



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 12, December 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com



Evaluation of Speed Breakers in Pune & Pimpri-Chinchwad Municipal Corporation

Bhilare S.B., Hake V.D., Sutar W.N., Kumbharkar N.N., Tandale S.C

Department of Civil Engineering, Trinity Academy of Engineering, Pune, Maharashtra, India

ABSTRACT: A detailed literature survey indicates that there is a detailed study about various types of speed breaker, Installation of speed breaker, The accident which is happened due to improper size of speed breaker, How the speed humps have reduced the speed of vehicles, Speed humps are known to be effective in reducing the occurrences of accidents that might otherwise be resulted in speeding of vehicles, So we conclude that there will be a strong need for a proper study before and after implementation of speed breakers to check their effectiveness by using Developed Equipment. Also, there exists scope for the development of a portable low-cost equipment

KEYWORDS SPEED-BREAKERS

I. INTRODUCTION

Traffic calming is defined by the Institute of Traffic Engineers (ITE) as “the combination of mainly physical measures to reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users”. Since speed humps are a very effective means of calming traffic, the main purpose of the installation of speed humps is to reduce the speed and volume of traffic to acceptable limits to enhance safety for pedestrians and motorists. The roads of different categories are designed for certain design speeds, which the vehicles are required to maintain the proper functioning of the roadway system.

To ensure that the required speeds are maintained, it is a practice to provide certain control measures. These measures can ensure/improved traffic movement with better safety and convenience. The traffic scenario has changed drastically over the past decade. An increase in the number of vehicles has led to an increase in the number of accidents. The scenario of traffic safety is worsening day by day in our country which requires proper attention. Accident data reveals that more than 1.5 lakh people die in road accidents every year which is significantly high as compared to other developed countries. Analysis of various accidents shows that the main causes of accidents are inappropriate speed, lack of road safety awareness, driving under the influence of alcohol and narcotics, and violation of traffic rules. To reduce the frequency as well as the severity of accidents various traffic calming measures like speed breakers are used.

II. LITERATURE REVIEW

1] **Mitul Patel, Prof. (Dr.) P. J. Gundaliya.**

study on speed breakers (2017)

This Study makes us understand that speed breakers means of controlling the speed. Reducing frequency and severity of accidents. Stronger need for proper study Before and after impement of speed breaker.

2] **Chandrasekar Parsuvanathan** Use of portable Speed humps near school for an observation-free traffic flow during Holiday.

Speed humps are known to cause inconvenience to drivers, occasional injuries, an increase in fuel consumption and pollution level, and even damage pavement to a certain extent.



These benefits are more pronounced if the flow level are high. Therefore, the use of portable speed breakers proves to be worthy of consideration for school area that might have no operation for a considerable period of year.

3] **Sayed Shwalya, Amal AL-Ayaat, Mohamed Hamed Zakaria** Public Elevation of speed humps performance and Effectiveness(2018)

By comparing the responses on vehicle speed before and after installation of humps, it was found that speed decreased significantly after the installation of humps.

Concerning the effectiveness of speed humps in reducing the accident rate, the responses showed that their effectiveness is high in reducing the accident rate.

4] **VSKP Verma, Adarsh Sa.K.L. Ramachandran, Binoy B Naira**, Real-time Detection of speed Humps/Bumps and distance estimation with deep learning using GPU ZED Stereo camera(ICACC-2018)

A method that detects and informs the driver about the upcoming unmarked and marked speed humps/bumps pavement to breaker proves in realtime using deep learning techniques.

This drivers or autonomous mode of the vehicle can control the vehicle speed to be at safer limits to not cause any kind of discomfort to the passenger and damage to vehicle.

III. OBJECTIVE

1. To control field studies to compare the speed breaker dimension with the standard mentioned in IRC 99-1988.
2. To develop a systematic methodology for the construction of accurate speed breakers.

IV. PROPOSED METHODOLOGY

To achieve the research objective and answer the research question, a proper research will be carried out to show the methodological structure of the research.

1. Preliminary Survey- Selection of Proper Site Where Maximum Speed breakers and Variations are Observed.
2. Traffic Studies and Demographic of Selected Section-Observation of onsite speed
3. breakers, where the speed breakers are Painted or not, there is any Signboard before Speed breakers or not, There Drainage is Provided or not, etc.
4. Measurement of Speed breaker at site-Study of various types of speed breakers means
5. which type of speed breakers is suitable for this road, also the standard size of Speed Bump
6. or Speed hump whichever is installed.
7. Analysis of Data and Corrective Measures-Analysis of data and Comparison with IRC
8. 99-1988 Guidelines.
9. Traffic Volume studies of selected section-Traffic studies from Ravet Bridge to Aundh.

V. CONSTRUCTION PROCESS

Generally, speed bumps are installed in a parking lot to slow drivers down and protect pedestrians. If possible, speed bumps should be installed between islands so that cars cannot drive around them. When a contractor paves there is a sub-grade, then base rock and asphalt on top.

When speed bumps are being installed, they are overlaid on existing asphalt and bonded to it with tack oil."

The crew cleans the area, either blowing off debris or sweeping depending on how dirty it is.

- 1] Then we mark out our dimensions, (depending on how wide the customer wants the speed bumps, usually 2-ft wide is minimum), so we measure and chalk line out the bumpers.
- 2] Next, the existing asphalt is keyed. A notch is made about 2-in. wide around the perimeter of the bump so the speed bump mass has something to tie into the drive surface and won't get displaced by things like plows.
- 3] Once the lines are chalked and the area is notched, we fill the inside of the bumper we marked with ss1 tack oil so the asphalt stays in place.



- 4] The asphalt is then poured into a wheelbarrow for easy transport from the truck, then dumped onto marked areas as needed.
- 5] Once the asphalt is dumped, one of the crew members spreads the asphalt as another crew member uses a rake to form the speed bump.
- 6] While the raker forms the bump, another crew member is sweeping the loose asphalt away from the area while a final fourth crew member uses a vibratory plate to pound the edge of the bump, then up and over the bump.
- 7] When compacting, the crew member is making sure everything is set correctly, we want to make sure there are, no rock pockets (rocks showing/no fines in the mix) and taking outlines.
- 8] Then the crew cleans the area and makes a plan to return in 30 days. Each speed bump takes between half a ton to 1 ton of asphalt, depending on the condition of the existing asphalt.

VI. INSTRUMENTS USED FOR SURVEYING

EDM- Electronic distance measuring instrument is a surveying instrument for measuring distance electronically between two points through electromagnetic waves.

Electronic distance measurement (EDM) is a method of determining the length between two points, using phase changes, that occur as electromagnetic energy waves travel from one end of the line to the other end. We used the EDM method for measuring the distance. Electronic distance measurement in general is a term used as a method for distance measurement by electronic means. In this method, instruments are used to measure the distance that relies on propagation, reflection, and reception of electromagnetic waves like radio, visible light, or infrared.

Sunlight or artificially generated electromagnetic wave consists of waves of different lengths. Among these waves' microwaves, infrared waves and visible light waves are useful for distance measurement. In EDM instruments these waves are generated, modulated, and then propagated. They are reflected at the point up to which distance is to be measured from the instrument station and again received by the instrument.

The time taken by the wave to travel this 2x distance may be measured and knowing the velocity of the wave, the distance may be calculated. The improved techniques use the phase difference method in which the number of completed waves and an incomplete wave is measured. Knowing the length of the wave, distances are calculated. Built-up microprocessors provided in the instrument calculate the distances and display them by liquid crystal display (LCD).

VII. EXPECTED OUTCOME

The expected outcome of the work is to create a database on the speed breakers in Pimpri Chinchwad Area and suggest mitigation measures to reduce the frequency and severity of the speed breaker-related accidents.

REFERENCES

1. Mitul Patel, Prof. (Dr.) P. J. Gundaliya, A study on Speed Breakers, International Journal of Advance Engineering and Research Development Volume 4, Issue 3, March-2017
2. Sayed Shwalya, Amal AL-Ayaatb, Mohamed Hamed Zakaria, Public Evaluation of Speed Humps Performance and Effectiveness, Civil Engineering Journal Vol. 4, No. 6, June, 201
3. Chandrasekar Parsuvanathan, Use of Portable Speed Humps Near Schools for an Obstruction-Free Traffic Flow during Holidays, Civil and Environmental Research ISSN 2224-5790 (Paper) ISSN 2225-0514 Vol.8, No.1, 2016
4. VSKP Verma, Adarsh Sa, K I Ramachandran, Binoy B Naira, Real-Time Detection of Speed Hump/Bump and distance estimation with deep learning using GPU and ZED Stereo Camera, 8th
5. International Conference on Advances in Computing and Communication (ICACC-2018).



Impact Factor:
7.569



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details