

News Letter - 21

January to June 2020

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

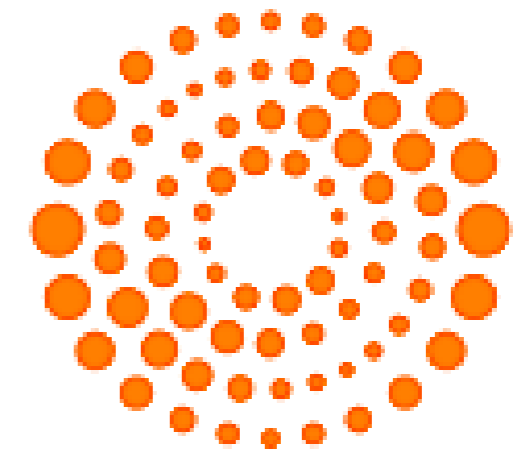
- **Build knowledge and skill** set required for solving Civil Engineering problems
- **Create innovative technical ventures** in Civil Engineering.
- **Promote Research and consultancy activities** to solve Real world Civil Engineering problems.

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.



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Publications

1. Maruthachalam, D., Shyamala, G., Sugunadevi, M., MH, P. G., & Kumar, R. (2020). Experimental investigation of different color pigments on concrete. *Int J Sci Technol Res*, 9, 2382-2384.
2. Kavitha, O. R., Shyamala, G., Iyappan, G., & Rajesh Kumar, K. (2020). Influence of fly ash and metakaolin on high performance concrete. *International Journal of Scientific and Technology Research*, 9(2), 5582-5586.
3. Krishnasamy, R., Shyamala, G., Christian Johnson, S., Sabarinathan, K., Sakthivel, S. M., & Rajesh Kumar, K. (2020). Performance Management of Transmission Line Tower Foundations against Corrosion by Non Destructive Testing. *Inter. J. Eng. Adv. Tech*, 9(1), 443-447.
4. Thirugnanasambandam, S., Murthi, P., & Poongodi, K. (2020). Development of Alkaline activated high strength concrete using fly ash-ground granulated blast furnace slag-metakaolin as binders and manufacturing sand as fine aggregate. *International Journal of Innovative Technology and Exploring Engineering*, 9(4), 903-911.
5. Murthi, P., Kolandasamy, P., Awoyera, P., Gobinath, R., Muthusamy, S., Krishnasamy, T. R., & Vilorina, A. (2020). Permeability properties of lightweight self-consolidating concrete made with coconut shell aggregate. *Journal of Materials Research and Technology*, 9(3), 3547-3557.
6. Thangapandi, K., Anuradha, R., Archana, N., Muthuraman, P., Awoyera Paul, O., & Gobinath, R. (2020). Experimental study on performance of hardened concrete using nano materials. *KSCE Journal of Civil Engineering*, 24(2), 596-602.
7. Haripriya, S., Rajesh, B., & Khan, M. I. (2020). Strength Characteristics of Recycled Aggregate Concrete by *Ann. Int. J. Innov. Technol. Explor. Eng.*, 9, 1210-4.

Influence Of Fly Ash And Metakaolin On High Performance Concrete

Abstract: This investigation focuses on the effect of Fly Ash (FA) and Metakaolin (MK) on the High performance concrete of Grade 40. Ordinary Portland Cement content of 385 kg/m³ was considered, while the FA was replaced with 30% by weight of cement and fly ash blended mix was produced. Again is replaced with MK (5,10,15 and 20 %) in fly ash blended mix and FA & MK blended mix was produced. To assess the mechanical properties of concrete compressive, split tensile and flexural strength tests were performed. And to assess the durability properties of concrete water absorption, Sulphate and Acid resistance tests were performed. The mechanical properties of concrete results show that mixes prepared with fly ash shows good strength and inclusion of MK also increase the strength of concrete upto 15% replacement level. Likewise durability properties shows inclusion of FA and MK shows more resistance. The optimum replacement of MK was 15 wt.% regarding mechanical properties and durability properties. The results shows 15% of MK enhances the strength and durability of concrete and consider that (OPC 70%, FA15% and MK15%) is suitable construction material to the both economic and social efficiency..

Keywords: Acid Attack Fly ash, Mechanical properties, Metakaolin, , Sulphate attack, Superplasticizer Water absorption

Citation: Kavitha et al., 2020, International Journal of Scientific & Technology, ISSN 2277-8616

Permeability properties of lightweight self-consolidating concrete made with coconut shell aggregate

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: Self consolidating concrete, Coconut shell, Light weight concrete, Permeability, Silica fume.

Citation: Murthi., et al 2020, Journal of Materials Research and Technology. doi: 10.1016/j.jmrt.2020.01.092

Experimental Study on Performance of Hardened Concrete Using Nano Materials

Abstract: Various challenges encountered in the construction industry has led to the production of concrete, with not just high strength, but also with enhanced durability properties. Several research works have been carried out using replacement of constituent materials and introduction of various admixtures in concrete. Alccofine is one of such promising micro fine material. This study investigates the performance of hardened concrete using nano materials. Effects of alccofine (AL) and zinc oxide (ZnO) on the durability and strength of hardened concrete were explored. Series of tests were conducted by substituting cement by weight with 10% AL and adding ZnO in proportions, 0.25%, 0.5%, 0.75% and 1%. Based on the results obtained, the strength properties of concrete reduced as cement replacement level rose beyond 10%. The durability performance of the concrete, in terms of rapid chloride permeability, water permeability test, sea water attack and chloride resistance, was within acceptable limit, even as the ZnO was increased. This study has generally proposed a sustainable solution to produce durable concrete that could have useful application in the construction industry.

Keywords: Durability, Nano Materials, Corrosion, Damage detection/Identification, Alccofine.

Citation: Thangapandi., et al 2020, KSCE J Civ Eng 24, 596–602, doi: 10.1007/s12205-020-0871-y

Performance Management of Transmission Line Tower Foundations against Corrosion by Non Destructive Testing

Abstract: In this paper, corrosion in overhead line foundations in different field environmental conditions (plain, agricultural and coastal/industrial region) have been detected by non-destructive test methods such as Half-cell potential test, Ultrasonic pulse velocity test, Rebound hammer test, chemical analysis of soil and Transmission Line Tower (TLT) footing concrete samples and scanning electron microscope (SEM) analysis of deteriorated tower footing concrete. The collected soil samples have been analyzed for chemicals and the TLT coping concrete samples have been tested using scanning electron microscope. The correlation between the test values, mineralogical composition of soil and concrete samples at tower footing level is presented

Keywords: Corrosion, Non Destructive Testing, SEM, TLT.

Citation: Krishnasamy., et al 2020, International Journal of Engineering and Advanced Technology, 9(3). ISSN: 2249-8958

Departmental & Student Activities

1. Two Days DST Sponsored Workshop on “Entrepreneurship Development programme on Sustainable Building Materials”, between 3rd and 4th March 2020 Organized by Dept of Civil Engineering, SREC, Warangal
2. Guest Lecture on “Career Guidance”, on 2nd March 2020 Organized by Dept of Civil Engineering, SREC, Warangal
3. One Day Workshop on “Sustainable Material and Green Buildings”, on 8th February 2020 Organized by Dept of Civil Engineering, SREC, Warangal
4. Two days program on “Introduction to Intellectual Property Rights”, between 20th and 21st January 2020 Organized by Dept of Civil Engineering, SREC, Warangal
5. Sai Priya from 3rd Year A-section, presented at “Second International Conference-ICMSMT-2020”, between 9th to 10th April 2020, Organized by Institute of Physics, Coimbatore
6. Shravan from 3rd Year A-section, presented at “A National Level Technical Symposium-STHAPTYA-2020”, between 12^h to 13th March 2020, Organized by Department Of Civil Engineering, JNTUH College of Engineering
7. Sai Priya from 3rd Year A-section, presented at “Seventh International Conference ~ Transformations in Engineering Education (ICTIEE-2020)”, between 5th to 8th January 2020, Organized by Department Of Civil Engineering, Anurag Groups of Institutions, Hyderabad
8. Industrial Visit
 1. Lakshmi Prestress Concrete Works Pvt. Ltd near Hasanparthy Railway Station on 12 March 2020
 2. Industrial visit to School Building Construction site nearby Bavupet X Road, on 22 February 2020
9. Students of 3rd year A and B-section, presented their work and attended in numerous workshops, webinars (# 23), across the country.

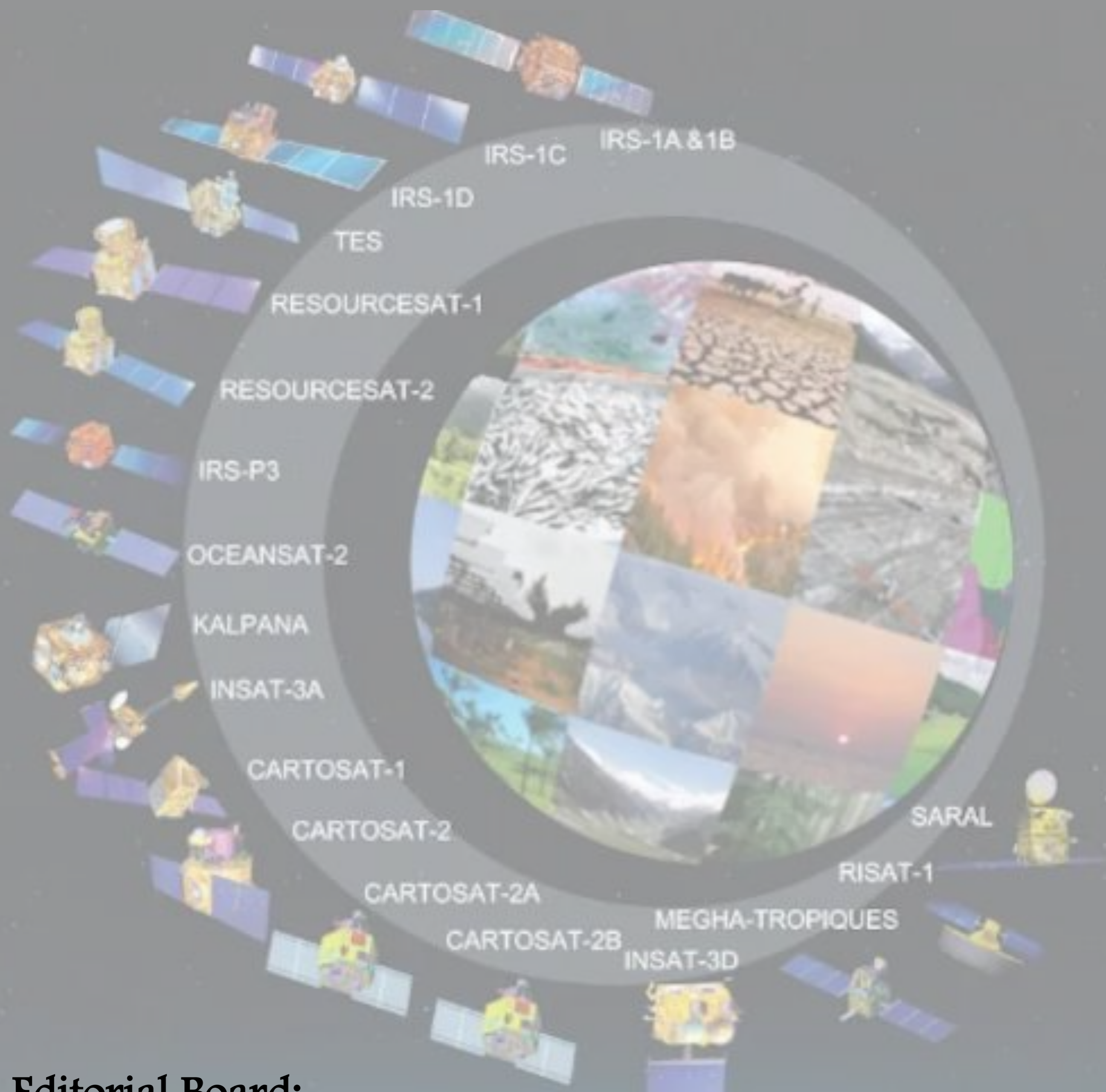


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