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Comprehensive Review on Road Safety Assessment of Kaithal-Kurukshetra Road in Haryana

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ABSTRACT

Road safety audit is formal procedure for assessing potential and safety performance in the provision of new road schemes, the improvement and rehabilitation of existing road and in maintenance of roads. The role of auditor is to provide independent advice in the form of recommendation. The primary role of auditing identifying the potential problems of a highway project by conducting the site inspection and collecting data. The objective of the study in the identification of accident prone areas on the road from FIR, to study the effect of roadway geometrics and traffic conditions on the road and development of statistical relationship between accident and various factors causing accidents.
The scope of the study is to reduce accidents on road network, reducing severity of accidents and the need of costly remedial work is reduced.
The road selected for the study is Kaithal-Kurukshetra, Haryana, India. Accident prone locations are identified by the all analysis.

Key Word: First investigation report (FIR), Road Geometrics.

INTRODUCTION

Road traffic accidents deaths and injuries occur worldwide. It was estimated that over 1.2 million people died each year on the world roads as a result of road traffic accidents. According to a survey by WHO, more than 3,200 people get killed and over 130 000 injured in traffic every day around the world. Also almost half of all fatal accidents involve pedestrians, cyclists and power two wheelers, collectively called vulnerable road users.

Road traffic accident occurs worldwide, but the incidence is more in developing countries such as India. The problem of road accidents in India has reached such an alarming proportion in such a way that our highways have been converted into dead zones, killing citizens daily. According to survey 7,269 peoples died, 20,752 persons sustained various degrees of injuries and 7,517 people are left permanently disabled in the year 2012 as a result of road traffic accidents across highways in India.

Sudden deaths due to road fatal accidents have continued to be source of grief in a number of homes in India. There is scarcely a week that passes without an account of a ghastly road traffic accident with many deaths being recorded. Despite the annual road safety campaigns, warning against reckless driving and road marshals on our roads, it is unfortunate that the number of traffic accidents is always on increase leading to loss in both human and material resources through road traffic accidents.

Deaths as a result of motor vehicle accidents constitute a great economic loss to our society. Accidents have far reaching effects on families' life, on development and economic life of the country. The strained health services in the country often cannot adequately look after accident victims and there by entire families, relations, friends and collogues were suddenly swept away, which brings grief and economic hardship to the families and survivors.

Besides those that died in road traffic accidents there are many others who survived with residual disabilities of varying degrees of severity, who ends up as burden to the society. The country itself suffers by losing its talented and productive manpower often in the prime of life.
Road traffic accidents have physical, social, emotional and economic implications. The global economic cost of road traffic accidents was estimated at $518 billion per year in 2003 with $100 billion of that occurring in poor developing countries such as India.

India loses more than 80 billion annually to road traffic accidents. Of all subjects that are involved in road traffic accidents in India, 29.1 per cent suffer disability and 13.5 per cent are unable to return to work.

Table 1. Predicted Road Traffic Fatalities (2)

REGION	% CHANGE 2000-2020
South Asia	144
East Asia & Pacific	80
Sub-Saharan Africa	80
Middle East & North Africa	68
Latin America & Caribbean	48
Europe & Central Asia	18
Sub Total	83
High income countries	-28
Global total	66

LITERATURE REVIEW

Road safety engineering is a branch of traffic engineering that deals with reducing the frequency and severity of crashes. It uses several aspects such as physics and vehicle dynamics, as well as road user psychology and human factors engineering, to reduce the influence of factors that contribute to accident crashes.

Road safety engineering involves the application of road and traffic engineering principles, based on a sound analysis of all relevant data, with an understanding of road user behavior in order to identify and implement improvements to bring about cost effective reductions in crashes and casualties.

Road safety engineering should be applied at all stages of road/transport development such as in the planning of new developments, in the design of new roads, in safety improvements for existing roads, in remedial treatments of hazardous locations, and in routine maintenance programmes.

The three major components of highway safety are driver behavior, vehicle safety, and roadway safety. Roadway safety refers to that portion of overall highway safety that is determined by the roadway's physical features such as road design, roadway signs, pavement markings, operating conditions, roadside objects (such as utility poles, signs, trees, guardrails) etc.

Importance of Road Safety Audit

Road safety auditing is a recognized crash prevention road safety tool worldwide that has the following importance:

a) A reduction in the likelihood of crashes on the road network,
b) A reduction in the severity of crashes on the road network,
c) An increased awareness of safe design practices among traffic engineers and road designers,
d) A reduction in the need to modify projects after they are built,
e) A reduction in the life-cycle cost of a road,
f) A more uniform road environment that is more easily understood by road users,
g) A better understanding and documentation of road safety engineering,
h) Eventual safety improvements to standards and procedures,
i) More explicit consideration of the safety needs of vulnerable road users.

Importance of Road Safety Inspection

The main importance of road safety inspection in general can be summarized as follows:
a) To identify potential road or traffic safety concerns for all road users,
b) To minimize the risk and severity of road accidents that may result from the existing situation of a road section,
c) To minimize unsustainable losses to health and economy.

RECOMMENDATIONS

The following recommendations can be drawn from the case study:

a. The case study methodology as a safety audit should be followed and implemented on all present rural highway networks in India and all other roadways for evaluating the overall safety of the country roads.

b. Road safety audit surveys should be done for short intervals to observe changes in the road structure and equipment as well as the road environment.

c. Road Safety Audits are being considered as more and more important and widely used tools/applications to increase the road and the road environment safety.

It is necessary to introduce course programs to teach young highway engineers in all parts of India and world in general, about these techniques as quickly as possible. The different teaching techniques such as distant learning and distant workshop facilities should be applied.

d. Problems with the lack of dependable traffic and accident common database in India have adversely influenced the road safety activities. Thus, implementing reliable and well-designed traffic safety database including road and traffic statistics and records should be accepted as the first priority action in the recent future. This common database should be open to researchers with no restrictions.

e. India should start to invest in the researches of accident reduction factors for different road safety countermeasures that are currently not available but adapted from international studies. These researches require long-term studies and should be implemented as soon as possible.

Actions for Improving Road Safety on Highways

By planning more efforts for increasing highway safety, some transportation agencies have introduced safety programs specifically designed to study and improve some important geometric elements contributing to highway accidents.

At the same time, engineering design has greatly been improved in terms of increasing safety into road structure and environment. In earlier years, engineers designed and built highways, which provides a minor of protection to vehicles colliding with infrastructure or roadside elements outside travel lanes.

In 1960s and 1970s, engineers have started to build more “forgiving highways” which incorporated critical design elements that mitigated the consequence of colliding with elements beyond the travel lanes. More recently, engineers have begun to develop “caring highways” by emphasizing the need to prevent (rather than mitigate) collisions.

Although it is in practiced for nearly two decades, the concept of Road Safety Audits has only recently gained acceptance in North America. Originally developed in the United Kingdom in the 1980s as part of Accident Investigation and Prevention techniques, they have evolved to the point where they are now an integral component of the road safety process. Road safety audits help to ensure that issues associated with road safety are specifically addressed and are given equal importance as the other factors in a design project.

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