

Newsletter of the Indian Association of Structural Engineers July 2020

Message from the President



Dear Readers,

The COVID-19 pandemic has created unprecedented consequences across the globe and has affected the traditional offline IAStructE events that aim at dissemination of knowledge, conduction of continuous professional development courses, exchanging of knowledge and advancing of the practice of structural engineering.

To cope with such unprecedented situation, IAStructE has put forward series of online Webinars. So far 12 webinars and 2 panel discussion has

taken place in last four months, which is a new IAStructE event format. AGM was held for the first time in the history of IAStructE in virtual mode. Balance lectures of our refresher course on IRC:SP:114 also was very successfully and satisfactorily conducted in ZOOM with near-full attendance and better interaction with senior members in the Q&A session.

With the unappeased COVID-19 pandemic, facing the new age in post-covid era will be a real challenge for the association. Apart from the current challenges faced by structural engineers (which includes finding gainful employment opportunities for the young engineers who enters the industry, bringing the Engineers Bill for regulation of the profession of Civil Engineering and dealing with the issue of proposed amendment of the Architects Act 1972 by CoA), structural engineers are confronted with the problem of quickly imbibing the culture of working from home. The profession is also facing the added challenges in the field of disaster reduction and mitigation, maintenance and rehabilitation of structures and above all, the need for professionals to embrace digital solutions for engineering, etc.

Considering this situation, there is a strong need felt by the members, for brain-storming and forging out with a long term strategy for the association. Accordingly, a new committee is formed, which is called "Committee for Strategic Plan". This committee will be headed by our past president, Mr Manoj Mittal. I am sure this committee will give us the road map for future. Suggestion from members are welcome in this regard.

Happy reading

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ALOK BHOWMICK

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IAStructE Journal: Call for articles Webinars Conducted Forthcoming Webinars Articles Forthcoming Student Chapter Activity Newsletter Advertisement About IAStructE Membership Information

Call for Articles

The Chairman and other members of the SED Editorial Board invite article contributions for the quarterly Journal of the Indian Association of Structural Engineers, the Structural Engineering Digest, which will be published in E-Book Format.

Journal subscription | Article Submission | Sponsored Advertisement

The Editorial Board also invites the articles for the July – September 2020 SED issue, which will be dedicated to the Theme **"Earthquake Safety Assessment and Retrofitting of Buildings & Infrastructure Facilities"**. Sub themes are i) Buildings; ii) Bridges; iii) Water Tanks; iv) Embankments & Retaining walls & v) Jetties and other port structures. Interested Professionals may submit the Abstract by 14th August 2020 and full paper by 31st August 2020.

Submission template and ethics statement can be availed by emailing iastructe@gmail.com

Interested professionals may also send the articles for publishing in monthly Newsletter, which can be sent to iastructe@gmail.com

Webinars Conducted

- 1. Panel Discussion on Role of Structural Engineers in Post COVID-19 Scenario organized on 27th June 2020 through zoom webinar. The recorded presentation can be seen at the following link: https://youtu.be/SP6jG6wG-iA
- Role of Structural Engineers in the Society by Mr. Alok Bhowmick, President IAStructE and Managing Director, B&S Engineering Consultants Pvt Ltd on 19th July 2020 through Zoom webinar. The recorded presentation can be seen at the following link: https://youtu.be/Sa1gz60MCbk
- 3. Wind Engineering for Short and Medium Span Bridges by Dr Lakshmy Parameswaran, Chief Scientist, CSIR-CRRI on 26th July 2020 through zoom webinar. The recorded presentation can be seen at the following link: https://youtu.be/o4-SdE9F_IM

Forthcoming Webinar

IAStructE is organizing a Webinar on "WIND ENGINEERING FOR LONG-SPAN BRIDGES by Dr. K. Suresh Kumar, Principal / VP – Global Wind Engineering Consultant, RWDI on 05 August 2020 at 11:00 AM to 01:00 PM. through zoom webinar. The link for registration is: https://zoom.us/webinar/register/WN cFwWi-EVSMOaPIrgLhLp3A

Articles

WHY DO I LOVE STRUCTURAL ENGINEERING?

by Mr Prateek Jain, Associate Member IAStructE & one of the Directors of Force Structural Engineers Pvt. Ltd.



I have been a practicing structural engineer since 2010 and I am deeply in love with what I do. Recently, I came across a video (link at the end) of another structural engineer, who also happens to be the creator of a well-known structural engineering software, where he expressed his love for this wonderful profession, and more importantly, the dire need to bring back the glory. In just 13 minutes, I fell in love with him and declared him my role model. His words triggered several emotions in me and since that day, I have decided to talk more about it and motivate young engineers to pursue this noble path. I realized that the profession of Structural Engineer is very similar to that of Doctors and lawyers, and it takes years of hard work, patience, and practice to gather the insight, build the fame and accrue the wealth. As a result, I thought I would share my love by writing about it.

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My love for structural engineering originates from the joy of creation. I love creating and I have learnt this accidentally when my wife and I moved to a new house and started creating small decorative pieces for the home. The whole process of conceptualizing, planning, procuring, and finally building it, put us in a flow state (a form of meditation!). Watching the final output is amusing too, as sometimes it wows you beyond your expectations and sometimes it turns out be a complete disaster. Nevertheless, the whole process of creating from 0 to 1 is the most satisfying experience I have ever had, and I am fortunate that this can be applied for practically infinite possibilities in our lives.

Being a Structural Engineer, my passion for creation reaches its highest levels. I have the power to be the maker of possibly largest things on our planet — the structures.

"STARTING FROM AN IDEA IN MY MERE 1260 CUBIC CM BRAIN, TRANSLATED INTO CRUDE A4 HAND SKETCHES, CONVERTED TO SIMPLE ANALYTICAL MODELS FOR ENGINEERING AND DESIGN, DETAILED TO ITS DEEPEST CORNERS IN LARGE A2 DRAWINGS AND THEN CONSTRUCTED ON SITE WITH DIMENSIONS AS LARGE AS HUNDREDS OF METERS, WEIGHTS AS HIGH AS THOUSANDS OF TONS AND LASTS AS LONG AS HUNDREDS OF YEARS!

The sheer scale of things that I do still astonishes me every day. I feel godlike to be one of the creators of the modern world but humbled at the same time to be responsible for so many lives.

I have a special love for cable supported structure and my theory says that it arises from my love for music!



Erasmus bridge in Rotterdam, Netherlands (© flickr user lukeprice88. Licensed under CC BY 2.0)

Each of these structures appear to be a unique musical instrument in my mind, like a harp or a violin. Just by intuition, we know that all cables generally have different size (like a guitar) and would sound different, when plucked. I always dreamed if I could play a cable stayed bridge someday. AS ON TODAY, AT LEAST I AM ABLE TO LISTEN TO THE MUSIC OF THESE CABLES WHEN I RIDE ALONG, BY VARYING THE TENSION IN THEM!

Apart from yielding satisfaction, the art of designing structures also taught me a few useful principles of life. They might sound abstract at first, but I find them worth sharing:

1. Cable stayed structures symbolize the delicate balance that we must observe in our daily lives. Pulling one string, requires others to adjust! Though we talk about having no strings attached, but we all have our limited set of attachments and commitments in our lives. A balance is vital for achieving variety of personal and professional goals. So technically, it is **ALL STRINGS ATTACHED WITH THE RIGHT FORCES FOR PERFECT BALANCE**!

- 2. Structures also teach you to be flexible in life. Because when the tremor comes, it is the one who is flexible, draws less forces and stresses, and comes out of the situation unharmed :D
- 3. Structures also help us realize the importance of teamwork where different people have different roles and it is the teamwork and not their individual strengths, that makes it a success. Imagine a load coming on the structure, the force flows from the point of application and travels through various parts of the structure. All the parts must perform in unison to ensure that the load is safely taken down to the ground.

To conclude this extempore piece of writing, I would like to encourage all structural engineers to write your heart out on this topic of "WHY DO I LOVE STRUCTURAL ENGINEERING?" and share with your colleagues. I am little worried about the current situation when younger generation is driven by early money offered by non-engineering sectors and a lot of them end up becoming structural engineers because they did not have a choice! I would like to reiterate the fact that being a Structural Engineer is as valuable to the society as a doctor.

"A GOOD STRUCTURAL ENGINEER MAY SAVE MORE LIVES IN ONE PROJECT THAN A DOCTOR IN HIS ENTIRE CAREER."

We need more and more people from our fraternity to speak about it, as loudly as we can, and make it attractive for our future generations. The glory shall be restored! I have pledged to spare a good time for this mission. **ARE YOU IN THIS WITH ME?**

Thank you for reading it till the end. I hope this may have motivated you if you are a structural engineer.

The video that gave me this purpose — https://youtu.be/IPE_-35R_E0

About the Author

Prateek Jain is one of the Directors of Force Structural Engineers Pvt. Ltd., Mumbai. He has completed his B.Tech + M.Tech (Structures) in 2010 from IIT Bombay. He started his career with Gammon India Ltd. as a Structural Designer. His love for bridges led him to co-found Force Structural Engineers in 2013, with a vision to engineer the most challenging projects of the world. He is passionate about structural engineering and strives to motivate young talents to put their minds and hearts to their profession.

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HOW SAFE IS YOUR HOUSE

by Mr Deepak Bansal, GC member IAStructE



There is a huge shortage of houses in the country, especially in affordable

housing category in rural as well as in urban areas. The current shortage of urban affordable houses, is estimated to be about 12 million in year 2018. Public and Private agencies are planning and developing, these houses in the country on a war footing. The construction is being done by scrupulous as well as unscrupulous agencies and also by the public, but the big question is this, how safe, these houses are, in terms of their performance under gravity loads, lateral loads (EQ, Wind), induced loads and geotechnical considerations.

In our country, the people responsible for these safeguards, like geo-technical experts, architects, civil/structural engineers are generally not stakeholders and other people like builders, contractors, etc., are given all weightage in planning, developing and construction of the houses / buildings. The results can be damaging as India is prone to all sorts of disasters, weather it is Earthquakes, Tsunamis, Cyclone, Floods, landslide or soil liquefaction. The provisions given in NBC 2016 for planning, designing and constructing houses / buildings along with compliance to local building bye laws, are generally not being followed in real time situations in India, so what will be future of these development, is a child's guess. Even NDMA has issued guidelines to NBFC/FI to adhere to certain technical specifications in financing for

designing and construction of these housing stock in the country, yet they are not being considered by many Indian stake holders. Building byelaws of few states are not in line with NBC 2016, as NBC is said to be only advisory, although this is most rigorous and authentic document in built environment in the country, prepared by Bureau of Indian Standards under Ministry of Consumer Affairs, Govt. of India and in line with international standards. Besides this, the building plans approvals and monitoring of by few local authorities is flawed. The cases are visible in may parts of the country. The buildings are collapsing every other day, killing habitants and damaging environment, but authorities are just ordering enquiry, without addressing the issue of malpractices. What these local authorities are doing to prevent such collapses and ensuring the safe and sustainable built environment? Builders are working with full impunity and public suffer in the hand of unscrupulous agencies and players in the construction. Now RERA has been created, but there is no attention on provisions of NBC/NDMA and penalties for faulty planning, designing and construction of houses/buildings.

Besides this, there are more questions and validity of building plan. As Taj Mahal and Qutub Minar were built couple of centuries ago, with available technical knowledge and available building materials that point of time, but are these buildings safe, now? (As now more knowledge is available and the building materials used in construction are showing distress after so many centuries). The same way, all old buildings in cities needs to be analyzed and retrofitted on war scale as these are potential threats. The building permit must have all the provision of fitness of buildings like vehicles have, in their certification/license under Motor Vehicle act of India. There is a well-defined set of guidelines in National Building Code of India (NBC) 2016 to conduct periodic safety audit of all buildings, every 3 to 5 years as stated clearly in chapter II on administration. These multi-disciplinary audits will expose vulnerability of existing buildings in terms of Fire Safety, Structural Safety as well as in Electrical Installations etc.

In Noida/Greater Noida and many such places, where the flood plains have been encroached upon and houses / buildings are constructed in very eco-sensitive zones, Environment Impact Assessment not done and foundations were done in haste. Many high rise buildings are coming, without any wind load testing. In Gurgaon, the buildings are being designed and constructing with western concept, without the iota of thought given on sustainability and building configuration and symmetry. When the "Lalita Park" type of building collapse takes place, an enquiry is ordered but no lessons are learnt.

India is a developing country with 1.3 billion population and 30% urbanization as per year 2011 census. The population as well as urbanization is increasing in India, putting already crumbled existing cities under distress. Old buildings are vulnerable as they were not designed as per current vulnerability and further people have done much structural changes due to commercialization and FAR business, they can give way in any of the natural disaster and new buildings are also compromised, without understanding the consequences of disaster.

Until unless we do things consciously with full knowledge and integrity without prejudice, we will continue to create another disaster, as Structural Engineers and Geo-technical Engineers are backbone in construction / development and now they are not being consulted in many of the projects as there is no professional body in India created by act of parliament in the country, resulting in encroachment by other professionals in this area, resulting in malpractices and unsafe development. Many state development agencies are also hand in gloves with few professionals and drafting guidelines in variation with NBC 2016 as competence of civil engineers and structural engineers are changed to suit them and few other vested parties, as land and housing is a state subject. In such situation, only God can save the housing / buildings in India.

The views expressed are personal.

About the Author

*Deepak Bansal is a Civil cum structural engineer and is affiliated to Indian association of structural engineers, Bureau of Indian standards (India), Indian society of Wind Engineers, International Masonry society of United Kingdom, TERI- SUV- GRIHA. He can be contacted on dbansalindia@gmail.com.

Forthcoming Student Chapter Activity



Engineers (IAStructE)

Student Chapter Faculty of Technology, CEPT University, Ahmedabad



https://docs.google.com/forms/d/e/1FAIpQLSfvcZmwM8PkJZNr2frPzLEoMBD7xXazQ McYVELSaqciQN_WWQ/viewform

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About IAStructE

Indian Association of Structural Engineers (IAStructE) is the national apex body of structural engineers in India established with the objective to cater to the overall professional needs of structural engineers. The association has become the source of expertise and information concerning all issues that involve structural engineering and public safety within the built environment. It has no commercial aim or objective. IAStructE is purely a professional learned society with the prime objective of supporting and protecting the profession of structural engineering by upholding professional standards and acting as a mouthpiece for structural engineers. IAStructE endeavors to ensure that it's members develop the necessary skill in structural engineering and work to the highest standards by maintaining a commitment to professional ethics and standards within structural engineering. IAStructE strives for continued technical excellence; advancing safety and innovation across the built environment. It also strives to make available to the Government, Public Sector and Private Sector - a credible source of well qualified and experienced Structural Engineers. A nationwide database of Structural Engineers has been compiled and is being constantly updated. IAStructE undertakes a broad range of technical activities which are aimed at information sharing and capacity building. The association provides opportunity for all the members to develop various skills in structural engineering and helps members to be at the forefront of structural engineering practice. Towards achievement of its aims and objectives, IAStructE is engaged in organizing the following: CPD Courses for Professionals at all levels Refresher Courses for Fresh Graduate Engineers, Student's orientation program, Technical Lectures by Experts, Technical Discussions on Contentious Seminars/Workshops, Issues. IAStructE is currently operating from four regional centers. These regional centres located in the Eastern, Western, Northern and Southern parts of the country effectively cater to the professional needs of members residing/practicing all over the country.

How to become a member ?

Membership form and details are available at http://www.iastructe.co.in/membershipform.html ; For membership information and other details contact the Indian Association of Structural Engineers Secretariat

IAStructE Membership benefits

Membership of IAStructE is a sought after professional accreditation. Your membership of IAStructE can help you enhance your intellectual, academic, technical and professional status. It provides inter connectivity to the fellow professionals and the fraternity. Some of the benefits of membership is provided below:

- Complimentary magazine subscription: All members (except Student Members) receive a complimentary subscription to the Institution's flagship publication 'Structural Engineering Digest' (SED). Published quarterly, each issue allows members to remain connected to the association through the provision of technical papers, Industry and Institution News, Featured articles, Professional Guidance on everyday matters affecting the practicing structural engineers. [Released]
- Access to all Technical Lectures, organized every month, at no charge
- Access to Technical Discussions held regularly
- Access to the association's library (Including e-library)
- Discounts in attending Seminars and Workshops organized by the association
- Full on-line access to the current volume and entire e-archive of journal "Structural Engineering Digest (SED)", Refresher Course Materials, Technical Lectures E-Newsletters and other Technical Resources of the Association.
- Opportunity to network with professional structural engineers of eminence and to meet potential employers in the association.
- Opportunities for professional development

Indian Association of Structural Engineers

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