

Economical Road Divider and Natural Fence

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Abstract :- Being the Second Largest Road Network of over 54,72,144 Kilometres, India has perfectly set to be on the verge of becoming Developed Nation. Road Transport has always remained as first choice by the transporters. Yet in terms of Road Safety India is missing its rank as it is also a destination for Maximum Road Accidents. Statistics says in India Road Accidents leads to sad demise of one person in every four Minutes due to negligence.

The Road Safety issue becomes more sensitive during Night driving because of high beam-perils. During night time every vehicle has its headlights on, and we have high beams on highways. The plants planted on divider acts as barrier in order to avoid glare from the vehicle coming in the opposite direction and hence reduce accidents because many times glare from head lights blinds the vision for some seconds which is enough time for accidents to happen. Tulsi plant can be implanted as natural barrier which can achieve maximum economy and gives zero maintenance cost of divider. This natural barrier gives numerous advantages than artificial divider.

Has anyone wondered about pollution condition of today's dividers in India? Road safety divider are used to prevent vehicle from colliding. They are made up of concrete. However, it leads to higher expenses and also causes emission of hazardous gases such as Carbon Dioxide, Methane, Nitrous oxide, Precursor gases (NO_x, CO, NMVOCs, SO₂, HFCs, PHCs and SF₆) etc. To avoid such emissions, an attempt is being made to develop Road Safety Divider Materials for ensuring environment friendly and economical substitute. Using some suitable substitute material we can reduce the economical cost of divider by 51%. Hence this paper attempts in development of economical road dividers and natural fence diminishing blur vision and reducing road accidents.

Keywords: - Road accidents, blind vision, concrete divider, tulsi, oxygen emission, greenhouse gases.

I. INTRODUCTION

Road transportation provides benefits both to nations and to individuals by facilitating the movements of goods and people. It enables increased access to jobs, economic market, education, recreation and health care, which in turn have direct and indirect positive impacts on the health of the population. However, the increase in road transportation has also placed a considerable burden on people's health in the form of road traffic injuries, respiratory illness and the health consequences that ensure from a reduction in physical activity. There are additional negative economic, social and environmental consequences that arise from movement of people and goods on the roads- such as air pollution, greenhouse gas emissions, consumption of finite resources, community severance, and noise.

Road traffic death rates in many high income countries have stabilized or declined in recent decades, data suggests that in most of the regions of the world the global epidemic of the traffic injuries is still increasing. It has been estimated that, unless immediate action is taken, road deaths will rise to the fifth leading cause of death by 2030, resulting in an estimated 2.4 million fatalities per year Road accidents

have been emerged as a new health challenges in the world which not only leads to injuries, disabilities and loss of precious human lives but also imparts substantial economical burden on the family concerned and nation as a whole. A number of factors contributing to the risk of collision including vehicle design, speed of operation, road design, road environment etc .

After Ms Marry Ward, who was first documented victim of automobile accident that took place on August 31 1869, the global status report on road safety 2015, reflecting information about 180 countries, indicates that worldwide the total number of road traffic deaths has plateaued at 1.25 million per year, with the highest road traffic fatality rates in low income countries. Statistics says that in India road accidents leads to demise of one person every four minutes due to negligence. The problem is much more in the country where close to 5,00,000 road accidents caused nearly 1,46,000 deaths and left more than thrice that number injured.

In order to implement preventive measures a detailed green data is inevitably required. This study aims to provide a base line data to avoid increasing road accidents.

II. OBJECTIVES

- To study the road divider mechanisms practiced in India and to give economical cum environment friendly substitute.
- To give an substitute which will help to reduce the road accidents causing due to intense beam of headlight causing blur vision.

III. SCOPE

In this paper there is an attempt to use environmental friendly, recycled and cost effective products which gives us economy up to 39% as road divider material. Also we have to provide a tulsi shrub which acts as barrier and will act as translucent green material. These tulsi plants are to be planted outskirts of cities i.e. on national highway, state highway etc. Where as in city area we can plant beautification plants like chafa, bougainvillea etc. Tulsi plant not only sustain the pollution on the divider but also reduces the pollution by emitting oxygen for 20hrs, ozone for 4 hrs, and nascent oxygen which helps to reduce the pollution on the road. Also it helps in keeping environment fresh along highway which can boost the brain activity of the drivers and eventually they will remain fresh whole journey. Planting tulsi plant can also provide huge labor pool as there are many herbal medicinal factories emerging in this era. As there is fast growth of tulsi shrub hence germination process is also very fast, so there is densification, which will totally act as translucent material. We can use tulsi leaves, stem, flowers bark etc. as ingredients for herbal products like tulsi water, tulsi capsules etc. hence maximum economy will be achieved, hence one cause of road accidents can be minimized.

IV. LIMITATIONS

- Lack of available/reliable data.
- Lack of prior research study on the topic.
- Lack of exact mathematical interpretation. Self-reported data.

V. DATA ANALYSIS

Estimation of cost:

For current concrete road divider:

Ingredients	Material required	Cost (Rs)
Cement	156kg	842.4/-
Sand	156kg	103.35/-
Aggregate	312kg	144.67/-

Total-1090.42/-

For the eco-friendly road divider:

Ingredients	Material required	Cost(Rs)
Fly ash+cement	156kg	475.8/-
Surkhi	156kg	51.67/-
Broken brick bats	312kg	137.77/-

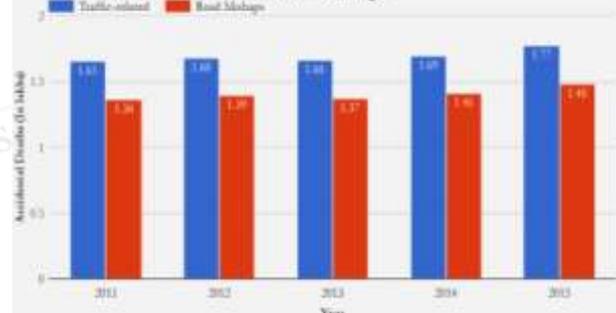
Total-665.24/-

RISING FATALITIES

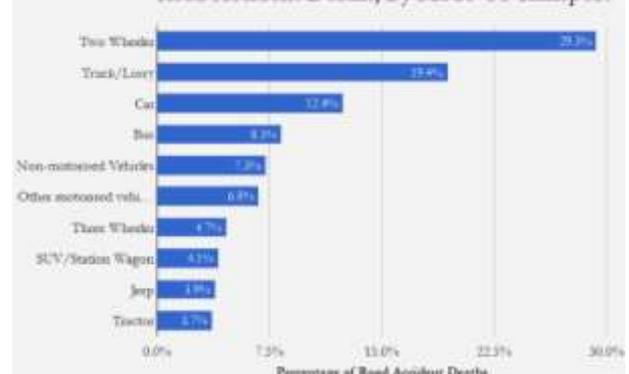
Year	No. of accidents	No. of fatalities	Accident Severity*
2010	4,99,628	1,34,514	26.9
2011	4,97,686	1,42,485	28.6
2012	4,90,383	1,38,258	28.2
2013	4,86,476	1,37,572	28.3
2014	4,89,400	1,39,671	28.5
2020#	-	67,257	-

*Accident Severity: No. of persons killed per 100 accidents
 #Target under UN 'Decade of Action Plan' which envisages 50% reduction over 2020 road fatalities by 2020
 Source: Ministry of Road, Transport and Highways

Over 4 Years, 7% Rise In Deaths From Traffic-related Accidents, 9% From Road Mishaps



Road Accident Deaths, By Mode Of Transport



VI. FINDING

- The report estimates that the cement production by plants is set to increase at the rate of 8.2 per cent per year to 237 million metric tons in 2012. This also contributes to increased carbon emissions. This paper aims to provide suitable economical, eco-friendly material to reduce carbon emission. Here 38.99 % of economy is achieved.
- During night time every vehicle has its headlights on, and we have high beams on highways. The plants planted on divider acts as barrier in order to avoid glare from the vehicle coming in the opposite direction and hence reduce accidents because many times glare from head lights blinds the vision for some seconds which is enough time for accidents to happen.

VII. CONCLUSION

Road accidents is increasing every year and is dangerous to all people. In this situation all people must realize and give more attention to decrease the rate of road accident. At the same time, all people must co-operate with authorities to settle these problems. The causes are road condition from poor, climate and vehicle factors. The rate of road accidents can be reduced by the various accidents including from education, comfortable road condition, campaign and enforced the law. If all people give support and cooperation, this problem could be settled easily and our country also can decrease the number of death that results from road accidents.

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