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July to December 2019

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. Arun Kumar, B., Sangeetha, G., Srinivas, A., Awoyera, P. O., Gobinath, R., & Venkata Ramana, V. (19). Models for predictions of mechanical properties of low-density self-compacting concrete prepared from mineral admixtures and pumice stone. In Soft computing for problem solving (pp. 677-690). Springer, Singapore
2. Poongodi, K., Murthi, P., Awoyera, P. O., & Gobinath, R. (2019, October). Effect of mineral admixtures on early age properties of high performance concrete. In IOP Conference Series: Materials Science and Engineering (Vol. 561, No. 1, p. 012067). IOP Publishing.
3. Murthi, P., Poongodi, K., Awoyera, P. O., Gobinath, R., & Saravanan, R. (2019). Enhancing the strength properties of high-performance concrete using ternary blended cement: OPC, nano-silica, bagasse ash. Silicon, 12(8), 1949-1956.
4. Sangeetha, G., Srinivas, A., Siva Krishna, A., Gobinath, R., & Awoyera, P. O. (2020). Optimization of drilling rig hydraulics in drilling operations using soft computing techniques. In Soft Computing for Problem Solving (pp. 849-862). Springer, Singapore.
5. Guruprasad, M., Priyanka, A., Prabhanan, N., & Swamy, G. (2019). Behaviour of Slurry Infiltrated Hybrid Fiber reinforced Concrete Subjected to Acidic Attack. International Journal of Recent Technology and Engineering, 4, 6598-6602.
6. Tipraj, B., Prasad, M. G., Prasanna, E. L., Priyanka, A., & Hugar, P. (2019). Strength characteristics of concrete with partial replacement of cement by fly ash and activated fly ash. International Journal of Recent Technology and Engineering, 34, 1-7.
7. Poongodi, K., Murthi, P., Gobinath, R., Srinivas, A., & Sangeetha, G. (2019). Mechanical properties of pavement quality concrete using recycled aggregate. Int J Innov Technol Explor Eng, 9, 33-38.
8. Prasanna, E. L., Tipraj, B., Haripriya, S., Khan, M., & Gobinath, R. (2019). Mechanical properties of fly ash based concrete aided with recycled aggregates and manufactured sand. Int. J. Recent Technol. Eng., 8, 9848-51.
9. Sivakrishna, A., Awoyera, P. O., Oshin, S., Suji, D., & Gobinath, R. (2019). Fabrication of precast concrete slab panels incorporating foundry sand and blast furnace slag as a potential wall insulator. J. Eng. Sci. Technol., 14(4), 2386-2398.
10. Khan, I., Challa, B., Varma, S. H., & Sayyed, M. A. A. (2019). Sorptivity and durability assessment of dolomite impregnated ternary concrete. Int J Recent Technol Eng, 8, 5676-5681.
11. Poongodi, K., Murthi, P., Awoyera, P. O., & Gobinath, R. (2019, October). Effect of mineral admixtures on early age properties of high performance concrete. In IOP Conference Series: Materials Science and Engineering (Vol. 561, No. 1, p. 012067). IOP Publishing.
12. Awoyera, P. O., Adesina, A., Sivakrishna, A., Gobinath, R., Kumar, K. R., & Srinivas, A. (2020). Alkali activated binders: Challenges and opportunities. Materials Today: Proceedings, 27, 40-43.

Models for predictions of mechanical properties of low-density self-compacting concrete prepared from mineral admixtures and pumice stone

Abstract: This study applies the principle of artificial neural networks for modelling the mechanical characteristics of a lightweight self-compacting concrete containing pumice and mineral admixtures. Models for predicting compressive strength, split tensile strength and flexural strengths were developed based on several measures of the materials as obtained from the experimental stage. The input parameters for the model were contents of cement, ground granulated blast furnace slag (GGBS), rice husk ash (RHA), fine aggregates, coarse aggregates, pumice stone, water, super-plasticizers and micro-silica. Three output parameters, including compressive strength, tensile strength and flexural strength were considered. The data were trained, tested and validated using the feedforward backpropagation algorithm. The study established the best model for the tested concrete, based on the minimal error criteria, as 9 (input), 12 (hidden layer) and 3 (output layer). This model is expected to serve as a useful tool for concrete designers and constructors.

Keywords: *Compressive, Split tensile, Flexural strengths, Artificial neural network, Mineral admixtures, Pumice stone*

Citation: Arun., et al 2019, Soft Computing for Problem Solving. Advances in Intelligent Systems and Computing, vol 1057, doi:0.1007/978-981-15-0184-5_58

Enhancing the Strength Properties of High-Performance Concrete Using Ternary Blended Cement: OPC, Nano-Silica, Bagasse Ash

Abstract: This study determined the strength properties of high-performance concrete (HPC) produced using ternary blended cement, based on Nano-silica (NS) and bagasse ash (BA) addition to Portland cement. Several mix proportions, based on random mix design, were considered based on the substitution of constituent materials. Fine aggregate was comprised of 60% river sand and 40% recycled aggregate (RA), coarse aggregate used was crushed rock for the development of M50, M60 and M70 grades of concrete. The replacement of cement by BA causes slowdown initial strength development, but increased the setting time of concrete. In order to improve the performance of HPC at early stage, NS was considered as third admixture for developing ternary binder blend in the concrete. The effect of NS and BA on fresh and hardened HPC were investigated and presented. The results indicated that the incorporation of NS reduced setting time and increased the early age strength development significantly. Thus, it was concluded that the addition of NS with mean particle size of 12 nm is suitable as an additional binder for improving the early age performance of HPC.

Keywords: *Bagasse ash, Nano-silica, Early age properties, Recycled aggregate sand, High performance concrete*

Citation: Murthi. P., et al 2019, Silicon, 12(8), doi: 10.1109/I2C2SW45816.2018.8997421

Behaviour of Slurry Infiltrated Hybrid Fiber reinforced Concrete Subjected to Acidic Attack

Abstract: In the present study attempt is made to study the slurry of cement and sand in a proportion of 1:1 was prepared with a water cement ratio of 0.35 SIFCON. Fibers were placed randomly in concrete cubes. Vibration was externally applied with vibrating table after the mould is fully filled. Specimens were kept curing for 60 days in an acidic media and characteristics were studied. Compression strength, splitting tensile strength, flexural strength, Shear strength and impact strength characteristics were studied in the present experimental investigations. It is been found that by adding fibers the characteristics of concrete are increased considerably. In this research work attempts were made to know about weight loss in slurry infiltrated hybrid fiber reinforced concrete subjected to acid attack for different combination and results here compared with respect to the mono-fibers and hybrid fibers. The Growth in major construction is mainly focusing on fixing problems of improving the efficiency of building industry, economy, and optimum utilization of material and power resources. Due to different property of concrete it will give a variety of new designs. Apart from its flexibility in its use it can be given any shape and other properties such as compressive strength, low thermal conductivity, stiffness etc it is best material for the construction. To increase its tensile strength fiber are reinforced.

Keywords: *Foundation . Geotechnics . Materials . Soil improvement . Waste management*

Citation: Guruprasad, et al 2019, International Journal of Recent Technology and Engineering,. ISSN: 2277-3878

Alkali activated binders: Challenges and opportunities

Abstract: Alkali activated binders (AAB) are gaining huge research attention in recent years, due to their potential to totally be used in a zero-cement composite. Ordinary Portland cement (OPC) is characterized by high energy usage and carbon emission from its production process, which thus shows the need for AAB development. AAB are a sustainable replacement for OPC, as they can be produced from waste materials generated by various industrial processes. This paper explored the properties of different types of waste used as a solitary and binary combination for AAB, alongside their effects on the resulting composites. A general summary of the opportunities of AABs are also discussed. It was concluded that, with more research and developments dedicated to the field of AAB, AAB can be practical replacement of OPC for large-scale applications in the near future.

Keywords: *ABAQUS, Bamboo, steel, Seismic failure, Shear resistance.*

Citation: Awoyeara., et al 2019, Materials Today: Proceedings, 27, 40-43.. doi: 10.1016/j.matpr.2019.08.199

Departmental & Student Activities

1. One Day Seminar Program on “Primavera And Revit Software" , on 17th December 2019, Organized by Dept of Civil Engineering, SREC, Warangal

2. One Day Seminar Program on “Concrete and Highway Materials” , on 17th December 2019, Organized by Dept of Civil Engineering, SREC, Warangal

3. One Day Training Program on “A Brief Review on Civil Engineering Software’s (Revit Architecture)”, on 5th December 2019, Organized by Dept of Civil Engineering, SREC, Warangal

4. Two Days Workshop on “Illustrated Design of Reinforced Concrete Building”, between 29th and 30th September 2019, Organized by Dept of Civil Engineering, SREC, Warangal

5. Lecture series on “A Brief Review on Ground Improvement Techniques”, on 26th September 2019, Organized by Dept of Civil Engineering, SREC, Warangal

6. Seminar on “Prestressed Concrete Structure”, on 12th September 2019, Organized by Dept of Civil Engineering, SREC, Warangal

7. Expert Lecture on “Engineering Challenges in Transportation Engineering”, on 23rd August 2019, Organized by Dept of Civil Engineering, SREC, Warangal

8. Guest Lecture on “Health Monitoring of Structures - Research Perspectives”, on 8th July 2019, Organized by Dept of Civil Engineering, SREC, Warangal

9. Entrepreneur Training Program for IV B.Tech- Civil Engineering Students, on 1st July 2019, Organized by Dept of Civil Engineering, SREC, Warangal

10. Shravan, T., presented his work at “Sumshodhini-19”, on 24th to 26th October 2019, Organized by Department Of Civil Engineering, Kakatiya Institute of Technology, Warangal. – ***Secured First Place***

11. Ashish, J., Shruthi Y., Harikrishna, G., Tharun, N., attended day workshop organized at Bennet University, Greater Noida

12. Final Year Students (38) participated and presented their work at “Young Researchers Symposium on Geotechnical Engineering'2019)”, on 1st and 2nd October 2019, Organized by Depart. Of Civil Engineering, National Institute of Technology, Warangal (NITW).

Industrial Visits

1. Sai Manikanta RMC Plant and Siri Construction on 10th December 2019
2. Kaleshwaram Project Link-1 & Annaram Barrage on 27th September 2019
3. Fecal Sludge Treatment Plant, Warangal on 24th September 2019
4. Water treatment plant at Dharmasagar - filter beds and other head works (Mission Bhagiratha) on 19th September 2019

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भारतीय मानक

पीने का पानी — विशिष्टि

(दूसरा पुनरीक्षण)

AMENDMENT NO. 1 JUNE 2015
TO
IS 10500 : 2012 DRINKING WATER — SPECIFICATION

(Second Revision)

Indian Standard

DRINKING WATER — SPECIFICATION

(Second Revision)

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1622 : 1981	Methods of sampling and microbiological examination of water (*first revision*)
3025	Methods of sampling and test (physical and chemical) for water and waste water:
(Part 1) : 1987	Sampling (*first revision*)
(Part 2) : 2002	Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy
(Part 4) : 1983	Colour (*first revision*)
(Part 5) : 1983	Odour (*first revision*)
(Part 7) : 1984	Taste threshold (*first revision*)
(Part 8) : 1984	Tasting rate (*first revision*)
(Part 10) : 1984	Turbidity (*first revision*)
(Part 11) : 1983	*p*H value (*first revision*)
(Part 16) : 1984	Filterable residue (total dissolved solids) (*first revision*)
(Part 21) : 1983	Total hardness (*first revision*)
(Part 23) : 1983	Alkalinity (*first revision*)
(Part 24) : 1986	Sulphates (*first revision*)
(Part 26) : 1986	Chlorine residual (*first revision*)
(Part 27) : 1986	Cyanide (*first revision*)
(Part 29) : 1986	Sulphide (*first revision*)
(Part 32) : 1988	Chloride (*first revision*)
(Part 34) : 1988	Nitrogen (*first revision*)
(Part 37) : 1988	Arsenic (*first revision*)
(Part 39) : 1989	Oil and grease
(Part 40) : 1991	Calcium
(Part 41) : 1992	Cadmium (*first revision*)
(Part 42) : 1992	Copper (*first revision*)
(Part 43) : 1992	Phenols (*first revision*)
(Part 46) : 1994	Magnesium
(Part 47) : 1994	Lead
(Part 48) : 1994	Mercury
(Part 49) : 1994	Zinc
(Part 52) : 2003	Chromium
(Part 53) : 2003	Iron
(Part 54) : 2003	Nickel
(Part 55) : 2003	Aluminium
(Part 56) : 2003	Selenium
(Part 57) : 2005	Boron
(Part 59) : 2006	Manganese
(Part 60) : 2008	Fluoride
13428 : 2003	Packaged natural mineral water — Specification (*first revision*)
14194	Radionuclides in environmental samples — Method of estimation:
(Part 1) : 1994	Gross beta activity measurement
(Part 2) : 1994	Gross alpha activity measurement
15302 : 2002	Determination of aluminium and barium in water by direct nitrous oxide-acetylene flame atomic absorption spectrometry
15303 : 2002	Determination of antimony, iron and selenium in water by electrothermal atomic absorption spectrometry

Editorial Board:
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