

Role of a highway design engineer



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Highways are extremely important to a nation's development in an economical way. The high quality road network's construction directly leads to an increase in the nation's economy and its output by reducing the factors such as the journey times and costs. Such advantages can make the country more economically attractive.

Highway engineering is a branch of Civil Engineering which involves the construction of highway systems with the design and maintenance of it. The actual process of construction of the road/highway boosts up the construction market in the particular region and thus the employability.

Standards of highway engineering are continuously being improved.

A Highway Design Engineer plays a very crucial role in the designing and the development of a highway/road/connection. The engineer needs to be a technical expert and should have excellent communication skills in order to explain and let the other team members, manager and the contractor his concept and ideas. Communication should be ideal in both the ways including verbally and in written. The engineer should be experienced enough to explain his logics professionally. At the same time the engineer needs to be a good listener. The design given by the engineer are given opposed response more than the supportive ones, because before the stages the design has to go, it needs to gain the support of the parties, local authorities, environmentalists, etc.

Highway engineer takes the account of the future traffic flow, providing the design of the highway being constructed and work on the intersections.

One of the main roles of the Highway Design Engineer includes, providing the given project with quality engineering design services and at the same time take care of the restoration and the construction along with the renovation and maintenance of it. A Highway Engineer also provides ordered arrangements and design, looks after and checks on the highway road surface materials and design of it.

Designing the structural part of the roadway thickness, and surface maintenance are also the roles of the Engineer. Also, when the design work is being carried out, the role by the designer is to scan and avoid predictable risks so that there are not any problems during the construction stage and in the future.

‘ The design engineer is strategically placed to influence health and safety aspects of the project, not only from the creative opportunities offered by design but also from his/her position as professional adviser to the client.’ – (Stuart Summerhayes, 1999: 39)

With great work comes great responsibilities and thus the responsibilities of a Highway Design Engineer are as follows:

The first step the engineer needs to take is to undertake design duties as assigned by the Project Manager or the Office Manager and then provide drafts and designs of the road/highway so that it gets easy for roads design-team to work accurately for the basic and detail design stages of a project. ‘ While drafting, what the design engineer needs to do is to lay out the design, providing documentations and complete instructions, drawings to tell others

about how the equipment, or structures are to be fabricated, constructed, maintained, or used.’ – MyMajors. com

The next step is to prepare designs according to the client’s and government’s demand using the formats which are well recognized internationally. The designs are made using the well-known and recognized software such as AutoCAD, ETABS, etc. Once the design is completed it is sent to the next step where the reviewing of the design takes place.

The design engineer should know how to analyse data and information and should be capable enough to identify the fundamentals, reasons, facts, etc.

After the reviews and checks the remaining drafting works are then carried out and completed by the co-workers or other parties having the contract with original design intent. A survey is then carried out and the results of the survey are interpreted into the phase of technical drawings.

– promoting and improving professional standards for road engineering design;

Undertaking any other duties as assigned by the Design Office Manager, QA/QC Engineer, or Project Manager.

Estimating quantities and cost of materials, equipment, or labour to determine project feasibility also comes under one of the important roles. Engineer must be familiar with the properties and the structural characteristics of the materials that will be used in constructing the highway segment. Also his duties include keeping a check and inspections on regular

basis of the materials, structures and equipments. Due to such inspections it becomes easier to identify the cause of errors or other problems or defects.

He must be aware and responsible for his duties, keeping a record of the data in forms such as recording, in written or any electromagnetic form.

Other than that, the engineer should have good enough access to the site.

He should be able to meeting and work sites, time to time, to attend the events and the meetings.

So, in conclusion, the role of the Highway/road design engineer is amongst the most crucial role in the process of building roads/highways. He needs to ensure that the designs given by him should be good enough and should work with the Euro-code. Once the design is agreed by the managers, and reaches the satisfaction level of the client and the people and the environmentalists, the design is preceded to the further stages. The engineer should be able to provide the given project with quality engineering design services along with the construction, renovation and maintenance of it. He should maintain checks on the highway road surface materials and design of it on regular basis. One of the main factors the highway designer does is to work with health and safety measures, in order to make the design safer. He/she should visit sites to keep check on the work in order to prevent any upcoming hazard in the future, affecting the lives of people.