

Review Of Pavement Management System

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Abstract

One of the most important measures of road condition is roughness of road surface. Mainly there are two different types of instruments used for the measurement of road roughness in this report. First one is the Merlin. It is a machine which evaluates roughness using low cost instrumentation, utilized either for immediate estimation or for adjusting reaction sort instruments. Secondly is the Auto-Level which is an automated leveling optical instrument. During construction site surveys for gathering, transferring or setting horizontal levels and grade applications, is normally used. The estimation of rough distance between instrument and grade staff is done by the stadia reticle present in auto level. In this study a low cost device has been indigenously fabricated/ developed to measure the roughness of a road's surface. Finally, experiments on ten road stretches have been conducted using three methods including the developed device. It has been observed that the overall roughness parameters in terms of (IRI) in all the methods are almost same

Introduction

Roughness is characterized as the longitudinal unevenness of road surface. It is a great factor which measures road condition vehicle operating cost and ride quality. Now a day there is an importance of study on the effect on vehicle operating cost. Number of experiments and studies have shown that roughness has greater influence on vehicle productivity, running speed, maintenance and tire damage and hence vehicle productivity.

Roughness is a figured measure of the longitudinal smoothness for the segment of Road being overviewed. It is used as an indicator to determine how the road has deteriorated with regard to ride comfort. Roughness can be determined by different ways in units such as, IRI, NAASRA, ride number etc. All of these systems of measurement consider the amount of vertical

displacement that is felt by a passenger in the car driving over the section of road. Generally the higher the number the rougher the road and the less comfortable the ride is to road users.

So it is seen roughness measurement is an important activity for pavement management that's why various roughness measuring machines and different scales for roughness have been developed. As per the requirement for developing countries, there is a need of simple de eloping machine which can measure roughness over a constrained span of road system specifically or for aligning different roughness measuring machines.

Principle of Operation

Merlin is a device with a probe and two feet which rests on the surface with course of wheel track whose roughness by this device is to be measured. This device is at 1.8 meters

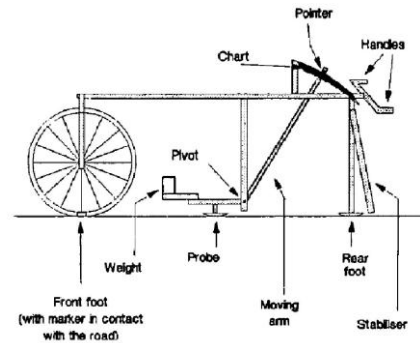
separated and the probe lies at the mid-path between two feet. At the contact of road surface and the two feet this instrument measures the vertical relocation between the way surface and the focal point. The measured vertical relocation is called as the mid-harmony deviation.

The relocation relies on upon the progressive interims to be undertaken way surface, if the readings are taken at progressive interims along a longitudinal profile of way, then the rougher the street surface the more amazing will be the variability of the vertical displacement. There is an outline is mounted on the device on which the estimations are recorded by arranging the relocations as a histogram on a Chart. It is not difficult to record specifically their overlay and this has been observed that to connect well with the way roughness is measured, spread of mid-chord deviation method is much important. Case in point, different investigates have proposed two roughness records MO and OI which are depicted by Sayers et al (1986a), The Merlin device works on one base length measuring mid harmony deviations and there is no requirement for bar and level throughout measurements mid harmony deviations variability is dictated by variability and for determination of roughness next to no estimation is include.

Description

The accompanying figure demonstrates the Merlin instrument. For simple operation, there is a wheel as the front leg and back leg is made

up of inflexible metal pole. Shorter settling leg is available at one side of back leg that aides in keeping the device from falling over throughout taking perusing. There are two handles anticipating behind the primary back leg that gives the device resemble a long and thin wheel barrow.



Method of Use

For determination of roughness of road surface profile, 200 estimations at consistent interims is to taken. The machine is situated with the wheels on its ordinary location and the back foot stabilizer probe in touch with the asphalt surface at each one measuring point. At that point the recording the position of the arm pointer on the graph with a cross in suitable section is carried out by the administrator. For keeping the record of aggregate number of readings, cross in the count box of chart is given.

For the further system of estimations the Merlin's handles are lifted up so that just the wheel stays in touch with the way surface and the machine is rolled in forward heading at the same methodology is rehashed. As long as the wheel is in the typical position the dividing between the measuring focuses does

not make a difference. By taking the estimations at standard interims, will help in transforming both great normal specimens over the entire length of the area and decrease the danger of inclination because of the propensity of administrator to keep away from terrible areas of the street.

The chart is removed from the merlin after 200 observations. Mid path between the eleventh and the tenth checking from each one end of the diagram underneath the columns as given in the sample frequently it may be important to insert between segment limits. "D" is the dividing between the two imprints is measured in millimeters and it's characterized as the roughness on the merlin scale.

Conclusions

Merlin and auto levels are normally considered to be simple devices for measurement of road roughness. An attempt has been made in this study to design and develop a new device. Experiments have been carried out using this device and at the same time using other two types of equipments on the same road stretches. The results of the experiments on road roughness in terms of IRI using these three devices have been compared among the three methods considered. It is observed that auto level has an error% of 3.95% when compared with the IRI values obtained from merlin. All the three instruments have its unique importance in the calculation of the road roughness.

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