made. This paper proposes a seven category decision making tool that can help quantify the potential risk observed on the roadway into a number that can be analysed. The result shows that all of the categories having potential risk reductions after the safety recom- mendations were made. The categories with the most reduction were centred on low cost safety improvements of maintenance and sign improvements. The tool will help decision makers in targeting areas of the roadway that showed high risk.

Mario De Luca et. Al. (2012) has proposed a procedure to identify these black spots. Four different road sections were selected in Southern Italy for the study. For each road section the accident data since 2004 to 2008 were collected.

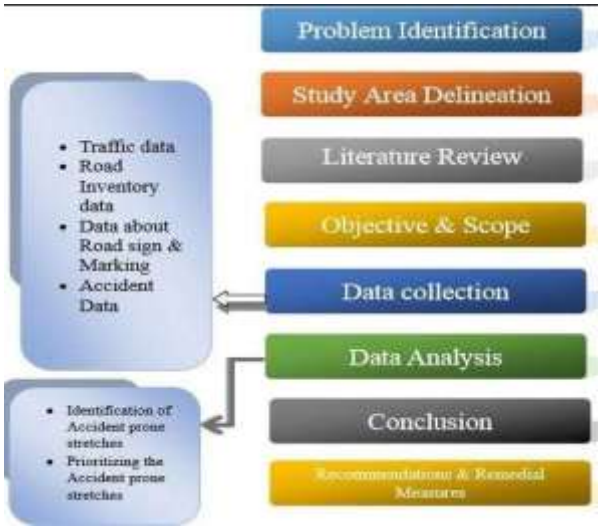
The good statistical fitting between the estimated parameters and those surveys confirms the validity of the models and, at the same time, their reliability to define road safety improvements. The procedure described has provided important clues to identify the Hazardous areas due to poor coordination of the track. The results have shown that the procedure also works on segment other than those on which has been obtained models (1) and (2). Developed model can be used to analyse more segments and to identify priority area of intervention

Thomas F. Golob et. Al. (2004) has developed a tool, called FITS (Flow Impacts on Traffic Safety) which can be used to assess the changes in traffic safety tendencies that result from changes in traffic flow. The tool use data from single inductive loop detectors, converting 30-second observation of volume and occupancy for multiple freeway lanes into flow regimes. Each regime has a specific pattern of crash types, which were determined through nonlinear multivariate of over 1,000 crashes on freeways in Southern California. This research may provide the foundation to forecast the crash rates, in terms of vehicle miles of travel, for vehicle that are exposed to different traffic flow conditions. Data covers that occurs in six major freeway routes in Orange county, California, during calendar year 1998 which were drawn from the Traffic Accident Surveillance and Analysis System (TASAS) database which covers all police- reported crashes on the California State Highways System. Other applications might be compare the same section of roadway during different time periods or under different weather/lighting condition. FITS applies only to urban freeways with at least three lanes in each directions but validation has not yet been conducted, so we cannot confirm the degree of spatial transferability. FITS provides information as to which types of crashes are more likely under different types of traffic flow, but does not forecast crash rates.

METHODOLOGY

The completion of any work needs planning before starting a work. The methodology of work is part of that planning phase and that is why it is necessary to develop methodology of work. It covers the whole work which is going to be carried out for the completion of thesis. The first step in methodology is to identify the problems; it covers the subject of work. The next is literature review, in this step the previous years works on that subject are collected and has been studied carefully. The third step is to select stud area for implementing thought of work and it should be suitable for the objective. After the selection of study area the work should be decided. For achieving that goal the data collection and data analysis is carried out. Once the data analysed, on the bases of analysis results some remedial measure for road safety is going to be suggested. Last step is to give conclusion of this work done. Complete flowchart of each activity showing various stages involved is shown in Fig.

RESULT



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