

## **ABSTRACT**

The increase in population every year makes more and more owners of motorized vehicles and cars resulting in full access to the highway, not only the highway that experiences density while the bridge is one of the factors of density due to the number of motorized vehicles and cars that pass not only at a certain time the bridge will be congested and experience enough vibrations because the load carried by the bridge is different, the greater the load held by the bridge, the more the bridge vibrates, therefore the writer will make an instrument using a geophone sensor that can measure how much vibration on the bridge and analyze how strong concrete works on the bridge which often occurs density, with the elastomer or rubber pads used between abutments with the placement of the elastomer feeding road will reduce vibrations that occur due to the burden carried by the bridge.

This tool will use the main components in the form of geophone sensors, geophone is a device that converts ground motion into voltage, Geophone is a transducer of ground movement that is very sensitive. A geophone converts seismic energy, or vibration, into an electric voltage that can be measured accurately.

In this study, it was found that in monitoring geophone sensors can find out the amount of voltage and deflection that occurs when a vehicle crosses the bridge, to process data in this system using a microcontroller in the form of Arduino uno and displayed in excel data to facilitate data collection. From this study it can be concluded with a maximum deflection of 0.3 cm or 0.003 meters at a time of 1045kg, meanwhile when a vehicle load of 2 tons to 10 tons will occur a maximum deflection of up to 2 cm on the Cilampeni Bridge and on the Kopo Tol Bridge

Keywords: geophone, elastomer, Arduino uno, seismic energy