ABSTRACT

In the present electronic age, the development of the country is going at a very fast pace. An efficient transport system is a pre-requisite for sustainable economic development of a country. The highways play an important role in the development of a country and also improve the living standard of the people. The road development programmes envisaged for the country involve large amount of money, manpower, materials and machinery not only for the construction of new roads, but also for the improvement of the existing road network. Road transport is the most widely used system of transportation. This mode of transportation carries 85% of the passenger traffic and 70% of the freight traffic. So, in addition to the wide and efficient road network, the quality of the roads should be as per the best available standards. Presently there is no system to monitor and assure the quality and quantity of the work. The machinery used for the construction of a highway does not have any check on the various ingredients of the material used and thus the quality and quantity of the product are not assured. The highway construction materials are carried through tippers, trucks etc. but there is no system available to monitor an Engineer, to check the fuel consumption of the vehicles, theft of fuel, if any, unnecessary halt of the vehicles which leads to delay in the completion of a project. With the availability of sophisticated plants and equipments, the pace of construction of highways has increased manifolds. The present system of quality control is time consuming and has become a major hurdle in the high speed of construction. The existing tolerance limits have also been kept keeping in view the use of conventional machinery and prevailing quality control system which permits higher range of variations for acceptance and needs to be relooked. So, keeping in view the requirements of time, an e-quality control system has been developed which assures that full material as per desired standards is used and thus gives a confidence for quality assurance of the product. For a better control on the quality, the machinery used for construction of the highways has been updated so that it can have an automatic check on the quality of the product. The Vehicle Tracking System (VTS), Fuel Sensor and Global Positioning System (GPS) have been used in the construction of a highway and accordingly a model has been developed for the proper monitoring of the vehicles during the execution of flexible pavements. To keep the quality control tests matching with the pace of construction, the age-old procedures of quality control have been modified. A methodology using e-quality
control system has been developed to modify the acceptance criteria of sample testing in the flexible pavements. This e-quality control system is an automatic system of testing which runs with the pace of construction. With the use of e-control, and modern machinery such as cone crusher, the properties of aggregates have also been upgraded. Due to use of the e-quality control system in Highway construction, the tolerance limits of WMM, DBM and BC etc. have also been modified which gives better riding quality of the roads. As a result, the standards of riding quality have also been upgraded.

**Keywords:** Electronic Sensor, e-Control, Flexible, Global Positioning System, Roughness, Vehicle Tracking System.