

# E-Road Construction Monitoring And Control System

Swapnil Patil, Chetan Pote, Utkarshapawar, Tejastamkhane

**Abstract:** It is noticed that in most developing countries there is no centralize mechanism to control or set watch on that construction work environment by central or state government body. This system of monitoring can be used to know the proper uses of construction material on the working site. The software system which we are developing contains standard database for the construction project, from which we can acquire the working data for the work. The hardware components work in conjunction with the software to make sure that only the appropriate quantities of the materials are made available and that corrupt malpractices are avoided.

## I. INTRODUCTION

Today corruption occurs in every field, civil road construction, dam construction, building construction, drainage construction etc. It is also noticed that there is no centralize mechanism to control or set watch on that construction work environment by central or state government body. Every time its notice that in first rain itself we find roads gone with cracks and pitches, buildings and dam developing cracks. So, ultimately big loss to all citizens in all way (Life and Money). Contractor gets tender but work with inferior ratio of material which ultimately tends to big loss to work done with low quality. So here is an effort from our side to overcome this corruption by developing a prototype model. Corruption is widespread in India especially in fields where money is involved in large terms. Road construction is one such area, where corruption is rampant. The amount of money invested in road construction does not conform to the condition of the most of the roads in India. This fact stands as a testament to the corrupt practices that take placelike forging the qualitative and quantitative aspects of the money and materials involved in road construction. Our proposed system aims to reduce these malpractices to a large extent, by making it tedious to rig the quantities and the qualities of the materials and to misuse the materials.

## II. PROBLEM STATEMENT

The loose availability and wastage of the constituents involved in the road construction should be avoided. For this the materials should be made available only in the mixed form. Along with this quality control also needs to be achieved.

## III. LITERATURE SURVEY

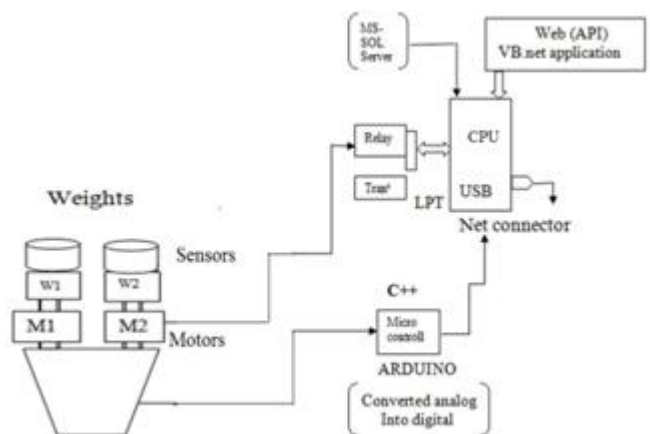
Most of the forgery takes place by requesting for larger amount of material than needed and using a lesser quantity of it, thus leading to degraded conditions of roads in India. For example, tar is usually mixed with petrol or kerosene which reduces its viscosity. Thus the amount of tar required is significantly lesser, this hampers the end result in the form of poor quality of roads which cannot sustain much wear and

tear. On the other hand the concerned authorities can make money from the unused materials.

## IV. PROPOSED SYSTEM

In our proposed system, we plan to reduce the chances of the material loosely available for use. No amount of material will be available for stand-alone use. Whenever required for road construction, the corresponding materials will be mixed and then only made available to be used as a mixture. Therefore, since the material is not freely available, there will be no chances of it being sold freely. Once the materials are mixed together, it is practically impossible to separate them. Thus, our proposed system aims to reduce the chances of forgery and corruption in road construction. In this project we will use "VB.NET" in the front end of the user application & "MS SQL" is used as a main server application in the system. MS SQL contain Pentium 4 processor as relay controller which controls weight of material uses by the contractor, if it matches with the standard database then proceed or not, than stop the machine. Finally it work proceed according to software system then the message will send to the sponsor. Contractor gets tender but work with inferior ratio of material which ultimately tends to big loss to work done with done with low quality.

## V. SYSTEM DESIGN



**Fig. System Architecture**

We shall be developing a smart machine which is computerized with Smart Software running on it with VB.net application. Entire system will be connected to back end database of the pre-audited materials via the internet. User

- Swapnil Patil, Chetan Pote, UtkarshaPawar, TejasTamkhane  
Department of Information Technology NDMVP  
Samaj'sKarmaveerAdvBaburaoGanpatraoThakare  
College of Engineering, Nasik  
Swapnil.patil4647@gmail.com,  
Cool.chetanpote@gmail.com

will be provided with UID and password, through which he could access the functionalities of the machine and in turn obtain the constituents required for the construction work. The machine will also have an inbuilt GPS device attached to identify the location of machine and confirm that it coincides with the location of the work site. The first step for the user will be to enter UID or password and authenticate whether the right person is accessing it. Next, the user will enter the length, width and other parameters of the current section of the road to be built. Software will calculate weight ratio automatically using continuous search algorithm. The Arduino microcontroller will obtain the values of the amount of constituents available through the analog weight sensors and convert it into digital format. If exact amount of constituents is not available then the corresponding message will be displayed. If weight is within a set point and the relay will send the signal to gates of valve. Using a helical gear motor, the valve will be opened and the prescribed amount of material will be mixed together and then dispensed for use. At the same time an entry will be added to remote database server which can be centrally accessed by the concerned government authorities. Using web application, the concerned authorities can monitor and analyze the work done; the amounts of constituents consumed and audit the correlated financial statistics. Another notable feature of the system will be to check for impurities in the materials. For example, tar is usually adulterated with petrol or kerosene which reduces its viscosity. Thus the amount of tar required is significantly lesser. Our system will use MQ3 sensors to check for adulteration with petrol or kerosene. Thus we get a clear assurance that any time he/she selects work task for road construction, ratio will be given by software and if it matches then only gate is opened and all material is mixed together. Same time a CCTV camera will watch the process and will record the process. Message will have latitude and longitude so work done should be at same site where road is constructed or building is done.

## VI. CONCLUSION

Thus our system aims to minimize the corruption involved in road construction at the grass root level. As in our system, since the materials are never loosely available, there are very little chances that they can be used for other purposes. Our system can also minimize wastage of expensive constituents involved in construction, thus making it more efficient.

## VII. FUTURE SCOPE

In future, we plan to extend the scope of our system to dam construction, building construction and other types of civil construction projects. The constituents involved in these types of construction projects are a bit different than road construction projects. Also, sensors that detect other types of adulterations in the materials are also planned. Most significantly, the sensors that could identify the granularity of materials and determine its quality can also be installed.

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