



STRUCTURAL ENGINEERING

QUARTERLY JOURNAL OF
INDIAN SOCIETY

OF

STRUCTURAL ENGINEERS

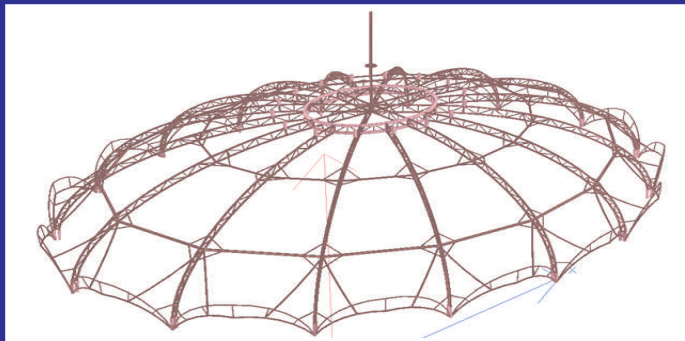
ISSE

VOLUME 23 - 4

OCT - NOV - DEC 2021



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STRUCTURAL ENGINEERS



INDIAN SOCIETY OF STRUCTURAL ENGINEERS

ISSE

VOLUME 23 - 4, OCT- NOV- DEC 2021

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Views expressed are authors' or reporters' personal and do not necessarily reflect views of ISSE. ISSE is not responsible for any consequent actions based on contents or information given in the journal.

AIMS & OBJECTIVE OF ISSE

1. To restore the desired status to the Structural Engineer in construction industry and to create awareness about the profession.
2. To define Boundaries of Responsibilities of Structural Engineer, commensurate with remuneration.
3. To get easy registration with Governments, Corporations and similar organizations all over India, for our members.
4. To reformulate Certification policies adopted by various authorities, to remove anomalies.
5. To convince all Govt. & Semi Govt. bodies for directly engaging Structural Engineer for his services.
6. To disseminate information in various fields of Structural Engineering, to all members.

FIELD OF INTEREST

* Structural; Designing & Detailing	* Construction Technology & Management
* Computer Software	* Geo-Tech & Foundation Engineering
* Materials Technology, Ferrocement	* Environmental Engineering
* Teaching, Research % Development	* Non Destructive Testing
* Rehabilitation of Structures	* Bridge Engineering & Other related branches

Fraternity News WELCOME TO NEW MEMBERS (OCT - NOV - DEC 2021)

2010	Abhijit Bhaidas Motirale	2037	Anil Vitthal Rathod
2011	Onkar Uday Bhosale	2038	Shubham Pramod Shinde
2012	A. Karthikeyan	2039	Vishv Ratan Bansal
2013	Awadhesh Kumar Maurya	2040	Mayur Dhansing Satav
2014	Meena Murmu	2041	Yogesh Hemantkumar Tambe
2015	Libin Poullose	2042	Mayur Kailas Tade
2016	Vipin Vasantlal Munot	2043	Nathu Dada Thombare
2017	Sandeep Ramesh Ranaware	2044	Suraj Sopan Chandgude
2018	Niranjan Shamkant Jadhav	2045	Suraj Balasaheb Kokare
2019	Umarfarook Hamidurrahman Momin	2046	Dilipkumar Vitthalrao Yadav
2020	Parag Kashinath Nerlekar	2047	Vinod Pandurang Kare
2021	Mahdevaiah Dileepkumar Kollegal	2048	Ganesh Dattatray Narute
2022	Shrinivas Vikas Waghmare	2049	Suraj Vishwnath Kokare
2023	Ranjeet Shamkant Jadhav	2050	Sameer Bhimrao Kokare
2024	Anurag Sharma	2051	Sanjay Shivajirao Kadam
2025	Rajaram Baskar	2052	Harshvardhan Khanderao Ghadge
2026	Purna Chandra Rao Kamarathi	2053	Ganesh Ramdas Bhosale
2027	Chaitali Vikas Pote	2054	Vikas Sanjay Nirmal
2028	Shubham Sunil Desarda	2055	Ranjeet Navinchandra Doshi
2029	Sandeep Jagdish Dubey	2056	Smruti Ranjan Prusty
2030	Amol Shivaji Nikam	2057	Jayendra Satyapa Madkari
2031	Sakhi Ashok Satkar	2058	M. S. Nagendra Prasad
2032	R. Madhukumar	JM 61	Nishant Rathi
2033	Ganesh Raghunath Awhad	JM 62	Samidh Anil Patil
2034	Kunal Ratilal Patel	JM 63	Ashutosh Vijay Mayekar
2035	Paresh Harendra Rajyagor	JM 64	Saniya Hemant Vaidya
2036	Rakesh Tarachand Dalbhanjan	JM 65	Nikhail Sudhakar Gavad

Patrons : 38

Members : 2058

Student Members : 224

Organisation Members : 32

Junior Members : 65

Sponsor : 8

IM : 04

TOTAL STRENGTH : 2,429

GEM 30 PROF. S. RAJASEKARAN - GENIUS IN STRUCTURAL ANALYSIS

By Dr. N. Subramanian



Prof. S. Rajasekaran (born: 1942)

EARLY LIFE

Dr. S. Rajasekaran was born on 18th September 1942 at Perambur, Chennai, India. He is a native of Rasipuram, Tamil Nadu India (presently Namakkal District). He was the only child to his parents. His father Dr. R. Sundaramoorthy was a medical doctor and mother S. Indumathi, a housewife. He did schooling in Board High School at Rasipuram during 1951-1957. He got interested in Mathematics and English Grammar because of his enthusiastic teachers in the school. He did his Pre-University Course during 1957-58 in Loyola college, Chennai.

PROFESSIONAL DEGREES

Dr Rajasekaran took his B.E (Honours) in Civil Engineering with IV rank in 1963 and M.Sc. in Structural Engineering with I rank in 1965 from PSG College of Technology, Coimbatore affiliated to the University of Madras. He started his teaching career as a Technical Teacher Trainee at the College of Engineering, Guindy in the year 1965 and after completion he joined as lecturer at P.S.G College of Technology, Coimbatore in 1965. He was initiated to research by then the Head of the Department, Dr V Ramakrishnan (who returned from UK after his PhD from Imperial College) during 1965-68 (more info on Prof. Ramakrishnan in GEM 29 article).

On study leave from PSG College of Technology, he went to the University of Alberta for his Ph.D. studies. He obtained his Ph.D. in Civil Engineering from the University of Alberta, Edmonton, Canada in 1971 and served there as a post-doctoral fellow and faculty member from 1971-73.



Rajasekaran admitted to the Doctor of Philosophy during sixty first Convocation of the University of Alberta, Edmonton, Canada in the year 1971 and his PhD guide Dr D W Murray

Dr. S. Rajasekaran was awarded "Doctor of Science - D.Sc. (Civil Engineering) by the Bharathiar University in October 1999 based on his post-doctoral research, books and technical papers and the reports by the duly constituted Board of Examiners including two foreign experts and one Indian Expert with D.Sc degree. He was the first D.Sc in Engineering of the Anna University, Tamil Nadu.

PROFESSIONAL CAREER

As mentioned earlier, Dr Rajasekaran first worked as a lecturer at P.S.G College of Technology, Coimbatore in 1965 and worked during 1971-73 as Post-doctoral Fellow and faculty member in the University of Alberta, Canada. Later he joined as a faculty member of the Department of Civil Engineering, PSG College of Technology in 1973.

During the span of 56 years of his teaching and research career, he has carried out extensive research in the areas of Finite element Analysis of Thin-Walled Structures, Non-Linear analysis of Concrete Structures and Artificial Intelligence applications to problems in Structural engineering and Non-Traditional Optimization techniques for space structures and Behaviour of functionally graded beams, plates and arches. He has guided about 200 ME and 8 Ph.D scholars out of which 3 Ph.D scholars are in Computer Science and 5 in Structural Engineering.

PUBLICATIONS

Prof. Rajasekaran has published more than 300 research papers out of which 124 are in reputed international journals besides nineteen books including one on “Finite Element Analysis in Engineering Design” and the other on “Neural networks, fuzzy logic and Genetic algorithms”. He has contributed an invited chapter to the book “Theory of Beam-Columns” published by Mc-Graw Hill in 1977 edited by W.F Chen and T. Atsuta and another invited chapter to a book "Analysis, design and Construction of Space Frames" edited by Prof G S Ramaswamy, et.al. published by Thomas Telford Publishing company in Feb 2002 and the third one to “Dynamics of Plated Structures” edited by Prof C M Wang and Prof N E Shanmugam, published by Wood Head Publishers in 2005 . He has written a book on “Structural Dynamics of Earthquake Engineering- Theory and Application using Mathematica and Matlab” published by Woodhead Publishing, U.K in 2009. Prof. Rajasekaran has edited five international conference proceedings. His papers have been well cited (more than 3700 science citations with h-index of 29 and i10-index of 57 in Google Scholar) in books, Ph.D theses, reviews, annual reviews and international and national journals of repute.



In addition, Prof. Rajasekaran has successfully carried out many major projects funded by CSIR, BARC, MHRD, ARDB, ISRO, AICTE, ARDB and DST to the tune of Rs. 69.2 lakhs. He is also responsible along with the chairman of the department of Civil Engineering in getting a grant of Rs.1.25 crores from DST-FIST project in the year 2006 to establish an Earthquake Engineering research laboratory at PSG College of Technology.

REVIEWER AND EDITORIAL BOARD MEMBER OF JOURNALS

Prof. Rajasekaran is the reviewer of many international journals viz:- ASCE Journals of Engineering Mechanics, Journal of Computing in Civil Engineering, Structural Engineering Mechanics, IEEE Transactions of Neural Networks, Journal of Solids and Structures , Finite Elements in Analysis and Design, Engineering Structures, Journal of Artificial Intelligence and Research, and many other Elsevier, Springer-Verlag journals. He is the member of Editorial Board of International Journal of Structural Engineering and Mechanics. He has been a member of scientific committees of several international and National conferences and has also been the guest editor of a volume of the International Journal of Engineering Structures. He also served as a member of expert panel in the

Design Review Team of PSLV program for ISRO and served as a consultant to ISRO for the development of “Gap Element” to the software “FEAST–C”.

AWARDS AND RECOGNITIONS

Prof. Rajasekaran’s research work has fetched him several international and national awards. When he was a graduate student at the University of Alberta, he was awarded “The University of Alberta Graduate Fellowship out of 20000 students” which is the highest award among graduate students during 1970-71.

He was offered the “Colombo Plan Fellowship” in 1974 to participate in the International Conference at Sydney, Australia. He was awarded “Outstanding Young Person of Coimbatore” by the Coimbatore Jaycees in 1982. The Government of Germany also awarded him the prestigious "Alexander von Humboldt Fellowship" in 1982 to carry out the research work at the Institute of Baustatik, University of Stuttgart, Germany.

In 1985 AVH foundation of Germany donated Victor-PC -a micro computer System to PSG College of Technology for the research work of faculty and the students in the department of Civil Engineering. In 1991 he was awarded the “Indian Society of Technical Education Maharashtra State National Award” for his outstanding research work in Engineering and Technology.

His other awards include the following:

- “ACCE- NAGADI Award” for the best publication in Civil Engineering for the year 1996 for his book “Finite element Analysis in Engineering Design” by ACCE (I) [Association of Consulting civil Engineers (India)].

- “Outstanding Fellow corporate Member in Civil Engineering Division” by the Institution of Engineers (Coimbatore) chapter in September 1996 for his outstanding work in Civil engineering.
- “Tamil Nadu Scientist Award – TANSA AWARD” by the Tamil Nadu Government (Tamil Nadu State Council of Science and Technology) on Sept 20, 1996, for his outstanding teaching and research work in Structural Engineering.
- “Vocational Excellence Award” by the Coimbatore Rotary West on 6th December 1999.
- “Anna University National Award” for outstanding Academic for the year 1999 - 2000 by Indian Society for Technical Education.
- “AICTE Emeritus Fellow” by the All India Council for Technical Education for the year 2000-2002.
- “Eminent Engineer Award ”given by Association of Consulting Engineers , India for the year 2010.
- Conferred with an honorary appointment to the Research Board of Advisors of The American Biographical Institute, USA.
- Selected as one of the “Eminent Personalities of India” by the International Biographical Research Foundation, India.
- Included in “Who is Who in the world”.
- Selected as "Man of the Year -2000" by The American Biographical Institute, USA.
- Elected as “Fellow of National Academy of Engineering” India in 2002.
- “Life Time Achievement Award” given by Indian Society of Technical Education” by Indian Society of Technical Education (Tamil Nadu and Pondicherry section) in 2015.
- Honored on 22 Aug 2021, “ACCE(I) Gaurav Award” given by Association of Consulting Civil Engineers , India for the significant contribution to Civil Engineering profession.

He has visited several countries including Canada, U.K., France, Germany, Australia, Singapore, Hong Kong, Malaysia, China and Japan. He has also been Visiting Professor at the University of Alberta, Canada in 1979-80 and the Humboldt Guest Professor at the University of Stuttgart, Germany, in 1982-83 and Visiting Professor at the University of Sydney, Australia in 1990 and visiting fellow at the National University of Singapore during 2005.

In 1998 he participated and presented a paper in a conference CADCOMP at Montreal, Canada with the travel grant of AICTE and again in Nov 2005 he participated and presented a paper in an international conference on earthquake engineering held at South East University, Nanjing, China with the travel grant of AICTE.



Prof. Rajasekaran with Toraja Medal winner, inventor of Formian Algebra and the former chief Editor of International Journal of Space Structures Prof. H. Nooshin, at the University of Surrey, London, 2005.



Prof. Rajasekaran with Prof. Nethercot, Prof of Imperial college, London, who is an authority of Steel Structures, and the only professor who has been bestowed with the Honour of “Order of the British Empire (OBE)”, 2005

Dr. Rajasekaran was responsible for establishing India Project program of Worcester Polytechnic, USA at PSG College of Technology for the fruitful exchange of faculty and students between PSG College of Technology and Worcester Polytechnic, USA during 1997-98.

CONSULTANCY WORK

Prof. Rajasekaran has also been involved in many major consultancy activities:

- (1) On the analysis of Bayano dam (with Prof N.R. Morgonstern world renowned expert in Soil Mechanics) at Panama across the river Bayano, in Darien Province during 1973-75 and the dam was opened in 1976.



Rajasekaran did the Analysis of Bayano Dam Panama with Prof N.R. Morgonstern, University of Alberta, Canada, 1971-73

- (2) Investigation of failure of LRT bridge across Elbow River at Calgary in Canada along with Prof J.G. McGregor in 1979.
- (3) Investigation of failure of Cathedral at Narimedu, Madurai in 1983 with Prof G S Ramaswamy, former Director of Structural Engineering Research Centre (more details of Prof. G.S. Ramaswamy in the next GEM article).



C.S.I. Cathedral at Madurai

- (4) Design of pumps and valves for submarines for KSB pumps for a DRDO project.
- (5) Analysis of the structural shell roof of CSI cathedral at Coimbatore in 1992



Prof. Rajasekaran along with Prof S Alexander analyzed the shell roof for CSI Cathedral in Coimbatore

- (6) Design of Space Structure for roof of Avinashilingam university indoor Auditorium at Pannimadai, Coimbatore in 2010 and offered many consultancy to various building and construction projects.

ORGANIZATION OF CONFERENCES

Dr Rajasekaran has organized many summer and winter schools and short term courses for the benefit of students and engineers. He has also organized an International Conference on "Stability of Structures" - ICSS 95 during June 7-9, 1995 at P.S.G. College of Technology in collaboration with the Washington University in St. Louis, USA, in which 35 foreign experts apart from 175 from India participated and this conference was a grand success. He was also responsible for establishing a computer centre for the department of Civil Engineering with hardware and software facilities. He has given guest lectures in Monash University, and University of Melbourne, Melbourne, University of Sydney, University of New South Wales TU Berlin, University of Stuttgart, and University of Alberta, Edmonton, Canada.

Dr. Rajasekaran has given video lectures on four modules on topics such as "Earthquake Analysis

and Design" and "Behaviour of Bi-directional functionally graded beams" in "SWAYAM" under MHRD under PMMMNMTT programme for training the faculty of all engineering colleges to focus on latest developments in the subject for transacting revised curriculum in October, 2018.

Apart from teaching and research activities he was also a member of Board of Studies and Academic council of Various Institutions, Head of the Department of Civil Engineering 1995-2000, Dean of the Post Graduate Studies and Research from 1998-2005, acting Principal, PSG College of Technology (when the principal was on leave), Professor in Charge for the Library 1987-1994, Member of the Governing Council of the Kumaraguru College of Technology, to name a few. In addition, he was the Editor for College Journals Technology, Tech Review, etc., Staff Advisor, Students' Union and also for Civil Engineering Association.

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

Dr. S. Rajasekaran is a Fellow of the Indian National Academy of Engineering, Fellow of the Institution of Engineers (India), Member of Indian Society of Earthquake Technology, and Member of the Indian Society for Technical Education.

NOTABLE CONTRIBUTIONS

His special research achievements and contributions include (1) Development of equations for curved/straight beams of open cross section, (2) Finite element buckling analysis of beams and plates made of composites materials, (3) Application of non-traditional optimization techniques such as Genetic Algorithm, Simulated Annealing, ant Colony Algorithm, Cellular Automata, Neural Networks, Functional networks, (4) Optimization of Space

Structures and (5) Stability and Vibration of functionally graded non-prismatic beams and arches.

DISTINCTION

Dr. S Rajasekaran has been listed among the “top 2% of the world's scientists” in the database of more than 1.5 lakhs whose work has had a maximum impact in their respective field working in 21 different fields. Dr S Rajasekaran has been “ranked 265 (in 2020), 295 (in 2021) in the world rank list” in Civil Engineering (among 2% scientists in the world) and ranked 2 (in 2020), 4 (in 2021) among (2% of top Civil Engineering Scientists in India). This world rank list was first independently compiled by a group of Scientists of Stanford University, USA in October, 2020 and is being updated every year.

FAMILY

Dr S Rajasekaran is married to Mrs R Saraswathi and they are blessed with two daughters, Latha and Preetha. Latha is an MS in Mechanical engineering from the National University of Singapore and her husband Dr Sivaraman is a Professor of Bio-Sciences at the National University of Singapore. They have one son Mr Amitesh presently doing PhD in Mechanical Engineering at the Stanford University, USA and one daughter, Miss. Ananya in 11th standard.

His second daughter Dr Preetha is an Ophthalmic Surgeon at Agarwal hospital , Chennai and she is MRCOphth(Lon) from Royal College, London and her husband Dr Ramachandran is FRCS(Uro)(Lon) in Urology from Royal College, London and he is an Urologist at Isabella Hospital , Chennai. Their son Mr Akilesh is doing B.Tech (Computer Science) at Sastra University , Tanjore and one daughter Miss. Aditi is in 7th std.



Mrs. Saraswathi & Prof. Rajasekaran



Latha's Family



Preetha's Family

Dr Rajasekaran learnt swimming, ice skating and western dance when he was at the University of Alberta, Edmonton, Canada during 1968-73. He was a Table Tennis player while at college. His hobbies include drawing, philately, numismatics and listening to music.

About The Author



Dr. N. Subramanian, Ph.D., FNAE is an award winning Author, Structural Engineering consultant and Mentor, currently based at Maryland, USA, with over 45 years of experience in Industry (including consultancy, research and teaching). He was awarded with a ‘Life Time Achievement Award’ by the Indian Concrete Institute, the ‘Gourav Award’ by the ACCE(I) and many other awards for his contributions towards Structural Engineering. He is the author of 26 books, including the famous books on ‘Design of Steel Structures’, ‘Design of RC Structures’, ‘Principles of Space Structures’ and the recent ‘Building Materials, Testing and Sustainability’ and also 290 technical papers. (email - drnsmani@yahoo.com)

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SELF-REDEVELOPMENT FUNDING - BOOSTER JAB BADLY NEEDED

By Siddharth Tipnis

Pandemic seems to have gripped the Self – Redevelopment Model (SRDM) the most. Lot has been talked about the state of affairs pertaining to the SRDM, over the last two years or so. The Govt. which had launched the SRDM with great fanfare seems to have suddenly developed the feeling of untouchability towards it. Except for two notifications (GR) one dated 4th July 2019 and subsequent 13th Nov. 2019, there has been no concrete activity from the Govt. side, especially in the present dreaded situation of unscrupulous Builders being all over the place. The Govt. should have given a hard thought to the fact that in such a scenario SDRM model, that can bring cheers to innumerable families and give a sense of belonging to the lower, middle and upper middle class of the population, precariously living in old and dilapidated buildings would be a great equalizer and leveler and equally soothing and absolutely risk-free. Unfortunately, with no Govt aid in sight this dream of owning a new, bigger and better house, seems to have collapsed like pack of cards.

RERA-The Real Estate (Regulation and Development) Act that came into force on the 1st of May 2016 followed by Demonetization of the Indian currency on the 8th of November 2016 and introduction of GST in July 2017 and to top it the formation of Maharashtra Real Estate Regulatory Authority (MahaRERA) under the Chairmanship of Mr. Gautam Chatterjee (Retd. IAS officer) which made the (RERA) applicable on the 1st May 2017, under the ambit of which all construction activity was regularized. proved to be the final nail in the coffin of all fly by night Builders. The sudden disappearance of Builders from the scene, with

projects incomplete brought the common man on the streets with nowhere to go. At this point of time Govt should have strongly pitched in and arrived at an amicable

solution, which was clearly there and that was allow the affected people to develop their properties on their own. In other words, Self-redevelop their properties with a firm liquidity backing from Govt. approved Lenders

Common sense tells us that the Construction Industry is only second to the Agriculture Industry to boost the economy of our country. It is, in fact, the backbone of our Country's economy. It is quite surprising that the power houses have always looked upon the construction industry as the "Milking Cow" rather than developing it into a great Industry for the benefit of the common man. It is a tragedy that in our country, the predominantly middle class has always received a step motherly treatment. No thought or very little thought goes into the betterment of basic needs like food, shelter and clothing. Living conditions in age old building, in the City, Suburbs and Extended Suburbs, especially those that are well over 40-50 years old, have worsened beyond imagination. People are living actually with their heart in their mouth and yet we don't see any concrete solution from the Govt.

It is very clear, and it is not Rocket Science, to understand that any Industry, may it be manufacturing, construction, e-commerce, IT, etc., to thrive, needs a high degree of handholding from the Govt. both in terms of ease of doing business and generating liquidity in the market

through lenders like Banks, NBFCs, etc. An attempt has been made in this direction in case of MSMEs and Startups and other fields like Unconventional Energy. What is entirely left out is the Construction Industry. It would be in the fitness of things that Construction Industry, especially Self-Redevelopment of Residential Buildings, should be offered a status of MSME, whereby it will get a great boost as Lenders will whole heartedly contribute towards the project cost, knowing well that the Govt. itself is the guarantor to the loan availed by the Society. Even with a few basics like an upper cap limit of Rs. 50 crs. It will pave the path to better homes and living conditions for nearly 20,000 Societies waiting to be redeveloped and imagine the income it would generate for the Govt. by way of Taxes. Alternatively allow other Lenders like Bank, NBFCs, HFCs to provide funds directly to Societies to take up Self-Redevelopment rather than approaching a Builder to do so. This automatically, will lead to the collapse of all the unscrupulous and fly by night Builders market thus leading to less litigations and less worries for the common man and the Govt. as well.

The only silver lining that we see as far as the funding for Self-redevelopment Projects is that though the RBI has closed one door by denying the Central District Co-operative Banks to lend for any commercial activity it has opened another door by allowing the Housing Finance Companies (HFCs) and Non-Banking Finance Companies (NBFCs) to lend to Self-Redevelopment projects. It is only a matter of time that these institutions will start showing their willingness to do so. The fact that the Builders have pushed many lenders into a situation of no return by generating large NPAs leading to Lenders being tried under the IBC, they are now looking towards the Govt. to get them out of this mess. The Societies often on their part find it

difficult, and at times, for all the members to come on a common platform and understanding about the proportion in which the incentives generated would be enjoyed between contributing and non-contributing members. It is of utmost importance that all the members should show the willingness in contributing at least some amount of funds towards seed capital. Self-redevelopment is not a business model, but a collective effort taken up by the Society under strict guidance of the Project Management Consultants (PMC) and hence participation from one and all is of utmost importance.

We as PMC, on behalf of Co-operative Housing Societies, those of which have engaged our services, have been discussing with different types of Lenders in the market, Banks, NBFCs, HFCs, and even Co-operative Credit Societies . We are succeeding in our efforts as we observe that Co-operative Credit Societies have understood the essence of funding Self-Redevelopment Projects. It has come as an opportunity for them to start a fresh Vertical and make better use of Crores of unutilized funds by investing in better avenues such as Building Construction. They have very well understood the importance of the "Return on Investment" (ROI) that would be generated by way of interest by lending for a totally risk-free business such as Self-Redevelopment. Such Societies have been approaching us to prepare a working, error free and foolproof model for lending to the tune of, in some cases, 100% of the project cost. We are thus expecting a fruitful handholding from the Credit Societies who shall willingly participate in the redevelopment once the details such as feasibility report and other essential papers like land ownership, which they would prefer to mortgage against the loan amount, are submitted

to them. It thus becomes very essential for the Society to contribute towards the process for generating the Structural Audit and Feasibility report, at the least, to start with.

We, as PMC, shall be available for Societies to carryout the Self-Redevelopment right from the inception stage to handing over the keys. We do hope that better sense prevails, and we together make this Self-Redevelopment Model a great success. You can contact us on the mobile no. provided below.

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GIANT FABRIC DOME AT PATANJALI NATUROPATHY CENTER

By Prof (Retd) M. G. Gadgil

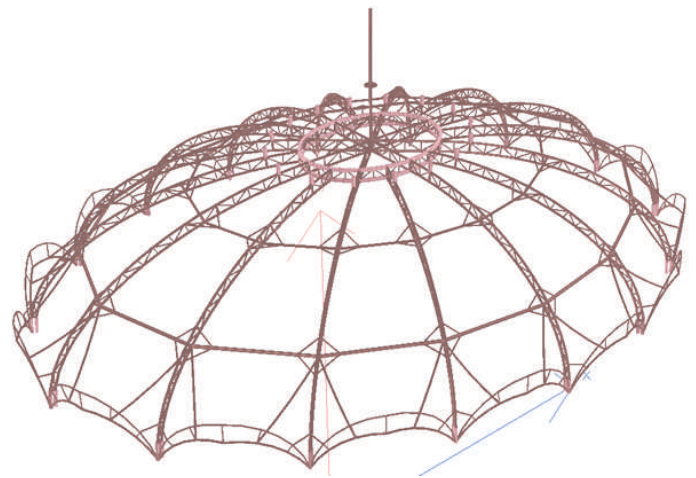
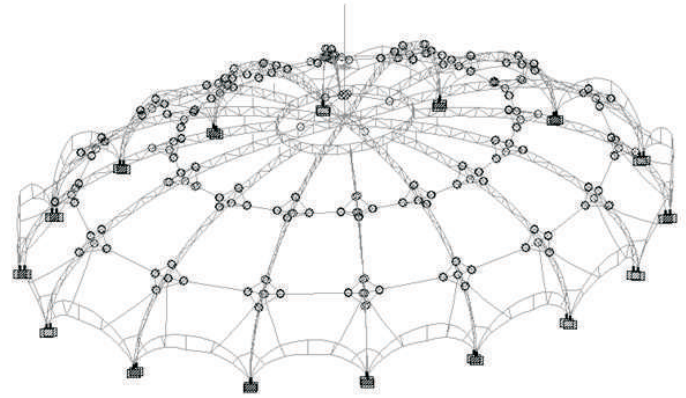
1.0 General :

Patanjali naturopathy center conducts large no of activities in a vast stretch of land near Haridwar, Uttarakhand state. Vast number of patients attend health and wellness shivirs there. There are several types of residential accommodation available for visitors and patients including, tent houses, huts, barracks, apartments and suits and facilities like dining halls, kitchens, ware houses, offices, shopping facilities, large halls for yogas, yadnas, panchkarma and shatkarma activities. To augment the ever increasing demand to accommodate more no of patients for the yoga and naturopathy activities it was decided by Patanjali Yoga and naturopathy center to construct a huge dome in open land inside their premises, with fabric roof for conducting accommodating more people under a single roof. M/S Mccoy Architectural systems Pvt Ltd, a contracting firm specializing in the field of fabric structure, steel fabrication etc.

2.0 Geometry of the dome

The dome was planned on elliptic area with major and minor axis of 80m and 63 m (approx.). The height of the dome is to be 16 m and on top of the crown, it was planned to have the national flag of about 8 m in height. An elliptic ring was planned at top admeasuring major and minor axis of 16m and 13 m respectively. The dome was supposed to have several entry points at ground level. The dome was planned to be covered with off white fabric in major area, saffron fabric in top elliptic and fabric near ground, lower 4-5 m height. Diametral stiffeners were planned for the top elliptic ring. Some of the

details are seen in staad model and photos of the dome below





3.0 Steel members arrangement

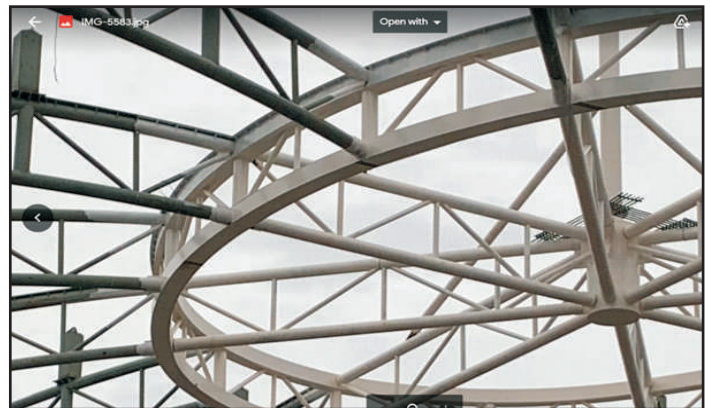
It was proposed to provide a central elliptic ring at 16 m height above ground level. The entire dome is provided with 16 elliptic arches going from support to elliptic ring. Two intermediate elliptic rings are planned which will give lateral stability to the arches. The arches are provided with built up members with max depth of about 1.2m. The central elliptic ring is provided with a depth of 1.2 m to accommodate top and bottom chords of the arches. The ring is provided with 8 radial stiffeners connected to a central pipe of 323mm dia. Lateral ties are provided to top and bottom chords of the arches at intersection with elliptical rings to provide them with lateral stability. Canopy type 16 arches are provided at ground level which will serve as entrance point to the space under the dome. The top flag post is provided with lateral stiffeners for providing stability.

4.0 Analysis and Design of steel members :

The initial analysis of the fabric dome is carried out in NDN software , for wind load . The results of analysis, obtained as reactions from fabric structure, are applied on supporting dome structure in structural steel and the supporting structure is analysed and designed using STAAD software and various provisions of the Indian code IS 800-2007. The reactions so obtained are used to design Base plates, Anchor bolts, RCC pedestals and RCC foundation.

5.0 Connections between members :

Main arches, rings etc are all provided with rigid, moment connections. The splice joints are designed for full strength of the connecting members. Connection between intermediate rings and arches is provided with bolted connections. At support , Fixed connection is provided to connect arch to the base plate.



Moment connections for members



Pinned connections between arch and intermediate ring

6.0 Base plates and anchor bolts

Moment Connection is provided between arch and base plate. Gusset plate is provided between arches and base plate. Welded connection is provided between arches, gusset plates, stiffener plates and base plate. Anchor bolts of 32 dia in MS are provided to transfer forces from arches to the RCC pedestal below. Photographs below show details of the connections at base plate.



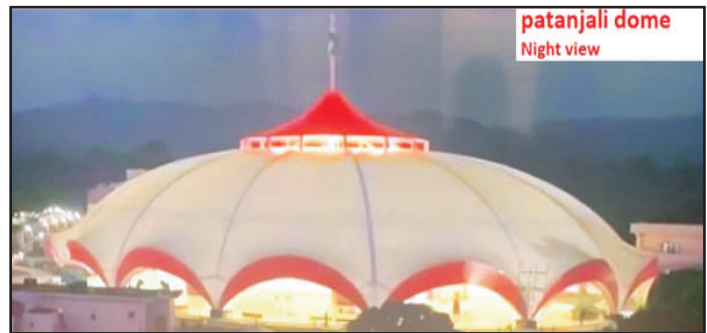
7.0 RCC pedestals and foundations

RCC pedestal, 1.5m x 0.8 m are provided to transfer load to the RCC foundation below. Foundation of the size 3m x 5m x 1m in thk is provided for each pedestal considering forces applied on it at ground level, SBC of soil etc.

8.0 Laying of Fabric

The fabric roof for the entire dome is prepared in 8 parts. This has been done on a machine that cuts the pieces from parent fabric rolls, stitches and welds the pieces to each other. Such pieces are then laid on the dome and connected to the dome structure using pressure plates and cables which are stressed after connecting them to the dome

structure and after passing them through the fabric at ends.



9.0 Concluding Remarks .

It was a great opportunity for me to design such a giant, monumental structure for Patanjali naturopathy center. A visit to the construction site gave me a first hand view of the structure just erected and came to realize in awe, the vastness and imposing nature of the structure. A structure designed on a computer and seen from several angles does not give the idea of real size of the structure. One has to see the structure to appreciate its vastness , and get an idea as to what one has designed and what kind of forces you have considered and whether everything that has gone into it --- the material, welding, bolting erections etc -- and miss a heart beat as to what situation you put yourself into!!!! You develop full faith in the god almighty who got the work done through you and all those skilled and unskilled workers who finally made the structure a reality.

About the author :



Prof. M. G. Gadgil is a retired professor and head Structural Engineering Department, VJTI, Mumbai and independent Consulting Engineer having four decades of experience. He has designed and proof checked variety of steel and concrete structures.

Email : mohan258@rediffmail.com

NEW CERTIFICATION FORMATS AS PER AMENDED UDCPR MAHARASHTRA PUBLISHED ON 2 DEC 2021

ISSE team members with their untiring efforts could rationalize the certificate formats. Special thanks to ISSE Pune team. It involved making representation on behalf of ISSE, coordination with government officials, attending meetings and hearing on the objections & suggestions, convincing the ministers about the necessity of making the due corrections in the certification formats for supervision and Design adequacy certificate to be provided by Structural engineer and site supervision engineer. All are requested to follow the new formats.

APPENDIX 'B' FORM FOR SUPERVISION

To,
The Authority
(Name of Authority)
Sir,

I hereby certify that the development in Plot Number _____ in situated at Road / street _____ shall be carried out under my supervision and I certify that all the materials (types and grade) and the workmanship of the work shall be general specifications and that the work shall be carried out according to the sanctioned plans. I shall be responsible for the execution of the work in all respects

Date :

Signature and name of the Architect or Licensed Engineer / Site Engineer / Supervisor *

Name :

Registration No / License No

* Strike out whichever is not applicable

CERTIFICATE

** I hereby certify that the structural drawings for the above-mentioned work are prepared by me / us and the work, as far as structural drawings are concerned, shall be carried out as specified in Appendix 'C'. I shall be responsible for the adequacy of the Structural Design as far as Structural drawings are concerned.

Date :

Signature and name of the Structural Engineer or Licensed Engineer ***

Name :

Registration No / License No

** Wherever applicable

*** Strikeout whichever it is not applicable

CERTIFICATE

** I hereby certify that the work of structural elements for the above-mentioned work shall be carried under my supervision as per the above-mentioned structural drawings after due verification by Structural Engineer. I shall be responsible for the execution of the work, quality of material used and quality of workmanship as per the above-mentioned structural design and structural drawings.

Date:

Signature and name of the Architect or Licensed Engineer / Site Engineer / Supervisor *

Name :

Registration No / License No

** Wherever applicable

* Strikeout whichever it is not applicable

PRAPTRA – 1
CERTIFICATE AS PER APPENDIX C-4.3 (VIII)
Structural Design Adequacy to be submitted at time of completion

TO,
THE Authority
(Name of Authority)

Sir,
I/We have been appointed as Structural Engineer by M/s _____ for preparing the structural design and drawings for the New structure consisting of _____ floors, / construction of _____ additional floors over existing structure with _____ floors, as described in my enclosed Design base report, based on the Architectural drawings and other utilities and services requirement given by the Owner / Developer of the development work of building in Plot No _____ in Block No. _____ situated at Road / Street _____ Revenue S. No. _____ / Gat No. _____ / Khasara No. _____ / City Survey No _____ / Final Plot No _____ Tal. _____ District _____.

The following listed firms / persons are associated with the work as appointed by M.s _____

Architect _____

Owner / Developer _____

Licensing Engineer _____

Site Engineer _____

I/we hereby certify and confirm adequacy of the structural design for intended use represented through my structural drawing issued from time to time.

I/we, further confirm that the structural design / structural drawings and details of the building which has been done by me / us, satisfy the structural safety requirements for all situations including natural disasters, as applicable, as stipulated in National Building Code of India and its Part 6 – Structural design and other relevant Codes, considering the report of Subsurface investigations, where applicable

I/we enclosing herewith undertaking of Site Engineer / Licensed Engineer / Owner regarding compliance with structural drawings and adherence to standard construction practices while executing the construction work, On the basis of this I/we hereby certify that to the best of my Knowledge and belief the said structure is structurally fit for the intended purpose.

As a Structural Engineer for design, my responsibilities are limited to providing structural design, structural drawings and details in accordance with the provisions of relevant prevailing Indian Standard Codes and visits to site at specified stages called for by the Supervising Structural Engineer / Supervising Engineer / Site Engineer for verification of reinforcement laid. All issues related to Supervision, Materials, Workmanship and Execution are the sole responsibility of Supervising Structural Engineer / Supervising Engineer / Site Engineer visit made by me as structural engineer are not for supervision since, I/we are not responsible for supervision and quality of work. This certificate is issued on the clear understanding that my overall design responsibility for safe and proper performance of structural design ceases, the moment any addition and / or alteration or any damage to the structural frame is caused by accident or by tampering with the geometrical sections of structural members for any purpose whatsoever or due to overloading of the structure or lack of maintenance or any act that is detrimental to the structure as a whole.

This certificate is issued in conjunction with the certificate of the licensed Engineer and Owner certifying the quality work.

Signature and name of Licensed Structural Engineer
Registration / License No

HIGHER STUDIES ABROAD... 4

- ER. ANAYA ATUL BHOBE.

By Kirty Hemant Vadalkar

Whenever students think of higher studies abroad their first choice is the United states of America. Rarely do we find students going to some other countries. So naturally, its important to find out more about various universities in the US.

It is essential to pursue higher studies, as the spectrum of knowledge widens. Experience in the foreign land makes one wiser. The discipline followed by the citizens makes one think about situation back home. And if there is a good reason for you to come back, there is no point in sticking around, better to come back.

Here is a smart , young Engineer, she is from Goa but born and brought up in Mumbai, so considers herself as hardcore, “Mumbaikar”, graduated from Mumbai , went to the US for further studies and returned in due course to work along side her father. She is ErAnayaAtul Bhobe.

Anaya completed her undergraduate degree of Civil Engineering, B.E., with elective as Structural Engineering from Datta Meghe College of Engineering , Mumbai University in 2014. She went to the US for further studies and accomplished her Masters in Engineering from the College of Engineering at Iowa State University in 2016 for the Civil Engineering Program.



IOWA state university? Why did Anaya choose a state university? She had planned her post graduation right from her graduation days in India. She had applied to a few universities in the US, with research programs aligning to her interests and categorized them into “Safe”, “Moderate” and “Ambitious” based on her profile. Iowa State University was amongst her “Ambitious” category so, obviously, she was very happy to receive admit from it.

The research programs at Iowa State University (Bridge Engineering Centre in the Civil Engineering College) had specifically caught her interest.

Also, Ames ,ISU’s student town, was voted as amongst one of the most beautiful campus in US with students of diverse ethnicities enrolled in the University, in previous years. And , location of the University was an added benefit. It is just 3 hours’ drive from Chicago and 1.5 hours from Des Moines. Yes, sounds good. Looks like Anaya studied the situation completely before finalizing on the university.

Anaya says, “The admission procedure was fairly simple – with the admission form, GRE and TOEFL score cards, Statement of Purpose and Letter of Recommendation to be filled in before the deadlines.” The statement of purpose is something students should pay more attention to and write it properly, paying attention to even the language along with the contents.

Anaya doesn’t find any need for a coaching class to get into a foreign university. According to her, it is just

a misconception that coaching classes actually help you in getting into your desired University

If one has a good and decent profile with all supporting documents, fulfilling the admission procedure, there is no stopping into getting admission in the preferred university. She finds that the coaching classes basically suck your pockets dry and ultimately you are left to do all the documentation yourself! So she says, “ its better to do your own research in advance and be prepared to finish the application process well before the deadlines for a smooth and effortless ride to your university.”

The admission processes to a foreign university are quite lengthy, since the evaluation process goes through a number of checks – right from the College personnel to the professors in the respective department – to determine whether the candidate is capable of joining in the program and successfully completing it. So it is essential to prepare the SOP and Recommendation letters wisely. These documents should be prepared in such a way that they showcase the candidate’s abilities to succeed broadly. Such that they can conclude from it that your admission to that university will not only benefit you as a professional but also the university will be honored to receive an esteemed student like you.

Anaya’s application procedure was completed in December, and she received the news of her admit in the month of May via post. Though this may sound out dated considering the changed scenario.

This was the first time Anaya was going to stay away from the family for such a long period. So there was anxiety. But lots to work on. She prepared all her luggage and things to carry herself, and all the time just flew fast, she reached the university. According

to her, keep the luggage within the prescribed weight limits. Also study the restrictions on things to carry carefully, as when one lands in the foreign country, the customs and immigration grill you, while you are so tired after a long journey. It is better not to surpass any rules. She also suggests, ” You can carry your rice cooker, Indian spices and any specific Indian comfort item that will cheer you up and you cannot do without. Avoid buying any winter items in India because you will get much more variety, choice and comfort in the local products. Also, do not save money on the winter clothes when shopping abroad, these actually help you keep warm and are worth the money!”



And I found, these days , there are well furnished studio apartments available at a little extra cost.

On arrival, the tricky stage is at the customs and immigration. It is better that the students are honest and follow all rules.

Anaya was also aware of this. She had read about the Immigration and Custom formalities to be completed in USA at the entry point while on her way to Mumbai Airport. Everyone faces this anxiety, initially. She was also quite excited to be alone, in a foreign land and that too on her own, to face this new adventure and new phase in life. And aptly she says, “Though the travel might seem long and tiring, the

journey and the invaluable experience that you would gain from this new start is definitely worth all the efforts!!”

All the hard work and tough time just vanished when she first visited the university.

The transportation system within the university, CyRide, is managed by the students. The university is famous for its beautiful campus, especially for its fall colours. There are many iconic structures like the Beardshear Hall, Campanile – bell tower, Jack Trice Stadium, ISU Recreational Centre, and so on. It's a pleasure seeing them.

She says, “I was in love with IOWA State University, right the first day that I landed on this beautiful campus, with easily approachable and jovial professors and colleagues”

There are ample housing opportunities, on and off campus for students.

Anaya shares a very interesting incidence, “I remember one of my ISU peer narrate an incidence where she forgot her wallet on a particular CyRide trip and she was worried that she would lose her valuables. But to her utter surprise, she found the wallet untouched and in the same exact spot that she had left it the previous day.”

There are a number of clubs and social engaging platforms available for students, which serve as a great stress buster. These platforms also help polish the student's personality.

The multi-storeyed Parks library on the campus is known for its well-stocked collection and archives. Any avid reader can spend hours gathering knowledge here.

There are many Dining Centres and Cafes around the campus, ensuring supply of delicious food to students throughout the day. The Dining Centre also happens to be one of the easiest places to land an on-campus job with the constant rush of hungry students and a flexible time schedule to match the routine without interrupting the class timings.

There has to be a difference in the pattern of studies. Anaya notices, “The pattern of studies in USA is completely different from that of our Indian system. While the Indian system works mainly on the system of theoretical learning, it takes a while for you to get acclimatized with the American way of practical learning. The understanding of basic concepts and principles is mainly taught to students during the classes; its application to reality is completely left up to the student to become proficient! This studying technique helps you to develop your independent thinking and teaches you to make practical decisions in life!”

Anaya had selected some interesting subjects like, Advanced Structural Analysis, Dynamic Analysis, Structural Health Monitoring, Transportation Engineering, Construction Management, Statistics, Geographic Information Systems (GIS), Urban Planning and Transportation and so on

All the professors who taught her during her coursework acted as her guide through the ISU ride! Anaya really made the most of her stay in Iowa. She didn't leave a single opportunity to acquire more and more knowledge and experience to groom her personality. She says, “I made it a point to get involved in associations and clubs at ISU to hone my inter and intra personal skills.”

She was the Vice President for the Indian Students' Association (ISA) – which represented the Indian

students on campus and organized various events to showcase Indian culture and festivities to all students at ISU.

She was also a member of the International Student Council (ISC) – an association which included students of different ethnicities to socialize and interact with each other.

Since dancing was her personal stress buster, she joined the Bollywood Dance Club (BDC) and actively participated in all the events on behalf of BDC and was elected as the Vice President for the Club as well.

The university, being a state one, the fees structure is quite reasonable. Multiple assistant and research scholarships are available on campus, to compensate.

Overall, she says, she enjoyed her entire experience at ISU. Because she finds, "Not only did it teach me to be a better professional with improved analytical thinking and technical expertise but also helped me to be an independent individual to lead my life responsibly. It also helped me realize to be extremely grateful to my parents, extended family and friends around me and to contribute to my country by applying my learnt skills to actual practice for the development of our country." good thoughts Anaya!



In all the foreign universities, the graduation ceremony is very special, for the students as well as their family members. Anaya was not an exception. She says, "The most precious moment of my entire Masters' program would have to be the graduation ceremony! My family had flown down to my University for the ceremony which was a surprise they had planned for me. It made my day even more special" So touching!

Anaya does not agree that an international graduate degree holds preference over a domestic graduate degree. She thinks, "A student's caliber should not be judged based on the ranking of his / her university but should rather be based on the student's merit irrespective of their University."

That is the reason she finds that obtaining jobs is not easier for students with international degrees. But yes, the quality of education matters and its application to real life is imbibed into the curriculum of students abroad giving them an upper edge when it comes to job applications.

Anaya had worked with an infrastructure consultancy firm as an intern to gain work experience during the summer break in USA. The internship was for a month, but it gave her an insight of her liking. And it was here, that she finalized her specialization which she planned to take up on a long run.

After her graduation Anaya decided to return. It's been almost 5 years since then, she is working in Mumbai.

When asked if she found it difficult to cope up with the changes in the University? She replied, "I did not find it very hard to adjust to the new environment at ISU."

Probably because ISU has a diversity of nationalities amongst students, and you are not the only one trying to settle down to your new home. People there are extra welcoming and helpful! Since the university is located in a student town, I had the benefit of affordable prices in and around Ames! But yes, I still went through the Dollar-to-Rupee conversion every time I went shopping for my groceries or errands!!” That’s interesting. We as travelers also do that every time, we go out shopping in a foreign land.

The most difficult part to cope was the American weather! Being from a humid place like Mumbai, she had never actually experienced snow and bitter winters. Like all firsts, her first snow experience was magical. And she slowly realized that sleet and snow winters are not really entirely fun. Eventually, she mastered the technique of not getting hurt on snowy streets. People always tend to hurt themselves while slipping on snow covered streets. Though she thinks, “it just was a completely different experience which I would have never encountered in Mumbai!”

Rules have to be followed, come what may. Same is Anaya’s experience. It is difficult for Indian students to cope up with the law, but they have to adjust. Better to remain alert and cautious at all times!

The work culture in US is very straight forward and simple. One works for 5 weekdays and enjoys weekends!

She has some nice memories of her short work life in the US. The festivities in USA start around October with Halloween, Thanksgiving followed by Christmas and New Years’ Eve. The work places host events like the best decorated workplace, spookiest workplace and so on! It is always fun to witness certain creative and unique ideas that

colleagues come up with during these competitions. Another memorable instance of Anaya. A friend had invited to her place during Thanksgiving. Anaya was really excited to celebrate the traditional Thanksgiving with friend’s entire family for the Thanksgiving feast which her mother had prepared! Right from the stuffed turkey to the pumpkin pie, it was indeed a delicious meal that she says she had ever eaten!

Anaya is a bright young engineer. She has carved her personality like a diamond, through different situations. I have known her for a long time as an undergraduate student. I distinctly remember her as a sweet girl with exceptionally long hair. A very bright student, I had written her letter of recommendation, too. When I met her after she returned, I noticed her hair was not that long. Earlier she was so fond of them. When enquired, she told me she had to cut them so as to be manageable while she was on her mission at Iowa!

All the best Anaya!

About the author –



Kirty Hemant Vadalkar, working with engineering students for a long time, helping them in their career planning and further studies. Certified STAADPro trainer , conducting training programs for past 25 years. Email - kirtyvadalkar@gmail.com

BOOK "BUILDING BRIDGES – SHAPING THE FUTURE"

by Er. Sachin Joshi

Bridges were in use for a long time. First documented bridge is the Ramsetu south of India connecting Sri Lanka. Bridges are equated to provide connectivity and bring prosperity.

Building Bridges is a storyline created out of proactive team work. Hon Minister Nitin Gadkariji provided the inspiration, Vaibhav conceptualized the storyline, my inputs was drafting the story and finally Amayllis did a fantastic job of creating this story book.

Building Bridges is a story not about bridge construction but a story of struggle and hard ship of the research team during their research period. It narrates the success which was achieved by synergy and cooperation between all stake holders.

Bridges undergo deterioration with aging and are known to collapse the world over. Countries have undertaken research to understand how Bridges deteriorate. This research was aimed at prevention of failure by predicting the imminent failure.

In India too, bridge collapse is well documented resulting in severing of connectivity and most often resulting in death of innocent users. Over 2000 bridge failure have been reported. Scores of people have died due to bridge collapse.

Damanganga bridge collapse which saw 26 young children lose their life ignites the urge to start the research. Commissioned after 13 years of research IBMS became the first system to be fully digitized and also the largest database of bridges owned by any single owner.

The storyline of Building Bridges is about what our beloved India can achieve with collaboration between right minded group of individuals, it is also about what our beloved India aspires, where there is still lot of work to do and it is in progress. We have a

long journey to travel. Our journey on this vision till date was possible due to supportive role from scores of Ministry officials. Synergy of passion between the political leadership and research team resulted in implementation of the same on National Highways in India. Savitri bridge collapse resulted in start of implementation.

Today, IBMS has data of over 172,000 structures. Data analysis helps in evaluating the status of all bridges. List of Bridges in urgent need of repair can be presented. Those with severe distress can be closed for traffic till they are repaired. This prevents loss of human lives.

Data availability also enables short listing bridges in need for testing to determine the requirements of repair.

Hon Minister Nitin Gadkariji has put forth his grand vision about a bridge management system that is fully digitized and integrates all innovative technologies from educational institutions in the sphere of Avionics, Robotics, Computer, Chemical engineering, Material science, and software guys who create the heart of the system to ensure human lives are saved by rendering all Bridges safe. Alacrity and speed in action is the key of this vision.

This grand vision is encapsulated in our Building Bridges in the last few pages wherein Vaibhav and I have tried our best to paint a perfect picture of what IBMS can evolve into a fully digitized System in the next 25 years from the day of conceptualization. Vision of Hon. Minister Nitin Gadkariji is the bench mark which can push the research in various institutions

.
If the above collaborative process between the educational institution, researchers, government is started and sustained; Hon Minister's dream vision is achievable under Atma Nirbhar Bharat program.

NEWS AND EVENTS DURING OCT TO DEC 2021

by Hemant Vadalkar

12 Nov 2021 : DFI India 2021 : “Conference on Deep Foundation Technologies for Infrastructure Development in India “ was held on virtual platform from 12 Nov 2021 to 20 Nov 2021. Various national and international experts participated in the conference. Wide range of topics were discussed during the conference. Major topics on which presentations were made are as follows –

- Earth Retention and Deep Excavation Support – Diaphragm wall, Shoring system, Secant pile wall
- Geotechnical Investigation, Testing, Instrumentation, Monitoring and Quality Management
- Ground Improvement Techniques
- Piling and Deep Foundation Techniques
- Research, Experimental and Numerical Methods in Deep Foundations and Deep Excavation Technologies
- Safe and Efficient Geo-Construction

Very interesting presentations on above mentioned topics by experts around the world and project case studies were presented. Conference was packed with huge technical information and project case studies and a lot more to learn from experts in the field. Conference was perfectly planned with precise time management and sharing of experience by experts in a concise form.

For more details visit <https://www.dfi-india.org>

Nov 2021 : Stalwarts in Structural Engineering Prof. Sundaram Ex. Head Structural Engineering Department, VJTI our respected teacher and Prof. V Ramakrishnan expert in fibre reinforced concrete South Dakota, United States (GEM 29 in our Journal July-Sept2021) are staying at Nana Nani homes at Coimbatore and enjoying each other’s company.



2 Dec 2021 : Unified DCPR for Maharashtra amended as per suggestions from ISSE and certificate format for Structural engineer has been rationalized . Congratulations to ISSE Pune team and ISSE committee members for their efforts and hard work for the fraternity. Details and certificate formats provided in the journal which is to be followed by all engineers.

4 Dec 2021 : Epicon friends of concrete arranged a webinar on “WEBINAR 126: Structural Assessment (Audit), Role of NDT & Case Studies” Mr. Jayant Kulkarni, Arvind Parulekar , Umesh Dhargalkar made presentations on the subject. It was attended by many civil engineers across India.

17 Dec 2021 : ISSE Palghar local centre was inaugurated at the function held at Vasai in the evening at Sunrise Banquet. ISSE President Shantilal Jain welcomed all the civil engineers present for the function. ISSE Hon. Secretary Hemant Vadalkar briefed about formation of ISSE and activities conducted by ISSE for many years and appealed all to become members to strengthen the organization. Er. Satish Dhupelia, Senior structural consultant having more than five decades of experience was the Chief guest for the function. Er.

Satish Dhupelia cherished old memories in the development of Mumbai and adjoining area over last fifty years. He narrated how ISSE was formed by Late Er. R L Nene in 1997 to help structural engineers. Er. Satish Dhupelia felicitated newly formed ISSE Palghar committee members. After the inaugural function, Geotechnical consultant Gaurav Parab talked on “Importance of geotechnical investigations for high rise buildings”. He described various geotechnical parameters and field tests to be conducted at site along with case studies. He also shared his experience on deep excavation for basements and shoring system and its stability during the construction. Membership certificates were presented to newly inducted members by the Chief Guest, Bimal Acharya and Rohit Pandya from Ultratech Cement along with their team arranged live demonstration of various building products like tile adhesive, waterproofing compounds, grouts and explained whole range of products. This was very well appreciated. Ultratech Cement supported the event which was conducted in physical form after the pandemic. The programme was attended by more than 100 engineers. Paresh Unnarkar along with his team and Raganath Satam worked hard to make the function successful.



26 Dec 2021 : Epicons Consultants Pvt LTD wins 'Industry Excellences Award' from 'Institution of Engineers (I)' on 26th December 2021. Award presented by Shri. Mahendranath Pandey – Hon. Minister- Heavy Industries under the category “Engineering Services and Consultancy”.
Congratulations Team Epicons !!!



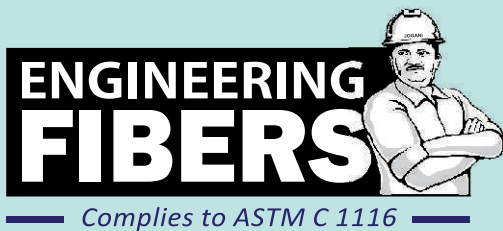
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