News Letter - 18

July to December 2018

Civil Quest

Department of Civil Engineering

SR Engineering College

Ananthasagar (V), Hasanparthy (M), Warangal 506371

Vision

To be a leader in developing competent Civil Engineers.

Mission

- Build Civil Engineering knowledge in students by implementing novel educational strategies
- Develop effective instructional infrastructural resources.
- Promote interdisciplinary learning
- Contribute to the growth of Civil Engineering through community service, consultancy and research

Program Educational Objectives (PEO's)

PEOs (Program Educational Objectives) relate to the career and professional accomplishments of students after they graduate from the program. The Civil Engineering graduates from S R Engineering College, Warangal are expected to

- **Build knowledge and skill** set required for solving Civil Engineering problems
- **Create innovative technical ventures** in Civil Engineering.
- **Promote Research and consultancy activities** to solve Real world Civil Engineering problems.

Program Outcomes (PO's)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO's)

- Apply knowledge of mathematics, science and engineering to analyze, design and execute the Civil Engineering structures for the betterment of the society and the nation.
- Acquire the knowledge about various techniques, skills and modern Engineering tools required for the construction of Civil Engineering structures.

Publications

1. Karthik, S., Rao, P. R. M., Awoyera, P. O., Gobinath, R., & Karri, R. R. (2018). Alkalinity and strength properties of concrete containing macro silica and ground granulated blast furnace slag, *7th Brunei International Conference on Engineering and Technology 2018 (BICET 2018)*, 1-4, doi: 10.1049/cp.2018.1603.

2. Murthi, P., Awoyera, P., Selvaraj, P., Dharsana, D., & Gobinath, R. (2018). Using silica mineral waste as aggregate in a green high strength concrete: workability, strength, failure mode, and morphology assessment. Australian Journal of Civil Engineering, 16(2), 122-128. doi: 10.1080/14488353.2018.1472539.

3. Selvaraj, K. P., Murthi, P., Gobinath, R., & Awoyera, P. O. (2018). Eco-friendly high strength concrete production using silica mineral waste as fine aggregate–an ecological approach. Ecol Environ Conserv, 24, 909-915. ISSN: 0971765X

4. Poongodi, K., Murthi, P., Shivaraj, M., Beerala, A. K., Gaikadi, S., Srinivas, A., & Gobinath, R. (2018, December). ANN based prediction of Bond and Impact Strength of Light Weight Self Consolidating Concrete with coconut shell. In 2018 International Conference on Intelligent Computing and Communication for Smart World (I2C2SW) (pp. 364-370). IEEE.

5. Reddy, S. P. S. S., Kasaiah, P., Gopikrishna, M., & Baba, S. K. V. (2018). Load studies on Granular Pile with and without Geogrid encasement in non-swelling Clay beds. International Journal of Civil Engineering & Technology (IJCIET)-Scopus Indexed, 9(7), 766-773.

6. Tipraj, E., Prasanna, N., Prabhanjan, A. S., & Krishna, M. G. (2018). Experimental study on strength of concrete by partial replacement of cement by nano silica and fly ash. Int. J. Civ. Eng. Technol., 9, 1763-1771.

Using silica mineral waste as aggregate in a green high strength concrete: workability, strength, failure mode, and morphology assessment

Abstract: Environmental degradation is a major challenge in the developing countries, which are caused due to unmanaged solid waste, or improper disposal. This study investigates the effect of using silica mineral waste (eco sand) as aggregate in a green high strength concrete, in which properties such as workability, strength, failure mode, and morphology were determined. There was low slump and compacting factor in all the concrete mixtures, however, strength properties were improved with the incorporation of eco sand as a replacement of conventional fine aggregate. Higher strength properties were achieved in the eco sand concrete than the reference mixtures, which occurred at an optimum eco sand content of 25%. The morphology and failure mode of the eco sand concrete showed that there was a significant compactness and constituents parking in the matrix.

Keywords: *Ecosand, Higher strength concrete, Aggregate, Morphology, Hydration*

Citation: Murthi P., et al 2018, Australian Journal of Civil Engineers, doi:10.1080/14488353.2018.1472539

Study Analysis on the High-Level Viaduct Over Bondivagu Drain

Abstract: A viaduct is a structure used to hold obstacles such as water, road, valley. It also provides the way for these obstacles. Assorted designs of proposals serve various purposes and can be applied for different situations. Depending up on the usage of bridge its function will be varied and the factors that comes into action are nature, location of the proposal, materials used for its framework also amount that is authorized to construction. In this paper we are presenting the study analysis on the high-level viaduct over Bondivagu drain. Construction of high-level viaduct over Bondivagu drain. As it approaches way of Hanamkonda to Warangal. The distance from Hanamkonda to Warangal is 4km approximately and this drain Bondivagu is located in a span of 2.5km from Hanamkonda and 1.5km from Warangal. Through this bridge the bypass road of Hanamkonda to Khammam passes..

Keywords: *Bridge, Construction, Foundation, Slab, Structure, Soil, Piers*

Citation: Haripriya S., et al 2018, International Journal of Engineering &Technology, doi:10.14419/ijet.v7i3.3.14469

ANN based prediction of Bond and Impact Strength of Light Weight Self Consolidating Concrete with coconut shell

Abstract: In this experimental investigation, lightweight self-consolidating concrete (LWSCC) was developed with coconut shell as coarse aggregate. The effect of coconut shell aggregate (CSA) on bond strength and impact strength of Rice Husk Ash (RHA) based binary blended and RHA + Silica fume (SF) based ternary blended Self consolidating concrete (SCC) were determined. The bond strength was determined through pull-out test and the impact strength was calculated using falling weight test. The concrete mix was developed with the total powder content of 450 kg/m 3 . The coarse aggregate content was replaced by CSA in the gradation of 0%, 25%, 50%, 75% and 100% in the designated SCC. The investigation revealed that the bond and impact strength of CSA based LWSCC were comparable to current code practice and other lightweight concretes. The experimental data obtained was used to develop an ANN model for predicting the strength characteristics of fresh or hardened concrete. The high regression values obtained during training the neural network models reveals high accuracy and were predicting the strength characteristics very similar to the experimental results.

Keywords: *Concrete, Aggregates, Artificial neural networks, Resistance, Civil engineering, Training, Bars*

Citation: Poongodi K., et al 2018, International Conference on Intelligent Computing and Communication for Smart World, doi: 10.1109/I2C2SW45816.2018.8997421

Alkalinity and strength properties of concrete containing macro silica and ground granulated blast furnace slag

Abstract: As the industrial by-products are continually increasing, and no strategic waste management scheme is put in place in developing communities, an effective solution is being sort through the use of industrial rejects in concrete production. This study evaluates the alkalinity and strength properties of concrete containing macro silica and ground granulated blast furnace slag (GGBS). Varying proportions of GGBS and macro silica were used as partial replacement of Ordinary Portland Cement (OPC) and river sand in concrete respectively, while other materials including granite and water content were kept constant. It was observed that the alkalinity of concrete is not affected by the modification of materials in the concrete as performed in this study. Higher 28 days strength properties, comparable to the reference concrete, was achieved when 10% macro silica and 50% GGBS were used as partial replacement of sand and OPC respectively.

Keywords: *Concrete corrosion, Strength properties, XRD, Macro silica, Water absorption*

Citation: Karthik., et al 2018, 7th Brunei International Conference on Engineering and Technology, doi:10.1049/cp.2018.1603

Departmental & Student Activities

1. A One Day Seminar On “Water Treatment Options For Geogenic Contaminants”, 20th December 2018, Organized by Department of Civil Engineering, SREC, Warangal.

2. Koduri, S., Theegala, S., Presented Paper at “International Conference of Computing for Problem Solving (SocProS 2018)”, between 17 to 19 December 2018, Organized by Vellore Institute of Technology.

3. Kadem Lingaswamy, participated at “Nationwide IESA MAKEATHON”, between 11 to 13 November 2018 Organsied by SRiX, SERC Warangal

4. Vikram, M., Sumeedha, K. T., Kanavena, R., Manasa, B., Participated at Two Day Young Researchers Symposium for Geotechnical Engineers, between 1 and 2 October 2018, Organised by Dept of Civil Engineering National Institute of Technology, Warangal.

5. Celebration of Telangana Engineers Day, on 15th September 2018, Organised by Department of Civil Engineering, SREC, Warangal

6. Lingasawamy, K., Jayanth, P., Viharika, S., participated at “11th National Level Technical Student' Symposium (SHRESTAH'18)”, on 15th September 2018, Organized by Balaji Institute of Technology & Science, Laknepally, Warangal. ***“Achieved First Place in Technical Quiz”***

7. Two Days IUCEE-SCALE Regional Workshop on “21st Century Grand Challenges”, 30th August 2018 – 1st September 2018, Organised by SREC, Warangal

8. One-Day Training program on “Nuanaces of Scientific Paper Writing”,15th August 2018 Organized by Department of Civil Engineering, SREC, Warangal

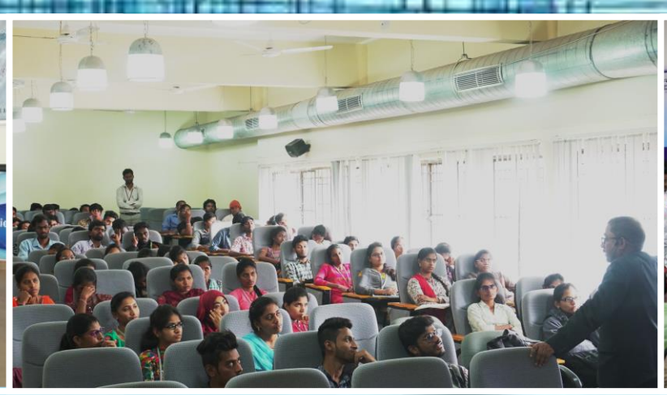
9. Guest Lecture on “Remote Sensing and GIS”,14th August 2018 Organized by Department of Civil Engineering, SREC

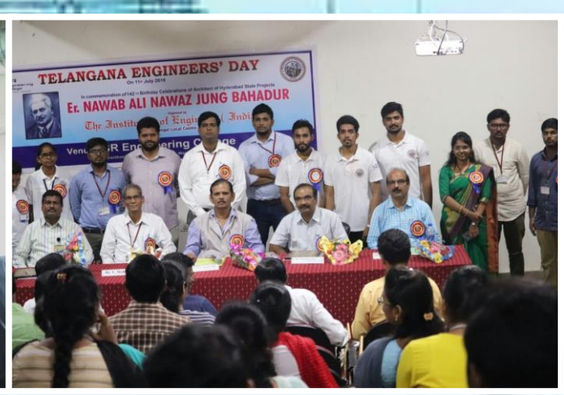
10. Two Day workshop on “Rate Analysis of Building Works”, between10th and 11th August 2018 Organized by Department of Civil Engineering, SREC, Warangal

11. Yashwanth, S K., Ravali, K., Sai Priya, P., Participated at “International Conference on Sustainable Construction Materials and Recent Innovations in Civil Engineering”, between 19th and 20th July 2018, Organized by Dept of Civil Engineering, Vaagdevi College of Engineering, Warangal.

12. Three Day Training Program on "Analysis and Design of Building“, 30th June 2018 to 2nd July 2018, Organized by Department of Civil Engineering, SREC, Warangal.

Inter Departmental Sports Competitions Phase-I, between 9th July 2018 to 31st July 2018, Students from Civil Engineering outperformed and were declared winners in Volleyball, Carrom (Singles and Doubles), Throwball, Table Tennis (Doubles), Kabaddi and runners in Table Tennis (Doubles and Singles), Basketball.





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IS 1893 (Part 1) : 2016

Indian Standard

CRITERIA FOR EARTHQUAKE RESISTANT DESIGN OF STRUCTURES

PART 1 GENERAL PROVISIONS AND BUILDINGS

(Sixth Revision)

1 SCOPE

1.1 This standard (Part 1) primarily deals with earthquake hazard assessment for earthquake-resistant design of (1) buildings, (2) liquid retaining structures, (3) bridges, (4) embankments and retaining walls, (5) industrial and stack-like structures, and (6) concrete, masonry and earth dams. Also, this standard (Part 1) deals with earthquake-resistant design of buildings; earthquake-resistant design of the other structures is dealt with in Parts 2 to 5.

1.2 All structures, like parking structures, security cabins and ancillary structures need to be designed for appropriate earthquake effects as per this standard.

1.3 Temporary elements, such as scaffolding and temporary excavations, need to be designed as per this standard.

1.4 This standard does not deal with construction features relating to earthquake-resistant buildings and other structures. For guidance on earthquake-resistant construction of buildings, reference may be made to the latest revisions of the following Indian Standards: IS 4326, IS 13827, IS 13828, IS 13920, IS 13935 and IS 15988.

1.5 The provisions of this standard are applicable even to critical and special structures, like nuclear power plants, petroleum refinery plants and large dams. For such structures, additional requirements may be imposed based on special studies, such as site-specific [illegible] such cases, the earthquake efforts specified by this standard shall be taken as at least the minimum.

IS No.	*Title*
800 : 2007	Code of practice for general construction in steel (*second revision*)
875	Code of practice for design loads (other than earthquake) for buildings and structures:
(Part 1 : 1987)	Dead loads — Unit weights of building material and stored materials (*second revision*)
(Part 2 : 1987)	Imposed loads (*second revision*)
(Part 3 : 2015)	Wind loads (*third revision)*
(Part 4 : 1987)	Snow loads (*second revision)*
(Part 5 : 1987)	Special loads and load combinations (*second revision*)
1343 : 2012	Code of practice for prestressed concrete (*second revision*)
1498 : 1970	Classification and identification of soils for general engineering purposes (*first revision*)
1888 : 1982	Method of load test on soils (*second revision*)
1893	Criteria for earthquake resistant design of structures:
(Part 2) : 2014	Liquid retaining tanks
(Part 3) : 2014	Bridges and retaining walls
(Part 4) : 2015	Industrial structures including stack-like structures (*first revision*)
1905 : 1987	Code of practice for structural use of unreinforced masonry (*third revision*)
2131 : 1981	Method of standard penetration test for soils (*first revision*)
2809 : 1972	Glossary of terms and symbols relating to soil engineering (*first revision*)

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