

“Road Safety Audit: A Case Study For Beed By Pass Road In Aurangabad City”

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Abstract: Total road network in India is about 3.3 million km, from which 65% is carried by freight & 85% by passenger traffic. Annual growth of road traffic is about 7-10 % & population of vehicle is growing at rate of 12% per year. Road Safety Audit (RSA) recognizes & provides possibilities for improvement in safety for all road users. RSA prevents instance of accidents or to reduce it. The motive of the study is to determine the accidents prone areas on the road from first information report, to study the road stretch & know relation accidents rates & reasons of accidents. In this project analysis of one of the major national highway of Aurangabad city will be considered, the location of interest is of Beed by pass road from Renuka Mata Kaman to T- point of Paithan road. The scope of study is to minimize accidents on the road and need for costly remedial work is reduced.

Keywords: Road Safety Audit, Road Accidents, Traffic, First Investigation Report, Inspection, Median..

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I. Introduction

Road Safety Audit first of all was adopted by UK in 1980, then introduced to Australia and New Zealand in 1990, in the mid of 1990, it moved to USA. Now it has adopted all over the world for safety purpose.

Out of 1.25 million road death worldwide every year, 8-10 % of all road deaths are in India. The road safety management system in India is very inferior due to untrained police officers, submitting incomplete record of fatal accident, always pointing the user mistake for the cause of accidents.

II. Road Safety In India

RSA also introduced in India & importance of RSA has realized by India. The ministry of road to construct the 8 packages of TNHP & 7 packages of GNTRIP on NH-2, the national highway authority of India handover it to CRRI to carry out RSA. It was about 900 km which was the longest road project for which RSA has done in the world. India realized the importance because of the ministry of road transport & highway sponsored the project on “Development of safety audit methodology for existing roadway sections” to CRRI in 2002. However, it has found that RSA can be carried out to all types of road.

III. Objectives of Study

The first object of carrying Road Safety Audit on Beed by pass road is to increase safety for the users. Specially, the objectives & various tasks to be achieved are as follow.

- 1) To collect the traffic intensity and description of Beed by pass road from Renuka Mata Kaman to T point of Paithan road.
- 2) To collect accident data of last 3 years from police station.
- 3) To collect perform accident data analysis.
- 4) To identify safety influencing parameter in reducing accidents rate.
- 5) To identify defects and conflict points on the road network which cause to accident.

IV. methodology

In this Road Safety Audit we have selected some parameter for deciding the condition of road and make some changes which reduce the rate of accidents & ensure more safety for road user.

The table of parameter is as follow.

| No | Content | Details | Detailed Score | Max Score | Achieved Score |
|----------------------|------------------------------------|---|----------------|-----------|----------------|
| 1 | Road Infrastructure and alignment | Road divided/ undivided | | 12 | |
| | | Sign board quality, direction boards, design, function | | | |
| | | Road marking, pavement condition, alignment | | | |
| 2 | Median type, design and condition | Type-Temporary/ Fixed, material | | 14 | |
| | | Width- ($\geq 0.5m$) | | | |
| | | Height- ($\geq 1m$) | | | |
| 3 | Shoulder provision and quality | Paved/ unpaved, pavement condition | | 8 | |
| | | Width ($\geq 1.5m$), function | | | |
| 4 | Footpath provision and function | Present / absent | | 12 | |
| | | Paved/ unpaved, pavement condition | | | |
| | | Footpath width ($\approx 1.8m$) function | | | |
| | | Footpath curb height ($\approx 0.15m$) | | | |
| 5 | Cycle track provision and function | Presence and pavement condition | | 12 | |
| | | Width ($\geq 2m$), function | | | |
| | | Track marking, design, signage | | | |
| 6 | Pedestrian crossings function | Location, type, controlled with appropriate green time | | 8 | |
| 7 | Land use (sensitive zones) | Special provision in sensitive zones (institutes, hospital) | | 4 | |
| 8 | Auto stand/Bus stand | Location planning, function | | 4 | |
| 9 | Parking | Type, function and design | | 6 | |
| | | Location and impact | | | |
| 10 | Encroachment | Type and density | | 8 | |
| 11 | Light quality | Light type | | 12 | |
| | | Intensity (at center of poles) | | | |
| Overall Score | | | | 100 | |

V. Data Collected

The data regarding the road accidents in Beed by pass road have been collected for a period of 4 years i.e. from 2014-2107. The data includes the accidents according to traffic at junction, nature of accidents, types & traffic isolation. Accidents format of 2017 which was collected from FIR from traffic police.

Table 1: Road Accident Format January To December 2017

| SR NO. | MONTH | FATAL | GRAVIOUS INJURY | MINOR INJURY | NO INJURY | TOTAL |
|--------|-----------|-------|-----------------|--------------|-----------|-------|
| 1 | January | 1 | 0 | 2 | 2 | 5 |
| 2 | February | 1 | 0 | 2 | 0 | 3 |
| 3 | march | 0 | 4 | 0 | 1 | 5 |
| 4 | April | 2 | 1 | 0 | 1 | 4 |
| 5 | May | 1 | 0 | 0 | 0 | 1 |
| 6 | June | 0 | 5 | 0 | 4 | 9 |
| 7 | July | 0 | 3 | 1 | 0 | 4 |
| 8 | August | 2 | 4 | 0 | 0 | 6 |
| 9 | September | 4 | 5 | 2 | 2 | 13 |
| 10 | October | 2 | 1 | 0 | 0 | 3 |
| 11 | November | 1 | 0 | 0 | 1 | 2 |
| 12 | December | 1 | 2 | 0 | 0 | 3 |
| TOTAL | | 15 | 25 | 7 | 11 | 58 |

TABLE 2: Accident According To Traffic Control At Junction

| SR NO. | TRAFFIC CONTROL | FATAL | GRAVIOUS INJURY | MINOR INJURY | NO INJURY | TOTAL |
|--------|-------------------------|-------|-----------------|--------------|-----------|-------|
| 1 | Traffic light signal | 6 | 7 | 1 | 4 | 18 |
| 2 | Police controlled | 0 | 4 | 1 | 1 | 6 |
| 3 | Stop sign | 0 | 0 | 0 | 0 | 0 |
| 4 | Flashing signal/blinker | 0 | 0 | 0 | 0 | 0 |
| 5 | Uncontrolled | 9 | 14 | 5 | 6 | 34 |
| Total | | 15 | 25 | 7 | 11 | 58 |

TABLE 3: Accident Classified According To Nature Of Accident

| SR NO. | NATURE & ACCIDENTS | FATAL | GRAVIOUS INJURY | MINOR INJURY | NO INJURY | TOTAL |
|--------|---------------------|-------|-----------------|--------------|-----------|-------|
| 1 | Hit and run | 4 | 9 | 1 | 0 | 14 |
| 2 | Pedestrian | 1 | 6 | 0 | 1 | 8 |
| 3 | Hit from back | 7 | 8 | 5 | 7 | 27 |
| 4 | Hit from side | 2 | 2 | 1 | 1 | 6 |
| 5 | Run off road | 0 | 0 | 0 | 2 | 2 |
| 6 | With animal | 1 | 0 | 0 | 0 | 1 |
| 7 | Fixed object | 0 | 0 | 0 | 0 | 0 |
| 8 | With parked vehicle | 0 | 0 | 0 | 0 | 0 |
| 9 | Vehicle overturn | 0 | 0 | 0 | 0 | 0 |
| 10 | Head on collision | 0 | 0 | 0 | 0 | 0 |
| 11 | Others | 0 | 0 | 0 | 0 | 0 |
| Total | | 15 | 25 | 7 | 11 | 58 |

TABLE 4: Accidents Classified According To Type & Traffic Violation

| SR NO. | TYPE OF TRAFFIC VIOLATIONS | FATAL | GRAVIOUS INJURY | MINOR INJURY | NO INJURY | TOTAL |
|--------|----------------------------|-------|-----------------|--------------|-----------|-------|
| 1 | Over speeding | 10 | 17 | 4 | 9 | 40 |
| 2 | Drunken driving | 0 | 2 | 0 | 0 | 2 |
| 3 | Driving on wrong side | 3 | 5 | 3 | 2 | 13 |
| 4 | Jumping red light | 0 | 0 | 0 | 0 | 0 |
| 5 | Use of mobile phone | 0 | 0 | 0 | 0 | 0 |
| 6 | No violation | 0 | 0 | 0 | 0 | 0 |
| 7 | Not known | 2 | 1 | 0 | 0 | 3 |
| Total | | 15 | 25 | 7 | 11 | 58 |

VI. Conclusion

- Reducing the risk of occurring in future as a result of planning decision on new transport infrastructure schemes.
- Minimizing the long term cost associated with a planning decisions.
- Minimizing the risk of accidents in future as a result of unintended effects of the design of road schemes.
- The performance analysis, expert visit and recommendations will be described in a next paper.

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