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# ROAD SAFETY AUDIT:- BLACK SPOT IDENTIFICATION ON THE STRETCH BETWEEN CHANASMA-PANCHOT CIRCLE

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**Abstract –** *Now a days is a main issue in transportation. The rate of accident increases year by year in the developing countries like India. An accident is unplanned & uncontrolled event. Accident results in death, injury, or damage of property. One moving vehicle is at-least included in the accident. The location on the road where accidents occur often is called black spot. To reduce this adverse effect, the work of road safety has become necessary. The main objective of this paper is to find out the black spot on the selected stretch i.e. chanasma-Panchot circle & understand importance of Road Safety Audit (RSA).*

***Keywords****- BLACK SPOTS, INVENTORY DATA, ROAD ACCIDENT, ROAD SAFETY AUDIT, TRANSPORTATION, ETC.*

## I. INTRODUCTION

*A. General:-*

The road accidents deaths and injuries are global phenomena but more sever situation in mixed traffic condition as prevailing on Indian multilane highways. According National Crime Records Bureau, Ministry of Road Transport & Highway, Law commission of India, Global status report on road safety 2015, total number of accident in 2014 & 2015 were 4,89,400 & 5,01,423 respectively. Total number of Casualties occurred in 2014 & 2015 were 1,39,671 & 1,46,133. This accounts about 10% of total world's fatal accident. There is one death at every 4 min due to road accident in India. Number of People injured in road accident were 4,93,474 & 5,00,279 in 2014 & 2015 respectively. One serious road accident in the country occurs every minute. 57 accident & 17 people die on Indian roads every hour. 1214 road crashes occur every day in India. 377 people die every day, equivalent to a jumbo jet crashing every day. About 23.6 Percent, 80.6 Percent, 23.4 Percent increase in total number accident, fatal accident & injuries accident from 2001 to 2015.

*B. Black Spot:-*

The location in a road where the traffic accidents often occur is called a Black Spot. An accident black spot is a term used in road safety management to denote a place where road traffic accidents have historically been concentrated. It may have occurred for a variety of reasons, such as a sharp drop or corner in a straight road, so oncoming traffic is concealed, a hidden junction on a fast road, poor or concealed warning signs at cross-roads etc.

*C. Road Safety Audit (RSA):-*

The RSA is a formal procedure for assessing accident potential and safety performance in provision of new road schemes and schemes for improvement and maintenance of existing road. A key feature of a road safety audit is the use of a team of professionals with varied expertise. The team should include highway safety engineers, highway design engineers, maintenance personnel, and law enforcement. Additional specialties should be added to the team as needed. The team members must not be involved in the design or maintenance of the facility being examined, so that they can have an objective point of view.

## II. OBJECTIVES OF RESEARCH

The main objectives of this paper are:-

i. To carry out the existing road condition survey for the selected stretch.
ii. To identify the black spot on the selected stretch.

## III. STUDY AREA

The state of Gujarat is located in the Western part of India. The State capital Gandhinagar is located near Ahmedabad. It is situated between $20^0$ 06'N and $24^0$ 42' N latitudes and $68^0$ 10' and $74^0$ 28'E longitudes. It has an area of about 196024 Sq.km. The NH-68 Connects Jaisalmer in Rajathan and Prantij in Gujarat with a total distance of 591 km. The long route passes through important places like Barmer, Sanchor, Tharad, Bhabhar in Rajasthan (307 km), Radhanpur, Patan,

Chanasma, Mehasana, Gozaria in Gujarat (280 km). The selected stretch starts at Chanasma & ends at Panchot Circle. Approximately the total actual length of the Project road stretch is 28.500 km. The longitude & latitude of Chanasma is 23.7192° N, 72.1090° E while that of Mehsana is 23.5880° N, 72.3693° E.

## IV. ANALYSIS OF ACCIDENT DATA

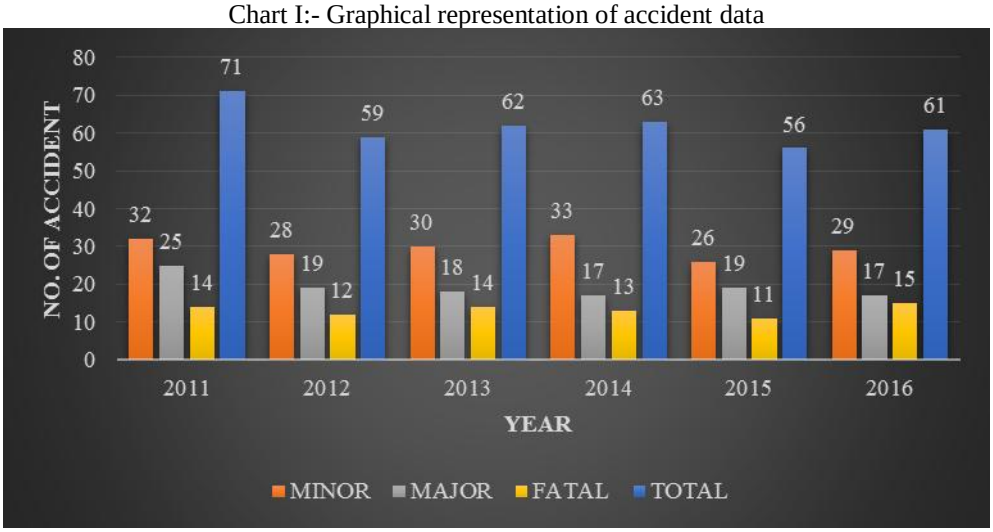
The accident data were collected from Chanasma & Mehsana taluka police station from 2011-2016. Total 372 accident occurred on the stretch. Out of which 178 are minor, 115 are major & 78 are fatal accident.

Table I:- Year vise accident data

| Year | Minor | Major | Fatal | Total |
|---|---|---|---|---|
| 2011 | 32 | 25 | 14 | 71 |
| 2012 | 28 | 19 | 12 | 59 |
| 2013 | 30 | 18 | 14 | 62 |
| 2014 | 33 | 17 | 13 | 63 |
| 2015 | 26 | 19 | 11 | 56 |
| 2016 | 29 | 17 | 15 | 61 |
| Total | 178 | 115 | 79 | 372 |

The chart below shows the graphical representation of accident data from 2011 to 2016

Chart I:- Graphical representation of accident data




## V. BLACK SPOT IDENTIFICATION

Based on accident record, the black spot is being identified. The accident details according to spot in whole stretch is being show below

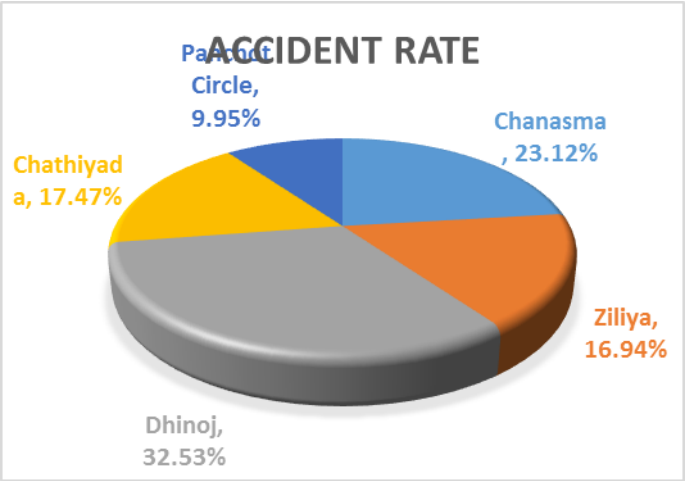
Table II:- Accident statistics at every locations of Study area from the year 2011 to 2016

| Link Name | Minor | Major | Fatal | Total |
|---|---|---|---|---|
| Chanasma | 43 | 25 | 18 | 86 |
| Ziliya | 28 | 18 | 17 | 63 |
| Dhinoj | 59 | 38 | 24 | 121 |
| Chathiyada | 32 | 21 | 12 | 65 |
| Panchot Circle | 16 | 13 | 8 | 37 |
| Total | 178 | 115 | 79 | 372 |

The chart below shows the rate of accident occurrence at every spot. This chart clearly indicates the spots having occurrence of maximum accident. With reference to the details appeared in chart, the two spots with maximum accidents are determined as black spots.

Chart II:- Pie chart representation of locational accident statistics




The black spots identified from chart above are Dhinoj & Chanasma. The accidents occurred at these spots are more than 50% of total accidents occurred on the whole stretch during last 5years. Because of the higher rate of accidents at these spots they are identified as black spots of the study area.

Table III:- Accident statistics at black spots of Study area from the year 2011 to 2016

| Link Name | Minor | Major | Fatal | Total |
|---|---|---|---|---|
| Chanasma | 43 | 25 | 18 | 86 |
| Dhinoj | 59 | 38 | 24 | 121 |
| Total | 102 | 63 | 42 | 207 |

## VI. ROAD INVENTORY DATA

Road inventory survey was carried out from Chanasma to Panchot Circle. There are two different locations selected as black spots as mentioned before. The inventory survey was carried out at the black spots. The locations are Chanasma & Dhinoj. The inventory details of the spots are as follows:

Its 2-Lane. The width of road is of 12.88 m. No median. One railway crossing pass through this link. 2 minor Junction on this link. No drainage facility. No parking facility. No bus bay. Plantation obscure visibility of road sign. No rest area & truck parking. Opportunities for overtaking of heavy vehicles is not available. No facility available for cyclist. No signs for pedestrians.

## VII. CONCLUSION

From the study of the above stretch it is seen that the following deficiencies are visible as seen below:

1. The black spots are identified based on police record, deficiencies of geometric like Non availability of footpath, service lane, parking lane etc. Non Availability of speed breaker, improper zebra crossing, no traffic signal, unauthorized parking.

2. Based on the accident data majority of accidents occurred at the Chanasma & Dhinoj.

3. There are no of traffic signals provided at any of spots.

4. There is no provision of parking lane

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