EDIFICE

Newsletter of the Department of Civil Engineering

Vol. 4 Issue 2

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EDIFICE

NEWSLETTER OF THE DEPARTMENT OF CIVIL ENGINEERING

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Volume 4 Issue 2

DEPARTMENT OF CIVIL ENGINEERING,
SSN COLLEGE OF ENGINEERING,
KALAVAKKAM, CHENNAI
www.ssn.edu.in

Cover Photo: I-Flex Solutions Building, Bangalore

Inside This Issue

FROM THE HOD'S DESK

I am very happy to present to you this issue of our newsletter EDIFICE, on behalf of the Department of Civil Engineering. This edition brings out the achievements of our students, faculty and alumni. Our faculty have published sizeable number of papers in indexed and refereed journals and I wish to register my appreciation for their continued and dedicated research efforts. The department has conducted numerous activities including Workshops, Expert Talks and Site Visits to enable holistic development of the students.

I also would like to record my compliments to the office bearers of the Association of Civil Engineers for conducting various events successfully during the technical symposium INVENTE 4.0.

I wish all the very best for the graduating class of 2020 for a successful career in academia and industry.

Dr. N. Sivakumar

1. **Sivakumar N.**, Beddu S., Muda Z. C., Mohamad D., Nazri F. M., Sadon S. N., & Hanafi M., "Effect of Lightweight Waste-Based Aggregate on Lightweight Concrete", *International Journal of Recent Technology and Engineering*, Vol. 8, No. 4, Nov. 2019, pp 1041-1044.
2. **Sivakumar N.**, Chakravarthy H. N., Anuar N. A., Kalavagunta S., & Mustapha K. N. B., "Behaviour of Cold Formed Steel Built-Up Channel Columns Strengthened using CFRP", *International Journal of Steel Structures*, Vol. 14, No. 4, Nov. 2019, pp 01-12.
3. **Sivakumar N.,**Beddu S., Zainoodin M. M., Muda Z. C., Kamal N. L. M., Mohamad D., Nazri F. M., Husain N.M., & Sadon S. N.,"Investigation of Natural Fibers as Ceiling Material", *AWAM International Conference on Civil Engineering*, Aug. 2019, pp 1239-1244.
4. **Sabapathy Y.K.**, S. Sabarish*, C.N.A Nithish*, S.M. Ramasamy*, & Gokul Krishna*(*B.E. Civil Engg. 2016-20), "Experimental Study on Strength Properties of Aluminum Fibre Reinforced Concrete", *Journal of King Saud University - Engineering Sciences*, Dec. 2019, pp 01-07.
5. **Srinath R., Sreehari P., Mahalingam B.,** & Haneefa K. M., "On Mechanical and Thermal Properties of Concretes with Rubber as Partial Replacement to Well-Graded Conventional Aggregates",*Advances in Materials and Metallurgy*, 2019,pp 57-65.
6. **Vijayalakshmi R.**, & Sathia R., "Effect of Keel Plate on the Performance of FPSO suitable for Arctic Ice Environment", *Ships and Offshore Structures*, Nov. 2019, pp 01-11.
7. **Vijayalakshmi R.**, K. Durga Abhishek#, & K. Yogesh Kumar# (#B.E. Civil Engg. 2015-19), "Road Safety Audit and Comparison with AccidentCase Studies", *Indian Journal of Science and Technology*, Vol. 12, No. 22, Jun. 2019, pp 01-06.
8. **Vijayalakshmi R.**, & V.B. Shalini# (#B.E. Civil Engg. 2015-19), "Study on the Durability Properties of SCC Partially Replaced with Agricultural and Industrial Waste", *Research Journal of Pharmaceutical Biological and Chemical Sciences*, Vol. 10, No. 1, 2019, pp 707-714.
9. **Sivapriya S.V.**, Balamurukan R.#, Vigneshwar A.J.#, Devi N.P.#, & Shrinidhi A.# (#B.E. Civil Engg. 2015-19),"Effect of Eccentricity in Sandy Slope of Laterally Loaded Single Pile", *Civil and Environmental Engineering*, Vol. 15, No. 2, Dec. 2019, pp 92-100.
10. **S.V. Sivapriya**, & S. R. Gandhi, "Soil-Structure Interaction of Pile in a Sloping Ground underDifferent Loading Conditions", *Geotechnical and Geology Engineering*, Oct. 2019.
11. **S.V. Sivapriya**, Gokul Krishna J.*, & Roshan R. * (*B.E. Civil Engg. 2016-20), "Understanding Sustainable Strategies in Low-Cost Housing", *International Journal of Housing Markets and Analysis*, Aug. 2019.

FACULTY UPDATES - RESEARCH PUBLICATIONS

12. **Sangeetha P.**, "Flexural Behaviour of a Cold-Formed Steel-Concrete Composite Beam with Channel Type Shear Connector - An Experimental and Analytical Study", *Civil and Environmental Engineering Reports*, Vol. 30, No. 3, Nov. 2019, pp 228-240.
13. **Sangeetha P., Ramanagopal S.**, A. Jai Vigneshwar#, A. Shrinidhi#,& K. Vaishnavi#(#B.E. Civil Engg. 2015-19), "Study on the Behaviour of the Cold Formed Steel Box Struts under Axial Compression",*American Institute of Physics (AIP) Conference Proceedings*, Oct. 2019, pp 020045-1 to 020045-7.
14. **Sangeetha P.**, M. Shamugapriya, R. Manjula*, &U. Amrutha* (*B.E. Civil Engg. 2016-20), "Experimental and Analytical Study on the Behaviour of the Steel -Concrete Composite Beam",*American Institute of Physics (AIP) Conference Proceedings*, Oct. 2019, pp 020044-1 to 020044-7.
15. **Jijo James, Sivapriya S.V.**, Hemavathi S., Sathya P., Jayashree A., &Murali P., "A Comparative Laboratory Investigation into the Role of Geosynthetics in the Initial swell Control of an Expansive Soil", *Civil and Environmental Engineering Reports*, Vol. 29, No. 4, Dec. 2019, pp 18-40.

FACULTY UPDATES - CONFERENCE PRESENTATIONS

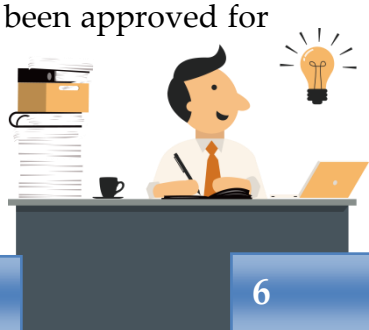
1. **Dr. Rajkumar R** presented a paper titled, "Experimental Investigation on Strength Characteristics of Concrete Partially Replaced with Seashells and Coconut Shells as Coarse Aggregates", in the International Conference on Innovative Research in Science and Technology, at Madurai, during 30-31 August 2019.
2. **Dr. Rajkumar R** presented a paper titled, "Construction of Multistoreyed Buildings in India with Environmental Perspective", in the International Conference on Innovative Research in Science and Technology, at Madurai, during 30-31 August 2019.
3. **Dr. R. Srinath** and **Dr. B. Mahalingam** presented a paper titled, "A Note on Climate Change and Extreme Water Event", in the International Conference on Recent Advances in Civil Engineering Infrastructure,atMuffakham Jah College of Engineering & Technology, Hyderabad, during 16-18 December 2019.
4. **Dr. R. Vijayalakshmi** presented a paper titled, "Reversible Data Hiding based on Rhombus Mean Interpolation", in the International Conference on Graph Theory and its Applications, at SSN College of Engineering, Chennai, during 20-21 November 2019.

FACULTY UPDATES – CONFERENCE PRESENTATIONS

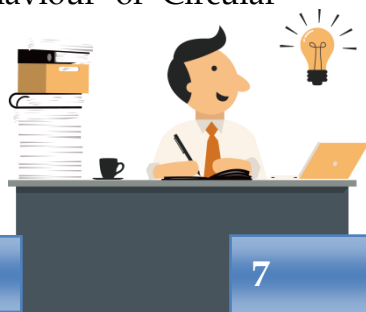
5. **Dr. S.V. Sivapriya** presented a paper titled, "Physio-Chemical Properties of Industrial and Municipal Wastewater", in the First International Conference on Recent Trends in Clean Technologies for Sustainable Environment, at SSN College of Engineering, Chennai, during 26-27 September 2019.
6. **Dr. P. Sangeetha** presented a paper titled, "Artificial Neural Network Applications in Fibre Reinforced Concrete", in the First International Conference on Recent Trends in Clean Technologies for Sustainable Environment, at SSN College of Engineering, Chennai, during 26-27 September 2019.
7. **Dr. P. Sangeetha** presented a paper titled, "GFRP Wrapped Concrete Column Compressive Strength Prediction through Neural Network", in the First International Conference on Recent Trends in Clean Technologies for Sustainable Environment, at SSN College of Engineering, Chennai, during 26-27 September 2019.
8. **Dr. P. Sangeetha** presented a paper titled, "Neural Network Modeling of the Convection Heat Transfer Coefficient for the Casson Nanofluid", in the International Conference on Graph Theory and its Applications, at SSN College of Engineering, Chennai, during 20-21 November 2019.
9. **Dr. P. Sangeetha** presented a paper titled, "Application of Graph Theory in the Analysis of the Space Truss Structures", in the International Conference on Graph Theory and its Applications, at SSN College of Engineering, Chennai, during 20-21 November 2019.
10. **Dr. S.V. Sivapriya** presented a paper titled, "Static and Post-Static Modulus of Laterally Loaded Flexible Pile", in the International Conference on Graph Theory and its Applications, at SSN College of Engineering, Chennai, during 20-21 November 2019.

FACULTY UPDATES – PROJECTS SANCTIONED

1. The project entitled "Use of Waste Quarry and Sea Shore Sand in Developing Manufactured Sand (M-Sand)", submitted by **Dr. N. Sivakumar, Dr. B. Mahalingam** and the III year students David Arunraj, Achchutha Varman and Sathish Kumar has been approved for funding by The Institution of Engineers (India).
2. Project titled "Prediction of Shallow Type Landslide Influenced by Rainfall using ANN", submitted by **Dr. S.V. Sivapriya and Dr. R.** Priyadharsini, ASP/CSE has been approved for Internally Funded Faculty Project.



1. **Dr. N. Sivakumar** reviewed a manuscript, "Seismic Behavior of Partial Connected Beam-Column Joint of Circular Tubed Steel-Reinforced and Deformed Bar High-Strength Concrete Columns", for the Journal of Steel Structures and Constructions.
2. **Dr. N. Sivakumar** reviewed a manuscript, "Design Supports for Wide Span Simply Supported Arch Bridge", for the Journal of Steel Structures and Constructions.
3. **Dr. N. Sivakumar** reviewed a manuscript, "Optimizing the Design of Tall Buildings using the Principle of Vertical Work – The Effect of Semi Rigid Connections", for the Journal of Steel Structures and Constructions.
4. **Dr. N. Sivakumar** reviewed a manuscript, "Barriers Affecting Sustainable Construction and Demolition Waste Management in Libya", for the Journal of Environmental Management.
5. **Dr. N. Sivakumar** reviewed a manuscript, "Evaluation of Oil Production and Wastewater Treatment Efficiency using an Extended Two-Stage SBM DEA Network Structure Model with Feedback Variables", for the Journal of Environmental Management.
6. **Dr. N. Sivakumar** reviewed a manuscript, "Biosynthesis of Zinc Oxide Nanoparticles using Cymbopogon Citratus Extracted for Decolorization of POMSE using Membrane Photocatalytic Reactor", for the Journal of Environmental Management.
7. **Dr. N. Sivakumar** reviewed a manuscript, "A Graphical Method to Determine Incinerability of Municipal Solid Waste", for the Journal of Environmental Management.
8. **Dr. N. Sivakumar** reviewed a manuscript, "Causes, Effect and Solution to Abandonment of Building Projects in Osun State, Nigeria", for the Journal of Steel Structures and Constructions.
9. **Dr. N. Sivakumar** reviewed a manuscript, "Fresh and Hardened Properties of High Calcium Fly Ash Based Geopolymer with High Dosage of Borax Addition", for the Iranian Journal of Science and Technology Transactions of Civil Engineering.
10. **Dr. Sivapriya S.V.** reviewed a manuscript, "Micro-Level Analysis of Marine Clay Stabilized with Polyurethane", for KSCE Journal of Civil Engineering.
11. **Dr.Sivapriya S.V.** reviewed a manuscript for the International Journal of Housing Markets and Analysis.
12. **Dr. P. Sangeetha** reviewed a manuscript, "Post Fire Exposure Behaviour of Circular Concrete Filled Steel Tube Column Under Composite Loading", for the International Journal of Steel Structures.



FACULTY UPDATES -EVENTS ATTENDED

1. **Dr. N. Sivakumar** attended the Advanced Course on Recent Advances in Concrete Technology and Durability of Concrete Structures, conducted by CSIR-SERC, Chennai, during 21-23 August 2019.
2. **Dr. B. Mahalingam** attended the RILEM-ICI Doctoral Course on Advanced Concrete Technology, conducted by IIT Madras, Chennai during 18-23 November 2019.
3. **Dr. S.V. Sivapriya** attended the GIAN course on Mechanics of Unsaturated Soils, conducted by IIT Madras, Chennai during 10-20 December 2019.
4. **Dr. S.V. Sivapriya** attended the One Day Seminar on Urban Rainwater Harvesting, conducted by Jerusalem College of Engineering, Chennai during 23 October 2019.

FACULTY UPDATES - FACULTY RECOGNITION

1. **Dr. Y.K. Sabapathy** attended the first Doctoral Committee meeting for Mr. R. Vijayakumar, Ph.D. Research Scholar, in the Department of Civil Engineering, SRM Institute of Science and Technology, on 26 July 2019.
2. **Dr.P. Sangeetha** attended the Doctoral Committee meeting for Ms. R. Chitra, Ph.D. Research Scholar, in the Department of Civil Engineering, Bharath Institute of Higher Education and Research, on 8 November 2019.
3. **Dr. P. Sangeetha** delivered a lecture on the topic, "Seismic Effects on Buildings and Retrofittings", in the FDP on Structural Dynamics and Earthquake Engineering, conducted by the Department of Civil Engineering, Bharath Institute of Higher Education and Research, on 17 December 2019.
4. **Dr. P. Sangeetha and Dr. R. Rajkumar** were honoured with the Best Teacher Award, in the Teachers' Day Celebration, held in our college on 5 September 2019.

Workshop on Civil Engineering Software

Dr. S. Ramanagopal and Dr. P. Sangeetha organized a two day “Workshop cum Hands on Training Programme on Civil Engineering Software" to our students about the various software applications in the field of Civil Engineering viz., AEC (Architecture, Engineering & Construction). This industry oriented awareness programme was conducted on 9-10 August 2019. Resource persons from M/s. De Nova Software Solutions, Chennai conducted the programme.

Moments from the Workshop

Workshop on Rock Mechanics

A workshop titled, "An Introduction to Rock Mechanics", was organised by Dr. S.V. Sivapriya and Dr. Jijo James on 30 January 2020. The main objective of the workshop was to gain knowledge about the fundamentals and applications of rock mechanics in field practices.

Session I was handled by Dr. Balamadeswaran P, Professor, College of Enginnering Guindy, Anna University. He spoke in detail about the relevance of rock mechanics in mining and construction. Session II was handled by Dr. P. Purushothaman, Associate Professor, Department of Civil Engineering, SRMIST, Chennai. His session gave an overview about the geological significance and applications of rock mechanics.

Captures from the Workshop

FDTP on Advanced Structural Analysis

Dr. S. Ramana Gopal and Dr. N. Sivakumar organized a five day Faculty Development and Training Programme (FDTP) on Advanced Structural Analysis from 02 to 06 December 2019. Around 20 participants from various engineering colleges participated and benefited in this programme.

The details of the external resource persons are as follows.

- **Dr. Colonal P. Nallathambi, Principal Structural Consultant, M/s. Sakthi Constructions, Chennai,** gave a lecture on "Matrix Methods of Structural Analysis".
- **Dr. C. Umarani, Professor, Anna University**, gave a lecture on "Influence Line for Determinate Structures".
- **Dr. K. Chinnaraju, Professor, Anna University,** gave a lecture on "Influence Line for Indeterminate Structures & Plastic Analysis of Structures".
- **Dr. N. Uma Maheswari, Professor, SRM Institute of Science & Technology, Chennai,** gave a lecture on "Analysis of Arches & Analysis of Cables".
- **Dr. U. Saravanan, Professor, IITM, Chennai**, gave a lecture on "Introduction to Finite Element Method".

FDTP participants with Dr. Col.P. Nallathambi and faculty

Association of Civil Engineers

Inauguration of "Association of Civil Engineers" was held on 31 July 2019 at EEE seminar hall. **Dr. G. Bhavani, Scientist-E, Bureau of Indian Standards, Chennai** was the Chief Guest. Following, the formal inauguration of the association and the introduction of the association's office bearers for the academic year 2019-20, Dr. Bhavani enlightened the students about the significance of BIS and the IS codes for a Civil Engineer.

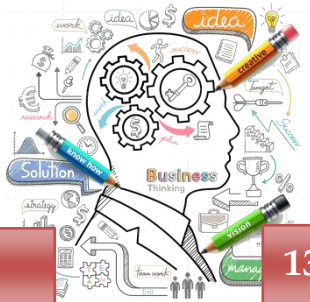
Dr. G. Bhavani delivering a Guest Lecture on BIS and its significance for a Civil Engineer

Guest Lecture on Light Weight Concrete

Dr. S. Ramanagopal organized a Guest Lecture, in the topic “Light Weight Concrete", on 19 August 2019 at EEE Seminar hall. **Mr. Sivaram Kumar, Director - Technical Operations, Luca Industries International, Berlin, Germany** gave a lecture covering the noteworthy characteristics of light weight concrete to the students. The students benefited from this knowledge transfer about a contemporary development.

Mr. Sivaram Kumar started his presentation with a brief introduction to Light Weight Concrete. Based on usage of light weight concrete, he classified it as structural light weight concrete (also known as light weight aggregate concrete) and non-structural light weight concrete (also known as aerated or cellular concrete). He briefly explained the composition, physical properties and production of non-structural light weight concrete. Then, he elaborated the classification, quality parameters (such as thermal conductivity, fire resistance, workability and durability etc.) and advantages and disadvantages of Autoclaved Aerated Concrete (AAC) and Foamed Concrete. He illustrated many applications of AAC and foamed concrete all around the world and also encouraged the students to use light weight concrete in future construction projects. He also showcased light weight concrete specimens of various densities, which helped the students to better understand the concepts. The presentation was followed by an interactive session, where the students were free to clarify their doubts.

Mr. Sivaram Kumar, Luca Industries



Expert Talk on Principles of Management

An expert talk on Principles of Management was arranged for the VII semester, B.E. Civil Engineering students by Dr. S.V. Sivapriya on 28 January 2020. **Prof. Natarajan** from SSN School of Management delivered the lecture.

Prof. Natarajan briefing the students

Expert Talk on Higher Studies

A talk on Higher Studies by Mr. Atiq Aziz, Director, Score Getter Pvt. Ltd. was arranged by Dr. Jijo James for the III and IV year, B.E. Civil Engineering students on 29 January 2020.

Mr. Atiq Aziz interacting with the students

Senior-Junior Chit-Chat Sessions

In order to facilitate better and meaningful interaction between the students in the Department of Civil Engineering, under the aegis of Dr. N. Sivakumar, Senior-Junior students interaction sessions have been arranged. Starting this semester, these Chit-Chat sessions at regular intervals will enable prolific discussion regarding a wide range of topics including academics, placements, securing internships, higher studies, co-curricular activities, etc.

Ms. Amrutha & Mr. Ramasamy, IV year, B.E. Civil Engineering, interacting with the II & III year students.

Alumni Meet – Tribute 2020

The alumni meet of SSN Institutions, "Tribute", was held on 4 January 2020 at the SSN campus with over 1200 alumni taking part in the reunion with their families. The theme this year was "Rewind the clock" and the alumni were treated to a nostalgic atmosphere on the campus. The distinguished Alumni Award 2019 was presented to Mr. Malaikannan Sankarasubbu, Vice President, AI Research, Saama Technologies Ltd, USA, an alumnus of B.Tech. IT 2004 batch.

Snippets from Tribute 2020

21st Scholarship Day

During the 21st Scholarship Day, held on 2 November 2019, scholarships worth Rs. 4 crore awarded to nearly 570 students. Former Election Commissioner, Mr. N. Gopalaswamy, graced the occasion as the Chief Guest. Mr. Naveen Chandramohan, founder and Chief Investment Officer of ITUS Capital was the Guest of Honor. A total of 22 students from the Department of Civil Engineering received scholarships.

Completed Internally Funded Students Project

Ms. Kala Vijayakumar, President, SSN Institutions, issued Completion Certificates for the successfully completed Internally Funded Student Projects for the year 2016-17 and 2017-18 on 2 January 2020.

Shiv Nadar University Team Visit

On 17 January 2020, a team from Shiv Nadar University, Noida visited our campus to understand some of our Best Practices. The delegates were Prof. Sandeep Sen, Director, School of Engineering, Prof. Suneet Tuli, Director, Research & Graduate Studies and Faculty Affairs and Dr Rajeev Kumar, Associate Prof., Department of Computer Science.

During their visit to the Department of Civil Engineering, Dr. N. Sivakumar, HoD, briefed them on the notable activities and achievements. Mr. Gokul Krishna, IV year, B.E. Civil Engineering presented an overview of the activities of the Association of Civil Engineers. They then visited a display of our R&D products.

Interaction with the Professors from SNU

Invente 4.0 was an amalgamation of the events of all 9 departments. It provided an opportunity for thousands of multidisciplinary qualified engineers to showcase their talents with unbridled enthusiasm in 70 technical events, 15 non-technical events and 3 workshops.

As part of the mega-event - Invente 2020, the Department of Civil Engineering had organised eight events and a workshop on the two days of 13 and 14 September 2019. The technical fest was a grand success with great cooperation and organisation from all sides. The participants liked the widespread of events and considered it a platform to challenge their skills and learn new skills too.

The Technical Magazine Release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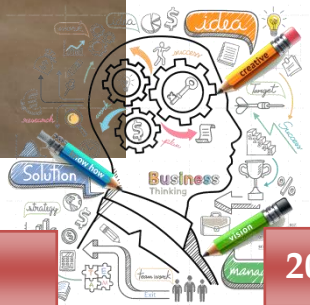
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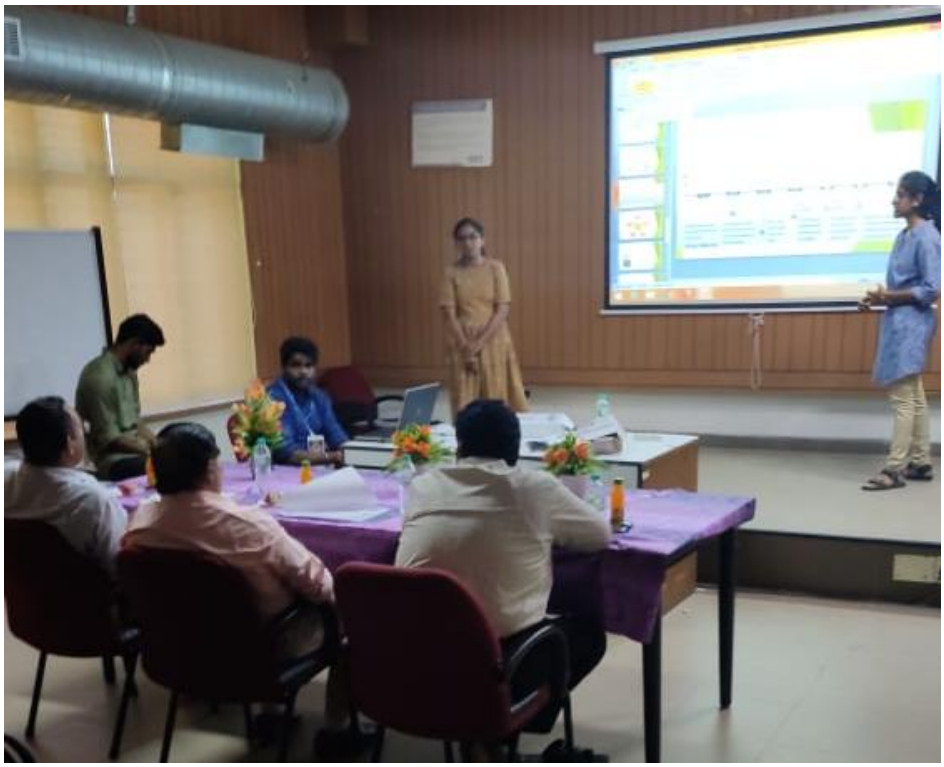


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Bridge for Highway Interchange at Kelambakkam

A field visit was organized for the students of II year, B.E. Civil Engineering on July 17th 2019 to the bridge construction site of the Tamilnadu Road Development Corporation (TNRDC) Kelambakkam bypass road project.

The nearly 5 km long Kelambakkam bypass road starts at Padur and ends at Thaiyur. The 33m wide six lane dual carriageway bypass will have 10.5m carriageway on both sides, along with 1.5m paved shoulder and two metres earthen shoulder for two-wheelers and pedestrians. It will enable vehicles travelling along the OMR to bypass the congested Kelambakkam junction. The project is being executed at a cost of Rs. 201 crores.

The bridge site visited is across the Kelambakkam-Kovalam road. It will act as a fly-over interchange for the bypass road. The vehicles travelling along the Kelambakkam-Kovalam link road will be accommodated in the underpass below the bridge. The students had the opportunity to see the various activities at the bridge construction site viz., piling, pile cap, abutment concreting, long-span girders casting, shuttering and post-tensioning. Witnessing the pile reinforcement detailing and prestressed concrete girder construction for such a large project was an inimitable learning experience for the students.

The visit was organized by Dr. N. Sivakumar and Dr. B. Mahalingam under the aegis of Indian Concrete Institute (ICI) Student Chapter of the Department of Civil Engineering.

Satish Dhawan Space Centre, Sriharikota

On 23rd September 2019, nearly 100 students of SSN College of Engineering got an opportunity to visit ISRO's Satish Dhawan Space Centre at Sriharikota. Six students from the Department of Civil Engineering – Vinothni S N, Anne Sherin A, Harika Madireddy, Nijanthan S, Grandhe Vishnu Prathap and Yuvalatha P accompanied by Dr. Sangeetha P made the visit.

The students first visited the Mission Control Centre which supervises all launches, where, a video was played, explaining the integral function of the Centre in the launch of the rocket. Next, they visited the Second Launch Pad, where, the mechanism of the launch and loading of the rocket onto the launching platform were explained in detail.

The third stop was the Golden or First Launch Pad. Next, the students visited ISRO's Telemetry, Tracking & Command Network Centre (ISTRAC), where, the students learnt of the tracking of the rocket and how the signal is gained by the next Radar station in the network before the current one is lost. The fifth and final stop was the SDSC Museum. The students are indebted to our college management for this incredible opportunity.

Construction inside the SSN Campus

The students of B.E. Civil Engineering had the opportunity to visit the construction sites inside the college campus, through January 2020. The two sites visited were

- The Arts and Science Block construction behind the existing Humanities block
- Staff quarters - new multi-storeyed building site

The Arts and Science block is a G+3 building, divided into four sections. The site engineers explained about the soil conditions and foundation. They elaborated on the dewatering techniques applied in the site.

The under construction staff quarters building is a G+8 structure. The students visited a 2BHK mock living quarters. The engineers showed them the meshing technique adopted in the walls used to join the non-homogeneous and homogeneous material and prevent cracks.

The site visits were organized by Dr. N. Sivakumar and Dr. B. Mahalingam under the aegis of Indian Concrete Institute (ICI) Student Chapter of the Department of Civil Engineering. The students were accompanied by Dr. P. Sreehari, Dr. B. Mahalingam, Dr. R. Vijayalakshmi and Dr. P. Sangeetha. Overall, it was a unique learning experience for the students.


SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING
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DEPARTMENT OF CIVIL ENGINEERING
STUDENT CHAPTER – INDIAN CONCRETE INSTITUTE


SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING
RAJIV GANDHI SALAI (OMR), KALAVAKKAM -603 110. TAMINADU.
DEPARTMENT OF CIVIL ENGINEERING
STUDENT CHAPTER – INDIAN CONCRETE INSTITUTE


SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING
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DEPARTMENT OF CIVIL ENGINEERING
STUDENT CHAPTER – INDIAN CONCRETE INSTITUTE

Co-Curricular Activities

- Mr. Dhanushvarman J, Mr. Rajkumar P & Mr. Gokul S, II year, have participated in the SPARC workshop on "Sustainability and Durability of Concrete Structures with By-Products abd Recycled Materials", conducted by IIT Madras Research Park on 17th & 18th January 2020.
- Mr. P. Prabhakaran, Mr. Vel Kruthik G & Mr. Vikram P G, II year, have participated in the Revival Design Camp organised by Dhan Foundation during 07-11 January 2020.
- Mr. P. Prabhakaran, II year, has participated in the workshop "Digital Marketing Workshop", on 29.08.2019, organized by SSN Lakshya.
- Mr. Gobinaath A S, Ms. Janani and Ms. Raghamalavika, III year, have won the 2nd prize for Paper presentation in the Tech Fest'19 conducted at SRM Easwari Engineering College on 14.08.2019.
- Mr. J. Gokul Krishna, G. Gayathri, S. Santhosh, and A. Balasubramaniam, IV year, have secured 2nd prize in the Technical Hunt event conducted by SRM Easwari Engineering College on 14.08.2019.
- Ms. Vaishnavi & Ms. Vinothni S N, III year, have participated in "Summit on Smart City, Smart Nation and Smart World", organized by St. Joseph's College of Engineering in association with Larsen & Toubro Pvt. Ltd. and IEEE Industry Application Society" held on 2nd & 3rd August 2019.
- Mr. David Arunraj & Mr. Rajarajan T, III year, has presented a paper and won 1st prize in the technical symposium Artifex 2k19 conducted by Sri Venkateswara College of Engineering, Sriperumbudur on 27.09.2019.
- Ms. Vinothni S N has participated in the GIAN course "From Infrastructure Creation to Rehabilitation: Redefining the Role of Engineers", during 02-06 September 2019, organized by IIT, Kharagpur.

- Ms. Tharanyaa S & Mr. Sabareeshwaran P, IV year, have participated in the workshop on Underground Structures conducted by Chennai Institute of Technology in association with Larsen & Toubro Pvt. Ltd., on 20.09.2019.
- Ms. Vinothni S N & Ms. Sushritha, III year, have participated in the Bentley's Global Student Design Challenge 2019.
- Ms. Vinothni S N, III year, has participated in the AICTE Start-up Idea Formulation Challenge as part of Vishwakarma Awads 2019.
- Ms. Sushritha, III year, has participated in the IEEE Innovate Challenge 2019.

Extra-Curricular Activities

- Mr. Aaditya Jagadeesh, IV year, was part of the winning Chess team in the Anna University Zonals 2019 and won the Bronze medal representing AU in the All India Inter University Matches.
- Ms. Manjula & Ms. Amrutha, IV year, were the runners in the Anna University Zonals (Chess).
- Mr. P. Prabhakaran, II year, has participated and received commendation in the Model United Nations, conducted by SRM Ramapuram Campus on 16.08.2019.
- Mr. Amaresh, III year, secured the 3rd place in 100 m and 2nd place in the 4x100 m relay races in the Anna University Zonals 2019.
- Mr. Harish Kumar N, III year, was part of the winning TT team representing SSN in MIT Pune, PITS Tanjore, Kumaraguru Engg. Colege Coimbatore, winner in Anna University Zonals 2019. He is also the Men's Singles Runner in Puducherry State Championship.

- Mr. Barath P, III year, was the winner in the Anna University Zonals 2019 and is selected to represent AU in the All India Inter University Matches.
- Mr. Krishna Kumar, III year, won the Gold Medal in Taekwondo TN State Championship, 2019.

Internship/ In-plant Training

- Ms. Abhinaya Sakthi, Mr. Nijanthan, Ms. Senthamil Selvi & Mr. Naveen Kumar, II year, completed their internship from 5th to 11th December 2019, at Chennai Metro Rail Limited.
- Ms. D. Yaswitha, III year, was accepted into the Institut Mines-Telecom Business School's European Winter Study Tour during 9th to 21st December 2019, at France.
- Ms. Sushritha, III year, completed her internship at TechnipFMC from 22nd November to 11th December 2019.
- Mr. Gopi T, III year, completed his internship at Caterpillar India Private Ltd. – EDC, during December 2019.
- Ms. Sanjai Kumar & Mr. Balasundhar, III year, underwent in-plant training at DCW Ltd. from 2nd to 7th December 2019.
- Mr. Gokul Krishna, IV year, completed an internship with Urban Desgn Collective, Chennai.
- Ms. Vinothni S.N., III year, was a Research Intern at IIT Madras during Nov.-Dec. 2019.
- Ms. Kavya, IV year, participated in the Exchange Project with AIESEC in Damietta Egypt from 9th Dec. 2019 to 7th Jan. 2020.

Placement Update

L&T ECC	Gokul Krishna J
TechnipFMC	Deveshwar K
ACC Ltd.	Nithish CNA
	Hema Naga Sri Pushpa Swetha
	Sajid Ali
	Amrutha U
Wood	Sai Likitha Krishna
	B. Sruthi Reddy
Pick Your Trail	Madhumitha V
	Raghunandan TS
	Lalith Venkatesh M
Friscone Group	Vishnu Vardan S
TCS Ninja	Ahalya S
	Aparna Vijay
	Hema Naga Sri Pushpa Swetha
	Manjula R
	Nithish CNA
	Sajid Ali
	Swarna Varshini D
	Sweatha S
Infosys	Deepika A
	B. Sruthi Reddy
	Sajid Ali
	Kishore P
CTS	Aparna Vijay
	B. Sruthi Reddy
	Hema Naga Sri Pushpa Swetha
	Nithish CNA
	Umakanth P

Higher Studies Update
(2015-19 B.E. Civil Engg.)

TU Delft, Netherlands	B Gokula Krishnan
The University of British Colombia, Canada	Priyadharshini KP
The University of Adelaide, Australia	Rakesh Raj V
The University of Adelaide, Australia	Dharmasekaran K
University of Ottawa, Canada	Manimanickam RM
Concordia University, Canada	Shrinidhi A
Carnegie Mellon University, USA	Sadhana S
CEG, Anna University, Chennai	Elakiya CM
SOPA, Anna University, Chennai	Raghavi N

Placement Experience

"Give me six hours to chop down a tree and I will spend the first four sharpening the axe"

~Abraham Lincoln

Preparation is the key to get selected in core companies. During 2019, many companies like L&T Constructions, ACC, McDermort, RDC concrete, TechnipFMC visited our campus for recruitment. Most of the companies more or less have a similar approach in recruitment process. The process consists of three to four rounds, starting from General aptitude, Group discussion, followed technical round and Hr round. Most companies select only the top one or two candidates. However, with consistent practice and dedication, you can definitely be that one too. Let's discuss the processes in detail to give a clearer idea of what you need to do, in order to ace all these rounds.

Aptitude:

To clear this preliminary gateway and progress to further rounds, mastering the general aptitude is a must. This includes topics like speed and distance , time and work , profit and loss , simple and compound interest etc. which was touched upon in your school curriculum. You can make use of various free test sites like indiabiz.com or YouTube channels like "careerride" for practising the sums. In around two months of practice, you can master aptitude. Later revision might just be enough to brush-up the concepts.

Group Discussion (GD):

As far as GD is concerned, most of the companies monitor how you could speak up and manage yourself in a group. We generally don't have any much elimination in this round

First we have to understand the problem statement and accordingly speak one to two points apt to the given problem statement. A confident and convincing vocabulary and body language is enough to clear the round. Another main hack for this round is to not argue and beat around the bush.

Technical round:

This round is simple if you are prepared for it. It is necessary to be ready with your resume and project details, as these are the areas the interviewers look out for. They will ask your favourite subjects and accordingly test in that area, so it's necessary to list the subject which you have prepared well. Most questions are more or less basic; like how most companies stressed on SI units and basic understanding of the concepts, so prepare formulas with the corresponding SI units too. Be confident with your answer as they might constantly check whether you have a thorough understanding or not.

HR:

This round is easy to prepare, as most HR managers tend to ask questions that fall in a template like:

Tell me about yourself which is not in cv/resume.

What are your strengths and weakness?

Why you chose this field?

What is your interest apart from academics?

See its pretty simple as you can prepare beforehand and this is something more generic. All you need is fluency and understanding about your basic attributes to crack this round.

Most of the companies declare the results four to five days after the recruitment process. Prepare well and give your best shot. If you didn't get placed, don't worry at all. They are plenty of options waiting in the outside world to suits your interests and aspirations. Do not bog down, prepare again and try harder. Note the mistakes that you possibly committed in last attempt and rectify it immediately. Constantly engage with experienced people around you as they will guide you in the right direction. It's essential to be mentally strong and be certain that everything will fall into place eventually.

All the best guys.

RAMASAMY SM

IV year

Is CGPA - a measuring stick?

Hi, my name is Gokula Krishnan Balaji. I am currently a first-year master's student in the field of civil engineering specializing in geo-engineering at Delft University of technology, the Netherlands. I want to share with you my journey as an undergrad at SSN (Batch 2015-19) and how I ended up pursuing a master's degree abroad. I hope this story inspires you to be optimistic and never give up on anything that you wish to be even though you face a lot of failures.

I was a very normal student, like you. As an engineering student, my goal, as every other student was to get a high grade, that's it. But studying at SSN made me explore many things than just studying engineering. During my first year, I applied for the student-funded project, our group was not selected, but it was a great learning experience, we learned how to write a research proposal, we also brainstormed for ideas, to solve some of the important problems in the field of civil engineering. We came up with an idea to use bamboo as reinforcement instead of steel in concrete, to make small structures more sustainable. Nevertheless, I did not give up; I approached my project guide, who was also a great mentor to me, to see if I could pursue some other project, although our idea was rejected. My guide said that we can take up this project but we had to overcome some obstacles to start that project, we had to go meet a manager of a steel company, who is a potential source for ferrochrome slag, which we wanted to use as an alternative to blue metal in concrete, thereby lessening the environmental impact that concrete usually has. We went to the company, a lot of times, we followed up and finally got the ferrochrome slag stones, almost half a ton, just for a meagre of Rs.12. Then we started the project, worked on it like crazy, and were almost one of the few groups that completed a student-funded project in the civil engineering department, even though we officially didn't get a project awarded. It was an enlightening experience that made us learn a lot of things about teamwork, research, facing failures, adhering to standards, managing time effectively and a lot more. We felt proud of this as a group of very enthusiastic students.

Then, in my second year of engineering, I was involved in a lot of things, I kept myself very busy. I was the class representative for batch 2015-19 and I was very enthusiastic about organizing the first-ever Industrial visit, and it was one tough ride for me with a lot of ups and downs, just organizing the IV. I realized it was not easy to satisfy everyone, but I tried my best to get along with everyone, make this a wonderful experience to them. I was a bit foolish to think that I could do it alone, I had a lot of friends who were very helpful to me, and we all made sure that it was one of the memorable times of our college life; I would cherish it for life. It gave me friends for life and a lot more. Although I had to go through all those organizing nightmares like money management, ticketing, booking, official college procedures, etc.., it made me a better leader and as a human being, I learned patience!

At the end of my second year, I heard about people doing internships and I was very much interested to do a research internship, but when I did a thorough research about it online, I was a bit disappointed to know that you need a high CGPA, above 8.5 or so to get a research internship. But I had a fortunate opportunity to be a speaker buddy to a professor from IIT for an event at SSN, to give a seminar on liquefaction. I was intrigued, I made interesting conversation with the IIT professor, in the short time, I was with him, at the end of the day, he gave me his academic card and asked me to contact him, If I needed any help. I didn't hesitate to, not even a bit I wrote him an E-Mail, the following week, asking if I can have an opportunity to do a research internship under him at IIT. The rest was my summer internship at IIT Madras at the end of my 2nd year. It made me realize you should be ready for any opportunity you get, anywhere, anytime. If you believe you can, you can get anything you want to!

The third and fourth year of my engineering was a breeze, I seriously did not know that time can go so fast, it feels like yesterday even now! In my third year, with my mentor, we started diving into serious research as an undergrad; I was involved in buried pipe research along with my best friend, who was a constant support to me through my college

life. I want to emphasize one thing here, always have your group of friends who support you, if you need it, works vice-versa too, my group of friends made my college life easier and happier. So, we did this buried pipe project and wrote a research paper as an undergrad, yeah it was an amazing experience of learning how to write a good research paper. We submitted it to a conference in civil engineering in Malaysia and it was accepted and published in a reputed journal. This made me motivated to do something new, different than usual things, therefore in my fourth year, with the design project we did something unique at that time, a finite element analysis of buried pipes, which I enjoyed doing and learned a lot of new software like ANSYS, Abaqus, CREO, etc. Therefore, for my final year project, we wanted to do something a tad bit amazing, so my mentor shared with me his idea to do an experimental setup of the design project that we did, as he was already involved in a faculty funded project, In the field of buried pipes. I should thank my guide and mentor, who was very motivating and gave us a lot of independence, to design the experimental setup based on an existing model from his Ph.D. research, believed in us and spent money to make it a reality. We did an amazing job in my final year project and it was a very enriching experience, we faced a lot of problems, we faced it patiently, came up with solutions to tackle them. In the end, it was a very satisfying project work that I was involved in. This inspired me to apply for research programs abroad, to do much more exciting experiments. But, again, my CGPA was perfectly an 8, and it was average, nevertheless, I had my resume filled with my other adventures during my undergrad and it helped me secure an admission at TU Delft, one of the best universities in the world, it was dream come true to me, my CGPA did not stop me from realizing my dreams, then I realized that if you have a never giving up attitude, a great mentor, good friends and your loved ones supporting you, it will help you achieve your goals, no matter what, be it an average CGPA.

Okay, to answer the question that I put forth in the title, no CGPA is not a measuring stick, but not to be literally taken, CGPA isn't everything, as an engineering student you

must do a lot more, apart from just writing exams. Although make sure that you at least have an average CGPA of 7.5, which is considered a must if you need a job or apply for higher studies, but don't let CGPA stop you, you are more than your grades. I wish you good luck for your future. Don't forget to have fun during these four years. Take help from your teachers, let them inspire you, who knows, there's something in store for everyone! Cheers!

GOKULA KRISHNAN BALAJI
(B.E. Civil Engg., 2015-19)
g.k.balaji@student.tudelft.nl
(Contact me here if you need any help – Don't spam please ☺)

Corrosion and Cathodic Protection of Reinforced Concrete Structures

The major factors leading to the deterioration of reinforced concrete are poor construction practice and the environment. Concrete can deteriorate for a variety of reasons, and concrete damage is often the result of a combination of factors. Corrosion of reinforcing steel and other embedded metals is one of the leading causes of deterioration in concrete.

Corrosion Chemistry

Corrosion is an electrochemical process involving the flow of charges (electrons and ions). For corrosion to occur: There must be at least two metals (or two locations on a single metal) at different energy levels, an electrolyte, and a metallic connection.

Reinforcing steel in concrete is initially protected from corrosion by the high alkalinity provided by the cement, which stabilises the passive oxide layer on the surface of the steel. The passive layer can be destroyed by a reduction in alkalinity to below about pH 10, such as may be caused by carbonation from the atmosphere or by the presence of aggressive chloride ions. Once the passive layer on the steel has been disrupted, an electrochemical cell can be formed in the presence of oxygen and moisture. The concrete provides the electrolyte in the cell, with the steel rebar completing the circuit and transmitting electrons from anode to cathode.

Anodic reactions involve oxidation of metal to its ions, e.g. for steel the following reaction occurs.

$$Fe > Fe^{2+} + 2e \quad (1)$$

The cathodic process involves reduction and several reactions are possible.

- In acidic water, where hydrogen ions (H^+) are plentiful, the following reaction occurs.

$$2H^+ + 2e > H_2 \quad (2)$$

- In alkaline solutions, where hydrogen ions are rare, the reduction of water will occur to yield alkali and hydrogen.

$$2H_2O + 2e > H_2 + 2OH \quad (3)$$

- However, unless the water is deaerated, reduction of oxygen is the most likely process, again producing alkali at the surface of the metal.

$$O_2 + 2H_2O + 4e > 4OH^- \quad (4)$$

While oxygen is consumed at the cathode to release hydroxyl ions and thus to increase the local alkalinity, rust (iron oxides) and acid are formed at the anodic site. Rust occupies a far greater volume than its parent metal and the process leads to a gradual buildup of bursting stresses within the cover concrete and, eventually, to spalling of parts of the concrete surface.

Treatment of concrete affected by corrosion damage

Numerous repair options are available and new technologies continue to make an impact in the field of concrete repairs. The suitability and cost-effectiveness of repairs depends on the level of deterioration and specific conditions of the structure. The primary methods commonly used to treat concrete which is suffering, or threatened by, corrosion damage to embedded steel:

• Patch repairs or partial rebuild • Migrating corrosion inhibitors • Protective coating systems • Electrochemical techniques • Cathodic protection systems

In this article we will focus on Cathodic Protection (CP) Systems. Cathodic protection is designed to halt all the active corrosion and prevent new sites from

developing. Cathodic Protection is an economical alternative to patch repairs in chloride-damaged structures, not only because it provides a long-term solution but also because it obviates the need for massive removal and replacement of contaminated concrete. It is also cost-effective in severely carbonated structures. It is now used extensively as a means of corrosion control in concrete and has been applied to a wide variety of structure.

Factors that influence CP system performance are exposure to a dynamic environment, variations in concrete cover, variations in chloride contamination, variations in reinforcing steel density, variations in concrete resistivity, electrical continuity.

The two principle types of CP are Impressed current cathodic protection (ICCP) and Sacrificial Anode Cathodic Protection (SACP).

ICCP systems arrest steel reinforcement corrosion activity by supplying electrical current from an external source to overcome the ongoing corrosion current in the structure. ICCP involves the permanent installation of a low voltage, controlled electrical system which passes direct current to the steel so that all of the steel is made into a cathode, thus preventing the steel from corroding. The anode can be applied on the surface of or drilled into small holes in the structure.

A sacrificial anode is a form of cathodic protection, it is made from a metal alloy from the galvanic series which has a more negative electrochemical potential than the steel reinforcement of the structure . This works because the difference in potential between the anode and steel causes a positive current to flow in the electrolyte, making the steel more negatively charged, thus becoming the cathode. The difference in potential between the steel reinforcement and the sacrificial anode, indicated by their relative positions in the galvanic series, means that the galvanic anode corrodes (sacrificed) in preference to the steel. The sacrificial anodes are directly electrically connected to the steel to be protected. Metals that are commonly used as sacrificial anodes are aluminum, zinc and magnesium.

These metals are also alloyed to improve the long-term performance and dissolution characteristics.

Cathodic Protection has become accepted and widely used as a means of halting corrosion of steel in deteriorating reinforced and prestressed concrete structures. The advantages of Cathodic Protection over other rehabilitation methods can be summarized as follows:

- Cathodic Protection has the ability to stop the corrosion process for the extended life of the structure.
- Cathodic Protection is a long-term solution (in excess of 25 years), with minimal maintenance requirements.
- Cathodic Protection exhibits long-term economic advantages when discounted over the design life of the system. In many cases, the first cost may be less than a conventional patch repair, with a life four to five times longer.

VINOTHNI S N

III year