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Review Paper on Speed Reduction Methods to Promote Road Safety and to Save Lives

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Abstract: ***The traditional and important road safety benefits of lower vehicle speeds include saving lives and reducing the impact and likelihood of crashes. However, speed reduction has important additional benefits that increase the quality of life for neighborhoods and bigger urban areas, but also for society at large. Speed reduction measures fall into the categories: direct – infrastructure, vehicle technology and enforcement and indirect – signage, education and publicity. Similar a small decrease in average vehicle speed across a road network will lead to a considerable reduction in traffic fatalities and the severity of injuries. In this paper, study was carried out on types of speed reduction infrastructure and their utility to reduce the speed of vehicle. High Speed of vehicle get uncontrolled on curve, so in this paper more attention given to application of speed reducer infrastructure on curve.***

Keywords: hump, chicane, infrastructure, gateway, rumble strip.

I. INTRODUCTION

Road traffic crashes are a major cause of death and disability. The speed at which a vehicle travels is an important determinant of injury; the faster the vehicle is travelling, the greater the energy inflicted on the occupants during a crash and the greater the injury. Excessive speed (driving faster than the posted limit or too fast for the prevailing conditions) has been found to contribute to a substantial number of crashes. It is predicted that, if the number of speeding drivers is reduced, both the likelihood and severity of a crash will be lowered. Various direct infrastructure could be incorporate to reduce the speed of vehicle. Edge stripping is one of the best infrastructures to reduce the speed on curve. Many times speed of vehicle on curve is more than the design speed of curve and which leads accident.

II. DIRECT INFRASTRUCTURE.

A. Speed Humps an Raised Platforms

Infrastructure is located on roads to reduce the speed of vehicle. Speed humps are enforced on road at appropriate location by study of accidental or vulnerable spots on the roads.



Fig. 1 Speed hump

Raised pedestrian crossing will be enforced at the zebra crossing which mitigate the over speeding of vehicle.



Fig. 2 Raised pedestraian

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B. Gateway Treatments

Gateway treatments indicate a new speed regime from a higher speed or access road e.g. when entering a built-up or residential area, school or increasingly popular Low Speed Zone Gateway treatments alert drivers that they are entering a slower area. This treatment may include signage, entry portals, speed tables, raised crossings, and curb extensions.



Fig. 3 Gateway infrastructure treatment in red color to indicate new speed regime



Fig.4 Gateway infrastructure near school zone.

C. Pavement Narrowings and Chicanes

Pavement narrowing and chicanes force lower traffic speeds due to required steering and yielding issues.



Fig.5 Road narrowing near a school in the UK

A chicane is a series of alternating mid-block curb extensions or islands that narrow the roadway and require vehicles to follow a curving, S-shaped path, discouraging speeding. Chicanes can also create new areas for landscaping and public space in the roadway. Chicanes should not be located on streets with Rapid or Local lines per Muni's operating framework. Though generally discouraged, chicanes may be implemented on streets with Community lines only; in these cases, the chicane should be located at a bus stop so that the impact on transit service and passenger comfort is minimized.

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Fig.6 Chicane infrastructure in red color.

D. Optical Markings

Treatments with optical markings give a feeling or illusion that the driver is going too fast. Speed should then be subsequently reduced. Optical methods to reduce speeding with higher marking density toward the curve or as gateway treatment.



Fig.7 Optical marking on curve.

E. Rumble Strips.

Rumble strips produce a vibration and rattling noise when crossed and draw attention and cause corrective action e.g. reducing speed. Rumble strips may be used as gateway treatment when entering a school zone,urban area with a different speed regime. They can be used as a stand alone measure or in combination with speed humps, raised platforms or road narrowings.

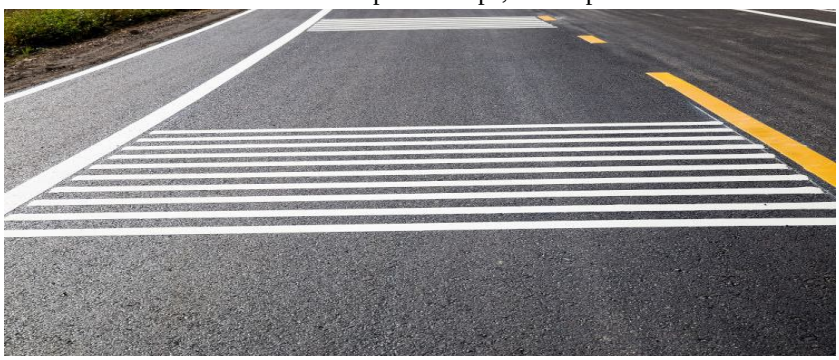


Fig.8 Rumble along the length of road at midway.

Rumble strips along the edge of the road may be used as gateway treatment when passing the vehicle on heavy traffic road.



Fig.9..Rumble along the edge of the road on curve.

Rumble strips along the edge of the road on curve may be used as gateway treatment when passing the vehicle on curve. Many of vehicle having high speed than that of the design speed of curve. It necessary to reduce speed of vehicle on curve. During negotiating vehicle on curve, it may get out the road due to high speed and lead to accident.

III.CONCLUSIONS

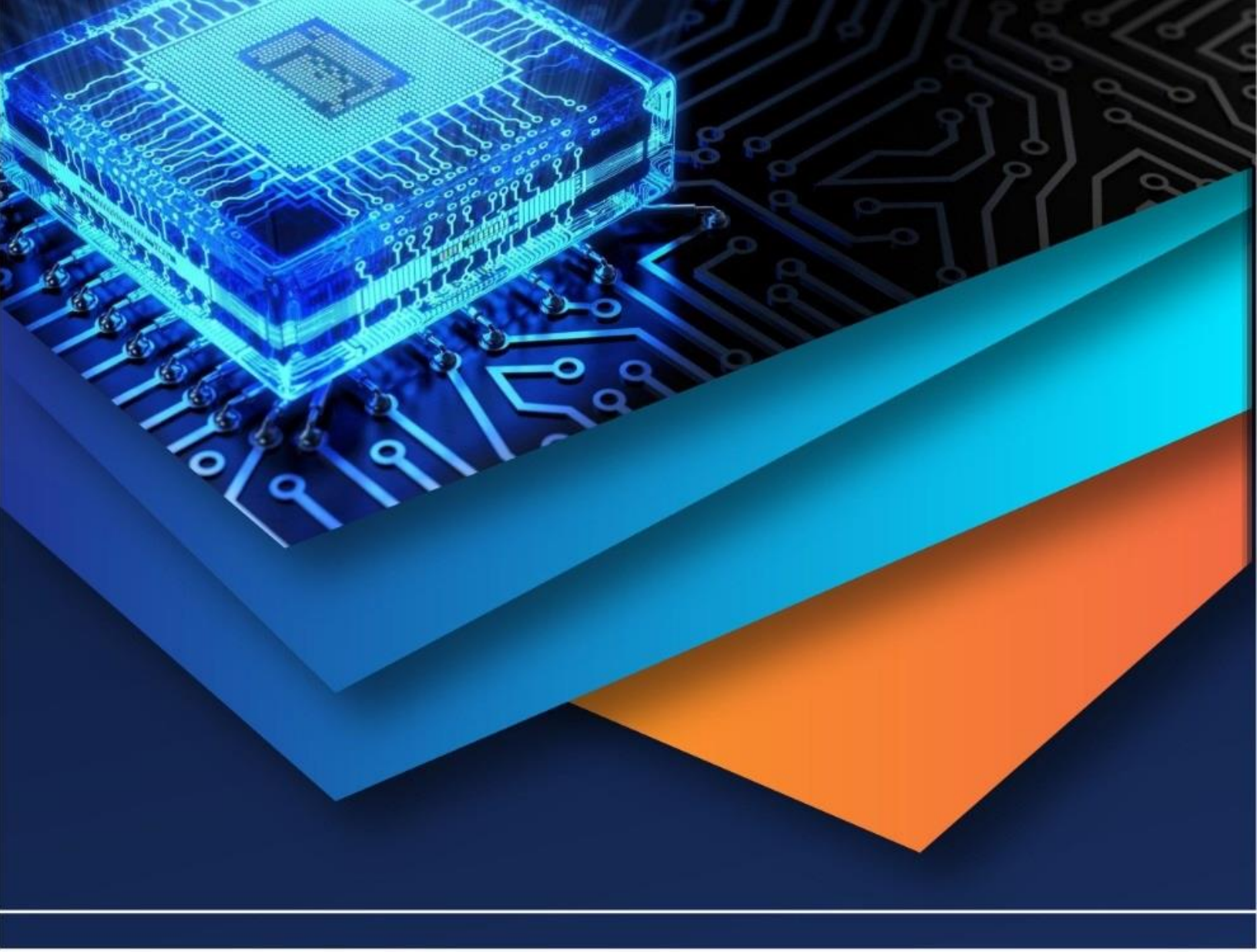
The direct infrastructure presented is not meant as a contest for the best solution for speed management. These methods are complementary and, when feasible, should all be applied at the same time.

Both manual and automated speed enforcement, as gatekeepers of proper driving behaviour, are a crucial cornerstone of road safety. Besides the new automated speed enforcement methods and technologies, regular manual speed enforcement by police officers remains indispensable as an important speed management measure.

One of the key aspects to improve road safety is to reduce the average network speed of all vehicles on streets, roads and motorways. This reduces the aggregate level of energy in the road network and will pay off quickly in fewer and less serious crashes and thus casualties and injuries. Research work is needed on proper location, size of direct infrastructure application along with sign convention of direct infrastructure

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