



FACULTY OF APPLIED SCIENCES
DEPARTMENT OF APPLIED PHYSICS

PROJECT TITLE:

Design and Construction of a system that senses the weight of vehicles and monitors the passage of those in the correct weight-range

SPECIAL COLLECTION
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Submitted in partial fulfillment of the requirements of the Bachelor of Applied Science Honours Degree in Applied Physics.

Bulawayo, Zimbabwe

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Abstract

This project sought to design a system for controlling the passage of vehicles according to weight using an electronically operated tow gate. Overload or overweight is a common cause for several structural failures especially due to vehicles, which has led to this idea. The report sheds light on the activities carried out during the design and construction of a system that restricts the passage of vehicles with the desired weight and a given point. The design detects the arrival of a vehicle at the point, senses its weight and opens the gate if it is confined to the permissible range of weight. Laboratory experiments were used as research instruments in designing, constructing, testing and implementing circuits that accomplished the required purpose. A control circuit made of a combination of 555 timers, a NAND and optical sensors was built as model. Various findings during the design were recorded and relevant precautions noted to ensure safety, accuracy and effectiveness. The prototype performed all the desired functions when tested. Further improvements recommended include the use of intelligent controllers such as PLCs and microprocessors.