Letters to the Editor

Introducing earthquake engineering in civil engineering curriculum

This has reference to the write-up "Introducing earthquake engineering in civil engineering curriculum" by C.V.R. Murty, Durgesh C. Rai, Abhay Gupta and Sudhir Jain, published in the February 2004 issue of the *Journal*. The authors have rightly pointed out the need to change the present syllabus for civil engineering studies. Indeed, in almost all branches of engineering, continuous changes are occurring; but in the civil engineering field the syllabus is more or less the same. Only certain innovations in construction methods are freshly introduced in the syllabus.

Earthquakes have been occurring in different parts of the world and in recent years, high-intensity earthquakes have struck India quite frequently. Hence, now it is time to change the syllabus and there is an urgent need to introduce the topic of earthquake engineering in the same.

Of course, the authors have suggested valuable and many important points. Our suggestion is that for simple buildings like those having ground-plus-one or ground-plus-two storeys, there should be simple procedures, points and steps to make the building (structure) resistant to the seismic forces so that the design engineer, architects, supervisors and concerned authorities can enforce the same. It is our experience that a number of authorities demand too many complicated details for such simple structures. It is quite difficult for local architects, engineers, etc to comply with such requirements.

Dynamic analysis for earthquake is somewhat clumsy and difficult to perform and further, may not be needed for simple buildings and structures.

Further, civil engineering is not so rigid like other branches of engineering. The judgment and past experience of the engineer play an important role in construction works.

Here, for simple reinforced concrete structures, prescriptive-type recommendations are needed such as minimum foundation depth though hard strata minimum column sizes, reinforcement details the with use of minimum bar diameter, anchorage and bearing length hooks, position of lintel beams, concrete mixtures, bracing and tie system at plinth/ground level, etc.

IIT Kanpur has given excellent write-ups on "Tips for Earthquake". These tips are required to be circulated among civil and architectural faculties including government bodies.

Hence, considering the above, we suggest that simple steps should be suggested for implementing the design and construction of earthquake-resistant buildings and structures.

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The authors' reply

I thank Mr Dave for his interest in the subject and in our write-up.

Mr Dave makes a suggestion that a simpler design procedure be developed for very small buildings. We generally agree with the idea. In fact, in the United States, there is now an "International Residential Code 2003" for one- and two-family dwellings covering all aspects: structural, architectural, services, etc. Its level of sophistication can be judged from the fact that it is in about 600 pages.

We are also aware of some efforts by the Gujarat state to get a handbook developed for structural design of small buildings that will give prescriptive provisions of reinforcement. It is important that professional engineers must come up with authentic and scientifically-sound documents on similar lines for the entire country.

Finally, we thank Mr Dave for his compliments on Earthquake Tips.

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