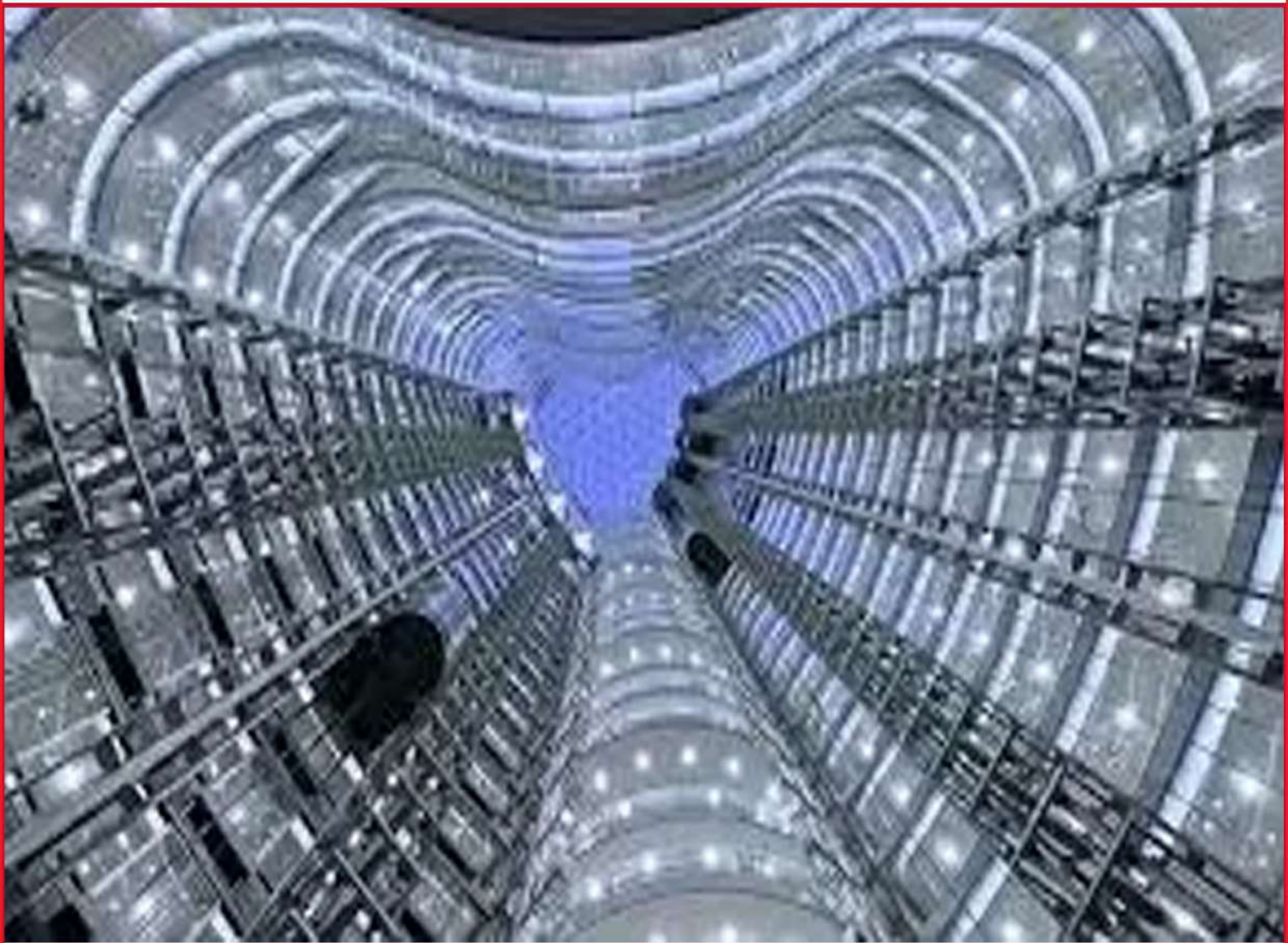




NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)

TECHNICAL MAGAZINE **STAPATHI**



JULY TO DECEMBER 2019

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CIVIL ENGINEERING

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Department of Civil Engineering

Dreamt it We Built it!

Vision

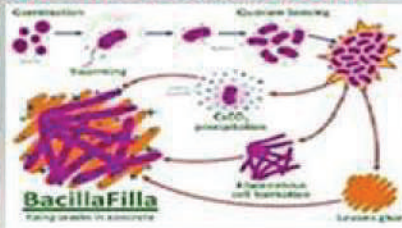
- To be a knowledge hub with state of art infrastructure and imbibe skills of advanced technologies in the field of Civil engineering with a focus on research and sustainable development for the benefit of society.

Mission

- To Provide infrastructure and Train the students as technologically motivated Civil engineers and researchers who can serve the society competently.
- To provide experienced and dedicated faculty for nurturing successful civil engineering professionals for Industry and allied fields.
- To ignite innovative thinking, entrepreneur skills among students with ethical values.

New Trends in Technology

Bacterial Concrete or Self-Healing Concrete for Repair of Cracks



In modern days, the use of technology has taken the standards of construction to a new high level. Bacterial concrete or self-healing concrete is one among them. It fills up the cracks developed in structures by the help of bacterial reaction in the concrete after hardening. Whenever there are cracks in concrete due to human mistakes, incorrect handling and unskilled labors gaps are formed in the concrete. Other agencies like weathering, cracks, leaks and bending etc., arises after the construction. To overcome these types of problems, many remedial procedures are undertaken before and after the construction.

The process of self-healing of cracks or self-filling up of cracks by the help of bacterial reaction in the concrete after hardening is known as Self-Healing Concrete.

It can be observed that small cracks that occur in a structure of width in the range of 0.05 to 0.1mm get completely sealed in repetitive dry and wet cycles. The mechanism of this autogenously healing is the width of range 0.05-0.1mm act as capillary and the water particles seep through the cracks. These water particles hydrate with the partial reacted cement and the cement expands, which in turn fills the crack.

The bacteria used for self-healing of cracks are acid producing bacteria. These types of bacteria can be in dormant cell and be viable for over 200 years under dry conditions. This bacterium acts as a catalyst in the cracks healing process.

Various Types of Bacteria Used in Concrete are bacterial concrete construction are: *Bacillus pasteurizing*, *Bacillus sphaericus*, *Escherichia coli*, *Bacillus subtilis*, *Bacillus cohnii*, *Bacillus balodurans* and *Bacillus pseudo firmus*.

Mechanism of Bacterial Concrete: Self-healing concrete is a result of biological reaction of non-reacted limestone and a calcium based nutrient with the help of bacteria to heal the cracks appeared on the building. Special type of bacteria's known as *Bacillus* is used along with calcium nutrient known as Calcium Lactate. While preparation of concrete, this products are added in the wet concrete when the mixing is done. This type of bacteria can be in dormant stage for around 200 years. When the cracks appear in the concrete, the water seeps in the cracks. The spores of the bacteria germinate and starts feeding on the calcium lactate consuming oxygen. The soluble calcium lactate is converted to insoluble limestone. The insoluble limestone starts to harden. Thus filling up of the crack automatically without any external aide is done. The other advantage of this process is, as the oxygen is consumed by the bacteria to convert calcium into limestone, it helps in the prevention of corrosion of steel due to cracks. This improves the durability of steel reinforced concrete construction.

Advantages of Bacterial Concrete:

- Self-repairing of cracks without any external aide.
- Significant increase in compressive strength and flexural strength when compared to normal concrete.
- Resistance towards freeze-thaw attacks.
- Reduction in permeability of concrete.
- Reduces the corrosion of steel due to the cracks formation and improves the durability of steel reinforced concrete.
- *Bacillus* bacteria are harmless to human life and hence it can be used effectively.

Disadvantages of Bacterial Concrete:

- Cost of bacterial concrete is double than conventional concrete.
- Growth of bacteria is not good in any atmosphere and media.
- The clay pellets holding the self-healing agent comprise 20% of the volume of the concrete. This may become a shear zone or fault zone in the concrete.
- Design of bacterial concrete mix is not available in IS codes.
- Investigation of calcite precipitate is costly.

Faculty Focus

Dr. G. Babu Rao participated and presented a paper entitled "Soil Chemistry of Erravagu Sub-basin of Guntur District, Andhra Pradesh" in International Conference on Science Engineering and Technology (ICSET-2K19) held at AIMS- Mummdivaram, A.P. on 26th and 27th July 2019.

Dr. G. Babu Rao participated in one week Short Term Training Programme (STTP) through ICT mode on "Effective Teaching" from 15.07.2019 to 19.7.2019 organised by National Institute of Technical Teachers Training and Research, Kolkata.

Dr. G. Babu Rao participated in one day national level seminar on "Hydraulics and Hydrology" organised by Andhra Pradesh State Skill Development Corporation on 21st October, 2019 at Andhra Loyola Institute of Engineering and Technology

Dr. G. Babu Rao acted as session Chair in International Conference on Science Engineering and Technology (ICSET-2K19) held at AIMS- Mummdivaram, A.P. on 26th and 27th July 2019.

Dr. G. Babu Rao participated and presented one paper at A.P. Science Congress-2019 organised by Andhra Pradesh Akademi of Sciences, Amaravati and Dr. B. R. Ambedkar University, Srikakulam at Ambedkar University, Srikakulam from 28th to 30th November, 2019.

Dr. G. Babu Rao became a reviewer in Journal of Emerging Technologies and Innovative Research.

Dr. G. Babu Rao became a reviewer in International Journal of Engineering Research and Technology

Dr. G. Babu Rao became a reviewer in International Scientific Committee of Geological and Environmental Engineering in the World Academy of Science, Engineering and Technology.

Dr. G. Babu Rao acted as an Advisory committee member for International Conference on Advances in Science, Engineering and Technology-2019 (ICASET-2019) to be held on 19th and 20th December, 2019 at K.S.R.M College of Engineering (Autonomous), Kadapa, Andhra Pradesh.

M. Srinivasa Rao published a paper entitled "Effect of High Volume Flyash on Fiber Strengthened Concrete" in International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume-8 Issue-11, September 2019.

M. Srinivasa Rao published a paper entitled "Analysis and Design of Pre-stressed concrete beam with different proportions" in IJIRSET volume 8, Issue No.6, June 2019.

K.V.Pratap has attended a one day 'National Workshop on Recent Trends in Civil Engineering (RTCE-2019)' conducted by Vignani's University, vadlamudi, Guntur district, Andhra Pradesh on 13/09/2019.

K.V.Pratap has presented a paper entitled 'Triple Blending of concrete by Partial replacement of cement with Perlite & Rice husk Ash' in the 5th Andhra Pradesh Science Congress (APSC-2019) held at Dr.B.R.Ambedkar University, Srikakulam, during 28th – 30th Nov, 2019.

K.V.Pratap has attended a 1 day 'National Workshop on Emerging Technologies in Civil Engineering (NWETC-2019)' conducted by Vignan's University, Vadlamudi, Guntur district, Andhra Pradesh on 19/12/2019.

K.V.Pratap became a member of IRDP group of Journals IRDP/M/044/2019}.



K.V.Pratap has received "Best Young Teacher International Award" from IRDP awards 2019 on 24/08/2019 at Hotel Atchaya, Chennai.

K.V.Pratap has completed SWAYAM-NPTEL online certification course (Jul-Oct 2019) on Strength of Materials with Elite + Silver.

Korrapati Pratyusha and Doredla Nagaraju published a paper entitled "Effect of Soil Structure Interaction on Multi-Storeyed Building with Raft Foundation" in International Journal of Innovative Technology and Exploring Engineering (IJITEE) Volume 9, Issue 1, Pages 557-570.

Doredla Nagaraju and Korrapati Pratyusha, published a paper entitled "Perusal of Multi Storey Light Frame Shear Wall by Manual Check and Finite Element Method" in International Journal of Engineering and Advanced Technology (IJEAT) Volume 8, Issue 6, Pages 569-574.

Dr. T. Phani Madhavi participated as an Invited Speaker on "Innovative Water Treatment Technologies", at 10th International Congress of Environmental Research organized during 19-21 December 2019 at Adi Shankara Institute of Engineering and Technology Kalady, Kerala, India in collaboration with Journal of Environmental Research and Development.

Student Focus

K. Naga Raju (17475A0126) of IV B. Tech has participated and presented a paper on "Spray Water Proofing for structural elements" in the AMR Fest Ignited Minds-2k19 and secured first prize.

మొదటి ఫస్ట్ లో ఎన్ కౌన్సిల్ విద్యార్థి ప్రతిభ



వరదాచలమి, డిసెంబర్ 30 (వరదాచలమి) ప్రాంతీక వరదాచలమి కలెజ్ లోని కళాశాలలో డి.టి. పైడే బహు విద్యార్థులకు కెలాగరూ ఈ సం 28వ తేదీన ఏ.ఎం.ఆర్. గ్రూప్ ఆఫ్ ఎడ్యుకేషనల్ ఇన్స్టిట్యూట్ నెరవేరించిన మొదటి ప్లేజ్ ఎన్ కౌన్సిల్ సెలక్షన్-2019 ప్రకారం ప్రాథమిక యేర్పర్లలో ఎం.ఎం.ఆర్. గ్రూప్ ఆఫ్ ఎడ్యుకేషనల్ ఇన్స్టిట్యూట్ లోని విద్యార్థులలో మొదటి ప్రాథమిక విజేతగా ఎం.ఎం.ఆర్. గ్రూప్ ఆఫ్ ఎడ్యుకేషనల్ ఇన్స్టిట్యూట్ కళాశాల స్టూడెంట్ లాక్ష్మణ్ ఎం. శ్రీనివాసరెడ్డిని ఎం.ఎం.ఆర్. గ్రూప్ ఆఫ్ ఎడ్యుకేషనల్ ఇన్స్టిట్యూట్ కళాశాల యోజనాదర్శిని అభినందించుచు.

విద్యార్థులు విజేతలను ప్రార్థించుచున్నట్లు తెలుసుకుంటున్నట్లు.

Tue, 31 December 2019
<https://www.apsc.gov.in/6747992>

N. K. Vishnuvardhan Reddy (17471A0141) of III B. Tech has got selected for Innovation Fellowship Program for the year 2019-20 at SR Innovation Exchange (SRIx), Warangal.

M.Vijaya Bhaskara Reddy (16471A0117) of IV B.Tech has successfully completed SWAYAM NPTEL course from July to October-2019.

D.V.S.Raja Sekhar Reddy (17475A0108) of III B. Tech has participated along with his college team in Kabaddi competition in AMR Ignited Minds 2K19 Fest" during 28th and 29th decemeber,2019 organised by A. M. Reddy Group of Educational Institutions and stood as winner.

Important Activities held in the Department



Department has organised a workshop on E-Tabs for IV B.Tech students from 24-12-2019 to 30-12-2019 in association with APSSDC.

 G.L.S.SUMANTH 19471A0118 RANK: 1 SGPA: 8.9	 P. GOVARDHAN 19471A0144 RANK: 1 SGPA: 8.9	 K. V. GOPAL 19471A0126 RANK: 2 SGPA: 8.7	 K.SIVA 19471A0131 RANK: 3 SGPA: 8.6
 A.G. KRISHNA 19471A0103 RANK: 1 SGPA: 8.77	 P. CH.P. GUPTA 19471A0136 RANK: 2 SGPA: 8.36	 J. HASMITHA 19471A0115 RANK: 2 SGPA: 8.36	 K.SUKANYA 19475A0113 RANK: 3 SGPA: 8.27

 M.V.SUBRAH 17471A0119 RANK: 1 SGPA: 8.23	 K. SEKHAR 16475A0106 RANK: 2 SGPA: 8.86	 E.S.SIVA 17471A0102 RANK: 3 SGPA: 7.77	 K.NAGA RAJU 17475A0126 RANK: 2 8.77	 S.K. M. LALU 16471A0103 RANK: 3 8.84	 D.K. REDDY 16471A0101 RANK: 1 8.91
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Alumni Voice



I feel fortunate to be a student of Narasaraopeta Engineering College as it helped me to both on personal and professional front. It inculcated a lot of intra and interpersonal skills which helped me in all round development. Teaching by the senior faculty and the field exposure in my college life has helped me a lot in securing a good job. Personal care towards me by the faculty members has helped me in qualifying the competitive exams at national level. I want to thank the management of the college for providing necessary materials and books in the library to face the competitive world.

PALLEPOGU ANKITHA,
Branch manager (OJM-I),
Chaitanya Godavari Grameena Bank,
Uppalapadu Branch, Narasaraopet

Student's Voice



I acknowledge that my knowledge has been enriched due to my association with our department. Knowledge transformation programs (guest lecture, workshops) conducted to the students is really helped to face global competition. The encouragement by the college management made me to qualify for campus interviews.

D. Kranthi Kiran Reddy,
Regd. No. 16471A0111,
IV B. Tech