

Road Safety Audit of Delhi – Mathura Road

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Abstract: Road Safety audit is the formal procedure for assessing accident potential and safety performance in the provision of new road schemes, the improvement and rehabilitation of existing road and maintenance of roads. The role of the auditor is to provide independent advice in the form of written recommendations. This paper explores the defects in the design and other safety features. This study highlights even the psychological factors involved in understanding the behavior of pedestrians and vehicular traffic. The main tool is Road Safety Audit. The road selected for this study is Delhi to Mathura road near CRRI, construction site at Mewala Maharajpur Station & Okhala Interchange. This audit is a part of CRRI Road Safety Audit Training Program. In conclusion, we argue that significant measures should be taken on Road Safety aspects to mitigate the accidents and ensure the safety to pedestrians and vehicular traffic.

Keywords: Accidents, CRRI, Pedestrians, Road Safety Audit, Safety, Vehicular Traffic.

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I. Introduction

Accident prevention and Accident reduction are the two main strategies in road safety work. In accident reduction, we use the knowledge of accidents that have occurred on our existing roads to improve the design of the roads or to influence the behavior of road users, so that similar accidents do not occur again.

RSA is a formal process and not an informal check

1. Carried out by persons who are independent of the design and the construction
2. Carried out by persons with appropriate expertise, experience and training
3. Restricted to road safety issues

Road safety audit assess the operation of a road, focusing on road safety as it affects the users of the road. These users include pedestrians, cyclists, motorcyclists, truck/ bus drivers, on road public transport users, etc. The outcome of a road safety audit is the identification of any road safety deficiencies and formulation of recommendations aimed at removing or reducing those deficiencies

Table1 Percentage wise contribution of various elements in road accidents

ELEMENT	PERCENTAGE
Road User	65.0
Road and Surroundings	2.5
Vehicle	2.5
Road User, Road Surroundings	24.0
Road User and Vehicle	4.5
Road User, Road & Surroundings and Vehicle	1.5

Road users are not perfect. Behavior of road users appears as a contributing factor in all the road accidents. Road users include drivers and even pedestrians. The main cause for the accidents is road users. Confusion in drivers, fatigue, stress, negligence may lead to the accidents.

II. Site Selected

The area selected is at 2 places, one is the construction site and the other is the flyover or ramp. The road selected for this study is Delhi to Mathura road near CRRI, construction site at Mewala Maharajpur Station & Okhala Interchange.



Figure 1 The above image shows the Mewala Maharajpur metro station.

Construction was going on at this area. They allowed even the traffic near the construction without proper safety measures which is causing the hazard and accident-prone area. Some of the factors like whether the transitions from the existing road to the site of works safe and clearly laid out, whether the sight distance and stopping distance adequate at site of works safe and clearly laid out should be checked.

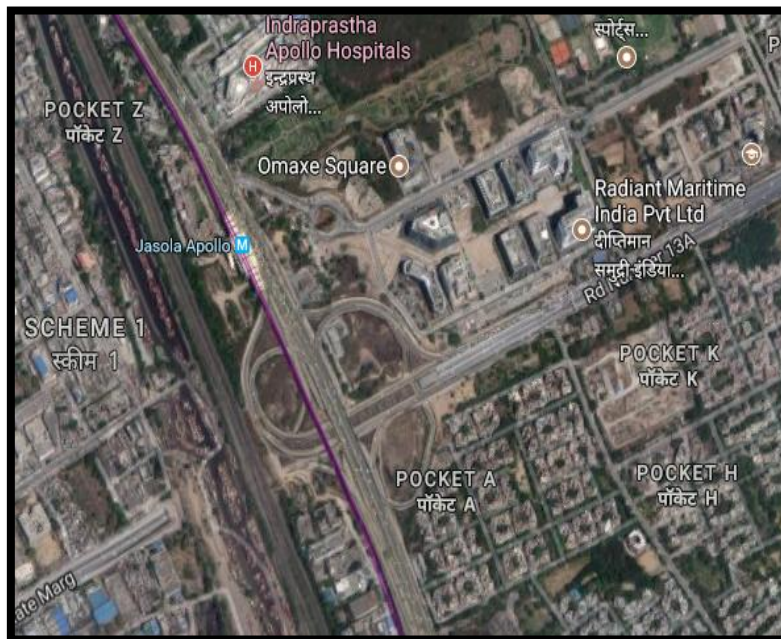


Figure 2 Image showing OKHALA Interchange

Interchange connects various roads and directions. We have noticed few issues which may be considered like structural defects and some safety issues related to vehicle traffic. Improper sign boards creating a confusion to the drivers. Some of the factors like is the layout encourage slow controlled speeds at and the approach to stop/ give way lines and other critical decision points, is the provision of night time lighting adequate, if not what are the deficiencies.

III. Investigations And Recommendations



Figure 3 The column of the foot over bridge near to the carriage way

2.1 Observation

Pillar of foot-over-bridge is hazardous as it is very near to the main carriageway.

Reason for Concern:

Any driver if loses control on the steering may hit the pillar which may be fatal.

Recommendation:

The foot-over-bridge should be re-designed to relocate this pillar away from the footpath.

Priority: Essential.



Figure 4 Open Entry to construction site

2.2 Observation

Open Entry to construction site

Reason for Concern:

Traffic from the main carriageway is entering to the construction site, they must come back after realizing the mistake.

Recommendation:

A flagman shall be deployed at the entrance to guide the traffic to use the diversion.

Priority: Highly Essential.



b

Figure 5 Sign boards without retro-refractory background & Men at Work is faded not visible clearly

2.3 Observation

Sign boards without retro-refractory background and reused old ones.

Reason for Concern:

Visibility in night is not clear as there is not reflection of the background yellow color. Vehicle users directly enters the construction site and may hit any objects. Road user do not get the clear information about the work site. To get alert while driving.

Recommendation:

The diversion signage and men at work signage shall be replaced with the new retro-reflective signs to avoid the accidents in night.

Priority: Highly Essential.



Figure 6 Barricading of working area causing hazard

2.4 Observation

Barricading of working area of the retaining wall (Approach to the flyover) with the help of wire mesh along with angleposts not placed properly. Some of the wire mesh & angle posts are damaged and exposed towards the carriageway.

Reason for Concern:

It is exposed to the direct road users may cause accidents in night as it is not visible in dark hours.

Recommendation:

The barricading provided to the working area with the MS sheets properly welded to the angle posts and with the retro-reflective signs should also be provided.

Priority: Essential.



Figure 7 Vehicles climbing over the median due to damaged median.

2.5 Observation

Vehicles climbing over the median due to damaged median.

Reason for Concern:

Major obstruction to the traffic coming on the other side of the road and this may be the hazard to the oncoming traffic.

Recommendation:

Median shall be restrained/repared and proper U turn shall be provided

Priority: Essential.



Figure 8 zebra crossing on the flyover.

2.6 Observation

Zebra crossing on the flyover

Reason for Concern:

Zebra crossing is not necessary on the flyovers or ramps, as pedestrians are not allowed on it. This creates the unnecessary disturbance to the riders. This also encourages the pedestrians to use the flyover, which is a great harm to them.

Recommendation:

Pedestrian should not be allowed on the flyovers and the zebra crossing marks need to be removed

Priority: Essential



Figure 9 median without sign board and no acceleration lane

2.7 Observation

Sign boards were not provided at the opening of the median & acceleration lane is not provided.

Reason for Concern:

It is a dangerous threat to the vehicular during night. Acceleration lane is not provided for climbing the ramps, this had been a very difficult to the heavy vehicles and this is causing the traffic slow movement

Recommendation:

Proper sign board need to be provided and acceleration lane need be provided for the smooth flow

Priority: Highly essential



Figure 10 Heavy truck parked on the acceleration ramp & bushes causing the blind spots during acceleration operation and it has a sharp curve

2.8 Observation

Heavy truck parked on the acceleration ramp & tress, bushes causing the blind spots during acceleration operation and it has a sharp curve

Reason for Concern:

Parking vehicles can create a blind spot and they will be as an accident causing elements on roads. Sharp curve is not good in terms of sight distance

Recommendation:

Strict provision should be there to avoid the stopping or parking of vehicles on ramps. Direction signs need to be provided to indicate the turning direction

Priority: Essential



Figure 11 Chevron sign are not reflective

2.9 Observation

Chevron signs are not retro reflecting materials

Reason for Concern:

It can be seen clearly during night times. Vehicular don't get a clear idea about the curve of the flyover during nights

Recommendation:

The sign should be replaced with the new retro reflection sign boards. Here the retroreflective signs should be placed so that they are clearly visible during nights which can guide the turning operation on ramps

Priority: High Essential

IV. Conclusions

This paper presented a Road Safety Audit that highlighted issues in safety management. It examined the defects in the road safety in relation to motorized traffic. It suggested the various recommendations which are easy to do and at low cost. The audit is applied to the risks outside the framework of standards and codes. User friendly considering the human psychology on a par with laws of physics and mechanics, which will ensure higher traffic safety level due to prevention of errors in road users behavior making it more predictable and safe.

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