

# e-conference on Professional Issues in Structural Engineering in India

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*hosted by*

National Information Centre of Earthquake Engineering  
Indian Institute of Technology Kanpur

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## Proceedings:: Day 3

Moderators [Wed Aug 28 00:14:01 2002]  
JitendraBothara [Wed Aug 28 08:22:00 2002]  
Sanjeev H. Mangoli [Wed Aug 28 08:22:04 2002]  
Abhishek Srivastava [Wed Aug 28 09:44:01 2002]  
Sunder [Wed Aug 28 11:27:00 2002]  
Mrs. Ganesan [Wed Aug 28 11:59:01 2002]  
Suryanarayana Saripalli [Wed Aug 28 11:59:05 2002]  
Pankaj Gupta [Wed Aug 28 12:29:01 2002]  
Suryanarayana Saripalli [Wed Aug 28 12:42:02 2002]  
Jignesh Chokshi [Wed Aug 28 13:10:01 2002]  
K V Subramanian [Wed Aug 28 13:12:01 2002]  
G.Balasubramanian [Wed Aug 28 14:31:01 2002]  
B.S.MAHMOOD [Wed Aug 28 14:32:00 2002]  
B Nath [Wed Aug 28 14:37:00 2002]  
S. Sengupta [Wed Aug 28 14:55:02 2002]  
S. Bhattacharya [Wed Aug 28 15:35:01 2002]  
Sudhir Badami [Wed Aug 28 16:42:01 2002]  
Structengg [Wed Aug 28 16:50:00 2002]  
Anil Choudhari [Wed Aug 28 16:53:04 2002]  
P. Srinivasan [Wed Aug 28 17:19:00 2002]  
Vidyut Gandhi [Wed Aug 28 17:46:01 2002]  
Suneet Gupta [Wed Aug 28 17:57:01 2002]  
Sanjeev Hanumant Mangoli [Wed Aug 28 19:10:01 2002]  
Jignesh Chokshi [Wed Aug 28 20:24:01 2002]  
Arvind [Wed Aug 28 20:25:01 2002]  
Chitra Javdekar [Wed Aug 28 21:21:01 2002]  
Hari Kumar [Wed Aug 28 21:42:01 2002]  
Navin Nawneetlal Chandak [Wed Aug 28 22:34:01 2002]  
Chitra Javdekar [Wed Aug 28 23:05:01 2002]  
S. Bhattacharya [Wed Aug 28 23:23:00 2002]  
Moderators [Wed Aug 28 23:43:01 2002]

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**Moderators [ Wed Aug 28 00:14:01 2002]**

Dear All,

We've been through another very active and fulfilling day – From the messages posted in the past two days, besides the topics summarised yesterday (Mainly licensing and certification through examinations, code of ethics, a representative body, recommended fee structure to avoid undercutting), some other related questions seem to be raising themselves

- a) Should the process of licensing be for a generalized civil engineer's license or should it be specifically for a structural engineer. In case of latter, will we be alienating the structural engineer from other fields in civil engineering?
- b) As was mentioned in one of the posts, should the engineering license be issued stagewise, that is, first for an Engineer-in training, then for a license to practice for limited size and scale of projects, graduating with experience and more examinations towards an all-encompassing license?
- c) What is the consensus mechanism for empowering a single structural engineers' body to represent the concerns and welfare of all the structural engineers in the country?
- d) How does one gather the numerous civil and consulting engineers' associations under one common umbrella so that they work with and not against each other?
- e) It emerged from the postings that a strong fraternity within our community of structural engineers is missing. We need to introspect on this- This needs to be corrected from within and does not require outside help for its rectification.
- f) It would be interesting to share experiences regarding professional liability insurance in India in the present context. Do any clients ask for it?

What are the costs involved and what is the coverage available?

We hope that the past two days have been as enriching to all of you as they have been to us- It is very inspiring to get such an encouraging response. It reflects that this topic is very close to all our hearts.

Here's wishing you a good day and looking forward to more of your valued inputs

Alpa Sheth and Sudhir Jain

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**Jitendra Bothara [Wed Aug 28 08:22:00 2002]**

Hi friends,

I am really enjoying the issues raised by colleagues. It is time to do some soul searching as well. Few of the issues coming in my mind are:

1. Gap between civil/structural engg and craftsman: There exists a fatally large gap between craftsman and civil/ structural engg. Both should be considered two faces of a coin. How many of we are we ready to accept them as a partner? Without a good craftsman (mason/ bar bender, carpenter etc.) a good construction is impossible whatever be the quality of design/ drawing. What I see in general a rivalry among craftsman and an engineer. It is general complain among civil/ structural engineering that craftsman do not follow them. The question is why should he obey us as he can construct a roof that is more important than a "safe" building for living where as we can make few drawings and he knows this fact. Rather than we helping them in site we order them and accuse them for bad doing. How many of we are ready to dirty our hands in site? Are we really able to help them to understand, convince them rather than ordering, translate our knowledge in their language? I talked with my friends, but they think it is not their duty. However I think, till we change work culture of "white collar job" and attitude towards them we should not expect regards from a craftsman.
2. Architech vs. structural engg.: As far as I know, architects are taught to imagine during conceptualization process without thinking of stability/ strength. And they do it in real practice. Without a good configuration a good structural system can't be developed in general. Till the attitude of architects do not change safer structure would be a mirage.
3. Professional ethics: Civil engineering is considered one of the most dirty/ corrupt professions among different streams of engineering as he has to deal with day to day life with civil society. I have seen engineers signing certificates without even approving it just for few hundred rupees. Where is our ethics and then what should we expect from society? I doubt, are we really AWARE of our responsibilities, consequences of our act? Should there be some classes on ethical issues during formal education in universities?
4. Gap between civil society and we: How many of we are able to tie-up ourselves with civil society? We are developed as a different "beings" in

universities with just theoretical knowledge and total ditachment with society. Till we can attach ourselves with society, talk in their language how can we expect they will realize our importance? In general, what we expect is, what we say people should just obey it without any comment as we are " specialist". Are we ready to change our attitude? Should their be a course in engg education that help us to realize the ground reality, social skills?

Jitendra K Bothara,

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**Sanjeev H. Mangoli [Wed Aug 28 08:22:04 2002]**

Dear Mr Rajib and friends, I fully agree to what has been said.

LETS FOCUS INITIALLY TO MAKE SURE THAT THE KNOWLEDGE AND GENERAL AWARENESS IS THERE. THIS CAN ONLY HAPPEN WITH SOME GROUP TAKING IT TO THEIR DUTY AND NOT ALLOWING PEOPLE TO FORGET THE DISASTER. THIS IS THE ONLY WAY. ONLY THE GENERAL PUBLIC CAN FORCE THE GOVERNMENT TO MAKE THE LAW NOT YOU AND ME AND THIS LESS THAN 1% GROUP OF PRACTISING CIVIL ENGINEERS.

yOURS  
Sanjeev

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**ABHISHEK SRIVASTAVA [Wed Aug 28 09:44:01 2002]**

Dear Friends and all Respected Senior Professionals,

I appreciate the proposal of forming a Nodal Body of Civil Engineers (which will include all specializations of civil engineering like structures, highways, etc.). This will bring all civil engineers under one roof. Today in India we have so many bodies like ICI, IIBE, IISE, ISET, etc. This itself divides civil engineers in different branches/Specializations which is not good as we have been talking that structural engineer, or highway engineers or bridge engineers are all basically civil engineer. Also, Its not possible for any one to become a member of all the bodies or institutions as the membership fees (cummulative for all) will be high.

So, I personally believe that we should work on following two things which will boost up our branch and knowledge of all civil engineers:

- 1) We should have a NODAL BODY OF CIVIL ENGINEERS which can have overview of the status of civil engineering and can give Chatteredship to

engineers based on some courses and exams conducted by the body as is done in UK. These Chattered Engineers can certify the stability of structure, etc. This kind of practice will also encourage engineers improve their knowledge and go for higher studies.

2) We can Build Website from where a subscribed user can update their knowledge base and can read all journal,etc and also like this e-conference, he/she can upload his/her doubt/ problem. But for all these the subscription fee should be low atleast for young engineers(having experience less than 5-6 years) because they may not afford high fee.

Regards

Abhishek Srivastava

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**Sunder [Wed Aug 28 11:27:00 2002]**

Dear Participants,

Further to the suggestions proposed by Ms. Chitra N. Javdekar the following also needs to be considered.

1. Integrity of material test lab agencies have a significant role to play in helping quality construction: For ensuring quality construction test of building materials is very much essential. In this regard a lot depends on the test house integrity & precision/care in testing. When the samples are sent for testing either by client and/or contractor, it was experienced that in certain cases, off spec materials/cubes tend to get an OK certificate due to human errors and other reasons!.

This has a huge impact on the credibility of structural engineers. Ways and means of improving this delicate area also needs deliberation.

Thanks

Sunder

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**Mrs. Ganesan [Wed Aug 28 11:59:01 2002]**

There are committees and sub-committees working on different codes(Dr. S.K. Jain is a member of IS 1893). If anybody wants to contribute really from industry. They can write to BIS directly.

Mrs. Ganesan

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**Suryanarayana Saripalli [Wed Aug 28 11:59:05 2002]**

Dear professor,sir

MAY be but for my experience Iam not sure where I stand in the following terms.

1]BUILDINGS IN COASTAL AREAS/SAY IN ZONE3-AND ZONE 2 ABUTTING MARSHY AREAS LIKE SURAT INGUJARAT THERE IS NEED FOR RESEARCH IN MARINE ALLUVIAL-SILTY SANDS, TO FIND THE CAPPILARY ACTION OF WATER DURING CYCLONES/STORMS/ AND HIGH TIDES THIS LEADS TO LOSS OF FRICTION ,RISE OF SWELLING, NEGITIVE SKIN FRICTION,AND BOUNCY.,COMPUOUNNDED WITH LIQIFICATION OF SOILS. ADD TO THIS THE DRAG OF WIND LOAD ON STRUCTURES WHICH ARE RELATIVELY TALLER,. DESIGNS SIMILAR TO STELL STUCTURES,WHERE TIES ARE A MUST INCLUDIG AT GROUND ,MAY REDUCE SECONDARY VIBRATIONS ON THE SRUCTURES. HOWEVER WE NEED TO DUG WELLS ALONG COASTAL BELTS, ON THE SOILS TO ASSERT THE MAMOUNT OF LIQIFICATION OF SOILS,IN ALL DISASETER CONDITIONS NEED TO SAY GOVERNIGING RECOGNISED BODIES ARE ESSENTIAL  
TO QALIFY ONE BASED ON HIS ACHIVEMENTS,AS CHARTED ENGINEER.

SURYA.N

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**Pankaj Gupta [Wed Aug 28 12:29:01 2002]**

Dear Colleagues,

First let me thank everybody who had responded to my posting (both publicly & privately). In this post I want to address the flip side of the coin.

Given below are some of the comments, which I had received from a Government Organization for my design of a basement+4 storied Police Station in Delhi

1. You have not done pattern loading analysis, please use LL on alternate panels of slab in both the horizontal directions. (I really got educated as I had never done this analysis, except read about it in my college days that too for a continuous beam and not a 3D space frame, and it took me 2 whole days to figure out how many load cases I have to come up for my 3D space frame model.

But I was really thankful that they did not ask me to use the moment & shear coefficients given in IS 456 in Tables 7 & 8 as supreme values over & above the values I got from my analysis results).

2. We only use the time period value as given in IS:1893 as T0.1n, so please use T0.4 in your seismic analysis. (My argument of so many factors affecting T like horizontal plan dimensions, absolute height, stiffness of members, stiffness of structure, configuration of the structure etc. did not break any ice with them. My plea that even the draft code has changed this formula got a reply that we will use the changed formula, when the code is formally launched. I was ready for a dialogue with anybody who could talk to me rationally & arrive at a conclusion, but all the JE, EE & even the SE said, we have been doing this for the past 30 years, the CDO at CPWD does the same and all our consultants also do the same, but nobody could give me the rationale behind it)

3. In slabs the minimum bar dia we use is 10 dia at maximum spacing 200 c/c (my argument that 95% of the slabs can be managed in 8 dia 200, and so a straight wastage of 45% is totally unnecessary, and if you people are so fixed up to the IS codes, can you show me written anywhere in the code, these minimum requirements you insist upon, got me the same reply as in point 2)

Then started the comments on the drawings & so on. By the time they had finished with me, my design & my drawings, I estimated that the total structural cost will simply double up from my original design. I never claimed that what I have designed is right & they are wrong, but all I wanted was to know their logic, after all we are dealing with a scientific subject & not abstract art. When somebody asks me to change my design, I think I have the right to know the rationale behind it. But the only answers I ever got to my questions were like...please do as you are told to do, and make it fast, as my leave has been suspended till I release the foundation drawing, and because of you I could not go on leave for the past 1 month & my wife is very angry with me....

More importantly, for me it was NOT an ego problem issue, but again an ethical issue of unnecessary national resource wastage, wastage of the tax we pay from our hard earned money and wastage of my time in revising to something which I think is wrong & not justified.

So the obvious....I decided to QUIT. But this time it was not easy, as the Architect was 1 of my 3 clients referred to in my yesterday's mail. He told me that he totally believed I was right, but can I please just do as they say, and he has agreed to so many of my suggestions / theories / general lunatic blabbering so many times that I OWE it to him, and also it is not so unethical (since the building is not going to be unsafe but oversafe). He was even ready to pay me for my re-

design, which I did not accept, but I caved in only on the promise that he should never ask me to do another government job. And so my name also got added to the list of consultants who use T0.1n, which will be used to cudgel the next poor fellow who would be unfortunate enough to argue with them. And I am ashamed that those drawings bear my name, and I have stamped them GOOD FOR CONSTRUCTION (they are not even good for using as toilet paper).

So here we stand between the need to underdesign or overdesign as the need may be, but never DESIGN as is right. For me the basic definition of Structural Engineering & what I call as work is "TO OPTIMIZE BETWEEN SAFETY & ECONOMY". If I ignore any one, either the safety or the economy, them what am I needed for, what is my job? If economy is not a criteria then I can design any structure in 2 minutes flat, and the same is the case if the safety is not a criteria.

Once again sorry for taking everybody's precious time. In my 2 posts I have only tried to underline the problems, but I hope to make an attempt at the possible solutions in my next post.

Regards

Pankaj Gupta

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**Suryanarayana Saripalli [Wed Aug 28 12:42:02 2002]**

DEAR SIR

IAM A MEMBER OF STANDARD ENGINEERS, BUT UNFOURTUNATELY I AM YET TO SEE A MEETING OF SAME AT HYD.I BUILT SEVERAL PROJECTS ON SEA SHORE INCLUDING AT HAZIRA RELIANCE.,ESSAR AT VIZAG I FIND PEOPLE IN HIGHESTTEEM GET CARRIED BY PRIDE THAN TEND TO DO ALITTLE REASEARCH OF THE PAST AND PRESENT.

SURYA

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**JIGNESH CHOKSHI [Wed Aug 28 13:10:01 2002]**

Hello,

The issue raised by Ms. Alpa on the process of licensing is very crucial and demands thoughtful implementation. All professionals would agree that by forming a licensing body we just don't talk about the licensing of Structural Engineers alone. We need to think in a broader sense. The process of licensing shall be applicable to every engineering professional serving in different capacities to the society and just not for civil or structural engineer.

We can not keep ourselves isolated from other branches of engineering and

related professions. As civil/structural engineers, we are bound to be in closer interaction with most branches of engineering professionals including architects, as our profession offers variety of services to the civil society. There do exist mutual interest among different engineering branches.

When we talk about the formation and introduction of bill or legislation for the professional engineers, it shall be for all branches of engineering professions.

A state level licensing authority under central command could be a good start. The license may be granted to practice through out nation.

Jignesh Chokshi

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**K V Subramanian [Wed Aug 28 13:12:01 2002]**

Dear all.

Thanks a lot for the econf on Professional issues in Structural Engg in India. with a special pat for the organisors, Dr Sudhir Jain and Alpa Seth.

We have been talking a lot with reference to the influence of Architects in the Civil Engg community and how they tend to play a commanding role. This comes generally when the engineer is not firm or sound in his basic principles. If the architect proposed certain features detrimental to the civil structure , specially in seismic prone zones, it is upto the Civil Engineers to stand firm and not clear a concept detrimental to the Civil Structure.

Due to the rapid advances in the Civil Engineering, it may be necessary to discuss what should be the minimum qualification for practice. The Bachelors degree does not cover knowledge the Civil Engineer needs for performing tasks associated with special structures, dealing with forces to natural hazard like wind / earthquake. It is necessary for the engineer to take a Masters Degree or undertake special recognised courses to enable him to practice with confidence.

We are having so many organisations but are they effective to guide a minimum quality in the Civil Engineering profession. The Institute of Structural Engineers could also go in that way. We may alienate in this way other members of the Civil Engineering community as well as organisations which are well recognised in their own right. It is the specific law enacting bodies in the various cities for govering the appropriate policies to enact such decisions. This can happen only if we weed out corruption and vested interests.

We Civil Enginers should be conscious to practice such that we do not get carried away with ways and means which would lead to violation of ethics, good

practices, codal practices instituted by long and healthy discussions in the various bodies etc. If we Civil Engineers are scrupulous with respect to principles, and discipline ourselves accordingly, a large problem is solved.

Professional liability insurance is available in India . This covers both professional liability and its jurisdiction can be India and abroad as desired. There are some cases where Clients ask for it but it is always advisable to carry one. The premiums depend on the indemnity limits as well as past performance.

The MOST important thing which must be realised is that Engineering comes at a COST. Undercutting is the basic reason that leads to deterioration of quality. Hence the owner / client should be guided NOT by minimum cost but the necessary effort and costs to do the job within the defined scope. He should evaluate objectively considering the work content and not go by the lowest bid, which could be inadequate.

It is from this angle that all tenders must be in two parts: technical and commercial. Evaluate technically, discuss with the bidders to bring the right agencies at technically par and get the price from only the bidders who are finally technically acceptable. In this aspect it is worthwhile to adopt one of the following two practices:

1. Open the price bid and negotiate only with the bidder rated as the best technically. However while negotiating, the client must be aware of the work content and not try to beat the bidder to a level where he cannot do justice to the scope. If discussions do not conclude, then only discuss with the next (technically)best bidder.
2. Open only the price bids of all those whose are technically acceptable and evaluate with a technical weightage 80% - 90 % and price as a secondary 20% - 10%.

In this process we could ensure to some measure avoiding undercutting.

K V Subramanian

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**G.Balasubramanian [Wed Aug 28 14:31:01 2002]**

Good Afternoon to all of you,  
There are strong views addressing the issues related to the Site Engineer as well, which has to be favourably considered in the end, to ensure continuing education for the Civil Engineers involved in Design Engineering at office, and also for those involved in Construction Engineering at sites.

The proposed nodal body for the Civil Engineers shall initially take the help/guidance of either ICE or ASCE, to have the launching platform at a high level to reflect the instantaneous Global (Best and Bad) Practices and News. The membership should be affordable to our Engineers.

The licensing system for the practicing engineers should also be linked to their field experience as this will lead to better training for both workers and engineers.

Regarding salary, I would like to present the Dilbert's theorem for your pleasant reading;

#### Dilbert's Salary Theorem

Dilbert's "Salary Theorem" states that "Engineers and scientists can never earn as much as business executives, sales people, accountants and especially liberal arts majors." This theorem can now be supported by a mathematical equation based on the following two well known postulates:

Postulate 1: Knowledge is Power..

Postulate 2: Time is Money.

As every engineer knows: Power  $\propto$  Work / Time.

Since: Knowledge  $\propto$  Power, then Knowledge  $\propto$  Work / Time, and Time  $\propto$  Money, then Knowledge  $\propto$  Work / Money.

Solving for Money, we get: Money  $\propto$  Work / Knowledge.

Thus, as Knowledge approaches zero, money approaches infinity, regardless of the amount of work done.<sup>20</sup>

Thanks with Best Regards,

G.Balasubramanian,

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**B.S.MAHMOOD [Wed Aug 28 14:32:00 2002]**

Dear professionals,

Can there be a discussion on the clear status of Structural Engineers and Architects in the Govt. and Semi-Govt. Organisations. The reason being - recently/normally we read about advertisements in the papers inviting Quotations for the Proposed project and in the terms and conditions there will be

a point that the applicant should be an Architect registered under the council of Architects.

In this case it is a clear discrimination between the two professions and every new opportunity will strike the Architects door and not the Structural Engineers.

A request on my behalf is to formulate a Council of Structural Engineers on the same terms as the Council of Architects so that only registered Str. Engineers in the council shall only have a right to practice as Qualified Structural Consultants.

Pls comment on this.

Mahmood B.S.

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**B Nath [Wed Aug 28 14:37:00 2002]**

Dear All:

It is heartening to see opinions of many respected colleagues. I think on an individual capacity a structural engineer can try to educate home buyers about importance of buying homes that have good structures. Many of our engineering colleagues outside the civil group not to mention the general public buys a flat based on layout, look or the type of finishing. I think home buyers should be encouraged to talk to the structural engineer of the housing project to get confidence and also as an indirect way of ensuring quality.

A home buyer should be informed that it is important to make sure that he is buying a structurally well designed product even though main efforts seems to be on coming up with the financing. I think if the structural engineering community could come up with do's and donot's of safe homes through advertisements many people will take note. It will also benefit issues related to fees and recognition etc..

Regards

B Nath

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**S. Sengupta [Wed Aug 28 14:55:02 2002]**

Dear Sudhir,

I have gone through the e-mails received on the above subject. This is a very topical subject for the entire fraternity of Structural Engineers. I agree to a large extent to the observations made by Mr. Sirish Patel and would like to comment

as follows.

The basic issues to be addressed, can be mentioned as

- i) Weak educational base, thanks to the mushrooming Engineering Colleges without latest facilities and faculty without real ground experience.
- ii) No exposure to international scenario and trends.
- iii) Lack of self confidence to take bold decision required for innovative designs of prominent structures which would make them proud in the society.
- iv) Lack of values, leading to unethical practices e.g. willful agreement for substandard quality of work, consciously cutting corners etc.
- v) Substantial technical ignorance on the part of clients regarding what to ask for

One of the possible solution to these longstanding issues could be to start a process to assimilate the like minded professionals and form a strong all-India level professional body e.g. Indian Institute of Structural Engineers (or Civil Engineers) . This body should be empowered to issue formal licensing/accreditation system to individual Structural Engineers based on well-designed tests e.g as conducted by Institute of Structural Engineers, London. This would lead to substantial improvement of service and help to need out substandard quality. Another major task of this professional body can be rationalizing the scale of professional fees for Consultancy Services ( as in Bureau of Public Enterprises for Architects.) to eliminate the menace of undercutting each other and finally be forced to cut corners and provide a poor quality of service to client. To start with, if we are able to at least implement above two steps in a time based manner, it will be a great leap forward. Simultaneously, there will be a need of specifying a "Code of Conduct" not only for Consultants & Contractors but also for the Clients. I feel, it is high time to start such a process with close interaction between existing professional bodies viz. IRC, IIBE, BPE , ACE etc. Out of all fields of engineering, Civil Engineering is presently opted by students with relatively lower ranks . Even the brighter Civil Engineering graduates from IIT's & REC's are showing increasing tendencies to shift to software field where payment packages are lucrative at lesser physical effort compared to the profession of Civil/ Structural Engineers at office or site. We have to reverse this trend without further delay Let us initiate some positive actions to bring back some of the lost glory to our profession.

Regards,

S. SENGUPTA

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**S. Bhattacharya [Wed Aug 28 15:35:01 2002]**

Dear Fellow professionals

It is a great pity that we do not monitor construction events or performance. During the earthquake of Bhuj we dont have sufficient data of ground acceleration (not at buildings near epicentre) except the Passport office of Ahmedabad. It has been reported that the instruments in Seismological offices were not properly connected.

We can endlessly argue, about the time period of structures T0.1n or as given by American Code as  $0.09h/\sqrt{D}$  or many New IS1893 code about. These all are based on fitting data to a large number of case histories.

In bridge we should now emphasise on putting accelerometers on bridges to record the traces (logging at 4000 Hz frequency) when a vehicle passes by. This trace can then be analysed to find the frequency of the structure. Later on they can compared to the assumed value in the design.

I dont know about monitoring of Delhi Metro construction. I can tell you the story in U.K or USA. In U.K. expansion of London Underground is going on. This construction is being monitored by Imperial College as well as Cambridge University to get real time data which can then be compared with the assumptions made in the design. This is done by few students as a PhD work. JUST IMAGINE HOW USEFUL IS THE DATA. Students enjoy the work and industries are keen in funding the project and later on hiring the work.

This will bring closer the INDUSTRY and INSTITUTE and produce useful PhD's which can be directly be used by INDUSTRY.

I did some similar work on monitoring of pile foundation while practising in Calcutta. Believe me it saved lot of money to the client but a safe building. I can share the information if people are interested.

Regards

Subhamoy Bhattacharya

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**Sudhir Badami [Wed Aug 28 16:42:01 2002]**

Poor education, with no continuing education after graduation:

Think Cricket, Drink Cricket and Sleep Cricket - cricket is exciting. It makes a youngster to dream of playing well and with intelligence and competence and confidence. But ask a non cricketing youngster who does not know the difference between a yorker and a full toss or a late cut and a hook or leg break and a googly, he is bound to be as interested in cricket as was George Bernard Shaw! You have to play the game to understand and enjoy the finer points.

Civil Engineering is quite exciting - to plan an infrastructure facility, be it an irrigation project or road network or a township or even a building complex. To be able to provide a product that is economical, durable and safe is a challenge that could be quite exciting especially when one realises that the end product is going to be experienced by so many people and their comfort and convenience and safety lies in the hands of the designers and constructors. It surely gives excitement to any youngster or even a veteran. The enormity the challenge does not overburden him but in fact gets him to be innovative if he knows that he is financially going to be fairly and justly rewarded. His learning process is continuous and this is beneficial to all.

To make learning of Civil Engineering exciting, it is not enough to impart class room knowledge and some site visits, though these are very essential. It is important for a student to know that he is going to get jobs and responsibility along with good remuneration and sees a path of career progress.

If the teachers of the engineering colleges are possessed lot, they can make the course work interesting, but what really makes a student feel good is that what he is learning is going to be really useful in his career. Teachers themselves may like to be well paid and that itself should get them wanting to teach well else they end up doing private consultancy, again at a very low price and there are people in the industry ready to exploit the situation.

So, it is not the question of only the professionals that we need to look at but the entire education in Civil Engineering. Term the teachers as consultants employed and fix their remuneration based on the time devoted to student's development. We will have to work out the funding problems arising out of this but we need to have competent teachers. It is not necessary that teachers are good researchers and researchers are teachers. To have a Ph.D. for teaching an UG level may sometimes be counter productive. The teacher must first feel the excitement of teaching students with hunger for learning.

Therefore when we start drawing certain conclusions, the educational aspects need to be also included.

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Sudhir Badami

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### Structengg [Wed Aug 28 16:50:00 2002]

Dear all,

I would prefer to deviate here from the detailed and interesting talk that many are doing, i think i would rather draw your attention to the need for PUBLICITY OF OUR FRATERNITY.

It is high time that we recognize the importance of creating sufficient awareness and importance of our profession at the level of a common man who is the buyer.

I believe that this task shall be taken up by bodies of structural engineering professionals like "The Indian Society Of Structural Engineers" and through IIT's and NICEE and other recognised bodies like ACI ( DIFFERENT CHAPTERS AROUND INDIA).For example if you have noticed every now and then there is either some architect or an interior designer putting in some articles every week in the TIMES OF INDIA...which is a wonderful media.Even if people don't read the articles , they know that there is a professional faculty called "ARCHITECTS"/ "INTERIOR DESIGNERS".I believe apart from talking only on the technical and core issues we must at the same time try and generate "I WOULD SAY ON URGENT BASIS" awareness about our profession....else the day is not far when even "INTERIOR DESIGNERS" leave apart architects would command better respect then us.

In this context i suggest the following:

1. A professional body like say "I.S.S.E" or IIT'S shall persuade these media's particularly NEWS PAPERS to allow them to contribute atleast two articles per week and demand the space/column for PUBLIC AWARENESS.....and for educating the common man.
2. The articles written by individuals should be forwarded to these bodies and these bodies should take up the task of putting them up in the media regularly. The articles should be on subjects of interest of common man and not too much in detail about design aspects or too technical.It has to have a simple language which shall be digested by common man.We must also show images of tricky works done .....images are very powerful media of expression....common man likes to look at something tricky / interesting.

Just think if the name of the STRUCTURAL ENGINEERS BODY keeps on appearing every week in the news papers.....what kind of effect it can have on a common man's mind? In my opinion it would for sure create a basic awareness of existence of our fraternity at common man's level.....which as we know is not the case today.Just take an example of Chartered Accountants.....a common man does recognize them, however we are not, I am questioned many a times " please tell us what exactly is structural engineering?.....

The word "STRUCTURAL ENGINEER" shall be made so recognized that it sounds like "DOCTOR" .....just look at the respect towards DOCTOR in a common man's eyes. Are we looking forward at getting that kind of respect ?

Also we should look at some kind of publication (one like INDIAN ARCHITECTS AND BUILDERS) , showing the detailed and intricate structural designing done , where by the creativity in structural designing is publicised.This shall be coupled with things/articles that interest a common man in buying or atleast browsing through these magazines.Have we not found a common man watching a DOCUMENTARY on DISCOVERY CHANNEL showing some bridge construction / tall building construction / earthquakes / Airport designs with hydraulic jacks under the columns....to name a few.I have seen people watching these things interestingly.If some documentaries are also filmed during the construction of some interesting structures and then shown through some channel repeatedly it would help tremendously in giving publicity to our fraternity.For example the Kanteerava Indoor Sports Stadium which L & T has designed and built with folded plate elements down the sou! th, projects like Konkan railway where TUNELLING and BRIDGES were the main activities.....the much talked about J.J.FLYOVER IN MUMBAI/DELHI METRO/KOLKATA METRO EXTENTION/WORLI-BANDRA SEA LINK PROJECT IN MUMBAI/BANDRA SEA OUTFALL ETC. to name a few.....it would draw immediate attention of the COMMON MAN towards the fraternity and the important role being played by us in the developement of the nation.Also things like surveying and setting out on big projects with specialised instruments and how the same are operated / their accuracy etc. if filmed and shown could be very interesting to people at common level....this would cover the BASIC FIELD "CIVIL ENGINEERS" as we should not forget that we are firstly a CIVIL ENGINEER as Shri.Shirish Patel had correctly pointed out.Using these big projects to draw attention , we should then in between educate people with importance of STRUCTURAL ENGINEER on RESIDENTIAL/COMMERCIAL/INDUSTRIAL PROJECTS as this is ! our main concern.Also with large number of MULTIPLEXES/HOTELS/MULTI STORIED CAR PARKS coming up in Metros these projects with specialised structures /large spans for girders, thier launching etc. could be covered and shown by way

of images and documentaries.....who doesn't want to acknowledge the structure where he/she has visited?...people like to relate themselves to it....we must use this to our advantage.

The funding for the documentaries can be borne by the large construction houses like L & T / GAMMON / H.C.C./ AFCONS / SHAPPORJI PALLONJI / BILLIMORIA / BRIDGE AND ROOF ETC. Also big companies like cement and steel manufacturers should be requested to sponsor the magazines and we all should support the same by subscribing the same and contributing by forwarding articles.

ALSO IT IS HIGH TIME THAT WE RECOGNIZE THE NEED FOR LARGE SCALE GATHERING OF CIVIL ENGINEERING FRATERNITY "I WOULD SAY CONSTRUCTION INDUSTRY" TO BE SPONSORED BY CEMENT/STEEL/OTHER RELATED COMPANIES IN METROS EVERY YEAR .THIS NEEDS TO BE STARTED IMMEDIATELY TO GET LARGE SCALE RECOGNIZATION.....PEOPLE SHOULD KNOW THAT SUCH A GATHERING TAKES PLACE.....AS OUR FRATERNITY IS MUCH MUCH LARGER THAN THAT OF ARCHITECTS AND COVERS NUMBER OF SECTORS. WE ARE THE NATION BUILDERS. We do hold gatherings /seminars/technical meets every now and then but the scale is too small.....IF WE THINK WE WANT A STATUS OF AN INDUSTRY THEN THE EXPOSURE HAS TO BE DONE IN A BIG WAY

THE AIM SHOULD BE....

1. TO SHOW DOCUMENTARIES TO FRATERNITY MEMBERS...WHICH CAN MAKE THEM FEEL PROUD OF BEING CIVIL ENGINEERS.
2. TO DISCUSS PAPERS AND HOLD TECHNICAL SESSIONS.
3. EXHIBITION OF PRODUCTS/EQUIPMENTS ETC.
4. TO REFLECT UNITY AND STRENGTH OF OUR FRATERNITY.
5. TO GET SUFFICIENT PUBLICITY BY DOING IT CONSISTENTLY AND RELEASING LARGE COVERAGE OF THE SAME IN NEWS PAPERS / OTHER MEDIAS
6. DISCUSSING AND SIGNING OF IMPORTANT BILLS/PROPOSALS TO BE FORWARDED TO GOVERNMENT FOR PASSING AND BE IMPLEMENTED AS CLAUSE.

7.SPECIAL PUBLICATIONS FOR PUBLIC AWARENESS TO BE RELEASED DURING THE MEET AND DISTRIBUTED TO PUBLIC FREE OF COST.

LARGE CONSTRUCTION HOUSES TOGETHER CAN EVEN THINK OF LAUNCHING OF A CHANNEL ON TELEVISION ON CONSTRUCTION INDUSTRY.....WHY NOT?WHERE THESE MEGA PROJECTS ARE SHOWN REPEATEDILY AND PEOPLE EDUCATED.

I think we need to begin this exercise in tandem with all other issues that we are discussing out here.

Looking forward to some movement on this and atleast a BODY LIKE I.S.S.E., IIT's and LARGE SCALE INDUSTRIES coming forward to take up this task by the end of this conference.

Regards,

"Structengg"

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**Anil Choudhari [Wed Aug 28 16:53:04 2002]**

Hello everybody,

Many postings were regarding the less business a structural engineer is able to get in comparision to the architect or the major fees goes to the architect.I am of the opinion that, there is a need to offer all services at one location to the client, like for building from making the layout plans, proposals , costing to getting it approved and roping in various other disciplines such as utility design to the building, site visits, stagewise inspection and building completion report etc. If a structural engineer (basically a Civil engineer) can take responsibility of co-ordinating all these areas alongwith structural design the client will opt for such engineers or consulting cos.

Anil Choudhari

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**P. Srinivasan [Wed Aug 28 17:19:00 2002]**

How do we compare with other countries with regard to number of structural engineers ? Any study available on the numbers linked to cement and steel consumed or any other acceptable index.

P.Srinivasan

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**Vidyut Gandhi [Wed Aug 28 17:46:01 2002]**

Dear Sir,

once again my heartly thanks to IITK Kanpur for organizing conference on hot issue.

Regarding the quality at design level I want to suggest one thing. Why not the fresh engineers/ graduate enginners should take the help of established & competant structural engineers like Shirish Patel (bombay), VMS (ahmedabad) & many more in designing the stuctures at conceptual level ? Their drawings can bear the names of those leading engineers alongwith their own names. Leading engineers can get royalty out of this ! Of course the liability lies with the engineers who take help from leading engineers.

I think this will definately solve the problem of quality & fee level. Society can get best design & engineers will get best fee If leading engineers(structural engineers) are willing to share their knowledge .

Vidyut Gandhi (Navsari).

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**Suneet Gupta [Wed Aug 28 17:57:01 2002]**

Sir,

Too good a theorem. I am 100% with u on this issue.

regards,

Suneet gupta

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**Sanjeev Hanumant Mangoli [Wed Aug 28 19:10:01 2002]**

Dear Friends,

I fully agree with Mr. Nath. I have mentioned this earlier also and Mr Jajib Shaw also wanted to convey the same.

Unless we educate the common public for the awarness and generate the public momentum all this will be on paper. Lets not forget the strength of the public.

Only than we will be moving towards the ultimate goal Hope we also start thinking in this direction

Yours  
Sanjeev

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**Jignesh Chokshi [Wed Aug 28 20:24:01 2002]**

Hello All,

Professional Knowledge sharing and protection of intellectual properties

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One of the major deficiencies in the Indian professional culture could be identified as the unwillingness and least motivation towards knowledge sharing. We do have different engineering journals and how many of them are always useful to practicing engineers? What percentage of practicing people participates in writing articles in the engineering journals and books? Many times the published articles become of least interest to practicing professional. Most of the books required during basic and advanced studies are from foreign authors only. Even for practice also, many people prefer only books of foreign authors. Despite the fact that we have achieved many milestones in this country indigenously, how much is actually published. Many professionals after their long and successful career could share their knowledge by writing in books, journals or even pamphlets. They can also assist engineering institutions in educating students by sharing their practical and useful knowledge and experiences. Can we exercise introspection to know where we go wrong? The possible answer: it is primarily due to lack of awareness or desire for publication, sometimes a long and tedious procedure for publication, least encouragement, support and promotion of this kind of activity and minor recognition of achievement. The western world has achieved a lot through the knowledge sharing at different platforms. Many different publications serve the platform of knowledge sharing. Now a day, most literature being referred in education and practice comes from UK or US.

I am sure with many practicing professional individuals and consultant companies, professionals might have developed many useful methodology, programs and applications and most of them are unpublished and unshared. The work could be processes, procedures, and spreadsheets and like documents, which could be of interest for many practicing personnel, authors of books and that could evolve a consistent professional culture. I believe that we should have a special publication pertaining to the field of structural engineering addressing the practices in structural engg.

This publication could be a printed journal of structural engineering, electronic magazine or even a web site of institute of structural engineers if formed. We

need a platform where we can exchange information and ideas. The governing body of this kind of publication can be expert professionals from various regions of country and among different working classes. Variety of practical and professional structural engineering issues may be covered in different sections.

The second and probably foremost reason for least interest in knowledge sharing could be the insecurity of innovative ideas and achievements. We, as Indians are strong believers of ancient thinking that by using/sharing the knowledge the knowledge increases. But, now a day, the knowledge shared may become someone else's property and could not reward in any way to the originator. Many people are scared of getting their ideas used by others without recognition and reimbursement to the originator. To encourage and motivate the developers of original work in the field of structural engineering, there must be a simple procedure and encouragement of protection of intellectual property. Encouragement to get ideas patented through simple procedures would be a good start. This way at least the ideas can be brought to the profession and the patent holder may allow the use of his/her work with appropriate recognition. We need to extract our hidden talents.

Jignesh Chokshi

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**Arvind [Wed Aug 28 20:25:01 2002]**

Dear Sir,

I have few points to add:

1. Sri Kare wrote

I have not studied in detail The architects Act 1972, Does it prevent architect from practising any other profession apart from Architecture (as Bar council's rules to Advocates).

Reply

No it does not

Sri Kare wrote:

I am talking about your point of architects being lead consultants, Can Architects call themselves Engineers!

Reply

At present they can write and engineers cannot do anything about it because we do not have any copywrite on the work 'Engineer' as they have on 'Architect'

Q-Sri Kare wrote:

Or Do we have to see the legislation of Engineers Act to prevent architects from using the word Engineers on their letter heads.

Reply

Yes, you are right.

Q-Sri Kare Wrote:

A) The preamble of Architects Act clearly states as follows "Act only protects the title of "Architect" but does not make the design, supervision and construction of buildings as an exclusive responsibility of Architects. Other professionals like Engineers will be free to engage themselves in their normal vocation in respect of building construction works provided that they do not style themselves as architects."

Reply

Yes, I agree with you on this point. That is why first step is not to use title as Architect, try using 'Project Consultant' or Consultant as title.

Second step is to educate the Govt departments that in a bid to call for quotations they should mention 'Architects / Consulting Engineers / Project Consultants of repute and request them to delete the words 'Registered with COA'

Q Sri Kare Wrote:

B) Also In 1977, the Govt of Goa has passed legislation and the note said that only Architects can sign building plans. This provision, was challenged in the Goa Bench of Mumbai High Court by Eng. Vikas Dessai by a Writ Petition No. 125/85, on the grounds that Engineers were adequately qualified and competent to sign the building plans and therefore the "NOTE" was unjust arbitrary and discriminatory in as much as it was imposing unreasonable restriction on the exercise of the profession of a Civil Engineer, praying that the same be struck down. The Goa Bench of the Hon'ble High Court of Mumbai, after carefully studying the case and analyzing the syllabus and Architects Act 1972, allowed the plea and observed "Civil Engineers are fully qualified to do works of development and of construction of buildings and as such there is no reason for excluding them from the class of persons who can sign the plans and applications for construction of buildings and for restricting this class to Architects only." It struck down the "NOTE", by its judgement dated 12th August 1986.

In view of A & B above, How legally correct the advertisement of semi-govt and govt bodies to ask in their advertisement for their projects that Registration with COA is a must. Well Civil engineers also can be lead consultants.'

Reply

Yes it is very heartening to receive full gist of the Judgement from you. But beware, recently there are instances to change the clause in NBC, pending revision, that only Architects are responsible enough to these jobs!

This has to be very seriously tackled, this incidence has come to light in workshop conducted by NCCBM on Revisions of NBC

With warm regards.....Arvind

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**Chitra Javdekar [Wed Aug 28 21:21:01 2002]**

Dear Mr. Chokshi,

I agree with you entirely. Documentation is very important in US as far as I know. We have lost on the experiences of many because not following the practice of documentation.

I never understood the significance myself until I came to US. I believe we are not taught the importance of writing and publishing at School and college levels.

Your suggestions are very good and I would be willing to work for promoting a publishing forum, if we can get some people with similar thoughts.

Thanks

Chitra Javdekar

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**Hari Kumar [Wed Aug 28 21:42:01 2002]**

Dear All,

Many thanks to IITK and especially to Sri Sudhir Jain for getting us all together. It is indeed a learning experience for all of us. One concern is that except for Mr. Sudhir Badami no one mentioned about the rural housing scenario and the Non-engineered houses. With more than half the land vulnerable to Earthquakes and with over 72% of our population being rural- it is indeed important for us to think seriously of these 'structures' also.

Other concerns...

\* Considering that the rural community invests their life savings on these houses, it should be their right to know if they are building on high risk zones, and what precautions they should take when they build. Awareness is a major problem as pointed out by many-among the community, among the Govt. officials including

engineers, builders etc.

- \* How can we disseminate codal provisions? Should these be simplified and translated into local languages?
- \* How does the authorities ensure adherence to these codes? Can the development authorities be held accountable?
- \* There is limited awareness about retrofitting measures for existing buildings.
- \* There is hardly any mention of EQ resistant technologies in the engineering curriculum.
- \* Can the poor really afford to add EQ resistant features in their dwellings? Can GoI provide additional funds for Indira Awas houses which adopt such features at least in the high risk zones?

Hari Kumar

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**Navin Nawneetlal Chandak [Wed Aug 28 22:34:01 2002]**

Dear friends,

This is Er. Navin Chandak from Nagpur.

It was indeed a great opportunity provided to us by IITK to interact with so many other colleagues on such a important issue. Only a person like DR. SUDHIR .K. JAIN can think of such a idea and make it a success. To tell u the truth we are all lucky that we have a person like Dr. SKJ with us in our fraternity. Having been his student at IITK, I must confess that a person of his callibre is sent by God only rarely.

Before we come to end of this e-conference I wish we must resolve three things, viz:

(1) Form a National level association of Structural engineers. Till its official meeting takes place lets make someone equivalent to Dr. SKJ as its working Chairperson. (everybody must be thinking why nor Dr. SKJ himself, yes why not he if he agrees). Be prepare to commit yourself financially if u agree to this proposal. No organisation can work unless its financial back bone is strong and well supported.

(2) We appoint a high level working committee which will look in to the matter of professionalism being discussed in this e-conference. Let each one of us briefly give a agenda for this committee. The members could be likes of Er. Shirish Patel, Er. Arvind Jaiswal, Er. LK Jain etc. A time frame can be chalked out for this committee to submit its report. In the mean time all members try to exploit their political contacts (I'm sure a lot of us must be working for some MP/MLA

or powerful leaders of political parties). The committee must work out a clear cut plan of action to achieve our goals, whether or not the recommendations are accepted by Government.

(3) We must all strengthen ourselves at local levels. Organise meetings and raise funds if required at National level. Educate our fellow engineers on various matters. No bill or regulation can come into existence unless we unite ourselves. We cannot achieve anything individually, though we may differ on various issues, however, when it comes to national level we must all speak on same line.

Cheers.... a  
concrete action taking place at national level soon.

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**Chitra Javdekar [Wed Aug 28 23:05:01 2002]**

Hi All:

I am also working on my PhD for a similar project at Tufts University MA,USA. What we do is instrument the buildings/bridges and we have developed software that can calculate the physical properties of a structure which can give an indication about the current state of the structure.

Please feel free to contact me if you have interest and would like to know more about this.

Chitra N. Javdekar

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**S. Bhattacharya [Wed Aug 28 23:23:00 2002]**

Dear Fellow Engineers

Being a civil engg we have some duty towards the society. As pointed out by someone that there is a need of educating the masons for rural housing. If we can write some thing like a code in local language (e.g. Hindi, Gujarati, Bengali etc etc) with lots of sketches about joint detailing, bar bending etc etc together with photographs showing the failure of real structures----showing them what would happen if someone does not follow it. This has been done by Mr Dinesh Patel in Gujarati and English and is posted in the website of the company he works for (Ove Arups and Partner)

Regards

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**Moderators [Wed Aug 28 23:43:01 2002]**

Dear Colleagues:

We have now reached the half-way mark in our six-day conference. As someone said, we should also focus on the solutions rather than just stating the problems. It seems that we have consensus on the problem statement. As engineers we are good at finding approximate solutions to exact problems. It is proposed that during the next three days we focus our attention on practical solutions that can be implemented at our level.

Usually, only those solutions work which are within our own reach and which require little outside help. It implies that very ambitious solutions are not likely to be implemented. Prior to the Gujarat earthquake, common belief held was that the solution lies in making the codes mandatory. Now after the earthquake several states have made the codes mandatory. And yet, the earthquake problem still remains because we did not develop the knowledge base and the infrastructure to enforce the codes. Similarly, an Engineers' Bill or formation of the IStructE may not be enough to solve the problems unless we work parallelly on several fronts.

What are the small initiatives that we can take ourselves? For instance:

- a) Will some of the knowledgeable structural engineers be willing to donate two days a month for providing training to younger structural engineers locally? It will not only train the younger engineers, but could also help develop the fraternity.
- b) Will our structural firms be willing to allow their engineers to spend 5% of their time for participation in training, conferences, committees, and other capacity building measures?
- c) Can we develop an annual retreat for young structural engineers wherein they could exchange ideas and concepts? This could even take the form of an educational and motivational camp.
- d) How about creating a test in "Seismic Engineering" to be conducted once or twice a year. Any structural engineer can volunteer to pass this exam and earn a certificate. Such a certificate could be useful to him for proving his credential. After we gain some experience in this, the scope could be enlarged. Will it be possible to have financial sponsorship for such a project from the industry? And, will the structural engineers be interested in taking such a test?

We are sure that there will be many more such small initiatives that can be taken up locally by the community of structural engineers. We invite your response on the above and seek other ideas that you think you can initiate.

Have a nice day and happy e-conferencing.

Sudhir Jain and Alpa Sheth