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Survey Paper on Rolling Barrier System

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Abstract: India is emerging country in all sector India's transport sector is large and diverse. The latest emerging technologies for road safety working on ways to avoid or reduced road accidents to road userswith special concern by minimizing the causes of road accidents. So in this paper study is carried out to minimize or reduce adverse effects of road accidents with the help of rolling barrier system. The roller barriers are extremely effective and it's implementation has given manifested results in minimizing the road accidents. Rolling barriers provides cushioning effect during crash and reduces the high speed effect constitutes material resilience with stiffness and have other performance characteristics that reduces injury to individuals and damage to their vehicles.

Keywords: Accidents, Rolling Barrier, Stiffness, Resilience,Crash Cushioning

I. INTRODUCTION

In Stockholm the third global ministerial conference on road safety was held, Sweden on 19 and 20 February, 2020. At this conference, all the participants including India, reaffirmed their strongcommitment for achieving the goals of reducing road accident related deaths by at least 50% by 2030. To achieve this goal rolling barrier system is one of the best way. The Rolling Barriers are the barrier thatabsorbs impact energy and converts that impact energy intorotational energy and directs the vehicles forward rather than potentially breaking through an immovable barrier.

A. Objective

1) To reduce the risk level during median divider acci-dents and reduces injury severity.
2) Provides cushioning effect during crash.
3) It converts impact energy into rotational energy topropel the vehicle forward.
4) In every roller there is reflective tape to alert thedrivers.

B. Related Work

India's first rolling barrier guardrail system has been successfully installed on the Nahan to kumarhatti section of NH 907A in Himachal Pradesh as a pilot project. There areplans to install the barriers on several other section pof national highways across india or in the areas frequently exposed to accidents. Also roller crash barriers installed for first time in tamilnadualong Kalhatti Ghat road in Ooty .It is being fitted with special crash barriers to make the 19km stretch connectingThalakundah in Udhagamandalam to the Mudumalai TigerReserve safe

C. Problem Statement

Compare to other type of barriers like reinforced concrete ,this rolling barrier which is made of urethane which resource availability is lesscompare to reinforced concrete. At hightemperature in summer season the rubber characteristics features is that it tends to low resistance property. So that plays major role in rolling barrier system but can be restricted ormaintain by proper inspection

D. Scope

It should be implemented at highways where accidents occurs repeatedly in India like MumbaiPune Expressway, Mumbai-Agra highway(Kasara ghat),Mumbai-Kolhapur highwaywhere vehicles are at high.

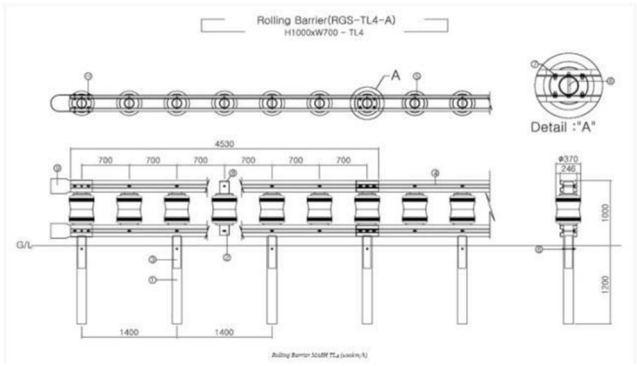
II. PROPOSED SYSTEM

Site selection: NH 48 Mumbai Pune expresswayData available on NH 48 has been selected on basis of small section of curve which is selected as a project site which is having speed of 60kmphvehicle designing the rolling barrier. Movement on the NH 48 were very high and frequently all sort of vehicles passes through it. However manyaccidents do occur at curve therefore using rollerbarrier will reduce the risk of accident. South Korean company named "KSI", has designed the rolling barrier.

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In this design all dimensions are inmm. Here given the name of roller is A. 370m is the total diameter of the roller,and the rounded stainless steel's diameter is 246mm. the distance between one posts to another post below the soil is 1400mm A spans distance is 4200mm. One roller to a different roller center to center distanceis 700mm. the vertical distance from ground level(GL) to further is 1200mm and therefore theheight of top is 1000mm. There have inner post, sub-post, w rail style stainlesssteel, muffler roller,post cap etc. Performance test has been allotted by KSI global to match normal and rolling barrier to livethe degree of harm imparted to the barrier during a vehicleimpact of the crash test (test 1). It had been observed thatthe traditional barriers experienced more damage as compared to rolling barrier. in a very similar crash test (test 2) a comparison is finished between railroad car and heavy vehicle impact to rolling barrier. it absolutely was seen that impact of carriage delivered no damage to the rolling barrier, while slight damage is recorded just in case of heavy vehicle.

III. SYSTEM ARCHITECTURE



A. Advantages

1) Made of special chemical compound like hard rub-ber.
2) Easy to maintain due to separated barrels (recycla-ble).
3) Stopper boards installed on the top and the lowerpart of the barrels to guide objects back to the road.
4) Easy to adjust height, noticeable to drivers due tonoticeable coloration and self luminescence.
5) Noticeable to drivers due to noticeable colorationand self-luminescence.
6) Less costs to install (less post- I unit per 2m)

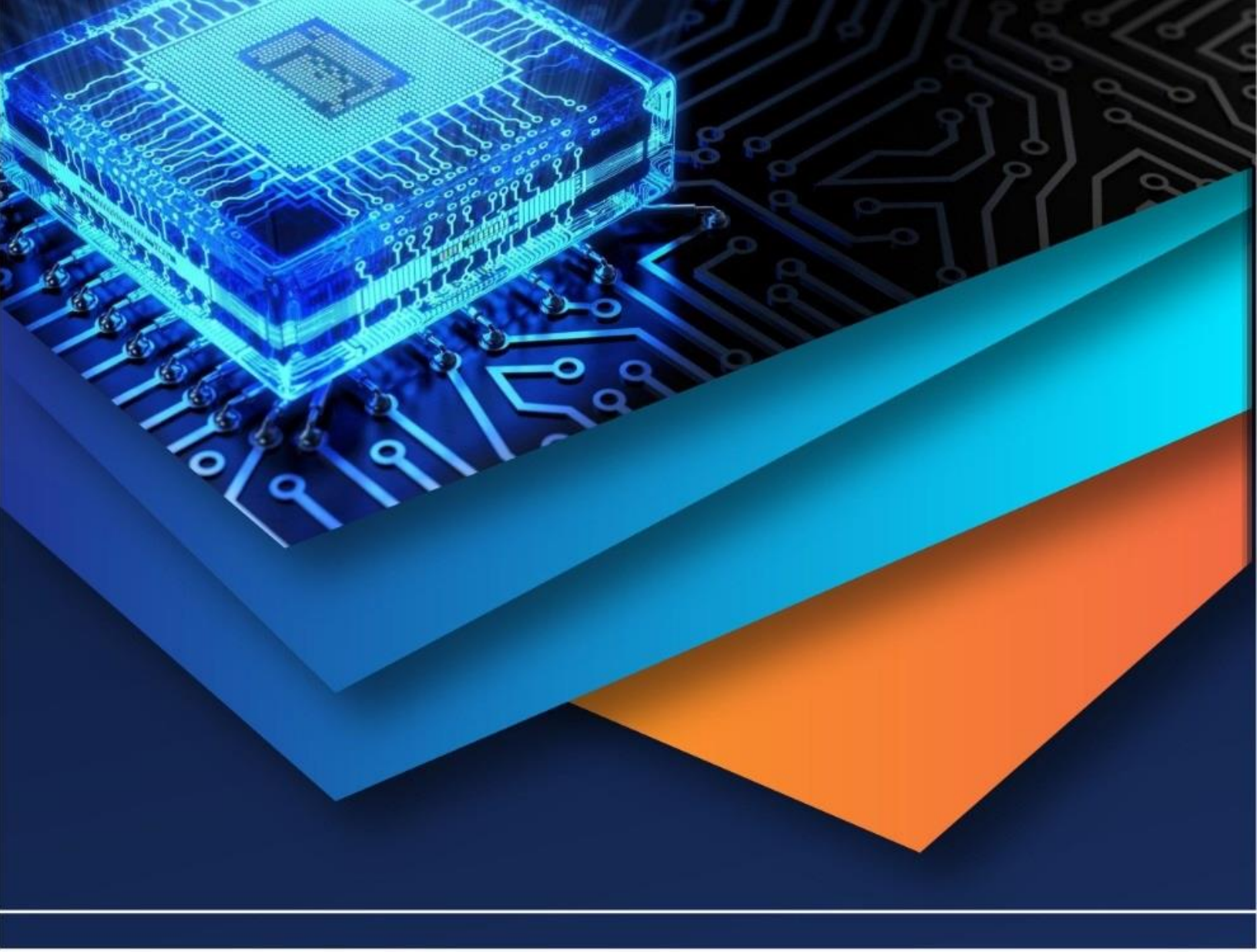
IV. CONCLUSION AND FUTURE WORK

In India, accidents are increasing day by day. As perthe info mentioned above, an outsized number of accidents occurs on horizontal curves. 42% of collision is with barriers. the traditional barriers protect other objects from collision, but it damages the vehicle heavily and it's going to even cause deathof passenger of the vehicles. The use of rollingbarriers can prevent the damage and loss of lives. It absorbs the shock energy and converts it into rotational energy. The rolling barriers, made of Urethane rubber, possesses both flexible and rigid property. LED light and reflective tape gives better visibility at the hours of darkness. So, the utilizationof rolling barrier system can reduce the damage due to accidents. Its initial cost is higher but it doesn't need much maintenance as compared to concrete and steel barriers. Rolling barriers are used currently in many countries. It should be implemented in India seeing current situations to cut back the damage andloss of lives due to accident.

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