PREFACE ICSSS 2019

Proceedings of

International Conference on

SUSTAINABLE SYSTEMS AND STRUCTURES

15-16, November 2019

(Sponsored by AICTE, New Delhi)

INTRODUCTION

It gives me immense pleasure in writing the preface for the proceedings of The International Conference on Sustainable Systems and Structures (ICSSS’19) that was organised during November 15-16, 2019 by the Department of Civil Engineering, MVGR College of Engineering (Autonomous), Vizianagaram, 535005, Andhra Pradesh, INDIA. A proposal for GOC (Grant for Organising Conference) was submitted by myself Dr P Markandeya Raju, Professor, Department of Civil Engineering, MVGR in 2017. A matching grant of Rs. 5 Lakhs was sanctioned by AICTE, New Delhi (F. No. 67-20/RIFD/GOC/Policy-1/2017 dated 28-02-2019). The Conference was scheduled to be held in person and organised during November 15th - 16th 2019. The program included Five keynote lectures given by experts in various fields and 37 oral presentations given by renowned Professors, practising engineers and research scholars working in various areas of Sustainable Civil Engineering. All the five invited speakers delivered keynote lectures on topics of their expertise related to recent trends in sustainable Civil Engineering followed by brief interaction. Four technical sessions were organised during which authors made oral presentations followed by question and answer. One best paper was chosen from among the papers presented on each day based on the novelty, presentation and response to questions and the Best paper award were presented. The conference was held in the A/C Auditorium of MVGR. This preface presents an overview of this conference, details of Organising committee members, themes and sub-themes of the conference, review process adopted and schedule of the conference including the details of keynote lectures. An Annexure with details of the Management, College and the Department has been included at the end followed by Photo gallery of the conference.

ABOUT THE CONFERENCE

Civil Engineers are expected to develop safe, economical, serviceable, durable infrastructure and systems based on their knowledge and expertise. A lot of hard-earned tax payer’s money is being invested by the government on sustainable structures and systems of public interest. Although the contractors and engineers ensure economy with quality and necessary specifications during construction, many hidden factors that affect the long-term performance and sustainability of structures. If the infrastructure has poor long-term performance, it will need frequent repairs and hence investment. The problem is more pertinent with structures in all the cities of India located in Coastal areas as they are exposed to the marine environment. Although many technologies and methods are available to ensure the durability of concrete structures, addressing this problem is twofold. Firstly, the engineers and contractors should be made aware of various methods of ensuring the durability and sustainability of proposed constructions. The other important point to be addressed is to identify and adopt suitable rehabilitation techniques to old constructions with durability related problems. Hence, Sustainability is the key component of future technology, innovations and development. Sustainable solutions for engineering and societal problems are the need of the hour as the resources available in the country are limited and the demand is rising. As Civil Engineers are expected to play a major role in developing the infrastructure of the country, they must look for sustainable solutions in the future. The conference (ICSSS’19) addresses the sustainable systems, solutions and their applications in the fields of Structural Engineering, Geotechnical engineering, Transportation engineering and Water resources engineering. It brings the young budding civil engineers, industry and the academic experts on one platform. The objective of the conference is to develop sustainable solutions for Civil
Engineering problems and initiate linkages for strengthening research, awareness and experience to Civil engineers.

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CONFERENCE THEMES AND SUB-THEMES

STRUCTURAL ENGINEERING: • Design of Structures and Buildings for Sustainability • Characterization, Durability and Modelling behaviour of novel materials • Design of Energy Efficient Building • Sustainable use of construction materials • Recent Advances in sustainable construction practice • Repair, rehabilitation and retrofitting of structures using modern techniques and novel materials • Challenges in numerical modelling and design of structures • Service life assessment and Life cycle cost and durability of structures • Evaluation of in-situ properties of concrete structures • Non-destructive testing methods and its applications • Regulatory Framework and Government Initiatives for sustainable construction • Preservation of cultural heritage etc

SUSTAINABLE WATER RESOURCES SYSTEMS PLANNING & MANAGEMENT: • Integrated water resources management • Sustainable wastewater treatment methods • Sustainable groundwater development and management • Sustainable GIS applications for water resources management • Impact of climate change on water resources • sustainable solutions for food security

GEOTECHNICAL AND TRANSPORTATION ENGINEERING: • Handling of problematic soil • Sustainable materials and methods for soil stabilization • Transportation infrastructure and mobility • Sustainable Geo-environmental solutions using GIS • Usage of sustainable materials and systems for landfill and stabilization • Sustainable Urban transport solutions

REVIEW PROCESS
Over 100 papers were received by the organisers. The papers were received by mail (aicteicssss19@gmail.com), through post/courier and in person. 65 papers were accepted for presentation after review by experts. The review process adopted was as follows,

Step 1: The paper received was checked by Turnitin software for Similarity index. Papers with a similarity index less than 30% were sent for review.
Step 2: The review was conducted in two stages. The preliminary review was done by Dr P Markandeya Raju, The Chair of ICSSS’19. The papers were shortlisted based on relevance to the theme of the conference, the novelty of the work and presentation of content (quality of language, grammar, following formatting guidelines etc.).
Step 3: The shortlisted papers were sent for review (in blind - without details of authors) to one external reviewer depending on their expertise. The papers of authors who responded satisfactorily to the reviewer’s comments were accepted for presentation.

The following reviewers have reviewed the papers.
1. Dr Bibhuti Bhusan Das, Associate Professor of Civil Engineering, NIT Surathkal, INDIA. Theme: Sustainable Construction Materials, Structural Engineering
2. Dr Partheepan Ganesan, Associate Professor, MVGR College of Engineering (Autonomous) Vizianagaram, INDIA Theme: Sustainable Infrastructure Development, Structural Engineering
3. Dr S. Chandramouli, Professor, MVGR College of Engg. (Autonomous) Vizianagaram, INDIA Themes: Water Resource Management, Environmental Sustainability, Reliability and Optimization.
4. Dr K. Rajeswara Rao, Professor, MVGR College of Engg. (Autonomous) Vizianagaram, INDIA Themes: Sustainable Materials for Soil Stabilization, Geotechnical Engineering
5. Dr SSSV Gopala Raju, Professor and Director, IIT Nuzivid, INDIA Themes: Durability of Concrete, Transportation Engineering and Highway Materials

In this context, it is appropriate to express my special gratitude to the reviewers for spending their valuable time despite their busy schedule for thoroughly reviewing the papers and for giving suitable comments that helped a lot in improving the quality of the papers selected for presentation at the conference and publication in the proceedings. Among the 65 papers presented in the conference, based on comments given by Chair and Co-chair of each session, some papers of high quality were shortlisted for publication in IOP Conference Proceedings: Materials Science and Engineering. The authors of these papers were allowed to write extended versions of these papers by improving the content reducing the similarity index (if possible) to less than 20%. Total 37 papers were submitted for inclusion in IOP Conference Proceedings: Materials Science and Engineering which included some invited papers from researchers on the theme of the conference received after the conduct of the conference. IOP Publishers accepted 35 papers for publication as a special issue in IOP Conference Series: Materials Science and Engineering, Volume 1025 with Dr. P Markandeya Raju as a Guest Editor. It is to be noted that this is a Scopus indexed journal and these papers were included in the proceedings after a thorough peer – review.

PROGRAM SCHEDULE

Over 100 delegates registered for the conference. Five keynote speakers delivered expert lectures and the accepted papers were presented in four technical sessions. The detailed program schedule was as follows.

About 56 papers were selected for presentation at the conference.

| Time | Program Schedule |
|------|------------------|
| **Day 01 – 15th November 2019** |
| **8.45 AM – 9.25 AM Registration** |
| 9.25 AM – 10.15 AM | Inaugural function |
| Chief Guest: Sri A Saibaba, Chief Engineer –Indian Railways |
| Guest of Honour: Dr KVL Raju, Correspondent MANSAS & Principal, MVGR |
| 10.15 AM – 11.15 AM | Keynote Lecture on “Role of Civil Engineers in Developing Sustainable Infrastructure” by Sri. A. Saibaba, Chief Engineer-Indian Railways |
| **11.15 AM – 11.30 AM High Tea** |
| 11.30 AM – 12.30 AM | Keynote Lecture on “Precast system – Materials and Construction” by Dr G. Appa Rao, Professor of Civil Engineering IIT Madras. |
| **12.30 AM – 1.30 PM Technical Session-1** |
| 01.30 PM – 02.00 PM Lunch Break |
| 02.00 PM – | Keynote Lecture on “Developments in Road Infrastructure and Engineering” |
03.00 PM – 04.00 PM Technical Session-2

Day 02 – 16th November 2019

09.30 AM – 10.30 AM
Keynote Lecture on “Polavaram Project and Its impact on Socio-Economics Conditions” by Sri. N. Jagan Mohan Rao, Chief Engineer (Retired), North Coastal

10.30 AM – 10.45 AM Tea break

10.45 AM – 12.30 PM Technical Session-3

12.30 PM-01.30 PM
Keynote Lectures 1. Analytical and numerical methods for vibration control in Impact forging hammer system and surroundings. 2. Design and Distribution of Friction Dampers for Optimum Seismic Performance Enhancement of 20-Storey benchmark Steel Moment resisting frame. by Dr K. Rama Raju, Chief Scientist, Head-Vibration control group, CSIR-SERC, Chennai.

01.30 PM – 02.00 PM Lunch

02.00 PM – 03.30 PM Technical Session-4

03.30 PM-04.00 PM Valedictory

The conference was sponsored by AICTE, New Delhi with a matching grant of 5 Lakhs sanctioned to Dr P Markandeya Raju, Professor and Head, Department of Civil Engineering, MVGR. I take this opportunity to sincerely thank AICTE for the grant. I express my sincere thanks to all the Organising committee members, Reviewers, participants, press and media for their support in successfully conducting this conference. Special thanks to publishers of IOP Conference Series: Materials Science and Engineering for accepting to publish the extended volume of selected papers submitted to ICSSS’19. I thank the almighty for letting me see this day.

ANNEXURE

ABOUT THE MANAGEMENT (MANSAS)
https://www.mvgrce.com/sites/default/files/2020-03/AboutMANSASTrust1.pdf

ABOUT THE COLLEGE (MVGRCE)
https://www.mvgrce.com/

ABOUT THE DEPARTMENT
https://www.mvgrce.com/department-civil-engineering

ABOUT THE CONFERENCE
https://sites.google.com/view/icsss-mvgr/home

Prof. Dr. P Markandeya Raju
Chair, ICSSS’19; Editor, Proceedings of ICSSS’19

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PHOTO GALLERY

International Conference on
SUSTAINABLE SYSTEMS AND STRUCTURES
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(AICTE Sponsored)

Organized by
DEPARTMENT OF CIVIL ENGINEERING
Accredited by NBA (Tier-I) of AICTE
MVGR COLLEGE OF ENGINEERING (A)
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Venue: Central Library Auditorium

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Listed U/S 2 (F) & 12 (B) of the UGC Act 1956,
Keynote speakers Day 1

Sri. Ankala Saibaba, Chief Engineer Indian Railways

Dr G Appa Rao. Professor IIT Madras
Dr Amarnath Reddy, Associate Professor IIT Kgp.

Some participants on Day 1 presenting their papers
Some of the participants on Day 1 receiving participation certificates
Other participants Day 1
Keynote speakers Day 2

Dr. K Rama Raju, Chief Scientist SERC Chennai

Sri. N Jagan Mohan Rao Chief Engineer (Retired), North Coastal Andhra Pradesh
Some participants on Day 2 presenting their papers

Some of the participants on Day 2 receiving participation certificates
PRESS COVERAGE

MVGR hosts seminar on Sustainable Systems

Vizianagaram: A two-day international conference on ‘Sustainable Systems and Structures’ was held at Department of Civil Engineering, MVGR College of Engineering (A). Indian Railways Chief Engineer A. Saibaba briefed the importance of these kind of conferences on sustainability and said the young students would be benefitted with this kind of meets as they transform knowledge into ideas. Principal Dr KVL Raju said that civil engineers would play a key role in development of sustainable systems as per the changing environmental requirements as per the changing environmental requirements. Civil engineering HoD Dr P Markandeyya Raju said the sustainability concept will address three ways namely, reuse of construction materials, minimum energy requirement for producing construction materials and 3. Increase the maximum life of structures. Dean Civil & Infrastructures Dr. K. Rajeswara Rao also shared the dias. Faculty members and students of department and over 50 participants from various colleges participated in the conference. About 100 research papers were submitted in the conference. Dr G Appa Rao, IIT Madras, Dr M. Acharnath Reddy, IIT Kharagpur, N. Jagan Mohan Rao, Chief Engineer, APWRD and K. Rama Raju, Chief Scientist, CSR-SERC were also invited to deliver lectures on this two-day conference.

Markandeyya Raju told that the sustainability concept is the need of an hour especially in civil engineering aspect and can address in 3 ways namely, 1. Reuse of construction materials, 2. Minimum energy requirement for producing construction materials and 3. Increase the maximum life of structures. Dean Civil & Infrastructures, Dr. K. Rajeswara Rao also shared the dias. Dr. G Appa Rao, IIT Madras, Dr. M Acharnath Reddy, IIT Kharagpur, N. Jagan Mohan Rao, Chief Engineer, APWRD and K. Rama Raju, Chief Scientist, CSR-SERC were also invited to deliver lectures on this two-day conference.

All faculty members and students of the department, nearly 50 participants from various colleges all over India participated the conference. About 100 research papers were submitted for the conference.