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VEHICLE SPEED CONTROL USING ROAD BUMPS

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Abstract

Road bumps play a crucial role in enforcing speed limits, there by preventing over speeding of vehicle. it significally contributes to the overall road safety objectives through the prevention of accident that lead to death of people and damage of vehicles. the result of our study reveal three important road bumps variables that influence control of vehicle speed.

Keywords

Human safety, road bumps, speed limits

Introduction

Research into traffic safety has steadily increase over the past several decades . Work in the field during the last century has evolve from three basic forms 1. Critical review 2.theoretical ai frame works 3. Application based articles.traffic safety is an important phenomenon with a wide range of studies in land or water and air transportation.

Land transportation covers to main means road and rails. water transportation refers to movements on seas or oceans on the other hand air transportation refers to air line operation. With an increasing significant proportion of the world population travelling by road, a more vigorous understanding of road traffic safety become critical. Road traffic safety research has assumed strategic importance in the safety literature.

Traffic engineering studies , enforcing existing laws and ordinances regarding speed limits , educating drivers and residents on causes and solution of traffic problem, installing traffic control devices all form a part of the daily investment of human effort and research resources into traffic research.

In all parts of the world vehicle accident present a very serious threat to human lives and survival .in the developed countries of the world where safety rules and policies are made and enforced, the problem of risks of human lives to the vehicles accident and death controlled.

The need to control excessive speeds of motorists has been stressed and treated in the world safety literature. Numerous control measures are usually imposed on motorist with the aim of preventing accident on our roads. Trained traffic officers and government agencies on traffic monitoring roads usually stay by the road sides to control vehicle over speeding.

Literature review

The literature reviews on road bumps encompasses a wide array of enquiries on the development of speed bumps system that can respond instantaneously of traffic condition .another view point is the construction of full or partial scale prototype remote control speed bumps and the assess of there abilities to meet specification .research attention has also been focused on effective use of speed bumps for traffic control with specific minimum criteria that must be met before installation .

In this paper ,bumps and bumps are interchangeably used. Speed bumps have geometric roadway design futures with the purpose of slowing traffic in residential neighborhoods (they are self forcing and often called sleeping police officers). Speed bumps are three to four inches high and 12 to 22 feet long .they are found on public residential road ways. To be effective, speed bumps should be placed in series at 200 to 600 foot interval. Speed bumps will reduce vehicle speed to 15to 20 mph at the bumps and 25 to 30 mph between bumps in a series.

The issues and challenges of reducing roads traffic injuries are explored. Vehicle speed is consider as a factor in the causation of the traffic road crashes using as case study while the enforcement of speed limit by traffic police may not be affordable for most developing countries, rumble strip and speed bumps were found to be useful alternative.

Assumptions

The following assumptions are made in the modeling of road bumps discussed in this paper.1.vehicle have variable speed with maximum speed between road bumps (when approaching road bumps, the vehicle needs to slow down and after crossing it accelerates)2.road bumps angel of inclination with the road should be less than 90 degree(to prevent impact due to collusion or to low uneasy ride over road bumps)3.road bumps angel of inclination with road should not be equal to zero.(if it is equal to zero, no road bump again).

Results and discussion

The mathematically analysis of the road bump problem using Fourier series shows that the motion of vehicle can be represented in a sinusoidal form with the expression of amplitude of the motion,Xn,and that phase angel is using a second order derivative equation with a constant co-efficient.the solution ,having both complementing and particular aspects, was also obtained, the root of auxiliary equation, r, may be real and distinct, real and equal or complex conjugate depending on magnitude of w and r.

Conclusion

The focus of the paper was to develop a mathematical model for determining the effective distance between road bumps for different maximum speed limit in a such a way to have a low transmissibility ratio between a road and vehicular system

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