

R. Sundaram



Developing new ideas in the design of shell and spatial structures

The International Association for Shell and Spatial Structures (IASS), Madrid recently conferred the famous international Award "Eduardo Torroja Medal" on R. Sundaram, a practising Architect and Consulting Engineer from Bangalore, India. He received this honour at Seoul, South Korea "in recognition of his outstanding and distinguished contributions to design, construction, or research of shell and/or spatial structures" on May 24, 2012 during the IASS-APCS 2012 Symposium. On this occasion he delivered a keynote address on "From Antiquity to Modern Shell Roofs". Recently, the Prestressed and Precast Concrete Society, Singapore also conferred on him a "Life-Time Honorary Membership" of the Society.

Mr. Sundaram is the Chairman and Managing Director of Sundaram Architects Private Limited, Bangalore, India. Mr. Sundaram holds a B.E. degree from B.M.S. College of Engineering, Bangalore and Master's degree from the Massachusetts Institute of Technology, USA. He has been practising both as a consulting structural engineer and as an architect since 1963.

Mr. Sundaram's contributions include large concrete hypar shells, large span RCC and steel folded plate roofs, inverted umbrella, cylindrical shells, precast prestressed plates, segmental bridges etc. Many of his innovative works have earned him laurels and awards both national and international.

Mr. Sundaram says "Dr. Hansen, Prof. Holley, Dr. Biggs of Structures Department and Dr. Whitman of Soils Department at Massachusetts Institute of Technology, USA are the source of great inspiration for me. They are brilliant, always trying to open students' minds. They gave me the courage to explore new avenues in architectural and structural Engineering".

Mr. Sundaram has designed many outstanding structures in India and abroad, some of which are mentioned below.

The famous 5000 seating capacity "Kanteerava Indoor Stadium Complex" with a column free space of 90 m x 120 m is covered with an elliptical roof using the state of the art technology of precast concrete folded plates. This structure is one of its kind in the world. This unique structure of Indoor Stadium won the most prestigious international award ie., FIP (Federation Internationale de la Precontrainte) namely "Award for outstanding structures 1998".

Convention Centre namely the "International T.A. Pai Auditorium" at Mangalore, a unique structure which is in an octagonal shape and the roof is a hyperbolic paraboloid shell with a bottom diameter of 54 m and top 10 m. This is an RCC structure, the slab has a varying thickness from 75 mm x 120 mm with ribs in between. Similar is the roof for exhibition hall but with a bottom diameter of 44 m and top 10 m diameter and seating



Kanteerava Indoor Stadium, Bangalore

capacity 2000. Many visiting dignitaries have all praise for this unique structure. [Writing in the Visitors Book, there was a special mention by the Honourable Finance Minister Shri. P. Chidambaram, Govt. of India "This is a remarkable world class facility that will make learning an enriching and enjoyable experience" and the Honourable Leader of the Opposition, Parliament Shri. L.K. Advani "I do not think I have seen such a spacious auditorium elsewhere in the country. Hearty compliments to all those who have conceived and constructed this excellent Dr. Pai Convention Centre"].

The list of structures designed by Mr. Sundaram include: a large elevated viaduct / flyover (2.4 km km long) using precast multi-cell segmental construction with columns of 30 to 35 m c/c.; Food Court for ITC at Saharanpur which is a conoidal kind of shell structure; Food Court (shell structure) for MICO-BOSCH, Bangalore, which consists of a series of inverted umbrella concrete shells; A unique precast roofing system of concrete folded plates and prestressed 'Y'-Girder for production hangers for MICO-BOSCH and ITC including precast wall panels etc; A group of 21 concrete groined vaults, Bangalore City Corporation; A large industrial project for ITC near Delhi; Dental College and Hospital buildings for Annamalai University in Chidambaram; 'Guru Mandir' at Sringeri, is a subtle blend of traditional architecture with modern elements; An industrial building near Bangalore for M/s. Rittal India Pvt. Ltd.; Factory Complex for Karnataka Soaps & Detergents Ltd. Factory, Bangalore; The most aesthetically pleasing, functionally satisfying shell structure has been done for the Infosys Food Court in Bangalore, which is adjudged by the Indian Concrete Institute as the Most Outstanding Concrete Structure in Karnataka for the year 2001 etc.

Dr. B K Raghu Prasad, a student of Mr. Sundaram, says:

I was a student of Mr. R. Sundaram during my engineering course in BMS college of Engineering, Bangalore during 1966 and 67. Just then Mr. Sundaram had returned from the prestigious MIT, USA. He used to teach us only the electives viz.. Advanced Structural analysis and Design. (I think that the titles are right because I am not sure whether my memory serves me right). His class would be full because his manner of teaching was superb. He would make a very complicated subject like Advanced structural analysis simple. Infact I started loving the subject after listening to his lectures. He used to drive the concept and particularly the mechanics part of the subject very clearly. Later I worked in his office during 1973, designing a few shell structures. He has a flair for shell structures and one can say that they are his hobby. I have seen many structural engineers but I am yet to find one of the calibre of Mr. Sundaram. I should say that Mr. Sundaram deserves the Eduardo Torroja Medal given to him during the IASS symposium in Seoul, S. Korea. I am proud of my favourite teacher.

Dr. B.K. Raghu Prasad, Advisor, Indian Institute of Science (IISc) and former Professor, Department of Civil Engineering, IISc, Bangalore.

One of the Masters Students of Princeton University, USA is doing a thesis on the shell structures designed by Mr. Sundaram.

Mr. Sundaram is currently the President of Structural Engineers World Congress (SEWC) Inc. Worldwide, (2nd consecutive term), Head quarters in San Francisco USA (the first Indian to hold this position). He is also the President of Structural Engineers World Congress-India. He has been associated with various national and international professional bodies such as American Concrete Institute, USA, Indian Concrete Institute, Association of Consulting Civil Engineers-India, etc.

While continuing his work on structural design, he focusses on ideas that save energy and use more of solar energy. ■