

Keynote Address 2

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Forensic Engineering

Forensic engineering is the investigation of engineering failure which allows us to diagnose the cause, responsible party and to eliminate similar failure in future. The interesting thing with forensic engineering is that it does not have a specific sequence of activities similar to activities in design stage. However, most of the activities carry some type of analysis with differing magnitude and sometimes combined with laboratory testing.

Important approach to forensic engineering is the cause of a failure is not assumed until all information is obtained, reviewed, and verified. Independent information is obtained from sources which are not initially used or considered important. Therefore, a wider range of information about an event is collected and the investigation is not confined to a single investigative path during failure analysis by prejudging the cause of the failure.

Important qualifications for a forensic engineer are being an expert in the subject under investigation and being fair, impartial, and ethical (Truthful, Objective, Avoid conflict of interest)

Considering the Sri Lankan context, there has been several design and construction failures in engineering projects in the past. However, considering recent information, there seems to be more failure on design and construction during the last decade. Forensic engineering has been carried out for several design and construction failures to identify the actual cause for these catastrophes. Such studies will help in understanding and eliminating similar situations in the future.

In a construction project as with the guidelines of Institute of Construction Training and Development (ICTAD [1, 2 & 3]), there are several parties involved to perform a common task but with different perspectives. Consultant is hired by the client, and as such his/her primary duty is to safeguard the interests of the client. This includes the realization of a satisfactory end product, and achieving it within the specified time and cost. The consultant plays a vital role towards the satisfactory execution of the project.

In this paper, attention has been focused to bring out some alarming trends in the construction industry of Sri Lanka, through some case studies, where the consultant and contractors have not performed his/her role satisfactorily during the construction phase, thus becoming partly responsible for failures.

Based on case study results, the following general conclusions have been made. It is the primary duty of the consultant to follow proper procedures and safeguard the interests of the client by properly advising the contractor and the client. Consultants not playing the intended role can lead to failure of the construction projects. Inexperience of the contractor also contributes to these failures, and the client is also to be blamed for not selecting the proper consultant. Construction sequence is important and rechecking of the design for these sequences. Any modifications or alterations of structures must be re-analyzed.