ROHINI
COLLEGE OF ENGINEERING & TECHNOLOGY

Approved by AICTE and Affiliated to Anna University (An ISO Certified Institution) | Accredited with A+ Grade by NAAC
Recognized under Section 2(f) of University Grants Commission, UGC ACT 1956
(AUTONOMOUS)

DEPARTMENT OF CIVIL ENGINEERING

CONSTRUCT '25
Magazine

Content

Department Vision

To be centre for quality education and research in diverse area of civil engineering, and provide service to nation in terms of nurturing Civil Engineers with a strong social commitment

Department Mission

- ✓ To nurture Civil Engineering professionals by providing strong fundamentals and technical skills in civil engineering through effective teaching - learning Methodologies

- ✓ To articulate research learning by dissemination of diverse areas of civil engineering in practical applications and undertake professional consultancy services.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOS)

PEO1: *Graduates will demonstrate how to apply fundamental principles of civil engineering to solve engineering problems.*

PEO2: *Graduates will work effectively as individuals and as part of interdisciplinary teams with a sense of social responsibility*

PEO3: *Graduates shall excel in recent advancements in industry and accomplish professional competence*

PROGRAM OUTCOMES

Civil Engineering Graduates will be able to:

PO 1. *Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution to complex engineering problems.*

PO 2. *Problem analysis: Identify, formulae, review research literature, and analyze complex engineering problems reaching substantiated conclusion using first principles of mathematics, natural sciences, and engineering sciences.*

PO 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.*

PO 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 conclusion.*

PO 5. *Modern tool usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.*

PO 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.*

PO 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.*

PO 8. *Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.*

PO 9. *Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.*

PO 10. *Communications: 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.*

PO 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 an in multidisciplinary environments.*

PO 12. *Life-long learning: Recognize the needs for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.*

PROGRAMME SPECIFIC OUTCOMES(PSOS)

PSO1: *Apply and develop basic concepts of civil engineering by including the best practices for solving real time problem through feasible solution and to specialize in various academics.*

PSO2: *Ability to provide interdisciplinary skill to meet the social needs through civil engineering and to develop successful professional career along with strong technical, communication and presentation skill.*

PSO3: *To apply experimental knowledge, analysis, interpretation of data and information to Civil Engineering problems.*

About the Institute

Rohini college of Engineering and Technology (RCET) was started in the year 2012 by Shri.K.Neela Marthandan, a great Industrialist and philanthropist and now managing by his son Dr.N.NeelaVishnu. It is located at Palkulam near Anjugramam junction & Kanyakumari, the southernmost town in India. RCET is about 5 kms from the Kanyakumari railway station and 14 kms from Nagercoil junction. RCET is approved by All India Council for Technical Education (AICTE), New Delhi & affiliated to ANNA University Chennai since 2012 and accredited with NAAC A+ grade. Recognized Under Section 2(f) of University Grants Commission, UGC Act 1956. The college has been conferred with the Autonomous status by the University Grants Commission (UGC). The main feature of the college comprises world class infrastructure with experienced and talented faculties, excellent pass percentage, good placement records and society-oriented products/projects developed by the students.

About the Department

The department of Civil Engineering started in 2012 with an initial intake of 60 students to the BE(Civil) programme and increased to an intake of 120 students from 2014. In the year 2021 the intake is reduced as 60. The department offers ME (Construction Engineering and Management) programme from 2013 with an intake of 24 students. The department accommodate outcome-based education which help the student to learn develop and serve to the society. The department has experienced and dedicated faculty with a wide range of specialization in Structural Engineering, Construction Engineering and Management, Environmental Engineering. The students are provided with lot of opportunities to work on projects and skill development from apart from regular curriculum.

Message from Chairman

Shri. K. NEELA MARTHANDAN
Chairman
ROHINI College of Engineering and Technology

"The function of education is to teach one to think intensively and to think critically. Intelligence plus character - that is the goal of true education"

I am very glad to know that the students of the Department of Civil Engineering are bringing out a magazine to throw light on the activities and achievements of their department. Such activities among the students will enhance their communications skills, technical skills, innovative thinking and knowledge as well. RCET has made a tremendous progress in all areas crossing several milestones within a very shot span of time. I feel happy to know that the students and faculty of Civil Engineering department of RCET bringing out the technical magazine Construct '24. I congratulate the students of departments of Civil Engineering for taking up this task On this occasion I convey my good wishes to staff and students of Civil Engineering in their endeavors.

Message from Pro Chairman

Dr. N. Neela Vishnu., MBA., Ph.D.,
Pro Chairman
ROHINI College of Engineering and Technology

It is a great pleasure for me that our Civil Engineering department is releasing magazine Construct'24. As the Pro-Chairman of Rohini College of Engineering and Technology, I feel proud about it. I am indeed happy to know that the Civil Engineering department has taken initiative in release the magazine and urge faculties and students to make use of the platform to share and educate among themselves in publishing article pertaining to the emerging domain and articles of interesting. I congratulate the team of department of Civil Engineering and I would like to compliment and congratulate the department of Civil Engineering and its editorial team for the contribution in bringing out the Magazine.

Message from Managing Director

Dr. V. M. Blessy Geo., MSc., Ph.D.,
MANAGING DIRECTOR
ROHINI College of Engineering and Technology

It is a great pleasure for me that our Civil Engineering department is releasing a magazine Construct'24. The magazine id presenting a glimpse of the growth of the institution on many fronts. The essential purpose of a magazine is to inform, engage, inspire, and entertain a diverse readership- including alumni, parents, students, faculty, staff and other friends of the college- by telling powerful storied that present a compelling, timely and honest portrait of the college and its extended family. This magazine has made an earnest attempt in this direction and brought out certain aspects of the college to the eyes of the public so that they may understand and know the college even better. The college has been simply unstoppable in its progress as it has been actively involved in various activities that have brought to light the hidden talents of the college students and staff.

Message from Principal

Dr. R. Rajesh., ME., Ph.D.,
PRINCIPAL
ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY

It gives me immense pleasure and satisfaction in expressing my appreciation to Construct '24 the magazine published by Department of Civil Engineering. I use this opportunity to congratulate all the people who have put in sincere efforts for the efficient functioning of the magazine, especially the Faculty coordinators, Editorial Committee and the Student members. The magazine to showcase its functioning, activities and achievements, but also an incredible platform for our students to exhibit their technical prowess, display their literary skills and pen down their creative thoughts. I sincerely hope that the Magazine keeps up the good work and wish them success in their future endeavors. Stay inspired and scale new heights.

Message from HOD

Dr. J. SAHAYA RUBEN
HEAD OF THE DEPARTMENT
ROHINI College of Engineering and Technology

It gives me immense pleasure and satisfaction in expressing my appreciation to Construct '24 The magazine offers a great platform for the students to showcase, develop and enhance their technical skills through workshops, industrial visits and technical talks. I express my heartfelt appreciation for the chapter and wish it will be able to scale greater heights in future.

Message from Editorial Board

A warm welcome to the magazine of the Department of Civil Engineering. It has been yet remarkable academic activities, with our students putting forth efforts and doing impressively well in academics and extracurricular and our faculties continuing to offer guidance and being a fabulous mentor. Team Magazine taking this opportunity to thank our faculties and staff for active co-operation and continued support, enthusiasm, passion and dedication. Also, many thanks to our dear students for their kind attention, participation and for a great year! This magazine attempts to showcase a glimpse of the myriad activities happening in our department. We are thankful to our faculties and students for their constant support and valuable inputs. We look forward for your support and feedbacks that will help us to improve.

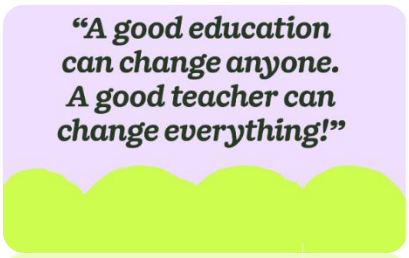
The Editorial Board

About Department Staff

Name	Degree	Photo	Area of Specialization	Current Designation
Dr.J.Sahaya Ruben	ME ., PhD.,		Structural Engineering	Professor & Head
Dr.M.Tamil Selvi	ME ., PhD.,		Structural Engineering	Professor
Dr.N.Suthan Kumar	ME ., PhD.,		Construction Engineering and Management	Structural Engineering
Dr.V.Jeyanthi Vineetha	ME ., PhD.,		Structural Engineering	Structural Engineering
Mr.A.Ananth	M.E		Structural Engineering	Assistant Professor
Mr.K.Ajan	M.E		Construction Engineering and Management	Assistant Professor
Mrs. Suthamalli	M.E		Construction Engineering and Management	Assistant Professor
Mr.L.Hari Gopala Krishnan	M.E		Structural Engineering	Assistant Professor
Mr.R.Rajiv Gandhi	M.E		Structural Engineering	Assistant Professor
Mrs.R.K.Aswini	M.E		Construction Engineering and Management	Assistant Professor

Mrs. R. Reno Infanto	M.E		Infrastructure Engineering and Management	Assistant Professor
Mr. R. Xavier	M.E		Structural Engineering	Assistant Professor
Mr. Easwara Thayabalan	M.E		Structural Engineering	Assistant Professor
Mr. Michel Theivadurai G	M.E		Structural Engineering	Assistant Professor
B.Sathya	DCE		Civil Engineering	Lab Technician
M.Mohanan Nair	DCE		Civil Engineering	Lab Technician
T.Ajitha	DCE		Civil Engineering	Lab Technician
T.Ajitha	DCE		Civil Engineering	Lab Technician

The Department of Civil Engineering is always imparting quality and real-time technical education including techno-social ethics, soft skills, and leadership qualities. Always motivating intellectual skill development and entrepreneurship among the graduates to handle projects independently. Faculty members of the department have excellent academic, research and industry credentials.

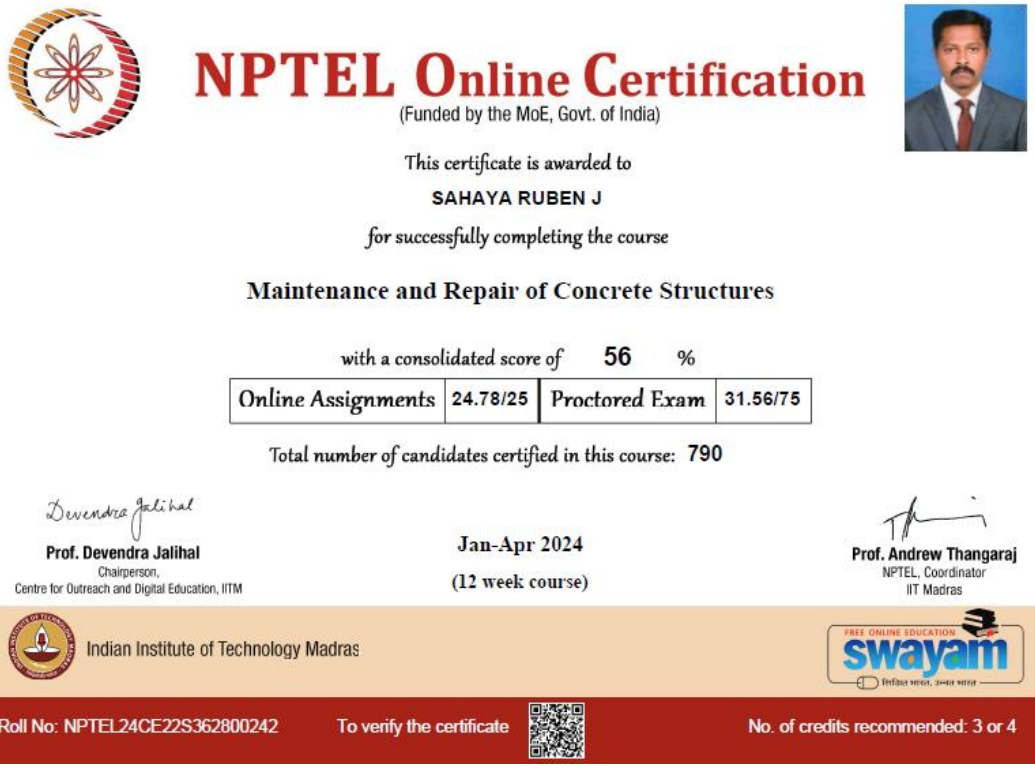


Paper Publication

Name of the Author	Title of the paper	Name of the journal	ISSN NO	Volume	Page Number	Year of publication
M. Prem Anand1 · M. Anand, M. Adams Joe, **J. Sahaya Ruben**	Lightweight Bi-LSTM method for the prediction of mechanical properties of concrete	Multimedia Tools and Applications	1380-7501	83	54863–54884	2024
M. Adams Joe; **J. Sahaya Ruben**; M. Prem Anand; M. Anand	Deep learning-based concrete compressive strength prediction with modified resilient backpropagation training	International Journal of Intelligent Engineering Informatics	1758-8723	12(3)	276-301	2024
Dasarathy, **Tamil Selvi,**	Exploring the feasibility of Distributed Ledger Technology for Tamber Proof Logging in MANETS Challenges and Solutions	Journal of Environmental Protection and Ecology	13115065	25(6)		2024
Suthan Kumar N., Sahaya Ruben J., Ibsa Neme M.	Sustainable Use of Gum Acacia as a Biopolymeric Additive in Ultra-High Performance Concrete	Advances in civil Engineering	1687-8094	Volume 2024	001-018	2024

NPTEL COURSE

Name of the Faculty	Title of the course	Credit of the course	Duration of the course	Duration	Status
Dr.J.Sahaya Ruben	Effective Engineering Teaching In Practice	2	4 Weeks	Jan-Feb 2024	Completed
Dr.J.Sahaya Ruben	Maintenance and Repair of Concrete Structures	4	12 weeks	Jan-Feb 2024	Completed
Dr.J.Sahaya Ruben	Building materials and composites	3	8 weeks	july-sep2024	Completed
Dr.N.Suthan Kumar	Building materials and composites	3	8 weeks	july-sep2024	Completed
G.Michel Thivadurai	Building materials and composites	3	8 weeks	july-sep2024	Completed



NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

SAHAYA RUBEN J

for successfully completing the course

Maintenance and Repair of Concrete Structures

with a consolidated score of 56 %

Online Assignments	24.78/25	Proctored Exam	31.56/75

Total number of candidates certified in this course: 790

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jan-Apr 2024
(12 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL24CE22S362800242 To verify the certificate No. of credits recommended: 3 or 4

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत - कुशल भारत

This certificate is awarded to

SUTHANKUMAR N

for successfully completing the course

Building Materials and Composites

with a consolidated score of **54** %

Online Assignments	20.58/25	Proctored Exam	33/75

Total number of candidates certified in this course: **402**

Jul-Sep 2024

(8 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL24AR15S442300225 To verify the certificate No. of credits recommended: 2 or 3

Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत - कुशल भारत

This certificate is awarded to

MICHEL THEIVADURAI G

for successfully completing the course

Building Materials and Composites

with a consolidated score of **69** %

Online Assignments	19.75/25	Proctored Exam	49.5/75

Total number of candidates certified in this course: **402**

Jul-Sep 2024

(8 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL24AR15S342300040 To verify the certificate No. of credits recommended: 2 or 3

Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

SAHAYA RUBEN J

for successfully completing the course

Effective Engineering Teaching In Practice

with a consolidated score of **61** %

Online Assignments	20.83/25	Proctored Exam	40.14/75

Total number of candidates certified in this course: **526**

Devendra Jalihal

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jan-Feb 2024

(4 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

Roll No: NPTEL24GE13S554900027 To verify the certificate No. of credits recommended: 1 or 2

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

SAHAYA RUBEN J

for successfully completing the course

Building Materials and Composites

with a consolidated score of **57** %

Online Assignments	18.92/25	Proctored Exam	38.5/75

Total number of candidates certified in this course: **402**

Jul-Sep 2024

(8 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL24AR15S342300102 To verify the certificate No. of credits recommended: 2 or 3

Fund Received

Name of the faculty Guide	Tittle	Funding Agency	Name of the program	Fund amount	Date of funding
Dr.J.SAHAYA RUBEN	Water & Soil Conservation Experimental investigation of water quality through index method for pazhayar river	Tamilnadu govt	Naan Muthalvan Niral Thiruvizha.	10000	12-09-2024
B.EASVARA THAYA BALAN	Experimental Investigation of reinforced thermocol panels as an alternate building material	Tamilnadu govt	Naan Muthalvan Niral Thiruvizha.	10000	12-09-2024
Dr.M.TAMIL SELVI	An Experimental Study on Self - Curing Concrete Containing GGBS Slag Using Polyethylene Glycol(PEG)	Tamil Nadu State Council for Science and Technology (TNSCST)	Student Projet Scheme 2023 -24	7500	09-07-2024

Conference Details

Name of the Authour	Title of the paper	Name of the Conference	College	ISSN NO	Year
Tamil selvi M	Experimental Analysis of River Sand Concrete And M-Sand Concrete Strength Comparisons Using Alccofines	International Conference on Nurturing Sustainability through Innovations in Science and Technology for Global Welfare	JAIN DEEMED UNIVERSITY, BANGLORE	2070-1721	2024
Tamil selvi M	Multiple linear Regression modelling for predicting noise pollution	International Conference on Nurturing Sustainability through Innovations in Science and Technology for Global Welfare	JAIN DEEMED UNIVERSITY, BANGLORE	2070-1721	2024

Patent Details

Name of the Authour	Title of the Patent	Aplication number	Applied/Published(2024)
Dr.J.Sahaya Ruben	Device for Mixing Cement with Zeolite	Application Number:423502-001	Published
Dr.M.Tamil Selvi	Device for Mixing Cement with Zeolite	Application Number:423502-001	Published

AXIAL BEHAVIOR OF CONCRETE FILLED STEEL TUBULAR COLUMN WITH EXTERNAL FRP CONFINEMENT

Dr.N.Suthan Kumar
Associate Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

A column is a vertical member which excellently takes load by compression. Basically, column is a compression member as load acts along its longitudinal axis. Bending moment may occur due to eccentric loading, wind, earthquake or accidental loads. Column transfers the load of the structure of slabs, beams above to below lying foundation and finally load is transferred to the soil. Position of the columns should be so that there are no tensile stresses developed at the cross section of the columns. Composite columns have an important application in the composite construction and they are widely used in high rise buildings and bridge piers. In recent years, FRP jacketing has become famous to retrofit of already existing damaged structures. The lightweight, extreme strength and corrosion resistance of fiber reinforced polymers create them especially more suitable for repair and strengthening. A large number of studies has been recently carried out on the characteristics of externally applied FRP and highlighting the use of externally applied FRP for retrofitting of structural elements. In this study, the compressive behaviors of Concrete Filled

Steel-Tubes (CFT) confined with Fiber Reinforced Polymers (FRPs) were investigated. CFT columns of varying height (0.9m, 1.2m, 1.5m and 1.8m), different types of FRPs (Glass, Basalt, Carbon) and number of plies (single and double plies) are chosen as varying parameter to study the behavior of CFT columns. First the materials to be used in the project are analyzed for their properties. The characteristic compressive strength of concrete taken in this study was 25 MPa. Feasibility study is a preliminary study undertaken to determine, analyses and select the best possible scenarios. A small scaled model of the main work is analyzed by fabricating same as per the design. The model is tested to study about its feasibility and deciding about the further process to be carried out. CFT column of 150mm height was considered for preliminary study. Compressive strength of 150mm height CFT columns were increased by confining with different FRPs. Similarly, double plies confined CFT columns having higher compressive strength than the single ply.

Keywords: FRP, CFRP, BFRP, GFRP, CFT, Column, Strengthening, Confinement, Compressive strength.

INVESTIGATING THE BEHAVIOUR OF THE COCONUT SHELL AGGREGATE AND USING SUPER ABSORBENT POLYMER AS AN INTERNAL CURING AGENT.

Dr.M.TamilSelvi
Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

One alternative for sustainable construction is the use of waste materials. This study on an experimental examination that was carried out to assess the compressive strength, flexural strength, load, and displacement of concrete specimens. The coarse aggregate used in the investigation was crushed coconut shell waste, which was then used to make light-weight concrete. In this study, waste coconut shells were used in concrete at different percentages to partially replace coarse aggregate. For example, 25% of the coconut shells had 0% SAP, 25% had 0.5% SAP, 25% had 1% SAP, 25% had 1.5% Super absorbent polymer, and 25% had 2% Super absorbent polymer.

Numerous material tests, including bulk density testing, sieve analysis, specific gravity, and water absorption, have been performed. After the concrete specimens have cured for 28 days, the results of the remaining tests for compressive strength, flexural strength, deflection, stress, strain, modulus of elasticity, and crack width will be ascertained. Through studies, the ideal amount of super absorbent polymer on concrete's compressive strength will be found and reported.

Keywords: Coconut shell; Super Absorbent Polymer; Light Weight Concrete; Internal curing; Durability; Sustainable development

EXPERIMENTAL INVESTIGATION ON STRENGTH OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT BY USING TITANIUM DIOXIDE SLUDGE WASTE

G.Michel Theiva Durai
Assistant Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

The construction materials such as concrete, bricks, hollow blocks, solid blocks, pavement blocks and tiles are produced from various natural resources. Now a days

construction activities increases all over the world. This sudden increase of these activities causes the shortage of conventional construction materials. Cement is the mostly used in the concrete for the construction purposes. The cement is used in the concrete for producing better binding properties in concrete. The demand of concrete is increases day by day. It will cause the utilization of cement in large volume. It will cause the exploitation of natural resources and also cost of cement increased in last few years. In India there are many industries which produce large amount of effluent treatment plant sludge in every year which leads to increasing problems in disposal and environmental degradation due to continuous exploration and depletion of natural resources. Since the land is limited, another method should be used for the disposal of industrial waste sludge.

The pollution control board and also various researchers are trying to reduce the environmental degradation of the industrial wastes by various researches including in the field of concrete. In this study focuses the replacement of cement by sludge of TiO_2 in M25 mix. The cement is replaced by 5%, 10% and 15% with waste sludge. The various tests such as compression, tensile and flexural strength are conducted.

Keywords: Strengthening, waste sludge, TiO_2, Compressive strength, tensile, flexural strength

EFFECT OF RICE HUSK ASH AND CORN COB ASH IN CONCRETE WITH PARTIAL REPLACEMENT IN CEMENT

K.Ajan
Assistant Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

The objective of the study is to investigate the mechanical properties of high strength concrete with different replacement levels of ordinary Portland cement by Rice Husk Ash & Corn Cob Ash. The standard cubes (150mmX150mmX150mm) were casted. The cubes were casted by partial replacement of Rice husk ash and Corn cob powder in cement for M30 grade of concrete. The strength effect of concrete of various amounts of replacement

in cement viz., 0%, 5%, 10%, 15%,20%,25%,30% with Rice Husk Ash & Corn Cob Ash of M30 grade is compared with Normal concrete. The optimum replacement of rice husk ash and corn cob ash in cement is found to be 15% and obtain more strength when compared with the strength of normal concrete.

Keywords: Rice Husk Ash (RHA), Corn Cob Ash (CCA), Compressive strength

EVALUATION OF ACID RESISTANCE IN CONCRETE ADMIXED WITH SILICA FUME AND M-SAND

Dr.J.Sahaya Ruben
Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

The M_{40} grade conventional concrete is made and its response towards acid resistance is compared with concrete partially modified with mineral admixtures and manufactured sand. 5% by weight of binder is replaced with silica fume. Fine aggregate is replaced partially with range of 0%, 15%, 25%, 35% and 45% by manufactured sand. All the mixes are cured under water for 28 days and also cured in two acidic mediums. Acid attack on concrete is studied for HCl and H_2SO_4solution with concentration of 1%. All the mixes are observed for its loss in weight and compressive strength after acid attack. The mix with 45% manufactured sand and 5% silica fume showed better performance. There was reduction in loss of weight when manufactured sand is replaced for 45%. Addition of silica fume enhances pozzolanic action at early age and hence early strength of concrete. Modified Concrete resists HCl than H_2SO_4solution.

Keywords: Silica fume, manufactured sand, Hydrochloric, Sulphuric acid, loss in weight, compressive strength

STUDY ON NANOTECHNOLOGY IN CIVILENGINEERING STRUCTURES

R.K. Aswini
Assistant Professor, Department of Civil Engineering
Rohini College of Engineering and Technology

ABSTRACT

The innovation of relevant nanotechnology and its significance in civil engineering practice is illustrated in this paper for broadening vision. Nanotechnology deals with understanding, controlling and manipulating matter at the level of individual atoms and molecules in the range of 0.1–100 nm (10-9 m). It creates materials, devices, and systems with new properties and functions. The role of nanotechnology in the conceiving of innovative infrastructure systems has the potential to revolutionize the civil engineering practice and widen the vision of civil engineering. Following this the analysis were carried out in ductile structural composites along with its enhanced properties, low maintenance coatings, better properties of cementitious materials, reducing the thermal transfer rate of fire retardant and insulation, various nano sensors, smart materials, intelligent structure technology etc. The properties like self-sensing, self-rehabilitation, self-cleaning, self-vibration damping, self-structural health monitoring and self-healing are the key features. To execute these, the gap between the nanotechnology and construction materials research needs to be bridged. This paper first presents the background information and current developments in nanotechnology and civil engineering in general followed by the merits and demerits of their interdisciplinary approach. Further the details of application oriented nanotechnology-enabled materials and products that are either on the market or ready to be adopted in the construction industry and also their possible consequences over the time is elucidated. Some of the major instances of current applications of nanotechnology in the field of civil engineering across its different sections around the globe are exemplified. The most challenging economic factors concerned with its practicality are discussed briefly. Finally, the future trend, potential and implications of nanotechnology development in civil engineering towards more economical infrastructure, low cost maintenance with longer durability are deliberated.

Keywords: Nonmaterial, Nanotechnology, Sustainability.

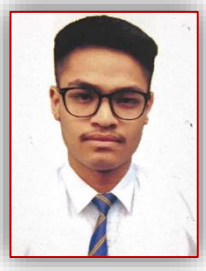
Association Office Bearers (2024-2025)

Sl.No	Name	Class	Position	Photo
1	Muthu S	IV CIVIL	Vice-President	
2	Sam Rahul S	IV CIVIL	General Secretary	
3	Jeevakan S	IV CIVIL	Treasurer	
4	Ari Hara Sudhan S	III CIVIL	Joint Secretary	
5	Hemam Laingam Singh	IV CIVIL	Executive Member	
6	Sasi Pratheeba P	IV CIVIL	Executive Member	
7	Suryadevi R	IV CIVIL	Executive Member	
8	Archana T	IV CIVIL	Executive Member	
9	M.Sam Prasath	III CIVIL	Executive Member	
10	M.Akash	III CIVIL	Executive Member	

Toppers Recognition

Tharsha P
IV Civil
CGPA 9.38

Haobijam Machaliema Devi
IV Civil
CGPA 8.79



Rohith Laishram
IV Civil
CGPA 8.70

Karthika G
III Civil
CGPA 8.70

Satyajeet Mutum
III Civil
CGPA 8.17

Athisha N
III Civil
CGPA 8.0

Student Achievements

NPTEL Course

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

WUNGNAONGAM KASAR

for successfully completing the course

Maintenance and Repair of Concrete Structures

with a consolidated score of **54** %

Online Assignments	24.22/25	Proctored Exam	30/75

Total number of candidates certified in this course: **790**

Devendra Jalihal

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jan-Apr 2024

(12 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL24CE22S359100010 To verify the certificate No. of credits recommended: 3 or 4

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

SINGTIT RSM

for successfully completing the course

Maintenance and Repair of Concrete Structures

with a consolidated score of **54** %

Online Assignments	23.69/25	Proctored Exam	30/75

Total number of candidates certified in this course: **790**

Devendra Jalihal

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jan-Apr 2024

(12 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL24CE22S359100034 To verify the certificate No. of credits recommended: 3 or 4

NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

ROHIT LAISHRAM

for successfully completing the course

Maintenance and Repair of Concrete Structures

with a consolidated score of **56** %

Online Assignments	22.75/25	Proctored Exam	32.99/75

Total number of candidates certified in this course: **790**

Devendra Jalihal

Prof. Devendra Jalihal
Chairperson,
Centre for Outreach and Digital Education, IITM

Jan-Apr 2024

(12 week course)

Prof. Andrew Thangaraj
NPTEL, Coordinator
IIT Madras

Indian Institute of Technology Madras

FREE ONLINE EDUCATION swayam

Roll No: NPTEL24CE22S459100068 To verify the certificate No. of credits recommended: 3 or 4

ROHINI COLLEGE OF ENGINEERING & TECHNOLOGY

PLACEMENT CELL

Placement Drive - 03-10-2024

Company Name: PRIME MERIDIAN SURVEYS PRIVATE LIMITED, Chennai

Register Number	Student Name	Department
963321103001	AADIL MOHAMMED	CIVIL
963321103003	AMALA NITHISH N	CIVIL
963321103008	ARUL JOSE C	CIVIL
963321103012	BUVANESH M	CIVIL
963321103017	HABEL VARGHESE	CIVIL
963321103020	JAYAKRISHNAN S	CIVIL
963321103024	JERIN J	CIVIL
963321103031	NELSON SHANDHAM	CIVIL
963321103038	RIVIN THOMAS	CIVIL
963321103041	SAKTHI BALA K	CIVIL
963321103046	SINGTIT RSM	CIVIL
963321103047	SITHARTH M K	CIVIL
963321103048	SIVAKUMAR E	CIVIL
963321103063	VISHAL B	CIVIL
963321103303	SATHIYA MOORTHI. T	CIVIL

"Opportunity doesn't make appointments, you have to be ready when it arrives."

Congratulations Students!

Placement Drive - 18-09-2024

Company Name: Besten Engineers & Consultants India Private Limited, Chennai

Register Number	Student Name	Department
963321103009	ASWIN M B	CIVIL
963321103016	ESTHER SHAJITHA D	CIVIL
963321103030	NAVEEN M	CIVIL
963321103034	PUKHRAMBAM MARADONA SINGH	CIVIL
963321103037	RESHMA V	CIVIL
963321103039	ROHIT LAISHRAM	CIVIL
963321103042	SAM RAHUL S	CIVIL
963321103043	SASI PRATHEEBA P	CIVIL
963321103049	SIVASANKARI G	CIVIL
963321103052	SURYADEVI R	CIVIL

May your new job bring you plenty of happiness and fulfillment. Congratulations Students!

Spectra-2K24

SPECTRA'24 was organized by Department of Civil Engineering at Rohini College of Engineering, Palkulam near Anjugramam on 10-09-2024. The program was presided over by Neela Marthandan, Chairman of the College, Dr. Neela Vishnu, Pro Chairman, Dr. Blessy Geo, Managing Director. The second year student Ms. Frehensa gave the welcome address. Dr. Rajesh, Principal of the college, delivered the presidential address. Dr. Murugan of Government Engineering College attended the program as the special guest and gave guest lecture on “Quality control and assurance in construction. Head of Department Dr. J.Sahaya Ruben honored the special guest with a memento. Finally, 3rd Year student Ms. Sruti Sahana delivered the vote of thanks. The program concluded with the National Anthem.

Guest lecture on intelligent transport system

Rohini College of Engineering and Technology endeavors to provide education and training of consistently high standards through innovative and versatile programmes suitable for the current and emerging needs of the Industry. Department of Civil Engineering has organized and conducted a virtual Guest lecture on "Intelligent Transport System" on 20-09-23. The resource person was Dr.Dasarathy AK , Professor/Department of Civil Engineering, JAIN(Deemed to be University). The eminent resource person explained about the Intelligent Transport System and its application development with real time demo examples and discussed about the current trends and opportunities in the industries

LIVIC 2K23

The Department of Civil Engineering of RCET has organized "A National Level Technical Symposium" on 17.02.2023 @ Grand Arena. Mrs.Laitha Ram Golobal talent Acquiston Manager Tiliconveli- Techfetch has deliver the chief guest address. All the technical events such as Paper Presentation, Technical Quiz, Puzzle hunt , Code cracking, CAD modeling and various Non-technical events were conducted in different venues. Around 150 students from various colleges have participated in the symposium.

One-day workshop on "*Special foundation and site exploration*

The Department of Civil Engineering of RCET has organized "ONE Day Workshop on "Special foundation and site exploration techniques for metro and national highway projects"on 26.09.2023. This program was conducted by Mr.K.Shankar Narayanan, Senior Geotechnical Engineer Varaha Geotechnical works, Rajapalayam.

Two days' workshop on structural design of buildings

Department of Civil Engineering organized "Two days' workshop on structural design of buildings" for IV year Civil Engineering students at Rohini College of Engineering & Technology on 12th & 13th September 2023. This programme aims to motivate and train the students for getting industrial exposure. Er.Praveen Kumar, BIM Cadd conducted the program.

International Conference - ICAIET 2K24

The conference was held on May 3rd and 4th 2024. This Conference will explore the new horizon of innovations from distinguished researchers, scientists, and eminent authors in academia and industry working for the advancements in Science, Engineering and Technology from all over the world. ***ICAIET 2K24*** *aims to bring together. Academicians, Scientists, Research Scholars and Students, to share and disseminate information on knowledge and scientific research works related to materials innovation in engineering and technology*

Association of Civil Engineering Inauguration

Construct '24 | Department of Civil Engineering |RCET

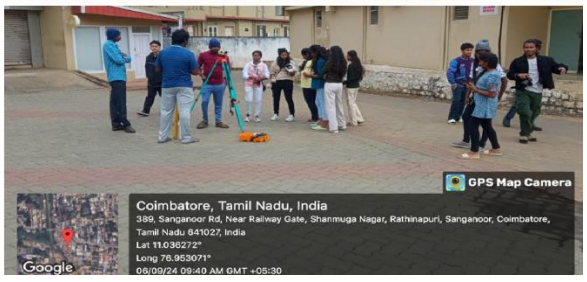
The Department of Civil Engineering Association Inauguration Event, held on August 20, 2024. This event was graced by the presence of distinguished guests, including our esteemed Chief Guest, Mrs.Selva Uma, Assistant Engineer, Irrigation Section, Kanyakumari , along with the Chairman, Pro Chairman, Managing Director, and Principal of our institution. Their presence added prestige and honor to the occasion, setting the stage for an unforgettable day of celebration and enlightenment. Dr. N Suthan Kumar, the Association faculty incharge , took the stage to present an overview of the association's upcoming plans. Her insightful report outlined the direction and vision for the year, sparking anticipation and excitement for the enriching activities to come.

Alumni Meet -2023

The Alumni meet was conducted on 27-10-2024 for 2019 -2023 batch. Pass out students were participated the alumai meet and share their feedback for the development of the College.

Site/Industrial Visit

Two-day Industrial Visit was organized for third year civil department students Coimbatore 05-09-2024 and 06-09-2024. Students get knowledge about surveying in road alignment and CAD design. This industrial visit is very helpful for final year students



Construct '24 | Department of Civil Engineering |RCET

One-day Industrial Visit was organized for final year civil department students in Pothayadi flyover work and bowstring girder bridge at manakudi on 24/10/2024. The students got practical exposure about the construction of flyover and bridge.

Fourteen day all India tour was organized for final year civil department students from 21-04-2023 to 05-05-2023.

Student Achievement

Internship

During summer vacation, students are permitted to undergo training in reputed industries/companies to get practical exposure to latest technologies. It helps the students to relate theory and its application to real world engineering problems. Students undergone internship in reputed organization like Government Highway Department(Nagercoil) , IREL, Nuclear power plant, Leading construction companies in Kerala and Tamilnadu.

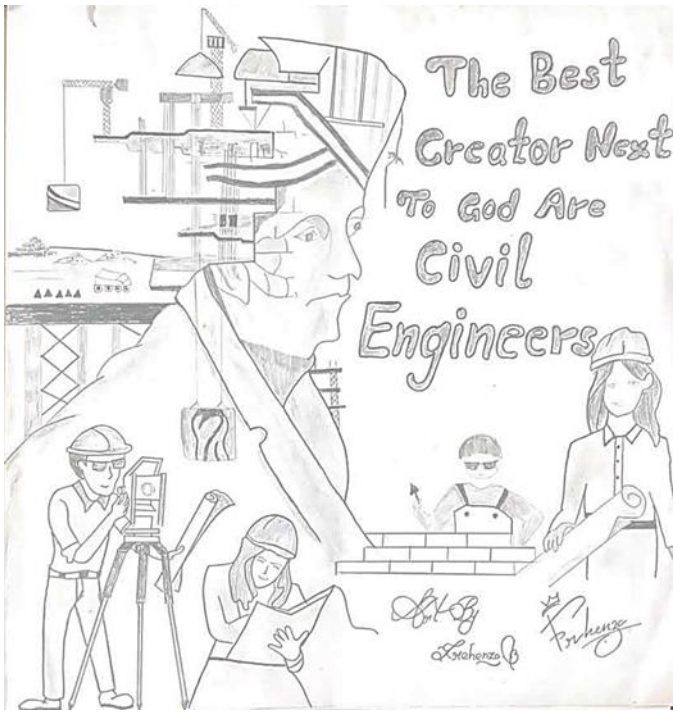
Year	***Number of Students Undergone Training***
II year	*28*
III Year	*45*
IV year	*90*

	MADURAI
P.	
J.SEM	
R.RAGAVI	vt.Ltd.,COIMBATORE
P.SHARMI PAVI	
M.KHADEEJA BEEVI	ALPHA TELECOM CADDESIGN, CHENNAI
R.PRINCY	
R.PREETHIKA	
P.SHARMI PAVITHRA	
A.SANTHOSH JENIFER	RINEX TECHNOLOGIES Pvt.Ltd., BENGALURU
R.PREETHIKA	MY CAPTAIN, BANGALORE
R.AJITH	PRAMODA REBAR Pvt.Ltd., NAMAKAL
R.MOHAMED SAKEEN	

PKM INFRASTRUCTURE

AARBEE
Innovative. Professional. Reliable.

Student's Corner




S. Mahesh


S.Mahal


S.Mahal


Naruto×Sasuke
S.Mahesh


S. Mahesh

A Civil Engineer In The Hard Time...

She is a great person
Whose love to everything and everyone
Beats all other things
She chose to be a Civil engineer, but
This is not her ultimate choice,
She wanted to be a dentist or
Any doctor, but it was
Her hard circumstances,
She studied hard, but,

Things went the other direction,
She accepted to be better than
Not to be,
She was born great to be or not to be, so
She is now in the Faculty of Civil Engineering
Studying how to plan for a good future and
For a good career in life,
They need her to be a great Civil engineer
For that great and pretty future that is
Waiting for her to build love and life so
Tomorrow will be hers to give hope for others

By.
B. Abilash
II nd year Civil.

"தோல்வியின் சிறகுகள்"

தோல்வி ஒரு தாழ்வோ?
அல்ல, அது ஒரு தளர்வோ
முதல் படி.

சிதறிய கனவுகள் நெஞ்சில்
புதைந்தாலும்,
நம்பிக்கையின் விதைகள்
முளைத்தன மெதுவாக.

நினைவுகளில் ஏறிய
துன்பங்கள்,
விழிகளின் மேல் சுமை போல்
நிறைந்தாலும்
அதை தாண்டும்
சாதனைக்கான சிறகு
இருட்டில் வெளிச்சமாய்

தோல்வி எனும் நிலையைத்
தாண்டி,
வெற்றியின் பாதையில்
பரிமளிக்கும் காற்றாய்
சுகமாய் என் பயணம்
தொடர்ந்தது,
சிறகு விரித்த பறவையாய்.

By.
Sherin C.S. Deno
II nd year Civil

POEMS

Foundations so deep, they hold the
weight, Keeping the structures tall
and straight.

Bridges spanning wide and strong
Engineers ensure they last long.

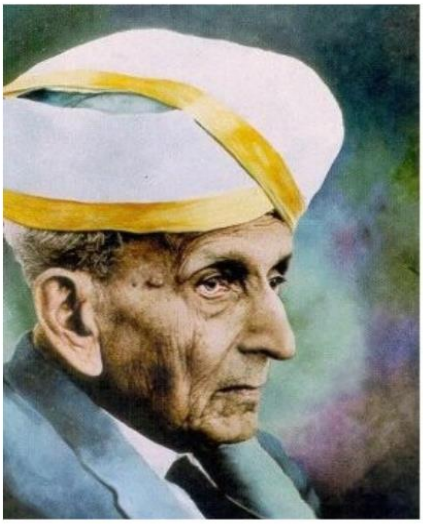
Roads and tunnels, cutting through
Engineers making dreams come true

Sky Grapers reaching for the clouds
Designed by Engineers standing proud.

From blueprints, plans come to life,
Civil engineers work without strife.

By
Harisha. R
IInd year civil

Sindhuja R
IVB Civil



"Remember, your work may be only to sweep a railway crossing, but it is your duty to keep it so clean that no other crossing in the world is as clean as yours."

- Sir M. Visvesvaraya

Sir Mokshagundam Visvesvaraya (15 September 1860 – 14 April 1962, more commonly known as Sir MV, was an Indian civil engineer, statesman and the 19th Diwan of Mysore, serving from 1912 to 1919. He started his primary education in Bangalore, received his BSc degree from the University of Madras, and then DCE (Diploma in Civil Engineering) from the University of Bombay through its affiliated institution and 3rd oldest Engineering College in Asia, College of Engineering, Pune. He received India's highest honour, the Bharat Ratna, in 1955. He was knighted as a Knight Commander of the British Indian Empire (KCIE) by King George V for his contributions to the public good. His birthday, 15 September, is celebrated as Engineers' Day in India, Sri Lanka and Tanzania in his memory. He was the Chief Engineer of Krishna Raja Sagara dam in the north-west suburb of Mysuru city, Laxmi Talav Dam near Kolhapur in south-west Maharashtra, and also served as one of the Chief Engineers of the flood protection system for the city of Hyderabad.

ROHINI
COLLEGE OF ENGINEERING & TECHNOLOGY

Approved by AICTE and Affiliated to Anna University (An ISO Certified Institution)
Accredited by NAAC with A+ Grade | Recognized under section 2(f) of University Grants Commission, UGC Act 1956

Courses Offered

B.E
- Biomedical Engineering
- Civil Engineering
- Computer Science and Engg
- Computer Science and Engg (AI & ML)*
- Electronics and Communication Engg
- Electrical and Electronics Engg
- Mechanical Engineering

B.TECH
- Agricultural Engineering
- Artificial Intelligence and Data Science

M.C.A
- Master of Computer Applications

Counselling Code **4670**

M.E
- Communication Systems
- Computer Science and Engg
- Thermal Engineering
- Const. Engineering and Mgmt
- Embedded Systems*
- Industrial Safety Engineering*

M.B.A
- Operations Management
- Marketing Management
- Financial Management
- Systems Management
- Human Resource Management
- Logistics & Supply Chain Mgmt

Integrated M.B.A
- B.B.A-M.B.A*

Admission Helpline

+91 85310 88888
+91 98942 98888

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