RESEARCH ARTICLE OPEN ACCESS

VIBRATION ANALYSIS OF VERTICALLY CURVED FLYOVER BRIDGES

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Abstract:

This paper studied the road construction in different places and corridors on both sides of the metro. This research read the headers along the three dimensions of the accelerator log. Delhi is responsible for inspecting and maintaining about 30 bridges. The age of these structures depends on many factors, such as structure type, impact on bridge environment, loading date, etc. The purpose of this study is to study the effect of vertical acceleration due to load and vibration of the upper corridor's service life. The development of new high-strength materials has led to a lighter structure thanks to advanced design and analysis that allows increasingly thin parts, in part because of increased vehicle load, to be an increasingly important factor in bridge design. The use of vibration meter calibration Analyzer and earthquake acceleration vibration in combination to influence the data on the way through the subway train and comprehensive to the housing unit collect the baseline. Under the existing environmental conditions, measured in the housing influenced on the 5th floor of the outer ring Deli in the road, and. Background of numerous major concerns of vehicle traffic Background of the vibration unit housing, carpenter cargo traffic congestion, and near the airport terminal operation, a small number to the second place it will contribute 3 traffic Because it is mainly caused by the flow of the train.

Keywords — **Vibration analysis, curved flyover, bridges**.

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I. INTRODUCTION

In addition to the busy traffic and the subway running along the highway along the new DMRC flyover and the high-speed railway of the airport, many complaints are made by passengers, vehicle carriers (pilots), residents of buildings on both sides of the subway If there is a lot of traffic passing through the area, feel the vibration of the corridor in the living room/bedroom. The complaints originated mainly from three centers along the corridor, viz.

(i) Outer Ring Road
(ii) Baba Kharak Singh Marg
(iii) Shahabad Mohammadpur Village

From the middle of the road DMRC laboratory and scientifically trying to deal with these complaints, they propose top road structural integrity and flyovers appropriate remedial measures to protect these houses New Delhi, sound and vibration the research laboratory is in contact with vibration and evaluation system at these sites. In order to use this, we are of the body's vibration research.

PURPOSE & SCOPE OF PRESENT STUDY

Vibration monitoring was conducted at ten selected locations and alleviated discomfort experienced by

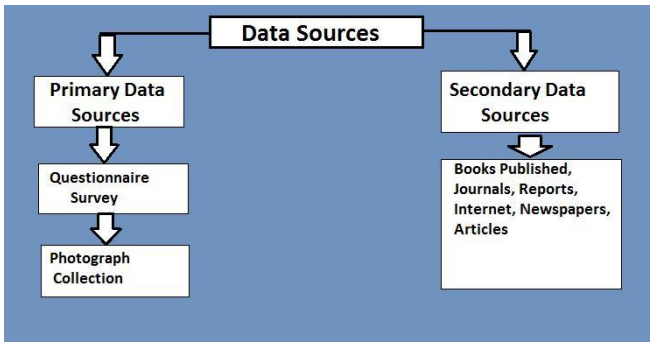
local people over a long period of time. Therefore, in addition to the subway line and the road above the expressway, we studied the structure of the crowded roads in different places and corridors on both sides of the subway. We are reading vertices along all three dimensions of Acceleration Log. Delhi is in charge of inspection and maintenance of about 30 flyovers. The useful life of these structures depends on many factors such as the type of structure, the impact on the environment of the flyover, the loading date and so on. The purpose of this study is to study the effect of vertical acceleration due to load and vibration of the upper corridor's service life. The development of new high strength that allow the use of increasingly thin parts, partly due to increased vehicle loading, it is becoming an increasingly important factor in flyover design. To increase vibration research has not caught up with these factors and engineers did not evaluate the actual performance of the highway by incorporating them into the model. Vibration usually does not cause breakage, but it may cause fatigue fracture. They can also contribute to concrete surface problems. Vertical acceleration shows that negative psychological effects are important to pedestrians and parking lots. Delhi Central Road Research (CRRI) has received reports from citizens that some flyovers are not safe due to vibration.

EXPERIMENTAL SET UP

A comprehensive flowchart of this is including provided, primary survey research components followed by primary and secondary data collection. The next phase is analysis of noise prediction model data. At the final stage of this survey, we propose measures to reduce noise.

I. INSTRUMENT SOFTWARE USED

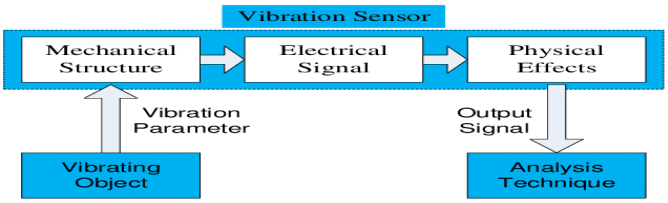
Samurai, NWW in software and Micro flown software have been used to collect the data,analyses the data in the SOUND-BOOK SURFACE IMPEDANCE METER. This software gives readymade data necessary to evaluate the dynamic properties of the structure. and



Flow Diagram of set up.

Methods used include mathematical models and limited computer model models. A computer model is created and used to simulate the problem. Natural frequencies and media morphology of the structure associated with the selected element model are then obtained and it is determined whether the structure is in a healthy state.

II. VIBRATION MEASURING INSTRUMENTS



Structural vibrations are usually measured using an electronic sensor called an accelerometer. These sensors convert the acceleration signals into electronic voltage signals that can be measured, analyzed and recorded suing electronic devices. There are many kinds of speedometers. The most common condition is that the voltage is connected to acceleration via wire as shown in Figure 3. Some accelerometers have internal circuitry and analysts can supply energy without power. The signal analyzer includes a calibration setting that converts the voltage signal to an accelerometer. The manufacturer calibration setting that converts the voltage signal to an accelerometer. The manufacturer calibrates each accelerometer and gives a sensitivity value. For example, the acceleration rate of 100mV / gn can be 102.3 mv /

gn. Accurate measurements will depend on whether the signal analyzer uses the correct sensitivity value and whether the accelerometer is used with the correct sensitivity in the application. High sensitivity (eg, 1000 mV / gn) may not be suitable for thigh acceleration applications. In this case, an excessive voltage may saturate the input signal analysis circuit. If the acceleration is too low, the signal may be too weak with small sensitivity (10 mV / gn etc.) and it may not be able to measure accurately. Sensitivity also has a significant effect on the signal-to-noise ratio. The signal-to-noise ratio is the signal level divided by the noise level and is measured with dB = 20 log (signal noise level).All sensors and measuring equipment are affected by electronic noise. Even if you know that the accelerometer is not moving, some acceleration may appear in the measurement due to electronic noise. This is due to sensor cables that capture electronic noise through ambient air signals, power supply noise, noise in the electronic device of the analyzer etc. high quality devices are designed to reduce internal noise, lower signal measurements and limit signal-to-noise ratios from minimum measurements.

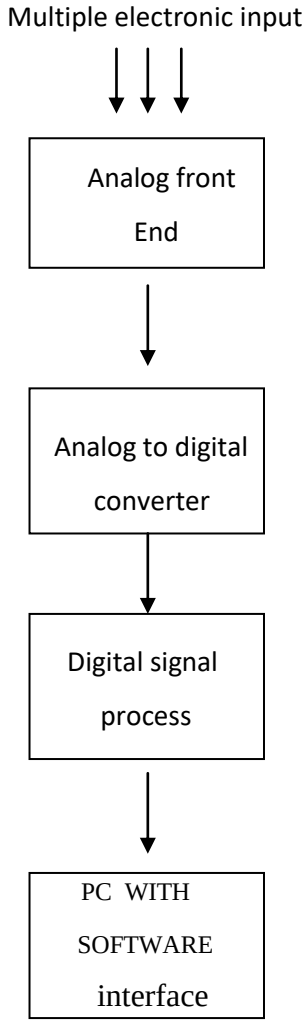
METHODOLOGY

I. Dynamic Signal Analyzers (Sound Books)

The most common device for vibration signal analysis is a computer based data acquisition system called a dynamic signal analyzer (DSA). In the first generation of DSA, we measure the frequency response using an analog tracking filter. Modern analysts use digital technology faster and versatile. Storing large amounts of data using the drive for subsequent processing, you can record frequency, capacity and statistics. The latest DSA consists of several electronic modules as shown in Figure 10. First, in the electronic signal analyzer that measures the analog signal front end and the analog front end, special signal adjustment, power sensor, TEDS (from the information of the sensor embedded in the chip, electronic data sheet converter), voltage adjustable setting is increased Simulate the filter. Next, convert the analog signal to digital form via an analog / digital (ADC) adapter.

i. Sound Book

II. Time and Frequency Analysis



Structural vibrations can be measured by electronic sensors that convert vibratory motion into electrical signals. Through the analysis of electrical signals, you can understand the nature of vibration. Signal analysis is usually divided into a time domain and a frequency domain, and each domain presents different perspectives and perspectives on the properties of vibration.

CONCLUSION AND RECOMMENDATION

I. Conclusion

General

In this chapter, we summarize project reports, clarify the boundaries of research and provide recommendations for future research. In this study, the purpose of vibration analysis was achieved at selected places in Delhi. This survey provides a wide of options for policy makers, academics and researchers.

After introduction, Section 6.1.2 provides the results of the study. Section 6.1.3 describes restrictions and sections.

II. Achievement

The information collected in this report consists of three different sections. The first part of the report explains the level of vibration. The second part of the project explains the current traffic confirmation. The third part of the project explains the verification of existing flyovers. The main findings of this project highlight the contributions of the following stages. This report comprehensively reviews domestic and international research. In chapter 2 we will introduce the review of vibration of flyovers of nearby residential buildings and engineering of earthquakes. Detailed methods of vibration data are given in Chapter 3 and Chapter 5. Details of multiple beam oscillations, the results and discussion data are also given in Chapter 5. This study appears for the first time in the vertical and horizontal vibrations of Chapter V in Delhi in certain places. In addition, Chapter 5 focused on formulating the necessary measures. Chapter 6 presents the conclusions and recommendations of this study. The main findings of this article are as follows.

- Provide literature review of vibrations around the world including India.
- Create new recommendations on road traffic in different situations.
- Understanding and understanding the details of Intelligent Transportation is easy.

56

- An important practical advantage associated with flyover vibration studies is 95% accuracy.
- The impact of earthquake ground motion is included in the report and its importance in construction.
- Survey completed horizontal and vertical noise mapping at specific locations in South Delhi.
- Drilling data clearly shows a depth of up to 15 meters, rocks and soil are not Babitathini or soft mats. Therefore, vibration cannot propagate very quickly.

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