

Department of Civil Engineering

A Panel Discussion on

Sustainable Civil Engineering Technologies for Smart Cities

on 08th August, 2018

Convener: **Dr. O. ESWARA REDDY**

Coordinator: **Dr. M. V. SUBBA REDDY**

The Department of Civil Engineering of Sree Vidyanikethan Engineering College organized a Panel Discussion on “**Sustainable Civil Engineering Technologies for Smart Cities**” from 11 a.m. to 1:30 p.m. on 08th August, 2018. The objective of the program was to bring together the experts, practicing engineers, officials from local bodies, students, researchers and academicians to discuss and debate on various theories, concepts and technologies required for sustainable smart cities.

The panelists were eminent personalities from the Industry, Academia, Public Administration and Professional Bodies like **Dr. N. V. Nayak**, Principal Advisor, Gammon Engineers & Contractors Pvt. Ltd., Mumbai; **Sri V. Vijay Rama Raju**, IAS, Commissioner, Municipal Corporation of Tirupati (MCT) & Vice Chairman, Tirupati Urban Development Authority (TUDA), Tirupati; **Sri C. Chandrasekhar Reddy**, Chief Engineer, Tirumala Tirupati Devasthanams (TTD), Tirupati; **Sri T. Venkatesh Babu**, Ex-President, Association of Planners and Engineers (TAPE), Tirupati. and **Dr. O. Eswara Reddy**, Professor and BOS Chairman, Department of Civil Engineering, Sree Vidyanikethan Engineering College, Tirupati who acted as a moderator in the panel discussion.

The Panel Discussion on “Sustainable Civil Engineering Technologies for Smart Cities” was inaugurated by lighting the lamp by the panelists and other dignitaries: Dr. N. V. Nayak, Sri. V. Vijay Rama Raju, IAS, Sri. C. Chandrasekhar Reddy, Sri T. Venkatesh Babu, Dr. O. Eswara Reddy, Prof. T. Gopala Rao, Special Officer, SVET, A. Rangampet and Dr. P.C. Krishnamachary, Principal, SVEC, A. Rangampet; Dr. M. V. Subba Reddy, Assistant Professor and Head, Dept. of Civil Engineering, SVEC.

Mrs. P. Naga Sowjanya, Assistant Professor, Department of Civil Engineering introduced the panelists to the audience by reading out their profiles.

Panel discussion was initiated by Dr. O. Eswara Reddy by introducing the topic and its relevance to the panel. Dr. Reddy emphasized that the city should not only be smart enough but also sustainable against vulnerable conditions. Each panelist gave his personal remarks on the topic for five minutes.

Remarks by Dr. N. V. Nayak

- Sustainable Concrete (Blended Cement Concrete) by using industrial waste such as Fly Ash and GGBS should be promoted to reduce carbon foot prints and to achieve economy.
- Awareness should be created among Civil Engineering Community and government bodies to use blended cement concrete.
- Smart cities should be planned considering Safety, Health and Education of the citizens.
- Inclusive growth should be the prime objective of smart city

Remarks by Sri V. Vijay Rama Raju, IAS

- Day to day problems faced by cities should be addressed first.
- Syllabi should incorporate local design requirements.
- Focus on home instead of house in a city planning to address livability of people and performance of buildings.
- Students should focus on knowledge, skills and attitude.
- Sustainable Civil Engineers should be produced along with sustainable materials.
- Students should work as interns in smart city program
- Students, faculty, practicing engineers and citizens should visit projects planned in Tirupati as a part of smart city program by MCT, Tirupati and TUDA, Tirupati.

Remarks by Sri C. Chandrasekhar Reddy

- Experience is knowledge. Hence, every civil engineer should acquire experience in civil engineering design and construction.
- Time bound projects need meticulous planning and design.
- Manage resources (material and manpower)
- Site characterization and adaptability of technology (Soil nailing, Retement etc.) should be given priority in rock slope stability issues in Tirumala Ghat Road.
- 3 D Drawings should be used for better understanding
- Skilled Manpower is scarce and needs development
- Practical difficulties in achieving quality and durability of Blended Concrete needs to be addressed
- Transparent workstations in offices should be promoted for better productivity
- Green design and construction should be promoted
- Transfer of knowledge from educational institutes to practicing engineers must be taken up on a regular basis.

Remarks by Sri T. Ventakesh Babu

- Urban Planning should consider the following:
 - Mixed user zones to reduce commuting time
 - No disturbance to natural resources
 - No Deforestation
 - Physical infrastructure with a vision for 50 years
- Public private partnership model of development should be employed in Policy and Governance
- Awareness on smart cities should be created among citizens
- Community infrastructure should be a priority
- Better industry–institution interaction should be explored in practicing Civil Engineering
- Civil Engineering education should be taught in similar lines of medicine
- Programs on 'Para Civil Engineering' should be designed and taught.
- Iconic buildings should be part of smart city program

After personal remarks by each panelist, the panel focused the discussion on certain key sustainable civil engineering practices such as structural health monitoring, urban storm water management, rainwater harvesting, underground utility tunnel, seismic microzonation and natural disaster mitigation and management. The highlights of the discussion are mentioned hereunder.

Structural Health Monitoring

- Defects in materials is a major problem in civil engineering construction and proper evaluation techniques need to be adopted
- Difficulties arise in adopting new technologies so training programs on these technologies should be organized
- RR Masonry below plinth beam should be used
- Maintenance of buildings is a challenge and needs focus
- Beam - column junction cracks are general and hence proper detailing of reinforcement is to be done.
- Roof leakages (Roof and Expansion Joints) are generally seen in buildings which need attention
- NDT testing can be used in evaluating old buildings
- Quality of workmanship needs improvement
- Supervision at every stage of construction is needed
- Building facilities should be provided considering future requirements
- Code of practice should be followed in all stages of construction
- Ductility should be given high priority in designing the buildings for safe dissipation of unexpected loading

Storm water Management

- Small reservoirs should be planned and constructed
- Rejuvenation of tanks must be given high priority
- Porous pavements can be adopted for better rainwater percolation
- Underground reservoirs can be planned
- Wind velocities should be considered in the design of tall structures
- Proper storm water drainage system should be designed and implemented based on the topographical features of the city and its outskirts.

Underground Utility Tunnel

- It is essential to have Underground Utility Tunnel, a passage built underground to carry utility lines such as electricity, steam, water supply pipes, and sewer pipes; and communications utilities like fiber optics, cable television, and telephone cables.

Seismic Microzonation

- Seismic microzonation, the process of subdividing a potential seismic or earthquake prone area into zones with respect to some geotechnical, geological and geophysical characteristics of the sites such as ground shaking, liquefaction susceptibility, landslide and rock fall hazard, earthquake-related flooding, so that seismic hazards at different locations within the area can correctly be identified. Microzonation provides the basis for site-specific risk analysis, which can assist in the mitigation of earthquake damage. Hence, Microzonation Maps should be developed for smart cities.

Natural Disasters Mitigation and Management

- Natural disasters cannot be avoided. Majority of them can be forecasted and minority of them cannot be forecasted. But the damage due to natural disasters can be mitigated with better disaster preparedness. Hence, disaster mitigation and management strategies for a smart city should be well planned.

A total of 430 students and 26 members of faculty from host institution and Practicing Civil Engineers from Tirupati participated in the event. Dr. O. Eswara Reddy was the convener, Dr. M. V. Subba Reddy was the coordinator, and other members of faculty (Civil Engineering Department) were the organizers of this program.

On the whole, the Panel Discussion was successful. All the panelists and participants opined that the outcome of the panel discussion was fruitful and helpful for planning and implementing sustainable smart cities. The purpose of the event is fulfilled and all the delegates and participants were benefitted.

Panel members visited all the infrastructural facilities of the institute such as Central Library and Dasari Auditorium and appreciated the efforts of management, faculty and staff.



Dr. M. Mohan Babu, Chairman, SVET interacting with the Panelists



Lighting the Lamp by Panelists



Lighting the Lamp by Prof. T. Gopala Rao, Special Officer, SVET, A. Rangampet.



Dr. O. Eswara Reddy Introducing the Topic of Panel Discussion



*Dr. N. V. Nayak, Principal Advisor, Gammon Engineers & Contractors Pvt. Ltd., Mumbai, India
Participating in the Panel Discussion*



*Sri V. Vijay Rama Raju, IAS, Commissioner, Municipal Corporation of Tirupati & Vice Chairman,
TUDA, Tirupati Participating in the Panel Discussion*



Sri C. Chandrasekhar Reddy, Chief Engineer, TTD, Tirupati Participating in the Panel Discussion



Sri T. Venkatesh Babu, Ex-President, The Association of Planners and Engineers (TAPE), Tirupati Participating in the Panel Discussion



Dr. O. Eswara Reddy, Professor and BOS Chairman, Department of Civil Engineering, SVEC, Summarizing the Panel Discussion



Students Listening to the Panelists



Students Listening to the Panelists



Felicitation to Dr. N. V. Nayak, Principal Advisor, Gammon Engineers & Contractors Pvt. Ltd., Mumbai, India.



Felicitation to the Sri C. Chandrasekhar Reddy, Chief Engineer, TTD, Tirupati.



Felicitation to Sri T. Venkatesh Babu, Ex-President, The Association of Planners and Engineers (TAPE), Tirupati.



Group Photograph at the End of Panel Discussion



Panelists Visiting the Central Library of SVEC