

e-conference on Professional Issues in Structural Engineering in India

(26-31 August, 2002)

hosted by

National Information Centre of Earthquake Engineering
Indian Institute of Technology Kanpur

Proceedings :: Day 2

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Moderators [Tue Aug 27 00:28:00 2002]

Dear Colleagues:

The response on day one has indeed been heartening. We have had a diverse set of suggestions and comments on the current state of practice in India and the woes that have befallen it. Very important issues are being raised, and already there seems to be a consensus that

- a. there is a need for a formal licensing system for structural engineers,
- b. there is a need for a single umbrella professional body to address issues of concern (such as regulation of the profession, professional ethics, accountability, etc)
- c. the best results cannot be expected with under-paid structural engineers, and hence, the fees and the salary structure have to be commensurate with the responsibility bestowed on us, and
- d. the structural engineer needs to make a place for himself in the society by giving the best possible professional services and he has to be conscious of his social and other responsibilities.

In this context, it may be interesting to note that recently Engineering Council of India (ECI) has been formed with similar objectives. The ECI will cover all

branches of engineering and not just civil engineering. Also, only professional societies will be the members of the ECI (as against individuals). Detailed information on ECI, its objectives etc, can be found on its website: www.engineeringcouncilofindia.org. We recommend our e-conference members to go through the same and discuss some of the issues that are outlined in the objectives of the Council.

We also understand that a new professional body Indian Institution of Structural Engineers (IIStructE) is being formed. It will be a national body of structural engineers with the major objectives to cater to the overall professional needs of the structural engineers practicing in India. Sri Mahendra Raj in Delhi and other prominent engineers in the country are spearheading this effort.

Some of the issues that require further discussion include:

1. Even with formation of such bodies, where do we go? India is a big country of one billion people and the task of licensing of engineers in a professional way is a Herculean one. What would be the best modus operandi to carry it out?
2. The difference between a developing country and a developed country really lies in the quality of human resources. As such, we have not invested enough in continuing education and other capacity building activities for the structural engineers. To bring up the large body of engineers to capacity is not going to be a simple job. And by the way, do not expect that seven IITs and an IISc alone can solve the HRD problems in a big country such as ours!!
3. If we were to introduce the examination-based licensing, how do we begin it? And, how are the engineers currently practicing for many years to be considered in the new system.

We are sure more issues will emerge each day as we continue to cogitate and communicate with each other regarding the professional practice in structural engineering in our country today. We look forward to another day of heightened discussions.

A few messages from the administration

- * Please delete the message you are responding to from the body of your email so as to limit the size of the email.
- * If you feel inundated by the emails flooding your inbox, you may use the digest mode option. The procedure for moving to digest mode is spelt out at the begining of each message.
- * The messages are being posted at the NICEE website (www.nicee.org) and will be archived for future reference.

Happy e-conferencing !!!

Sudhir Jain and Alpa Sheth

Pankaj Lahoti [Tue Aug 27 00:46:02 2002]

Dear Mr. Pankaj Gupta,

I enjoyed reading your nice anecdote. Although I have nothing to do with Civil/Structural Engg and I got added to your list by mistake, but I am glad to learn that there are still professionals like you exist, who are willing to walk away from a unprofessional and unethical work practices in spite of being offered a decent fee. Professional and ethical individuals like you can help moving nation from developing to developed country status. I live and work in United States and it is amazing to see the above average ethical standards and professional moral values of Americans.

Best regards,

Pankaj Lahoti

Sudhir Badami [Tue Aug 27 07:52:01 2002]

Dear Pankaj Lahoti,

It might give a very rosy picture of the fees offeref by the builder to Mr Pankaj Gupta - Rs 4/- per sft. At even a lower cost rate of Rs 800/- per sft, this works out to 0.5 % or of structural costs, about 1%. Now you tell me sir, whether Pankaj Gupta was sarcastic or not. It was indeed a very enjoyable narration of the episode Pankaj Gupta mailed us. Am I waiting for the Part Two!!!

Sudhir Badami

Sudhir Badami [Tue Aug 27 07:52:04 2002]

India is emerging as the largest urbanised country, not in terms of percentage of population but in absolute numbers. This also does not necessarily mean that the urbanisation is towards the megapolises like Mumbai and Delhi or metropolises like Kolkatta, Chennai and Bangalore. It is not widely known fact that when affluence comes to rural area, say a village, there is a migration to Taluka Headquarters or even Zilla Headquarters. It is a kind of progressive migration. Distress migration takes place to places like Mumbai as it offers some kind of employment and there should be no wonder why today about 70 lakh people out of 119 Lakh in Mumbai live in slums, not that everyone here has migrated to Mumbai in distress.

Slums are cities within and the present 43 cities in India with population more than 10 Lakh is likely to increase to 65 if not more by 2011.

Then of course there are the non-engineered buildings in towns and villages, not to speak of such structures in cities as well as metros and megapolises. What ever policies we evolve, we will not avoid a Killari or Bhuj though we may avoid an Ahmedabad and Jabbalpur, if we do not cut across the whole system.

I have a few suggestions but I will put forth these later. I have posed an important aspect of our profession to the econference as India is 70% rural. We are talking of earthquake as the damage done is almost instantaneous. We need to look at other disasters too - Orissa for example. I will say this much that Planning is essential part of Civil Engineering and this has to be done in partnership with Architect/Town Planners; not one as a subordinate to the other.

Sudhir Badami

Arvind [Tue Aug 27 07:58:01 2002]

Dear friends,

Moderators have certainly set the tone for the second day's discussions:

a. there is a need for a formal licensing system for structural engineers, The ECI, Engineering Council of India is already formed and this will be one of the important agenda undertaken by ECI.

But will it be possible for it to complete the job itself? ECI is going to cover all the disciplines in Engineering! This will mean compulsory external help, e.g. from constituent member organisations or organisations / societies already functioning in India in various disciplines.

Primary objective of ECI will be to formalize the procedure and norms for certification, identification of certifying bodies and the time frame for certification.

Certainly for Structural Engineering Profession Institution of Structural Engineers is a ray of morning sun!

c. the best results cannot be expected with under-paid structural engineers, and hence, the fees and the salary structure have to be commensurate with the responsibility bestowed on us, and

The fees and salary structure are very much interlinked and cannot be regulated on members as it can be seen from the experience of Architect's Act, 1972. Even after 30 years of the act, there is wide disparity in the fees being charged, despite the norms by Council of Architecture and acceptance by various Government Agencies / Ministries.

But there have been recent attempts by the Local Centres to discipline erring Architect. Similar control mechanism can be available for ECI and through its constituent member organisations.

But most important is the formalisation of Fees Structure Legally, and this will mean ECI proposing Engineers Bill and Parliament taking up immediately. All politicians require massive mandate to be shown.

We engineers should unite and show the mandate to them, and get the Engineer's Bill.

Kindly visit www.buildnova.com Go to 'Opinion Poll' and cast your opinion in favour of Egineer's Bill. This is being collected in larger interest of Engineers and please fill all your relevant details so that this can be compiled and then sent to the ECI and Ministry of Human Resources and Development, Government of India for furthering the cause. The same site address can be propogated to engineers of all disciplines so the movement picks up.

Continuing education and other capacity building activities for Engineers in general and the structural engineers in particular should be a prominent objective of ECI. To bring up the large body of structural engineers to capacity can be the responsibility of Professional Bodies like Inst. of Struct Enginers, Institution of Engineers, Association of Consulting Civil Engineers, Indian Concrete Institute etc. etc.

It is tough job and may take a long time to achieve.

With warm regards.....Arvind

Hitesh Ray [Tue Aug 27 08:46:01 2002]

Dear Thinkers,

Basically I am a structural engineer by profession & presently residing at Lucknow. During the tenure o my professional life, I have felt that the preference of a Structural Engineer is quite lesser than that of an Architect.

In fact, only a good understanding between a Structural Engineer & an Architect can give a Balanced Structure both from Structural Safety as well as from aesthetic point of view.

But present scenario depicts a very dreadful picture of Civil Engineering Construction & Consultancy Services.

Often I see, most of the structures weeping for their lack of Stability & Strength, especially from Earthquake / Horizontal Force point of view.

WHY THIS?

- # Is the Construction / Consultancy World started ignoring Structural Safety / Stability?
- # Why is such a low Salary / Consultancy value of Structural Engineers?
- # Why proper blending of ideas of Structural Engineer & Architect do not take place for any particular project?
- # Why are we incapable of stopping such Cheap & Dreadful Construction?

There should be a Strict Law to cope with the Bad & Illegal practices in the Construction & Consultancy World?

THIS MESSEGE IS ESPECIALLY FOR DR. S K JAIN OF IIT, KANPUR

HITESH RAY

Ramesh P. Singh [Tue Aug 27 09:00:00 2002]

hello,

When e-mails started pouring in my account I was very happy to read them and enjoyed maximum since I am not a Structural Engineer, nor a Civil Engineer to support views of anyone.

After going through numerous e-mails, I found that the majority of people want to divorce Structural Engineering, some are of the opinion to form a forum only for Civil Engineers. I found that people are not interested in the issues which are the "real" issues to the Structural Engineers in the country.

I have also found that everyone would like to live in his own house or in a society where he or she can have his or her monopoly, may be because of personal gains or business, as a result of which things are going from better to worse.

I will take an example of the American Society of Civil Engineers, they have so many sub branches of Journals and Civil Engineers are proud to publish in the Journals. Why we have so many branches of Journals?, this way the Society would like to earn more! But what harm this Society is doing, they have divided Civil Engineering community in so many branches and further people are interested to get divided in sub branches. This Society has restricted academicians to restrict in their specialised shells.

The Structural Engineer is interested in constructing a building by using huge amount of steels without caring about the foundation or soil properties, the consequences were seen in Ahmedabad. I am of the opinion that the people should learn to do their jobs with honesty and also give respect to others whether the person is trained in other branches of Civil Engineering. The Structural Enginner must consult others (Geotechnical or Soil Engineers whenever needed), I found that in our country coordination lacks among other branches of Civil Engineering. If we learn to do our jobs honestly may be we can give respect to others and people may give more respect to the Practicing Engineers or Structural Engineers even after any deadly disaster like Gujarat.

The issues one should debate how the Structural Engineers follow the codes and increase the coordination with Geotechnical Engineers or impose conditions to the Builders.

RP

K.N.Chandrashekaran [Tue Aug 27 09:41:00 2002]

In Hyderabad, we've had a few practicing consulting/ Structural engineers receiving notices from the Council of Architecture (COA) asking them to desist from using the word "Architect" either in their visiting cards or letter heads, even if they have COA registered Architects as partners or employees. Letters have also been written to clients telling them to award work only to architects. The implication is that the Architect will become the lead consultant and he will appoint sub consultants. This, we feel, is against the principles of natural justice. The Professional Engineers bill should be expedited in Parliament to protect the interests of the Consulting Civil/ Structural engineers and also to make sure that in the current environment of Multi disciplinary services needed by clients, a Civil / Structural engineer is more suited to play the lead role.

K.N.CHANDRASHEKARAN

Paul Varghese [Tue Aug 27 09:57:01 2002]

Hello All:

From the kind of comments that have been seen over Day 1, there seems to be lots of soul-searching about why the process seems to be failing, and if the problem lies within... Which is good, but some of the answers also lie outside ...

Part of the reason, I feel, is that the people who are doing/financing the building are those who know nothing about it. i.e., Economics drives much of it including

builders and similar.

For one, there has to be a way of controlling the pure builders with some form of licensing, which ensures that with political/legislative decision-making / reform such as and including Building regulations (as tall an expectation as this might sound.) also follows. Maybe -- Builders ought to have registered structural engineers on their team. Builders themselves probably have no Regulatory Body (but compulsorily needs to have), which needs qualified and responsible people/consultants to be in charge/ as advisors, etc.

Secondly, people who know about construction and are directly involved in this, architects and engineers alike, ought to begin getting into the field and begin working on their own as builders. Banks and financing agencies have to be lobbied to understand that competence and working knowledge are sufficient for seed capital against feasible projects, which will allow them to start up on their own. This is just like any other industry as manufacturing, etc.

So also architects and engineers must be ready to get their hands dirty and get down to actually checking and supervising on the site and on the job to ensure that their theoretical designs and calculations are actually followed up and also works on the site, instead of leaving it to 'supervisors'.

So also architects and engineers needs to know how to work together with their best efforts are joint, as well as in their core competencies, instead of assuming that they individually have all the answers. Explain to / educate people why their thinking is flawed, if and when any, and pointing it out and in fact perhaps even giving it in writing, etc.

The references especially made by Mr. Gupta ought to be enough to show that there are people who will resist compromising -- some things just cannot be compromised on, such as quality, etc. Hopefully such moves will increase the respect to that which is deserved. Some things just might not need to be questioned such as the integrity of one's thoughts, understanding, etc.

Another issue that is looming on the horizon is the issue of 'prescriptive' solutions. Similar to the medical establishment, the fact that what is driving the medical field is pharmaceuticals, and not individual medical practitioners or even their collective effort, but a whole separate industry. In a similar manner, those trying to dominate the market will be the materials industry who will approach it as commercial ventures with discounts, incentives and similar marketing strategies. Hence without many ethical and similar infrastructure in place, commercialisation will begin taking over.

regards
Paul Varghese

Chitra N. Javdekar [Tue Aug 27 10:02:01 2002]

Hello All:

I would like to thank the organizers for making this e-platform available to the community of Indian structural engineers. The postings regarding the issues facing our community are very informative and educational.

However, when this conference ends, we do not want this to be something we talked about and put aside. Therefore, I propose some action items (Please feel free to add to it) for us to develop leadership and promote our interests. WE MUST:

1. Communicate the concerns and interests of the Structural Engineering community with other Engineering Institutions including the structural and other civil engineering institutions and with the Government.
2. Develop leadership by forming either E-committees or physical committees to advise the Government, Educational Institutions and Civil Engineering Community:
 - * Committee for Professional Engineering Examination
 - * Technical Committee for Structural Planning for Safety and Durability (Earthquake related or any other emergency related)
 - * Committee for Standardization of Technical Reporting for Public and Private works
 - * Committee for Advancing new technologies in Engineering Colleges
3. Educate the Residents and Owners regarding issues faced by the Structural Engineering community by forming Advocacy Groups
4. Promote collaborative efforts between engineering educational institutions, governmental institutions and private companies for Research and Development and increasing the participation and creativity of students by involving them in this effort.

I hope that we can continue to talk about this. And once again, thanks for this great conference.

Chitra N. Javdekar,

Jignesh Chokshi [Tue Aug 27 10:10:00 2002]

PART I:

Hello all professionals,

The efforts of NICEE are highly appreciated for initiation of discussion on a wonderful issue. All professionals must thank NICEE for giving opportunity in the discussion and share views on an important issue.

It is strongly recommended to evolve a new licensing authority for professional services to stop malpractice in this profession. This body shall be purely of engineering experts of known strengths and shall not be influenced / controlled by any political or otherwise authorities.

I would like to share/add my views on the discussion brought up by Mr. Shirish Patel + Low status in civil society

Yes, its very true and not only in India but also in Americas and Europe. This feeling first came to my mind when I visited website www.greatbuildings.com. The website covers many landmark structures all over the world. Surprisingly, there was clear identification of the name of an architect (i think in bold face or with different color) and it was very difficult to find out the name of the engineers who designed the structure and who actually built it. Even for buildings like Sears Tower(Chicago, IL), whose design has been considered as new structural engineering concept, without which it was very difficult to imagine the safety and stability of the building with given height in the windy climate of Chicago. Every piece of this building is an example of engineering excellence and only architects are credited for.

I would try to recall the sentiments of the person who lead the structural design of Petronas twin tower (based on a program on Discovery) that the overall building industry do not recognize the contribution of either structural engineer and furthermore, the construction engineers. The industry forgets the significant and marvelous contribution of the people who actually build and shaped the object of someone's imagination.

In given circumstances, it is very difficult to make people aware of what exactly structural engineering is. Even highly educated people would consider the design of a bridge is the task of an architect. If we need to look for the dignity, recognition and self-esteem, we need to shake the grass root level education system where people shall be made aware the difference between different professions. Poor salaries, and low professional earnings

Can we agree on the simple principle of economics "when supply is more than demand, the price reduces".

Is it true that our country produce more civil engineers than what exactly it needs? Due to access engineering professional than required, every professional

would bid low for its own survival in this competitive world. I think, one of the aim of any group/body representing the issues related to civil engineering as a whole, must emphasize on the control of production of professionals every year. For certain forecasted projects the engineering colleges might have increased the number of admissions. But upon achieving the target, normalcy should be brought back. This way the abundance flow of professionals in one particular discipline may be restricted. The technical education bodies and education financing bodies must be made realize this fact.

The principal concern of the low earning is due to the fact that, a professional who bids for the lowest price may be either a very new professional or a incompatible professional fellow who is struggling inside this competitive market. This kind of situation is really difficult to control and alarming too. Many times the prices are kept low to maintain the flow of work and reputation in the industry even by experienced, high profile and reputed professional. In most cases the survival is the key issue. One recent supporting fact is that after recession in the IT industry, the expected salary standards for IT professional have gone down.

Part 2 to follow

Jignesh Chokshi [Tue Aug 27 10:15:01 2002]

Part II

Continuation of part 1 of mail: + Poor education, with no continuing education after graduation

One question should come to our mind "How many of us have actually approached the educational institutes and expressed our willingness to share the experiences and practice with the professors and new generation of professionals?" At the same time one must also wants to know "How many educational institutes would encourage/allow the professionals sharing their knowledge and experiences even if the professional do not expect any reimbursement for his/her services". This fact may not be true for our country's premier engineering schools like IITs and some highly reputed colleges. In many cases the professor who teaches the engineering may be far away from the professional practice exercised in this field and would never make the students to think in that direction.

Essentially, the high time is knocking the doors where we need to narrow down the gap between educational institutes and the professionals and professional organization. Many schools have now started summer training programs and

similar activities for students. Any professional body within the city may exercise initiative to gather professors, students and professionals on common platform for exchange of ideas for better education. The professional with higher education must also be rewarded appropriately.

The educational institutes must not make realize its outgoing student that he has to learn everything new in the practice. At the same time, the engineering companies shall not do the same to new professional and instead they must encourage the new professional learning additional skills needed in the professional career.

We need to learn share knowledge. Only we can improve the quality of professional education. Eradication of casual approaches in the practice

We must stop the commonly and casually used terms like *Sab chalta hai*, *Baad main dekha jayega* , *Aisa hi hota hai* in the profession. Many of our friends and family members would trust more to a carpenter or bar bender than the qualified engineer telling that *yeh to iska roj ka kaam hai*. This is the place where many times the profesional struggle for its own identity. It is always good to listen to someone's idea for a professional but do it what your ethics tell. This kind of casual tendency among the engineers and contractors may be one of the reason, where we saw a mind shattering disaster of the buildings after Bhuj earthquake. Every professional must be aware of his/her duty and importance and should not possess casual attitude. A bear minimum discipline shall be observed and Valid reasoning behind any judgement and decision shall be put forth. Awareness of difference between human intelligence and electronic engineering tools All professionals must realize and reconcile the difference between human abilities and the power of engineering tools. Every professional must understand that the software helps in design process and can not replace the whole process. This fact must be rigorously implemented to the professionals of recent generation who normally would be addicted to the computerized tools. Many engineering problems have been solved with the power of computational mechanics in structural engineering and most processes are accelerated with powerful computers. We do better engineering than a decade before. Despite these facts we must not be fully dependent on these tools.

The popular program SAP comes with a quote "with good engineering judgement you can produce on the back of an envelope that which otherwise can not be produced with a ton of computer output - anonymous Circa 1974" Every engineer shall digest the above quote of 1974 and restrict himself fully relying on any computer programs. Every user of any engineering software

must be aware of

1. The capabilities of the programs, methodology behind the development
2. Assumptions inside the program
3. The limitations of the program
4. True and logical interpretation of output of program
5. Reasonably good sense on the behavior of the structure analyzed
6. Alternative methods to verify results

One must go through the disclaimer given at the beginning of any program manual. We must understand that no program developer takes the responsibilities for the outcome of his product even after paying high prices. They also direct us to use our skills for verification of input and the results. We must not lose our art, skills and sense to design structures. We need to realize the people that civil/structural engineering is also a science of creation which many times include the art and imagination.

Thanks and good luck,

Jignesh Chokshi

K K Pradhan [Tue Aug 27 10:23:01 2002]

Dear All,

It is heartening to go through the mails of various participants(to name a few, Shirish Patel, Girish Behl, Sudhir Badani, Prof. B.K. Raghu Prasad, Indrajit Baruah, Dipak Shah etc.) expressing their concern / anguish for their dear profession & suggesting various points for improvement. Yes, indeed there has been tremendous erosion in the values and importance of structural engineers and the profession due to lack of proper regulations, and I would rather say in lack of political / administrative will to duly impose the existing regulations also. As asserted by some of my previous participant, we must see to it that there is a central regulatory authority at national level by uniting all civil / structural engg. professionals. The construction practice should be declared an Industry by the Govt. authority and it should find a deserving place like the Council of Architects(CoA) formed under an act of Parliament. Being a govt. servant, however, I do not have idea of the problems facing the Consulting Engineers. We, however, in our Company fully honour the guidelines of CoA & hence that system appealed me.

I would invite valuable views of participants well experienced in this line for sharing the knowledge.

K. K. Pradhan

Mrs. Ganesan [Tue Aug 27 10:55:02 2002]

Thanks to Dr. S.K. Jain sir and his team for organising this e conf.

My request to practising engineers:

Extra care has to be taken while designing non conventional structures. Small things like provision of drain pipe inside the column have to be considered while designing. Proper compaction of concrete in bend portions have to be taken care. While carrying out design using standard packages, please take care to consider long column effects etc.

Thanks
Mrs. Ganesan

Sivakumar K [Tue Aug 27 10:57:00 2002]

Dear Colleagues,

I concur fully with the erudite views of Prof.Raghu Prasad.

Many of the Civil Engineering fraternity are in the dark about many of the advancements in earthquake resistant construction and even if they come to know, they are confused in putting it into practice. Also, since the construction practice and methodologies vary greatly from place to place, it is imperative to host a website containing all the technical information in a lucid style. This will also help the client to appreciate the need for engaging the services of a civil engineer and the latter will also find it easy to convince the former in ensuring proper design and construction methodologies. In this way we can penetrate at micro level and can minimise the disastrous after effects, in case of any natural calamities like earthquake etc. The builders also will be forced to adhere to quality norms, due to greater awareness among the people. In a long term perspective, web-based efforts may combine possibly well with e-governance and the approval from the various town planning regulatory authorities will be qualitative and not arbitrary, as we are witnessing now. Let us hope to see the cowubs of cartels replaced by righteous construction using the web.

Thanks for the opportunity.

Yours,
K. Sivakumar,

Yogesh Kulkarni [Tue Aug 27 11:08:01 2002]

HI u all respected personalities

myself i am a student of structural engineering and i strongly agree with the views of Mr. Jignesh Chokshi.

while studing my course i always feel that whatever am i studying, is it that which is applied on the field or in practice. And if so then why such big failures.

there is lot amount of uncertainties while studying my course and i always have the feelings that whether i have done mistake by taking this course, it would have better if i would have joined the job of designing and get the practical knowledge and start earnings.

And anothore issue i wanted to know is that why is that when u apply for the job as a structural engineer , the EXPRIENCE in the field dominates the TECHNICAL BRAINS. why not a fresh brain with a sound technical knowledge get a chance. This what i have expierenced and hope i gwet some proffesional views on it.

thankng u all for the wonderfull job you all are caring out.

Yogesh A. Kulkarni

Hiren Desai [Tue Aug 27 11:27:01 2002]

Are we determined and consistent enough in our effort to improve the system?

After the earthquake in Gujarat may committees were formed and they gave their valuable suggestions, etc.

Local regulatory body has announced licensing of structural engineer, clerk of work, builders, etc. All are happy that now good quality construction will be there. Structural engineer have some relief that know there will quality supervision and work will be carried out as per his detail and specification as he has to take all the responsibility.

But as we and our system are "Aarambhe Sura".

Today no one is interested in licensing and appointment of clerk of work and if it is there then it is on the paper only. Licensing of builders is on the verge of cancellation. Construction works are carried out almost in same

fashion keeping aside few exceptions.

With the grace of whom I don know, rerolled steel, apparently looking TMT bars (not quality and specification wise), non standard in size and poor quality coarse aggregate, fine aggregate (full of silt), etc. are excepted by us as inevitable evil . Why? Something has to be done by authority or us to prevent non-standard material being supplied to site. After all we are relying on them for structural strength and stability.

Hiren G. Desai

Mr. D. Bhadra [Tue Aug 27 11:35:01 2002]

Dear friend,

The problems have been identified unanimously. The question is what is the solution, if not total even partial? A formation of a body of Structural Engineers is most welcome but this will not automatically lead to the desired solution. Institution of Engineers is there for a long time, but it has not done anything in convincing the Govt. towards introduction of statutory 3rd. party technical audit. Govt. has accepted the importance of financial audit and there is a statutory obligation. The bodies of Cost and Chartered Accountants have done a good job in this field. I feel technical audit which will cover both design and construction is no less important. Besides quality assurance this will also guard against wastage of natural resources.

D.Bhadra.

Ashima Sapra [Tue Aug 27 12:02:01 2002]

Hello everybody,

Among all the high professionals and well placed experts my input would not contribute much without an engineering background and not much experience. But i was waiting for this econf to begin, so i could share my experience.

I was there in ahmedabad (as a student of school of planning) on the 26th of jan 2001 when the earthquake struck and stayed there for the next two weeks when my college cept was officially closed to be a part of one of the teams surveying various residential buildings in ahmedabad for their structural safety.

As an architect by background i am accustomed to a little bit of structural knowledge (structure as a part of the design). Looking at some 15-20 odd buildings (I do not remember the correct number), during the above mentioned

survey, i realised that in addition to the various issues as stated by all of you regarding the regulating agencies, 'institute of structural engineers', ethics and like; we have accepted the relation of structural eng. with civil eng. but its relation to architecture is lost.

we should not forget that structural eng. has its importance whenever it comes to bigger projects like bridges, flyovers, dams, and high rise buildings; this however, is not the case when it comes to a 2/3 storey high load bearing residence or a low rise apartment block. Such were the examples that experienced maximum distress in ahmedabad during the 2001 earthquake. The distress was caused due to various factors:

- poor designs, wherein structures and services were clashing; i.e. there were drainage and water pipes running next to the column, which inevitably degraded the strength of the structural members over time;
- poor maintenance; the residents as owned only and apartment/flat, were concerned only about there 3 rooms and had been renovating them, not realising that there leaking pipeline was not just a problem to the neighbour staying on the lower floor but a safety hazard to their whole building;
- the soft storey; much talked about factor that causes the failure...but in a number of cases the whole building has just crushed the ground floor. Looking at those examples i thank god that there were no flats on the lower floor and only parking. The concept of soft storey infact is of a major importance, especially today when the land is becoming a scarcity and parking a necessity.

Here i would like mention steps that could possibly be taken:

a) imparting structural engineering knowledge in the course of architecture in the country, so the architect has the basic knowledge that he understands where and how to find a match between structural stability and design, without compromising on the safety of people. This would not mean to reduce the importance of a structural eng. as his contribution is equally important in any construction project. this would mean a review required in the architectural education in the country.

b) awareness amongst people about proper maintainance of ther buildings. this is as important as painting their houses before deepavali

Last but not the least, it is in the hand of the public whether to listen to the advice of their contractor or trust the word of a professional structural/civil engineer. We cannot force anyone to believe us and our intellect, we can only attempt to prove our point. And when people do not believe in our words, we have to show

it to them.

Wishing this econf a big success.

More important than what is ahead of you and what is behind you, is what is in you.

Ashima Sapra

Suneel Voditel [Tue Aug 27 12:11:00 2002]

Dear Fellow Professionals ,

It is unfortunate that although Civil & Structural Engineering is such a vast field , a majority of us find ourselves being confined to the Building industry (under the dictates of Developers and Architects) doing routine activities.

We all enjoy our work and are honest in doing the best possible for safety and stability of the structure.

Many of us may have doubled as College faculty to supplement our income (at some point of time in our career). Actually ,the Society has never ever been made aware about the importance of a Structural Engineer and what he is capable of doing .

Though it is true that :

- (1) WE are underpaid
- (2) WEdo not command as much respect as WE should
- (3) WE WE need to Unite as a Professional body

Is'nt it equally true that WE are TOO MANY doing the same job ?

Here are a few points to ponder :

We need to develop

- (1) Innovative / alternative structural systems for mass housing
- (2) Experiment with different Materials
- (3) Update ourselves on latest techniques / methods of Prestressing/ Post tensioning for Multi storeyed Parking structure applications
- (4) Aim at BOT (build - operate -transfer) type projects in the categories of Large Stadia ,large span retractable roofs, space structures etc.
- (5) Involve Academic intellectuals from various diciplines such as Geotech., Hydraulics and explore possibilities with their expertise .

Together WE .. CAN & WE ... WILL
give our Society "Innovative Solutions "
which Builders / Architects can only dream of ?

With Best regards ,

Suneel Voditel

Arulanandham A [Tue Aug 27 12:12:01 2002]

DEAR SIR,
WE ARE THANKFUL TO IITK FOR ARRANGING SUCH E- CONFERENCE TO
INTERACT
WITH VARIOUS EXPERTS .

ONE OF THE PROBLEM WHAT WE ARE FACING IS PROPERTY
DEVELOPEMENT BY ILLITERATE AND NONTECHNICAL PERSONS. THEY
LEAST BOthered ABOUT GETTING PROPER DESIGN FOR THE
STRUCTURE. IN MOST OF THE CASES THE APPROVING MUNICIPAL
/CORPORATION AUTHORITIES ALSO NOT EQUIPPED OR FAMILIAR
WITH WIND OR EARTHQUAKE ANALYSIS. THIS APPROACH LEADS TO
FAILURE OF MOST OF THE STRUCTURE DURING FLOOD , WIND AND
EARTHQUACK.

TO TACKLE THE ABOVE PROBLEM, WE SHOUL TAKE UP WITH THE
GOVERNMENT THRU PROPER FORUM THAT

- 1) PROPERTY DEVELOPEMENT SHOULD BE ALLOWED TO DONE ONLY
BY PROFESSIONAL GROUP. DESIGNS OF THE SAME SHALL BE DONE
ONLY BY APPROVED PANEL/GROUP IN THAT REGION.
- 2) GOVERNMENT SHOULD TAKE THE HELP OF PROFESSIONAL BODY /
INSTITUTION WHILE GIVING APPROVAL FOR THE MAJOR /
IMPORTANT STRUCTURE.
- 3)GUIDELINES TO BE RELEASED FOR THE MINIMUM REQUIREMENT TO
BE FOLLOWED TO DAMPEN THE EARTHQUAKE EFFECT IN ALL HOUSE
CONSTRUCTION.

SINCERELY YOURS

A.ARULANANDHAM

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Sudhir Badami [Tue Aug 27 12:24:01 2002]

What happens when professional fees decline is that a sense of insecurity creeps in. Grab whatever jobs are available whether or not one is able to do justice to it; and at whatever price!

This in turn compels the Consultant to employ an engineer at salaries that he can afford to give. Since the scenario is wide spread, an engineer seeking job is willing to accept it at much lower salary than he should else remain unemployed.

One ends up with a situation where either one is too busy with several projects and on the other, too free having none. One cannot attribute this phenomenon to greed but essentially the onus could be put on the general feeling of 'insecurity' and wanting to survive until better days come by. Mean while, other human attributes take prominence among a few and people thrive by either making earnings by other means or by cutting services needing to be rendered. To make the earnings by other means would perhaps need compromise on quality in design or of construction or certifying inferior and inadequate work while the specifications are of higher standards. In short malpractice may begin to take place.

What could happen when the fees are adequate is amazing. You no longer chase after projects for survival but to render good professional service. You are able to employ engineers at salaries that the engineers are satisfied with and happy with assured work in hand. The greed aspects get lowered in one's professional dealings. You have time at hand necessary to upgrade oneself through continuing education. There is a good blend between routine work and learning newer developments. The end results have to be raising of standards of service provided and the outcome, namely the structure.

If a consulting engineer wishes to make greater earnings, he should grow into a company with several engineers employed or become a contractor or developer where the margins are higher on account of higher material and equipment investments over and above deployment of labour and engineering personnel. But there should be no room for conflict of interest and hence no contractor or his engineer be allowed to practice as a consultant and vice versa, especially on same projects. This is because contracting is a business activity while consulting is that of providing professional services.

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Sudhir Badami

Jignesh Chokshi [Tue Aug 27 12:38:01 2002]

Hello,

I appreciate the direction for e conference shown by Prof. Jain. My suggestions are in response to the point no. 3 of Prof. S K Jain's mail for day 2.

Proposed Licensing system

Since, we structural engineers have variety of projects/ assignments to perform, it is extremely difficult task to formulate a licensing system suitable for all existing and future professionals. The problem would be extremely severe when we ask veteran practicing engineers to get license at the end of their professional career for 2 or 3 decades.

We want an easy, workable, durable, expert and powerful licensing authority to which we respect and obey. The licensing practice shall not be a formality procedure. We need to be very sincere now in this regard to avoid second occurrence of disasters seen after 26th Jan. 2001 earthquake.

I would suggest categorizing the licensing system. Several major subgroups can be formed for practicing engineers. The license shall be issued for one or multiple categories. The selection of category for the license shall be done by individual professional only. For each sub group there shall be minimum criteria to practice. The criteria could be education, experience, an examination etc. The license shall be valid for a stipulated period and must be renewed to justify competency to practice.

I would like to categorize few subgroups for which licenses may be issued:

Non Plant Structures * Residential buildings, administration offices, canteen buildings, etc, upto 2 storey

Residential and commercial complexes : Structures with more than 4 storeys comprising of elevators, HVAC systems, central water and drainage management, security, safety requirements

Industrial sheds * This category would cover structural steel storage sheds (with trusses or portals), small crane and monorails, cold storage etc.

Industrial structures * Plant Engineering - This category would allow to design most industrial structures like boilers, power houses, cooling towers, pipe racks and many similar structures subjected to normal, wind and seismic loading

Equipment/Machine Foundations * This category would comprise of critical analysis of important equipment foundation needing static and/or dynamic analysis. Even structures which need detailed and extensive seismic analysis should be listed here.

Transportation structures * Bridges, fly-overs, tunnels etc.

Hydraulic structures * canals, aqueduct, canal siphons, canal head works,

Structures of high importance * Dams, weirs etc.

The coverage of structures in each subgroup needs thorough survey by experts in our profession. I understand these categories may be increased or reduced in number by team of experts forming licensing body. These categories could be numbered to identify the type of license.

Everyone would agree that a bridge design engineer would not be interested to get the license to design a residential bungalow and vice-versa. Thus, I think the categorization would definitely ease the problem for a professional and the licensing authority. On one hand, the residential structural professional would not be asked to show his/her competence in designing industrial or bridge structures.

If any one feels, he has two or three expertise to perform he may be issued a license with one or more sub groups and the professional has to justify his/her competence to perform those tasks by means of minimum criteria defined.

I think, the licensing authority must be a team comprising of professionals from government, non-government, private and academic institutions. They must of known strengths and the selection shall be unbiased.

Thanks and Regards,

Jignesh Chokshi

Santosh Kolhe [Tue Aug 27 13:05:01 2002]

I fully agree with Mr. Chokshi. As a part of our contribution towards this fact, we are working out with different educational institutes to demonstrate the live video clips in the class room to improve the quality of education.

If anyone is willing to share photographs, video clips, case studies, you are most

wel-come.

Regards,

Santosh M. Kolhe

Datta Kare [Tue Aug 27 14:07:00 2002]

Hello,

Can somebody talk about proposed Engineers' bill and effort of ECI in formulating the same.

Datta Kare

Jayasimha K [Tue Aug 27 14:15:01 2002]

Hello all,

I am Dr.K.Jayasimha, at present working as design manager for Mace International in Yerevan, Republic of Armenia(former USSR)on a hotel refurbishment project. In India I used to work with Bovis Lendlease.

Regarding professional issues: I suggest that we can adopt either the U.K. model where in one attains a chartered status by becoming a member of the Institution of Civil Engineers or Institution of Structural Engineers or the P.E.model of U.S.A To begin with we can try to be associated with Institution of Civil Engineers U.K. who have evolved a rational and rigorous regime for according membership. This includes right education, training, interview and written assignment. Once the strength in the Indian scene increases, we can have our own system.

On the technical side :

Here in Armenia (which is prone to earthquakes frequently), the rules are that when a structure is modified, the modifications have to be agreed by the original designers. This is an interesting concept worth considering. In my project, the original building is curved in plan. The original designers have suggested strengthening columns and two radial walls in basement(this adds more mass). The building has one basement, ground floor + 6 floors.

Thanks
Jayasimha

Sanjeevmangoli [Tue Aug 27 14:15:04 2002]

Dear Friends,

Yes there is a need for a common body.

There will be resistance from senior consultants if the same are asked to appear for exams etc. etc. Many thought good designers and consultants may not be having computers etc. Today the major problem being faced by the majority of the consultants is the rigorous analysis to be done. The submission of that analysis. Bookkeeping of the analysis. Presetation of the same. Eighty percent of the designers and consultants will be more concerned with the above and will tend to cut corners and find a easy solution to the same.

My suggestion to the above would be as following

- 1) Identify local engineering colleges. These colleges to be made hub for getting the analysis done. This will help the colleges to get updated with the latest softwares.
- 2) The analysis should be done with minimal cost. And the same should be acceptable to the local authority.
- 3) If the college is not there than the local Consulting Engineer Chapter should be equipped with these facilities I would suggest that unless these things are in place it should not be recognised by the main body.
- 4) Any of these association should work as a NGO for atleast a decade.

If we start thinking in the above direction than our major problem will be solved and we will get lots of cooperation for all senior memebers. Otherwise in our so called corrupt country it would be difficult to achieve what we are planning to achieve. Here I would request Dr Jain and Mr. Shirish Patel to take the initiative as they are aware of one body in Bombay which is working hard toward this direction. And Both of these gentleman know the founder members.

Yours

Sanjeev

Structengg [Tue Aug 27 14:45:01 2002]

Dear Fellow professionals,

Well it's heartening to see everybody sharing their experiences, thoughts and suggestions on this platform offered by IIT-Kharagpur. Over the days I would like to chip in a bit further....however to start with here is a listing one of my experience, which I would like to share with yourselves.

I was entrusted a job of designing a residential bldg. a few years back (G + 8) . The design was carried out as per codal guidelines. To my surprise the client (a builder) had appointed a site engineer who happened to have been a design engineer (post graduate in structures) earlier on, and knew basics of designing,

however unfortunately the office where he worked as a design engineer earlier on didn't carried out Earthquake resistant designs for residential buildings up to 10 stories or so, which he put forward as an argument against me during the course of a meeting.... I suppose to please his boss at that time. This really was disturbing as I could not digest the fact that an engineer who is a Post Graduate in Structures was talking of designing a building violating IS1893. I just wondered momentarily why a design engineer should question following of the codes....but soon realized that he was too immature to realize this at that moment and I am sure he must have matured !

by now at least after the Gujarat earthquake. However looking back at the incident I feel the fellow professionals who have been violating codes for the reasons best known to them are responsible for doing such a practice, which encourages or guides these young engineers to go the wrong way...as the earthquakes don't occur frequently and the structures hold good for the regular DEAD + LIVE LOAD case....which in turn gives these young lads confidence to carry on designing the way their bosses has taught them. It's high time that all of us " THE SO CALLED STRUCTURAL ENGINEERS" truly follow the design guidelines and stipulations rather than just discussing this over here. I suppose it's time for all of us to realize this as THIS WILL GO A LONG WAY IN IMPROVING STANDARDS IN OUR FACULTY. As everyone knows you can fool others but can't fool yourself!

LET'S ATLEAST REMAIN TRUE TO OURSELVES.

I would like to thank the organizers in setting up this econf.....it's fast and enlightening.

Regards,
"Structengg"

S. Bhattacharya [Tue Aug 27 14:50:01 2002]

This is Subhamoy Bhattacharya from Univeristy of Cambridge. U.K

Dear Fellow professionals

I want to highlight the ill effects of software. The present generation of engineers does all sort of structural analysis using software packages-- for eg STAAD pro. But it would be appalling if he or she is being asked about the software say for example

- 1) What method the software uses- matrix method or FE or FD
- 2) What are the limitations of the software--can it handle P-delta effects.
- 3) Just he or she can justify one result by a quick order of magnitude calculation.

By over relying on software the new generation of engineers are losing confidence on themselves and rely mostly on software generated numbers.

Proper training while on work i.e. continuous professional upliftment-- by asking to write a document or a paper, attending conferences, seminars, giving seminars is a way forward. Though "IIStruct E" can be useful. This is the way how ICE (London) works. Each Engineer opting to get a professional degree (Chartered Engg) has to keep a Service book maintaining all the training or projects done.

regards

Subhamoy Bhattacharya

Dhirendra Tripathi [Tue Aug 27 15:02:00 2002]

Namaste All,

Though an engineer I am not a structural engineer. The earthquake at Gujarat exposed my family and me to a grave unacceptable risk. Though we thankfully emerged unharmed many were not so fortunate. Ever since the subject of getting the already available engineering knowledge to rid us of the evil of unsafe construction has been very close to my heart.

It is heartening to see a strong sentiment towards organizing the structural engineers under an umbrella organization that would benefit from strength of unity.

However though such an organization would be a means to arriving at a solution to the various problems mentioned, by itself it would not be a solution. So to carry the discussion to the next logical step mentioned below are some concerns that such a contemplated organization will need to address.

On the issue of making new construction structurally safe:

Structural engineers are in a market driven industry. The leading players in this besides the buyers are : The govt. (which is supposed to monitor the industry), the builder, the architect, civil and/or structural engineer, contractor and finally the masons and other workers.

Of this traditionally the builder and sometimes the architect play a dominant role and are often well placed to "exploit" (consciously or unconsciously) the other players. As is typical in an "exploitation" situation the builder and architect take credit for all that is right and the engineer and contractor / mason & other

workers take the blame for all that is wrong. The govt. which is supposed to be monitoring the industry is mostly content in being passive and generally allows the dominant players to have their way.

But the reason why the builders / architects are able to dominate is that the efforts of the structural engineers are "invisible" to the end user that is the buyer. In fact part of the brief of the architect is to make sure the engineering is hidden. But the truth remains that it is the buyer who is the real King. And in extreme cases like the earthquake in Gujarat even govt. was forced to act against builders.

So how do Str. Eng. bring an end to this "exploitability"?

Simply by making :

the importance of their input more recognized the actual input more visible. To increase the recognition of the importance of their inputs can be done by a well conceived and targeted media campaign (possibly sponsored by the cement and iron industry who stand to benefit from better quality structures). To make their actual inputs visible would be more tricky. As mentioned earlier often part of the architects brief in fact is to conceal them. Perhaps all buildings should be required to display salient aspects of its structural design and the name of the structural engineer, either as a framed certificate or better still etched in stone.

What these salient aspects would be can be identified by a suitably authorized committee. The ordinary public also should be educated on how to interpret such a certificate. This again would be tough but needs to be done and can be done. Examples abound of how technically elaborate concepts are adequately conveyed in lay man terms.

Let me state here that I believe the builder and architects are not adversaries of the str. engineers. Only in the present circumstance it often appears so. They would welcome the structural engineer with open arms as an equal partner once the importance of inputs are recognized by the buyer. The builder and architect would very much appreciate the peace of mind a good structural design brings.

Dhirendra Tripathi [Tue Aug 27 15:05:00 2002]

On the issue of making existing construction structurally safe:

The above was largely addressed towards new structures. But so far as risk of loss of life and property due to an earthquake is concerned it is mostly due to existing unsafe structures.

There is a huge engineering input required that the contemplated Inst. of Str. Eng. cannot deliver (due to the sheer quantity of work) but it can attempt to source and channelise it.

What is this engineering input?

We shall need to on a case to case basis for each dwelling/structure type, to come up with short term strengthening measures and long term detailed safety measures at workable costs. Both for rural and urban structures.

We shall need to train local structural engineers to replicate the solutions over the entire region.

Where can it come from?

As of now there is no one authority/agency who can even start to reduce this mountain of work.

Recommending the govt. to launch a new dept. (say like the technology missions for communications and oil seeds) would be one option.

Another is to launch an organization which is the engineering equivalent of the Nobel Award winning Medicin Sans Frontier say an Engineers Sans Frontier (ESF). I know for a fact that there is a vast number of engineers who would eagerly contribute if given a meaningful platform and agenda.

If such an organization does come into existence then it could take up such work as is required in many engineering fields and contribute beyond just earthquake loss mitigation.

Perhaps the contemplated Inst. of Str. Engineers can work with existing organizations such as NICEE and other NGOs and seek to establish an ESF.

with best wishes for the success of this conference,

Dhirendra Tripathi

R V S Choudary [Tue Aug 27 15:13:00 2002]

Dear Prof Sudhir K Jain,

I am in agreement with the opinion of Sri Shirish Patel, Dr B K Raghu Prasad, IISC and many others.

The under cutting of fees is one thing which very much undermined the credibility of Structural Engineers. How these Engineers, who under quote, manage to make both ends meet is only to be guessed.

One good thing in Andhra Pradesh (may be in other States too) Civil Engineering Course is not being offered in many new Engg colleges. This will, to some extent ease the problem of cut throat competition.

Sri KN Chandra Sekharan of our ACCE, Hyd chapter has already put on the net about the problem with the Architects. We Structural Engineers also have to unite and fight for existence/recognition and improve our stature.

Let us press for the Engineers' Bill.

Let us all unite and fight for the just cause.

Regards,

R V S Choudary,

H.S.Chandramouli [Tue Aug 27 16:52:01 2002]

Esteemed participants,

I have been reading with interest all the opinions and views expressed by a few stalwarts in the industry. Being educated in India and US, and working for a multinational consulting Company in India for the past 6 years, I would like to share some of my views.

The reason for low fees / salaries agreed / offered can be traced to the self esteem (or lack of it) of the graduating engineers. I am sure lot of the participants here would be members of reputed Associations such as ASCE, ICE, ACCE, CJIforum, ACI, ISE, etc. etc. In US and UK, these Associations offer a variety of practical experience to the undergraduate students which go a long way in lifting their confidence, esteem in their own eyes. I have personally participated in student competitions in the US and very much believe in it. This helps them face the professional world with renewed vigour. I would request that the effort coming from the grass roots level will go a long way in uplifting the profession in the Society. People / organisations who have the ability should organise such competitions like the 'concrete canoe competition' or the 'steel bridge building contest' in regional levels (to touch all Engineering Colleges) and National Level. I am sure Organisations such as ASCE, ICE or ACI which have been organising such contests for several years will come up to share some of the contest rules, so that we need not reinvent the wheel.

This has a lot of associated benefits of hands on experience and helps Engineers to believe in themselves rather than some computer outputs. The Knowledge I

derived during testing of the model steel bridges -exhibiting different failure modes, connection behaviour, composite behaviour, etc., can never be found elsewhere and will always be cherished.

I hope we start off in a small way and end up in a big mass movement for the upliftment of the Structural Engineering Community!

Regards,

Sundar Chandramouli

B. Vamsi Krishna [Tue Aug 27 16:59:01 2002]

dear all,

first of all thanks for IITK for providing this service of interacting between all structural engineers. i am vamsi krishna pursuing my m.tech in structural dynamics at DEQ, IIT Roorkee. whenever we look for job oppurtunities for civil engineers experince is the main criteria which is being asked for. but for fresh engineers like us how do we get that much experience. if given a chance we can prove that we or not less than anyone. it would be better for the institution of structural engineers to give some training or some sort of things to the fresh engineers so that

they too can serve in their own way. after all, all of us are fresh when we started our carrers. regarding this i agree with the memebrs who have suggested Licenscig for structural engineers. so it would at least make fresh engineers also to have an oppurtunity to give their best when chance comes their way.

B.VAMSI KRISHNA

Shreekantha Rao N [Tue Aug 27 17:20:01 2002]

SHREEKANTHA.RAO.N Wrote:-

Hello civil engineers and consultants participating in this unique conference binding our civil engineering fraternity from all parts of the world,I wish to add few points for you to think over and try to solve a unique problem currently facing our country.and to bring down the cost of structural concrete used in various projects in INDIA.

I AM WORKING AS DY.GENERAL MANAGER/CIVIL EXTERNAL PROJECTS in B.H.E.L Trichy and we are manufacturing power plant equipment's such as boilers and auxiliaries. Due to abundance of coal in our country mostly coal fired thermal power plant have been installed and the present capacity of thermal power plant in the year 2002 is about 66000 M.W out of the 1,06000 M.W installed

capacity of various type of power plant. The above figure is likely to be doubled in the next seven years. Presently about 200 million Metric Tonne of coal is burnt to generate above quantity of power and in turn about 90 million M.T of fly ash is produced of which hardly 13 %(12 million M.T)is utilized in INDIA compared to 70% OF 900 MILLION M.T produced in U.S.A. You all know , fly ash is not only causing pollution and requires large land and water etc for disposal at power plants. Also fly ash is available free of cost at power plant and can therefore be encouraged by civil and structural engineers for extensive utilization while designing India's present golden quadrilateral road project and suitable awards from institutional body such as proposed institute of structural engineers for developing products / projects utilizing extensively fly ash and offer cost effective solution in civil engineering / structural engineering leading to environmental improvements in INDIA. We can combinedly do many such projects and make OUR COUNTRY A DEVELOPED COUNTRY WITHIN A SHORTER SPAN OF TIME

Regards,

SHREEKANTHA.RAO.N

Nishith Desai [Tue Aug 27 18:22:02 2002]

Dear friends,

To form a apex body or let us say a Nodal Body of Civil Engineer is must for our country. The nodal body can issue certificate for Professional Quality Engineer or Professional Structural Engineer.

Today scenario for civil engineer in our country is pity. There are lots of reasons for that and one of the main reason is ...

"IT WILL DO" (every thing is acceptable) this is the general belief and the way of implementation by the Site Engineers and the Practicing Structural Engineers. Now why this type of feeling is there in the engineers is the point which requires serious thinking.

I did got the chance to work with and interact with Engineers mainly on construction site and some of the Practicing Engineers in my city which was the worst affected during earthquake. To my dismay Most of the Engineers were not able to provide answer to the basic question like "How to Retrofit" the damage buildings. My observation said that majority of the engineers were not aware of the latest codes and they don't know the latest position of the codes in our country. To add more even after earthquake tranquility lies in the working

professionals, they have cooled down to normal. This is something very serious.

Now point is

1. Are we not serious for updating our knowledge base ?
2. Are the codes easily available ?
3. Are the procuring cost of the knowledge material cheap ?
4. Are we in position to afford this material ?
5. What are the reasons that we have failed to get the desired quality of work ?
6. Are we under paid and if yes why ?
7. Are we careless ?
8. Are we keeping our clients in dark because they trust us ?

To all this question I think there is one answered.. since there is no implementation authority so we are free to work ourselves. Once we get College degree we assume that we are getting a life time license to work as civil engineer.

To my point it is very important to form a Nodal Body of civil engineers and as far as I know this idea has already taken a serious shape in South Africa where our Representative from Institute of Civil Engineers has taken a lead. I don't know the present status of that but I did remember that things are following.

The idea which is taking shape is taking all the things into consideration like the Professional Engineer must have done couple of the jobs in last two year. He must renew his license after every two year. Now if this takes shape I think we Civil Engineer will be put on the line and shall be more conscious for our knowledge updates and our commitments to our profession.

Whenever I get the chance to interact with the young engineers who are college fresh and then they are trained by the Senior Site engineers I always try to read their mind. What I found was that they are not serious and they get accustom to the current working system on the site..(IT WILL DO).

I will like to point out one incidence on the site where a Cement Agent said that since 53 grade cement gets early strength it not require to cure concrete more than 3 days. Now, if this is the position by the Authorized Cement Agent (he was a technical person) what shall be the position of the Site Engineer who has never read IS Codes and CPWD Manuals and MOST specifications.

To earn respect from the society we need to update ourselves and we need to follow the line of codes written by IS. It is very necessary that we follow the guidelines formulated by our Respected Seniors.

Nishith Desai [Tue Aug 27 18:22:05 2002]

contd...

To all this today need of the Civil Engineering Society is to have a Nodal Body which will issue the License to the Civil Engineers after checking all the Points and Factors. I also agree that we should have Institution of Structural Engineers which can issue certificate of Chartered Structure Engineer duly stamped by Nodal Agency.

Well we can all have institutions like

- a). Institution of Structural Engineers
- b). Institute of Bridge Engineers
- c). Indian Road Congress
- d) Institute of Concrete Technology etc.

Now if we go on segregating the institution then I am afraid how a Common Civil Engineer working on the site is about to know the latest development in the concern Industry. Believe me that it is very difficult for him to inquire in all the institution for the latest development in the industry. So, it is very important to have a NODAL BODY under its banner all the institution can work.

I found some mails quoting specially for Structural Engineers; well our worry should also for Civil Engineers practicing on the site. Sudhir Badami wrote for architects. To add to his view let me say that Building side.. architects are emerging as Masters. Now this is serious thing which we all civil engineer need to understand. First of all are we always there to follow the architects. Well it is high time now that we should upgrade ourselves not by status but by knowledge and knowledge will bring us up again. I don't agree with Sudhir Badami stating that Competence of Engineer will make client pay more. Well this cannot be true in this competition world. What we need to do is to have Nodal Body to regulate fee structures and see that the Professional Engineers are correctly paid. Well competence can make you pay for specialized jobs..but what for majority of engineers ?

I do agree with Suren Vakil about globalization, not divorcing Structural Engineers from civil engineers (St. Eng. can be trunk of the tree) and agreeing towards a) Improving professionalism b) Implementing existing standards c) Putting in place a regulatory system. He is very much correct.

S. Venugopal is not correct by stating that India being a develop country what we can do for disaster Management. Well to state this let me say that Gujarat has successfully come out from disaster like Cyclone and Earthquake. I do agree that there was some confusion in beginning but then all things were on line. My

concern was our Civil Engineering failure for guiding the people in emergency repairs and retrofitting. Though our country is developing but there are few people like Sudhir Jain and its institution nicee doing a terrific job in earthquake. So India being a Developing Country should not make any latency in technical development in our country. As far as I know our IS codes are of world standards and they written after much of articulations and discussions.

Main question lies how a NODAL BODY should be formed.. now this is the point where we need to think. If a NODAL BODY would be govern by a Government Officer then I have my doubts for its development and implementation. A strong voice should come out from our fraternity to make our government think about the seriousness of the NODAL INSTITUTION.

I am glad that colloquium is started by NICEE and my personnel thanks to Sudhir Jain and his colleagues.

To end let me say.. let us congregate to form a CONCRETE NODAL INSTITUTION

Nishith Desai

Gaurav Srivastava [Tue Aug 27 18:26:01 2002]

Dear All

Good to receives so many thought provoking ideas from various civil/structural engineers. At least we have got a platform where we (structural engineers) can put our ideas. Thanks to Dr Jain

Most of the participants are coming up with good ideas but I sincerely request that at the end of the e-conference we should reached a conclusion and all should agree on different issues. A person/group should be nominated to carry on the process resolving the various problems being faced by structural engineers.

Regards

Gaurav Srivastava

Arvind [Tue Aug 27 18:29:00 2002]

Dear Sri Datta Kare,

1. Engineers Bill has not yet been proposed. The onus of proposing the Engineer's Bill lies on Engineering Council of India (ECI).

(This is classic case we have been arguing for ages.....Egg first or Hen? In our case ECI is formed first before the Bill. Hence ECI is without any powers, only a society now, but destined to do take voluminous task of accreditation of engineers and many more in the later years.)

2. The Engineering Council Of India has already been formed on the behest of Ministry of Human Resource & Development, Government of India.
3. There are 24 professional organizations who are listed as founding members.
4. There are total 8 committees formed by ECI.
 - a. Committee for Registration of Consulting Engineers Chairman: V. G. Rajadhyaksha, Mumbai
 - b. Committee for Registration of Professional Engineers Chairman: Prof V. S. Raju, IIT. Chennai
 - c. Committee for Ethics for Professional Engineers & Consulting Engineers. Chairman: Prof. P. V. Indiresan
 - d. Committee on WTO / GATS and Engineering Profession. Chairman: Mr. Anwar'ul Hoda, New Delhi
 - e. Committee on Bylaws, Rules and Regulations. Chairman: Mr. Samiran Choudhury, Chairman Inst. of Engineers, India, Kolkata
 - f. Committee on Engineers Bill. Chairman: Prof. Ashok Chandra, Chairman ECI, Noida
 - g. Committee on Programmes and Resource Generation. Chairman: Not yet finalised
 - i. Committee for Development of Professional Engineers & Consulting Engineers. Chairman : Prof. C. S. Jha, Former Director, IIT-Kharagpur
5. Executive Committee is formed in the meeting held on 2nd meeting of ECI on 16.08.2002. The list is yet to be circulated.
6. Next meeting of ECI is scheduled on 6th September at Institution of Engineers Bhavan, New Delhi.

With warm regards.....Arvind

Nishith Desai [Tue Aug 27 18:43:01 2002]

Well some of my friends say that the St. Engineers do not have a Computer. Well I don't believe in this.. as in age of computer almost everyone has one Machine. It depends on the engineer how t uses the machine.

Secondly more of the stress is put on the computer software. Well as I have extracted that use of software should be done with utmost care.

How a Nodal body should be formed is a question which always comes. But I don't agree that the Nodal work should be given to colleges. Well it can be true for premier institution but not for local colleges. NODAL body should be a selection from well qualified civil engineers mainly senior ones and a committee should be formed by Indian Civil Engineers working abroad and from the local civil engineering community. Some premier institution (like IIT's) can be permanent member of the institution. But of all it is must to have a NODAL body.

One major step taken by the local authority in Gujarat is to form a panel of 'St. Eng.' which will scrutinize the work of the other St. Engineer. I think this a very good step taken by the authority. Now, this will put 'St. Eng.' in practice to remain conscious for his design and will not take himself as granted. This will definitely provide a good reason for getting design according to codes. But my worry is about the 'Centralize Control' both in term of quality control and St. Design. What is suggest is that all this body can form a FORUM for now and can exchange views and Ideas. It is very necessary for our country to have a 'Centralize Control'.

To end this let me say that 'Ramesh Singh has said the truth he has reached the basic issue of civil engineers'

nishith desai

Nishith Desai [Tue Aug 27 18:46:02 2002]

Dhirendra,
Your views are correct and logical.

'St. Eng.' do get exploit by Builder and Architect. That is why we need a NODAL BODY and a panel of 'St. Eng.' who will scrutinize the work of the Hired 'Eng.' now here St. Eng. will have a good excuse. It depends on him how he exploits this condition.

nishith desai

Nishith Desai [Tue Aug 27 18:46:05 2002]

His words 'The thought "IIStruct E" can be useful. This is the way how ICE (London) works. Each Engineer opting to get a professional degree (Chartered Engg) has to keep a Service book maintaining all the training or projects done.'

needs to be taken note off. We need this type of system earliest.

Nishith Desai [Tue Aug 27 18:51:01 2002]

Suneel Voditel,

Please dont consider builder and architect different from our field. You are to the point and are much positive. I loved reading your mail.

nishith desai

R. N. Vakil [Tue Aug 27 18:52:00 2002]

E-CONFERENCE ON PROFESSIONAL ISSUES IN STRUCTURAL ENGINEERING IN INDIA

1. NICEE, Prof. Sudhir Jain and Ms. Alpa Sheth are to be congratulated for bringing up this important topic for wider debate across the country. The issue of sub-standard professional service in construction industry including the design profession is part of the generic problem in all walks of our life in India. It is also true in governance, law and order and other professions like, medicine, law, etc. There is no quick-fix solution that would be either possible or satisfactory. As is well known there is a crisis of character and great decline in values. One can list several factors and then try to prioritize them.

2. As is well known by now, unprofessional conduct of builders, contractors, materials suppliers, design professionals, enforcing agency and general apathy and greed of the bargain seeking client community and the very nature of site oriented construction work done by unskilled migrant workers or semi-skilled unlicensed artisans- all have played their part in sub-standard buildings which were destroyed by the earthquake leading to great loss of life and property. Despite the fact that the construction industry is the largest employer of work force and also the largest spender of our GNP, the government has consistently ignored this very important industry-service sector. Some of the important factors responsible for poor performance are listed below. Each can become a chapter by itself, but is not necessary in the present context.

3. Education and Training of a Civil Engineer.

- Outdated curriculum
- Shortage of competent faculty- a national average of 35% positions vacant
- Lack of emphasis on fundamentals and also real life situation
- No value education
- Sense of belonging to a profession and responsibilities of the profession are not brought out.

4. Absence of Regulatory mechanism for professionals. There is urgent need to enact Professional Engineers' Registration Bill. Unfortunately, desperate efforts by the consulting professional body to get the Bill enacted for over a decade have not borne fruits yet. Individual professionals-both in the design and construction sectors- and firms/companies should be registered. This should include the contractors and the builders.

5. Hardly any enforcement mechanism. Rigid and insensitive bureaucracy. Third party inspection of quality and place for testing laboratories in the process may be called for.

6. Creating awareness in the society of quality and minimum professional standards to be expected and insisted upon. Tendering for professional design services has created havoc. Procurement of design services is not buying of product of standard specifications. It is also not like tendering out for construction work according to specifications. Lowest is not necessarily the best. Why does the society opt for the best doctor or lawyer but the cheapest designer or builder? Why no tenders are invited for appendicitis or a by-pass operation?

7. Need for a platform for likeminded professionals to get together, such as the Institution of Structural Engineers. Among other things the institution will monitor performance of civil engineering professionals and make suitable recommendations. Such an institution should undertake massive campaign for creating public awareness for appreciating and expecting quality, according respect to the professional and willingness to pay the price for quality professional service. The American Society of Civil Engineers does it quite well. It starts its campaign from high schools to attract talent to the profession and even has a large liaison office in Washington, D. c. to influence the lawmakers concerning legislation of interest to the civil engineers.

Azad Jain [Tue Aug 27 19:43:00 2002]

The problem indicated by Mr. KR Chandrashrkhari regarding architects v/s civil engineers as to who should be the project leader should be taken

seriously. Asso.Of Consulting Civil Engineers (I),HQ, Banglore have prepared ti file awrit in supreme court. Every body concerned is requested to contribute for the cause. Details can be obtained from P SURYA PRAKASH,convenor

azad jain

Jayant Sheth [Tue Aug 27 20:41:02 2002]

I think we have needed capacity, infrastructure. WHat we need is bit more understanding interms of team work. WHy is that a consortium of few leading consultant along with leading institute for laboratory facility cannot be formed.

Regards
JAYANT

Praveen Kumar R [Tue Aug 27 22:18:00 2002]

Dear all,

It seems good that many of the contributors have desired to improve the professional practices in structural engineering in our country. The engineers may devise a suitable mechanism to revise the Standards more frequently (than IS 456 took 22 years to get revised through BIS). WE may think of developing some mechanism on similar lines as that of ACI whose different committees work for revision of codes of practices almost continuously. Also we may think of publishing commentary and detailed reports of such committes(which may consist of professionals from industry as well as academia) so that professionals can buy them aand get continuing education at their desk and at their convenience.

Any organisation with broad network such as the idea floated for Institution of Structural Engineers or to start with that of ICI etc. in association with ACCE, etc. may tie up with BIS to start the exercoises on several codes of practices related to their domain.

Updation of knowledge of professional engineer is a vital thing for his survival in the market and quality service to the society. With warm regards to all participants and dignitaries

Praveen Kumar

Arvind [Tue Aug 27 22:12:01 2002]

Dear Azad Jain,

Few clarifications:

1. `Architects versus Engineers' : In case engineer is using the title `Architect' which he is not, is certainly falsifying his identity and he cannot do so. The title `Architect' is protected under Architects' Act 1972. Hence if Local Association of Architect have given notice to the firms to remove the title or style of `Architects' from their Firm's name- is justified- fair enough!

But kindly note:

In case a non-engineer uses a title as `Structural Engineer / Civil Engineer' and Local Association of Consulting Civil Engineers or any professional forum gives him a notice, it is legally not valid.

Engineers do not have any protection for themselves as on date, neither they can defend themselves, nor they can defend their title! What a sorry state indeed!!

That is why we all should spearhead Engineers Bill and make it reality very soon!!!

2. But if local Architect's Association asks engineer not to function in the related field of architecture by desisting in taking the total project consultancy it is against principle of natural justice!

The line dividing civil engineering and architecture is very fine (except for Interiors and Landscape). Also the interdependancy is very much. Just an Act should not deprive the Civil Engineers from practicing in the field which is a mix of civil and architecture. Just because one has an Act in favour it should not be a bane for others! This is where natural justice is failing.

Another point is if an engineer employs an Architect and runs a show as total solution provider, it is questionable from the point of Local Architect's Association. Whereas an Architect can employ an engineer and take the total project. This is also against natural justice.

Also if the Local Association of Architects gives notice to the Architect employees of a firm run by an engineer and threatens with dire consequences, (upto cancellation of their registration with COA), it is certainly against the natural justice and freedom of living.

How can Architect's Association issue notices to Registered Architects with COA, working for a firm run by Civil Engineer? It is against natural justice again!!

The fact is that Hyderabad Civil Engineers are very enterprising and they have long broken the myth of Architects and Architect Act 1972. Most of Consultants in Hyderabad are taking total projects and running very successful establishments. This has enraged the local association of Architect who are not able to compete with engineers!!

Foul Methods

They are resorting to foul methods like threatening the employees of firms run by civil engineers, approaching the Government Organisations and asking them to cancel the work orders for the consultants etc etc..

Hence a very fabric of harmony of Architects & Civil Engineer compatibility is at stake!!

But how far this argument will valid in court of law, is debatable, and I am not a good lawyer.

With warm regards.....Arvind

Arvind [Tue Aug 27 22:54:01 2002]

Dear Praveen,
I am in agreement with the points raised by you.

It is very desirable and ideal situation that Industry guides the pace of Standards and BIS follows the same. This very much the situation in European countries & USA.

Do we have the Capability to give Industry Standards? Answer is certainly yes, but a lot of effort is required and who will pay for the same? Hence we need a mechanism wherein professionals / academia are paid for working towards revising the outdated standards. Thus it is the need of Industry. But is Industry so united and willing to foot the bill? (In fact construction has not yet been accorded a status of industry!) Certainly some very hard bargaining has to be done with Government, but it should be possible. United we stand.....

All the Associations you have listed will certainly be very much willing to take part in revising the Industry Standards but for footing the bill for the expenses. Hence you got to get the funding done and anything can be achieved!!!.

With warm regards.....Arvind

Navin Nawneetlal Chandak [Tue Aug 27 22:54:05 2002]

Hello friends,

This is Navin Chandak from Nagpur.

The issues which I feel are important and we need to evolve a consensus on this are:

(1) INSUFFICIENT PRACTICAL KNOWLEDGE

Problem of professionalism starts while we make a civil engineer in present system of education. No practical training is imparted during bachelors or even in masters course. Things learned during these 4 or 6 years are mostly theoretical in nature and at times irrelevant to industry. Compare this to a student of Medicine who looks at the patients right at the time they take education. I feel even IITs do not give the required practical training.

(2) VAST SUBJECT

Civil engineering is such a vast science that it is not possible to cover each subject in details during 4 years. Thus specialisation in particular subject becomes a necessity. However, this specialisation will fail if we do not impart practical training.

(3) SOCIETY'S POINT OF VIEW

With insufficient practical knowledge a pass out enters in consultancy industry. This lacuna of a consultant is not appreciated by society and they give him small jobs and less fees.

(4) NO REGULATORY BODY

There is no legal regulatory body which checks the knowledge or experience of an individual before he is allowed to practice. We professional engineers lack an important aspect of modern politics i.e. lobbying in corridors of power.

(5) LACK OF INFRASTRUCTURE

Small works and less earnings does not make a consultant realise the importance of using sophisticated methods of design. In fact, many times he cannot afford the infrastructure required for these sophisticated methods. Therefore, even when he gets bigger projects he sticks to his old methods of design, which is mostly manual.

(6) DEMAND-SUPPLY GAP

We must also understand the demand-supply gap in profession of structural engineering. The amount of projects which can be called as purely structural engineering are quite less and therefore they have to be dependent on architects for work. Looking at the ratio of No. of architectural engineers to required structural engineers in the urban areas of country. Compare this to other professionals like Charted Accountants.

(7) PROFESSION IS NOT REWARDING

As mentioned earlier structural engineers have to depend on architects for jobs. At times architect do not share the due fees. Thus purely practicing structural engineering is not rewarding and hence we try to put ourselves in the shoes of architect. Hence most of the engineers practice as architectural and engineering firms. This in itself is a highly debatable issue and need to be addressed immediately.

(8) LACK OF A NATIONAL LEVEL PROFESSIONAL BODY

The Institution of engineers it looks has not succeeded in protecting the interest of engineers in its existence of so many years. Lack of professionalism among structural engineers also has its roots on the fact that no national level association or professional body exist in India which can guide and educate engineers on various technical and non-technical issues

Datta Kare [Tue Aug 27 23:38:01 2002]

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). I am talking about your point of architects being lead consultants, Can Architects call themselves Engineers! Or Do we have to see the legislation of Engineers Act to prevent architects from using the word Engineers on their letter heads.

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."

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.

Datta Kare

Arvind [Tue Aug 27 23:45:01 2002]

Dear Naveen,

It is hartening to have your views and they are justified.

(1) INSUFFICIENT PRACTICAL KNOWLEDGE

Problem can be tackled provided engineer is sincere with himself and towards his responsibilities and towards his profession and lastly towards the clients.

The engineers should not take the jobs or fein expertise in the field which he is ignorant of! Hence Certification of engineers is very important task, very challenging one and very noble towards giving a right man for a right job type to society!

Regarding practicing as a consultant, it was proposed in the 'Engineers Bill' by Sri Mahendra Raj that a fresh civil engineer should work for a minimum period of prescribed years, and for M. Tech. some years and so on! I think some improvements are going to be on cards on this clause by recent committee.

(2) VAST SUBJECT

Vastness cannot be an excuse for not attaining sound practice knowledge in the field. It can be certainly the case of specialities like in medicine, each limb has to be mastered seperately and one cannot afford to be generalist as in the earlier days. The trend is to stay in future.

But the question is what happens to the existing practising stock of engineers?
This is very interesting!!!

(3) SOCIETY'S POINT OF VIEW

I feel we are part of society, and if we are truthful then nothing can be better than being your plus point.

(4) NO REGULATORY BODY

ECI is already in place and will take a job of regulatory body shortly.

(5) LACK OF INFRASTRUCTURE

Right mix of resources and expertise shall be the buzzword of tomorrow's engineers, consortiums are going to stay as one cannot get licence to practice in all disciplines!!

(6) DEMAND-SUPPLY GAP

Employ Architect/s and do the total job. It is your birth right to get natural justice!!

(7) PROFESSION IS NOT REWARDING

It certainly depends on how you make it rewarding for yourselves.

I certainly feel that the profession is not so bad, as has been projected from the start of the conference. Certainly there are lacunas to the job opportunities and how you manage yourselves.

Buzz word is to take total job and employ Architects, all your problems are solved. We tried same in Hyderabad 10 years back, and every consulting civil engineer is a success story. He has created job opportunities for others! Hence Hyderabad Architects Association are after their blood.

(8) LACK OF A NATIONAL LEVEL PROFESSIONAL BODY

Certainly felt very badly now.

With warm regards.....Arvind

Dr. Manamohan R Kalgal [Tue Aug 27 23:45:05 2002]

Dear Sir,

I fully endorse the view of Mr. Aravind Jaiswal. The architects and engineers need to co-exist and co-operate. In their zeal to grab all the projects, let Architects not forget that it is the engineers who bring them fame by making things happen.

The confrontation, if taken too far, can lead to very unhappy end.

manamohan kalgal

Vithal V. Deshpande [Tue Aug 27 23:54:01 2002]

Hello All:

Many have expressed concerns about structural practices adopted by Builders in India.

A suggestion ::

To ensure Quality Control in the private construction: The common man buys residential or commercial units from the builders. It is usually financed by loans from HDFC / ICICI / SBI. When they provide money for real estate, these institutions can insist on guarantees and certificates of structural audits. Home owners insurance companies can also insist on these certificates.

This can push the builders for adopting better methods for construction and also make the common man aware of his rights and responsibilities.

Thanks

Chitra Javdekar