

CIVIL MAGAZINE

Engineering your dreams with us

March-2019

VISION

To Create Technically Competent, Research Oriented and Ethically Robust Civil Engineers to address the current and future challenges of the society

MISSION

- To Enhance proficiency in practical and theoretical concepts of Civil Engineering through a Supportive Environment
- To Promote Higher Education, Research and Entrepreneurship in Civil Engineering and allied fields to meet the needs of global environment
- To Create Civil Engineers of High Technical Competency with Ethical and Moral

HOD'S Desk



I am very happy to bring out the second issue of the Departmental newsletter "CE-Suddi". This newsletter outlines various activities that have taken place during the period January-2019 and the achievements of faculty and students. It is great to find a

considerable number of articles, poems and art that certainly prove that our staff and students are adequately equipped and possess necessary skill sets to express their talent. Sincerely congratulate the Chairman, Principal, Administrative Officer and editorial team of the department for their unrelenting efforts in compiling this News Letter.

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MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN

Sapthagiri College of Engineering, Civil Engineering Department and Global Civil Consultant Bengaluru-73

This MOU is executed on 19th November 2018 at Bengaluru.

3 DAYS FACULTY DEVELOPMENT PROGRAMME ON “ADVANCED SURVEYING TECHNOLOGIES USING TOTAL STATION”

3 days Faculty Development Program on “Advanced Surveying Technologies using Total Station” was conducted at Sir.M.V.Seminar Hall by Department of Civil Engineering from 31st January to 2nd February 2019 in association with ICI and Sapthagiri College of Engineering Bengaluru. The Resource Person for the Program was Hemanth Reddy. Dr.K.L.Shivabasappa Principal explained us the necessity of having the practical knowledge in Civil Field and enlightens the necessity of surveying with his own personal experiences. Mr.Hemanth Reddy also enlighten us about the need of Total Station and how is he helping the needy unemployed by creating the job opportunity by training about the Total Station.



On 31st January 2019 Mr.Hemanth Reddy (Resource Person) explained about the need of Total station and highlighted the seven basic steps in total station. This included the introduction to surveying and methodologies, Importance of accurate survey data to a civil engineering projects & Impacts of wrong surveys with live project experience examples, Brief on latest technologies and Instruments used as on today (Total Station, 5 DGPS, Li DAR, Drone UAV) and 3 point Traverse method. Mr.Hemanth Reddy practically demonstrated the basic seven steps of total station and the participants started practising individually the seven basic steps of total station for being perfect at their end.



On 1st February 2019 Mr.Hemanth Reddy practically demonstrated the 3 point traversing method and also explained Topographical Survey, area calculation, marking layouts etc.

On 2nd February 2019 participants practised 3 point traversing method, Topographical Survey, Area calculation, marking layouts. At the end of the programme certificates were given to all the participants and a token of memory was given to Resource Person Hemanth Reddy by our beloved HOD, Dr.R.L.Ramesh. Due to the impartial delivery of the practical knowledge by Hemanth Reddy the FDP received lot of positive feedback and it paved the way for participants to implement their ideas in projects by using Total Station.

SCE-ICI-STUDENT CHAPTER



The inaugural function of SCE-ICI -Student Chapter was held on 15th March 2019 in association with Indian Concrete Institute. The chief guest for the occasion was Er. Ravishankar M, Chairman, ICI and He delivered a Technical talk on “Alternative to river sand for quality construction” current understanding on the scope and future of civil engineering through a detailed and informative presentation. Guest of Honour Er. Kankanhalli shankara srinivas, Chief Engineer (Retd), Sardar Sarovar Narmada Nigam Ltd discussed the GDP Growth of India which is about 7- 8% also he briefed about Sardar Sarovara Narmada Project. Guest of Honour Dr.Radhakrishna, HOD, RVCE, and Bengaluru delivered a Technical talk on “Contract Management” and explained in a nutshell as to what are contracts and its need in the industry. He motivated young minds to explore more and be updated. The felicitation was done for guests and VTU forth rank holder Ms. Sindurapriya B.

VISIT TO SPANDANA RESOURCE CENTER

Faculty members and students of Civil Engineering department visited and donated work, Pencils, Erasers, Chocolates, Sweets and Toys for Playing, Cricket Bat and White Board Duster, Pen etc. Spandana Resource Centre on 15/02/2019 at Yogi Narayana swamy mutt of Shree Kshethra Kaiwara, Chintamani Taluk, Chikkaballapura District, Karnataka. Faculty members of Spandana Resource Centre have enough patience with their Mentally Challenged Children of this School. Students of Spandana Resource Centre were so happy with our Students. Our HOD, Faculty members and students had good interaction with the Children. The day spent well with cultural and recreational programs along with children.



One day Workshop on “Principles of Concrete Mix Design on High Strength Concrete and Self Compacting Concrete”

A one day workshop was conducted jointly by Sapthagiri College of Engineering and ICI on 26th April 2019. The function was presided by Sri. G. Dayanand and Chairman and Managing director, Sri. G D Manoj executive director, Principal Dr.K.L.Shivabasappa, Administrative Officer Dr.K.R.Nagabushana, Head of Department, Civil Engineering Dr. R.L Ramesh and Chief Guest Er. Nagesh Puttaswamy, Regional Head Technical Services Ultra Tech cements. 71 students of 3rd year and 63 students from final year Civil Engineering along with faculty members from various colleges attended the workshop.

The session included a discussion on introduction to Principles of Concrete Mix Design on High Strength Concrete delivered by Er. Nagesh Puttaswamy. The main topics of discussion were ingredients and properties of concrete and importance of these properties in high strength concrete. The principles of mix design were discussed in detail and mix design procedure explained as per IS: 10262-2019. Er. Nagesh Puttaswamy gave a cash prize for the student who secured highest marks in concrete technology subject for the purpose of encouraging the students to learn and apply the technology effectively in concrete industry.

Dr. Shrishail B.Anadinni gave a talk on self Compacting Concrete. self Compacting Concrete are the material that flows, placed into formwork and compacted under the influence of self weight only, without vibration. It can be used in the situation where vibration is difficult and reinforcement steel is highly congested in RCC. It adequately fills voids without segregation and bleeding, without vibration. Well graded or rounded coarse aggregates are desirable as they minimize cement paste content as well as admixture dosage. The maximum size of aggregate is generally limited to 12 mm for mass concreting.



An Industrial visit to Kaiwara Chintamani Taluk on 16th February 2019. The 6th Semester students had an opportunity to gain practical knowledge on “Precast Building Construction”. Precast Concrete is a construction product produced by casting concrete in a reusable mould or form which is then cured in a controlled environment, transported to the construction site and erected into place. The main advantages of precast technology are quality, speed of construction and a value for money product. To avoid labour shortage, time delays and with an aim to deliver quality products, developers and builders are now adopting precast technology. The use of such technology helps in up to 64% of the time taken for similar projects using normal construction methods and technology.

- The best part of the technology is that it not only speeds up the construction work but also enhances the quality of final output.
- Strength: - Trained & Skilled employees, fully automated plant is their strength.
- Safety: - For all the students they gave safety helmets.
- Speed: - for each & every activity there are machines, so whole work get boost up. Hence they achieve speed in production, transportation and construction



An Industrial visit to industrial RCC building of “Power Gears Limited Company” and “RASTA” on 26th February 2019. The 8th Semester students had an opportunity to gain practical knowledge on arrangement of reinforcement for column, beam and slab, and knowledge of apparatus using in slab in RCC Building, Peenya industrial area Bengaluru.

RASTA is a centre for Road Technology started in the year 2002 at Bangalore with the initiative of Volvo group India, to bridge the knowledge gap between the academic learning and the industry needs. Our Students visited the Laboratory consisting of more advanced and sophisticated equipments for the testing of various materials used in highway construction such as soil, Aggregate and Bitumen. The major equipments observed were:

- California bearing Ratio Apparatus
- Marshall Apparatus
- Tri-axial Testing Apparatus
- Rutting Measurement Apparatus
- Roughness Measurement using MERLIN
- Roughness Measurement using Bump Integrator.
- Repetitive Load Testing
- Brookfield Viscometer
- Ductility Apparatus
- Tar Viscometer



Out House Programmes Attended

The Students of 8th Semester were attended the Evening technical lecture on “Innovative Design of Viaduct” organized by Indian Concrete Institute Bengaluru Centre, held at Bengaluru Institute of Technology, Bengaluru, on 28th January 2019 by Prof. Aravind Galagali, Ministry of Water Resources, Government of Karnataka. The talk is about the design of viaduct, Water Conveyance & Road on the top, tallest pier height (approximately 100feet), Innovative applications of technology, Challenges in Design and execution & longest viaduct in India of 30m span located at Tidagundi, Vijayapura, and Karnataka. Method of analysis and design of the project includes two types of analysis longitudinal analysis and transverse analysis using software’s such as STAAD PRO and ANSYS. The software’s are used for stress check and crack width criteria are Micro soft Excel Programmes. The shape of the superstructure is trapezoidal section with least wetted perimeter. The grade of concrete used for this project is M30 and M40 with mineral admixture as GGBS. The estimated quantity of concrete is 1,00,000 m³, quantity of Rebar’s is 12,445MT, Quantity of Pre-tensioning Strands 1600MT for both sub-structure and super structure. The project was successfully completed within 12 Months.



Faculty Participation & Achievements

1. **Raghavendra R** has participated in National Symposium & Workshop on “**E-WASTE MANAGEMENT**” held at Global Academy of Technology on January 11th-12th. 2019. Organized under the aegis of international Society of Waste Management, Air & Water (ISWMAW) & in association with Bengaluru Environment Trust.
2. **Dhruvaraj M S** has participated in National Symposium & Workshop on “**E-WASTE MANAGEMENT**” held at Global Academy of Technology on January 11th-12th. 2019. Organized under the aegis of international Society of Waste Management, Air & Water (ISWMAW) & in association with Bengaluru Environment Trust.
3. **Rajiv T** “**Dynamic Analysis of 4-Legged Steel Telecommunication Tower**” International Journal of Civil Engineering & Technology (IJCIET), Volume10, Issue01, January 2019, pp.1535-1550p, ISSN Print: 0976-6308.
4. **Dr.R.L.Ramesh** participated in One day Seminar on “**High Strength Concrete**” organized by Indian Concrete Institute, Bengaluru on 13th February 2019 at The Capital Hotel, Bengaluru.
5. **Geetha T S** participated in One day Seminar on “**High Strength Concrete**” organized by Indian Concrete Institute, Bengaluru on 13th February 2019 at The Capital Hotel, Bengaluru
6. **Pramod.K.R** has participated in the Seminar on “**Project Management**” organized by Project Management Institute, Bengaluru on 22nd February 2019.
7. **Akshay J** has participated in the workshop titled “**Quantity Surveying & Contract Management**” Organized by Department of Civil Engineering, Sambhram Institute of Technology, Bengaluru on 7th and 8th March 2019.
8. **Dr.R.L.Ramesh** Participated as a Guest of Honour for Inaugural function of ICI-Student Chapter held at Sri Siddhartha Institute of Technology, Bengaluru on 28th March 2019.
9. **Dr.R.L.Ramesh** Participated as a Guest of Honour for Inaugural function of ICI-Student Chapter held at Sambhram Institute of Technology, Bengaluru on 29th March 2019

BUILDING INNOVATION

Civil engineering is a field where engineers need to be updated with the advancement in the technologies used for constructions. Usually Construction involving more strength and being cost effective creates more demand in the market. There are many technologies used in the field of construction. One of them which is narrated here is,

U-BOOT TECHNOLOGY:

U-boot beton is a formwork structure made of recycled plastic for the construction of two-way flat slab to be casted on site. This can be used to construct two way slab, large span slab, Mushroom slab and raft foundation in RCC structure. By using U-boot, lighter slab structure is obtained.

There are two types of U-boot beton (1) Single U-beton (2) Double U-beton

Let us now look at how the installation process is carried out,

- ❖ First place the basic formwork which we usually use in construction. Above this formwork place a lower reinforcement.
- ❖ Above lower reinforcement, place the u-boot at certain intervals, making sure that the horizontal connectors are provided between them.
- ❖ Again place the reinforcement above this U-beton and now pour the concrete and let it be allowed for setting and then un-prop the formwork.

Applications:

- ❖ Increases spacing of columns.
- ❖ Used in High rise Building, Commercial building, Hospitals, Parking lot etc.

It can be concluded that, this technology can save more concrete and steel. Usage of iron in the slabs, pillars and foundations is also less. Apart from this there are some anti-seismic advantages connected to reduce building weight, slimmer pillars and foundations.

It should be noticed that this technology is implemented in Shaktidham Temple in Maharashtra.

Navya.N
Assistant Professor



Student Article

Concrete has revolutionized global infrastructure. In fact, about half of everything that gets made in the world is constructed with concrete. Because modern society depends on the maintenance and upkeep of concrete, scientists are working to discover a way for concrete to look after itself.

What Is Self-Healing Concrete?

In the simplest terms, self-healing concrete is concrete with the capacity to repair its own cracks and imperfections. When it comes to using concrete in construction, structural integrity is a major concern. As a result, a great deal of time and effort is put into ensuring that the concrete is in excellent condition. Self-healing concrete requires no human intervention to remain in tip-top shape.

How Does Self-Healing Concrete Work?

Unlike regular concrete, self-healing concrete contains bacteria called *Bacillus pasteurii*, along with a form of starch that serves as food for the bacteria. These bacteria stay dormant in the concrete until a crack forms and air gets in. This change wakes up the bacteria and leads them to eat the starch that has been added to the concrete. As the bacteria eat, grow and reproduce, they excrete calcite, which is a form of calcium carbonate. When the calcite bonds to the concrete, it fills the crack and seals it up.

How Effective Is Self-Healing Concrete?

Self-Healing Concrete Uses Bacteria to Repair Cracks with the help of *Bacillus pasteurii*, cracked concrete can recover 90% of its initial strength. According to Professor Victor Li at the University of Michigan, “When we load [the concrete] again after it heals, it behaves just like new, with practically the same stiffness and strength. Self-healing of crack damage recovers any stiffness lost when the material was damaged and returns it to its pristine state.” In other words, using bacteria to jump-start the healing process is an excellent way to teach concrete to repair itself. Since concrete is used every day for all manner of construction, it stands to reason that this innovation could make infrastructure safer and more durable. The use of *Bacillus pasteurii* not only reverses deterioration, but could also minimize the costs and environmental effects of building new structures. Moreover, repairs made with this kind of concrete are likely to last longer than their traditional counterparts. There’s no denying that the world is changing every day. Concrete is changing with it. As time progresses, we can’t wait to see what more will develop with self-healing concrete. Our team at Del Zotto Products wants to help you with your next concrete project. For more information about our forms or training for precasters, contact us or reach out via social media.

Yamini J
8th Sem

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