

## **INAUGURAL ROAD SAFETY SEMINAR BY BRO ON 06 SEP 2021**

1. **General:** A presentation was given by project Vartak on 06 Sep 2021 during inaugural Road Safety Seminar on counter measures to be adopted against over speeding to enhance safety potential of roads. The major aspects covered during the presentation and recommendations made on the subject are enumerated in succeeding paragraphs.

2. **Introduction** : The speed limits specified for various road and terrain conditions are as follows:-

a) Speed limit given as per the MORT&H guidelines are as follows:-

- i) Express ways - 120 KMs/Hrs
- ii) Highways - 100 Kms/Hrs
- iii) Urban Roads - 70 Kms/Hrs

(b) Speed limits specified for various terrains condition by BRO Policy letter No. 21801/PC/DGBR/41/TP/(P) dated 12 Jan 2017 are as follows:-.

- (i) Plains - 80-100 KPH
- (ii) Mountains - 40- 50 KPH
- (iii) Steep terrain - 30- 40 KPH

3. It has been observed that these speed limits are not followed in letter & spirit by people and generally the drivers tend to do over speeding since road infrastructure have improved tremendously over last one decade. The new generations of vehicles have also been introduced by automobile industries which are capable of moving at very high speed thus 70 % of road accident take place due to over speeding.

4. **Road Accident Data:** On Analysis the data available on road accidents the following facts gets highlighted:-

(a) Road Accident accounts for more than 1.35 millions deaths as reported by Global Status report on Road Safety in 2018. 90% of these deaths are occurring in developing countries of which 11% deaths occurs in India.

(b) Social- Economic costs of Road Accident reported in India in 2018 was Rs. 1, 47,114.00 Crore, which is about 0.77% of our GDP.

(c) India ranks First in the number of Road accidents deaths as reported by World Road Statistics in 2018 followed by China and USA.

(d) Majority of Victims are vulnerable road users and in productive age group between 15- 34 years. Two wheelers accounts for 37 % of deaths, Pedestrians- 17% & Light Vehicle accidents are about 16%.

(e) Commitment has been made by India at Third Global High Level Conference on Road Safety in Stockholm in 2020 to reduce its deaths & Injuries due to road accidents to 50% in next ten years.

5. Causes of Road accidents : Over speeding is a major cause of road accidents death but following factors coupled with over speeding can be attributed for increase in the fatal cases due to road accidents :-

(a) Fault of Drivers/Pedestrians/ Motor Cycle: Reckless driving by driver in hurry to reach their destination is one of the major causes of fatal accident. At times pedestrians are careless and also cross the road without looking for the approaching vehicles.

(b) Defect in Vehicles : Poor maintenance of vehicles, and use of old vintage vehicles causes frequent defect in them, at times these defects occur when the vehicle is moving at high speed which causes fatal injury to drivers and pedestrians moving on road side.

(c) Improper Road Conditions: Poor road condition with pot holes and uneven surface can result in drivers losing control over their vehicles and it can lead to fatal accident.

(d) Improper Junction of uneven Road width. : At time due to encroachment of road/pavements shoulder width of road becomes restricted which causes accidents to occur on these stretches of road.

(e) Lack of traffic signage of road marking: It has been observed that many roads don't have proper road traffic signage and road marking on vulnerable stretches like sharp turn and road crossings are not placed which can causes accident.

(f) Adverse weather condition: From the past, experience it has been seen that the rate of road accident increases during rainy season and foggy weather. The poor visibility due to these factors is also one of the reasons for road accidents.

(g) Slides/Shooting boulders in Mountains. In mountains the slides are common phenomena and many stretches are prone to shooting stones and landslides. A large number of road accidents in hilly region occur due to land slide and shooting stone which generally occurs during rainy season.

(h) Drunken driving: Though drunken driving is prohibited by law but at times people drive vehicle commercial /private in state of intoxication, drivers don't have proper control over their vehicles and they tend to drive recklessly causing accident on the road.

(j) Use of Mobile. : The use of mobile phone while driving can causes accidents on roads since it distracts the concentration of driver.

6. Some of the counter measures which are used all over the world as counter measures against over speeding are:-

- (a) **Hump shaped Speed breaker surface across the road way** A speed breaker is a hump surface across the roadway having a rounded shape with width greater than the wheel base of most of the vehicles using the road. It is designed in a manner that no damage to vehicles or excessive discomfort is caused to the drivers/passengers when vehicles passes over the hump shaped speed breakers with a given speed limit. However, its limitation is that it cannot be constructed national highways.



- (b) **Rubber/ Rumble Strips**: - It is a corrugated pavement that causes rumbling sound and vibrations when vehicle passes over it ; this alerts the driver to caution him to reduce his speed him to. It can be used on all Highways.



- (c) **Speed/ Cushion** :- Speed Cushion are either speed hump or speed tables that include wheel cutouts to allow large Vehicles to pass unaffected, while reducing the speed of passenger cars.



- (d) **Speed tables** :- Speed tables are midblock traffic calming devices that raise the entire wheel base of a vehicle to reduce its traffic speed. Speed Tables are longer than speed humps and are flat-topped, with a height of 3-3.5 inches and a length of 22 feet. Vehicle operating speeds for streets with speed tables range from 40 KPH, depending on the spacing .



- (e) **Raised Intersection** :- Raised Intersection creates a safe, slow speed crossings and public space at intersections. It is similar to Speed Table.



- (f) **Chokers**:- Chokers are Curb extensions that narrow a street by widening the side-walk on planting strips, affectivity creating a pinch point along the street. Choker can have a dramatic effect by reducing a two-lane street to one lane at Choke point.





(g) **Chicanes** :- Chicanes is a series of alternating mid-block curb extension or islands that narrow the roadway and require vehicles to follow a curving S-Shaped path, in the process the driver has to reduce the speed of his vehicles.



(h) **Neck down** :- A narrowing of a road ways at an intersection in a residential area. It is intended to slow vehicular traffic and to increase the safety of pedestrians at important congested junctions.



(i) **Transverse Rumble strips** :- Transverse rumble strips are grooves cut into the pavement that act as a warning device. The sound of Vibration created when vehicles at speed pass over them, thus giving warning to the driver to slow down their speed.



(j) **Optical Speed Bars** :- Optical Speed Bars are transverse stripes spaced at gradually decreasing distances. The rationale for using them is to increase driver's perception of speed and cause them to reduce their speed.



(k) **“SLOW” Legend on Pavement** :- A pavement marking legend painted on road surface to indicate to reduce speed. This also imposes cautions among the driver to slow down their speed.



(l) **Speed Limit Sign with LED (Speed Feedback Sign)** :- Speed feed back signs (SFS), also known as dynamic speed display provides drivers with feed back about the speed in relationship to the posted speed limit on that particular stretch of road. When appropriately complemented police enforcement, SFS can be an effective method for reducing speed at desired location it is generally used in the NH/Major cities



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(m) **Curve Delineation** :- Edge delineation treatment help drivers to judge their position on the road and help them to know about condition ahead, it is helpful to visibility is poor due to rain /fog.



7. The measures which are recommend to be adopted against over speeding in our road are given below :-

- (a) Speed Limits and Vehicle Control Sign: - Setting speed limits is primary tool to counter over speeding.
- (b) Factors to be considered for setting speed limits are as follows :-
  - (i) Traffic mix
  - (ii) Crash History
  - (iii) Road shoulder width
  - (iv) Road delineation
  - (v) Road and Lane width
  - (vi) Degree of Development along the Roads
  - (vii) Volume of Traffic Flow
  - (viii) Sight Distance for Over taking safety
  - (ix) Identification of Black Spots occurring due to over speeding couple with lay out of road.
  - (x) Advisory speed warning sign.
- (c) Advisory speed warning sign.
- (d) Engineering Measures of Road :-
  - (i) Fixing of crash barrier
  - (ii) Edge Marking and Centerline Marking
  - (iii) Fixing of Cat Eyes
  - (iv) Fixing of Delineator
  - (v) Rubber/Rumble Strips
  - (vi) Speed Breaker/Humps on other than highways
  - (vii) Raised Intersection
  - (viii) "Slow" Legends on Pavements with Fluorescent paint
  - (ix) Digital Speed Feedback Sign
  - (x) Curve Delineation
  - (xi) Improve Night Vision
- (e) Installation of speed limit device (SLDs) in commercial vehicles
- (f) Changing behavior by Public Education :-
  - (i) By Changing Drivers Speed behavior.
  - (ii) Conducting Road Safety Campaigns.
  - (iii) Public figure as a Role Models.
- (g) Creation of data base for Accident Prone Area's for all roads.
- (h) Speed compliance incentives.
- (i) Legislative measures

## 8. **Road Safety Audit**

Road Safety Audit must be carried out to identify hotspots and accident prone areas to minimize the effect of accidents. The important aspect related to road safety are highlighted below:-

(a) Road Safety Audit (RSA) is defined as the systematic process of examining the planning, design, construction of road project and of the features and operation of an existing road by independent and qualified auditors to determine any potential hazard of road.

(b) Objective of safety audit should be to maintain a safe place of work through hazard recognition and removal, to verify whether employees are adhering to the local safety procedures, to make certain facility, equipments and operations meet the required local, state and National, health and safety requirements.

9. **Conclusion** : \_The importance of counter measures against over speeding cannot be over emphasized. These measures will enable us to mitigate the losses which the nation suffers due to fatal road accident. Technology should be in-corporated in a manner that it helps the people who are driving as well as the agencies who are monitoring /regulating the traffic on Express Ways/ Highways/Urban/Rural roads to reduce the road accident. A holistic approach by adopting passive as well as active measures can reduce the road accident to a great extent in our country.

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