

## At least after.....!

**S S Kutumbale**

Nature strikes blows! Disaster in Ahmedabad! Disaster in Bhuj! Disaster in Bachau! Disaster in Anjar! These were the prominent headlines a few months ago. Earlier too it was the same story only the places were different like Uttarkashi, Bihar, Killari, Lathur, Jabalpur etc. We have been reading this, we are reading this, and probably will continue to read this unless some serious efforts are made so that these head lines are not reprinted.

Blaming nature for this calamity seems to be uncalled for. Lots of studies, observations and experience have been encompassed in available codes, publications, literatures which provide enough guidelines for taking care of nature's force. Then why is it that structures located in zones III, IV and V are not constructed to withstand the expected forces?

Concrete is being used for more than half a century in our country, and is also used in villages. But are we producing concrete the right way? The terms - high performance concrete, durable concrete, healthy concrete are still known to a select few and use of such quality of concrete is less and limited to mega projects and limited part of megacities. Why then do we talk of high performance or durability when majority of people involved in concrete production is yet to understand the importance of water-cement ratio? For them concrete is just a mixture of cement, aggregate sand and water and that too in any quantity and of any quality. People just understand the word concrete without

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knowing what is concrete, much less the significance reinforcement and its detailing.

Why is it happening? Who is responsible? Engineers? Architects? Builders? Bureaucracy? Legislation? People? Each and every one of them. Engineers, because they did not implement their knowledge fully and effectively. Architects, because they did not select proper engineers. Builders, because of their greed to maximise their profits. They neglected the importance of a proper and healthy structure and role of engineers in design and construction. Bureaucracy,

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because they knowingly neglected various aspects. Legislation, because even today there is no law in this country, which would ensure entry of qualified, experienced and knowledgeable engineers of high moral and ethics in the profession of engineering. The people at large, because while investing their lifetime savings they did not ask a single question about safety, rather wanted cosmetic aspects only. Certainly the degree of responsibility may vary for each one, but no one can free himself or herself, from this responsibility.

However, this is not the time for indulging in fixing the responsibility and allowing matters to continue in the same old way. What is required is to make an all out effort to set things right, so that chances of such man-made disasters can be brought to a minimum.

Today, anybody who passes a degree or diploma of civil engineering, by whatever means, starts designing and constructing even if he does not have proper knowledge, skill and experience. Whereas in other countries, a qualified engineering graduate has to have an appropriate experience and pass through tests for knowledge and skill for entering the field for working or practising independently. This is governed through legislation. In our country there is legislation for practising doctors, advocates, architects, chartered accountants. Why not for engineers too. It is essential to enforce legislation for engineers too. This issue is pending for more than a quarter century. Mr Jagmohan, central minister for urban development and housing, has also indicated, recently, that a proposal for bringing a legislation for engineers is under consideration. This needs to be implemented soon.

For bringing uniformity in construction, strength and safety of structures, adherence to BIS codes should be made compulsory wherever the codes do exist. In others we should be willing to adopt the knowledge of available safe practices.

In case of natural calamities like floods, famine, cyclones the loss of human life has not been as large as in cases of earthquake. In earthquakes the deaths have been caused by failure of residential units. In our country, a majority of residential units is constructed in private sector and the

majority of failed structures, are from this sector. Structures constructed in the government sector has performed comparatively better. Why should it be the reverse in case of private sector? Probably because the government sectors did not meddle with basic structural configurations whereas in private sector it seems that the codes and other guidelines were just kept aside. This may have happened because some of our design engineers are not good designers and our construction engineers are not good at construction. This forces us to review our curriculum. It seems that we are teaching less of designing to a design engineer and less of construction to a construction engineer. In creating generalised engineers we are teaching less of both. It is observed that out of the civil engineers in field, only 10 to 15 percent are actually working on designing and rest 85 to 90 percent are working on construction. Then, why should we, not split the course and teach more of each subject to respective specialisation. Today, a graduate engineer, fresh out of college, has much less knowledge of concrete, reinforcement, and other construction aspects and practically nil exposure to either of them. As such he tends to learn these skills in the field from

the unskilled workers/masons. So more of practical exposure should be inbuilt in the curriculum and minimum two years on-job training should be made compulsory for qualifying to work independently.

As stated earlier, a majority of failures has been in private sector and in most of the cases builders had a major role to play. In order to maximise their profits they have neglected the basics of structural engineering and the importance of a structural engineer's role in construction of buildings. Today anybody can start working as builder even if he neither possesses knowledge and experience of building construction nor the professional ethics or morals. A system needs to be evolved which will permit entry of knowledgeable and experienced persons who are committed towards the clients.

As mentioned earlier concrete has reached the villages and is in the hands of unskilled masons and workers who have absolutely no knowledge of what is good concrete and how and why it should be prepared. Even in towns, cities and megacities wherever in situ concrete is being produced it is at the mercy of the same

people. With the engineers' guidance and supervision being minimal the problem becomes more severe. No serious efforts have been made to provide them proper training. Why should a collective effort not be made to establish tradesman-training centres, which will provide them essential theoretical and practical training. It would necessarily involve intricacies of concrete, reinforcement and other construction aspects communicated in a very simple and common man's language.

Today is the time when each and every person associated with the field of construction and creation, more particularly those who are higher up in the field, should rise to the occasion and recognise their responsibility, do whatever is necessary for uplifting the image of construction from below the average mark to at least upto the expected and accepted level.

With the responsibility of providing an abode a shelter to the mankind, and the trust mankind has in the people associated with this activity it is essential to do atleast this much to save ourselves even from a blot of breach of trust.

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