

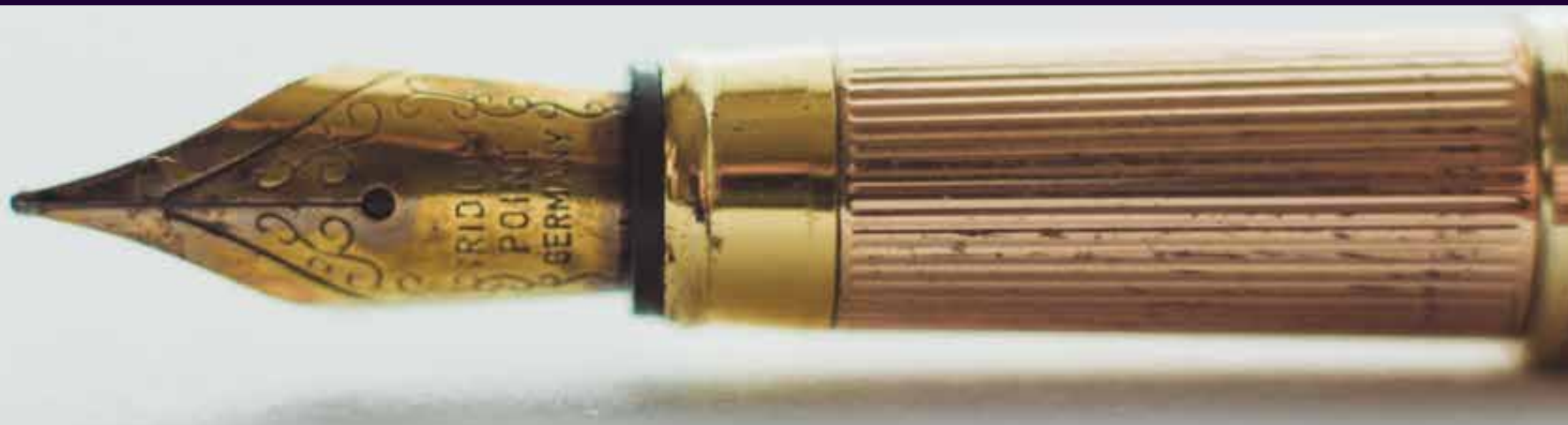
MAGAZINE

2020-2021

DEPARTMENT
OF
CIVIL ENGINEERING

STELLA MARY'S
COLLEGE OF ENGINEERING

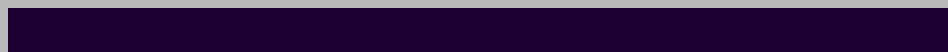




MESSAGES

Chairman's Message

Dr.Nazerath Charles



The college is run by nova educational trust started in the year 2007, to provide the highest quality educational and research facilities to the students across the country. The institution supports students in achieving their aims and also ensure that they maintain good academic standards. The institution educates the students with all essential knowledge and skills to become a successful engineer. The institution also strongly believes that education is the key to a nation's progress and hence aims in creating responsible citizens of our nation.

CEO's Message

Mr.Carol Judeson



Education is a gateway to success. I wish all students to acquire knowledge through professional skill development. Stella Mary's college of Engineering enable students to gain theoretical and technical skills through interactive teaching learning process. Our Institution determined to produce true employability skill through practical training.

Director's Message

Mr.P.Renjitham



Our vision is to create technocrats who can address the needs of the society through exploration and experimentation and to uplift mankind. Our institution strongly believe in academic excellence through effective teaching and learning process. The institution also strongly believes that education is the key to a nation's progress and hence aims in creating responsible citizens of our nation. Our institution trains and equip our students to get placed in multinational companies by improving their theoritical and practical skills .

Principal's Message

Dr.R.Suresh Premil Kumar



Education is about learning skills and knowledge. SMCE aims to impart strong knowledge to its students who are young and dynamic. Through a team of dedicated staff and EFFECTIVE TEACHING LEARNING PROCESS, OUR COLLEGE CREATES BEST ENGINEERS OF THE SOCIETY. Students ACQUIRE BOTH PRACTICAL AND THEORITICAL KNOWLEDGE at our institution which would turn them into a GREAT personality at the end of their course.

HOD's Message

Dr.R.K.Madhumadhi



The Department of Civil Engineering Engineering, established in 2014, is one of the most dynamic departments of SMCE. All the classrooms and laboratories are fully equipped and are made available for teaching and research purposes. Classroom teaching is supplemented with Tutorials, Paper presentation, projects, internships, group assignments, educational tours and industrial visits for effective delivery of curriculum. Our students are not only academically sound but also good in extracurricular activities. Our students are also part of our college sports teams and won many zonal level prizes. Nearly 95% of our graduates are placed in good companies and few are entrepreneurs. I am really delighted to tell that the Civil Department stands as one of the best department of SMCE.

Editor's Message

Mr.T.Ragin



Education always plays a vital role in the overall development and personality of an individual. Having realized this importance, SMCE aims to impart strong knowledge to its students who are young and are in thirst for it. SMCE will constantly work to provide the best knowledge to its students, through a team of dedicated staff and experienced faculty. Students are sure to get a new and good academic experience at our institution which would turn them into a holistic personality at the end of their course.

VISION

To emerge as a premiere institution, acknowledged as a centre for excellence imparting technical education, creating technocrats who can address the needs of the society through exploration and experimentation and uplift mankind.



MISSION

To provide an education that transforms students, through rigorous course-work and by providing an understanding of the needs of the society and the industry.



QUALITY POLICY



Stella Mary's College of Engineering, committed to imparting technical education, creating technocrats strives to achieve the institution's goal by :

- Focusing on the overall development of the students in strengthening their leadership skills.**
- Building an environment that is conducive for effective teaching, learning and research.**
- Improving the job prospects of students incorporating value-added programmes to the curriculum.**
- Periodically assessing the effectiveness of the programmes offered at the institute and responding positively to the needs of the industry.**
- Contributing effectively to the growth of the nation, by exposing the students to demonstrate their entrepreneurship skills.**
- Adopting the best practices for quality improvement that continuously benchmarks the institution against premier institutions.**



Engineering CIVIL

ABOUT THE DEPARTMENT

The civil engineering department was started in the year 2014 with the intake of 60 students. The department has steadily grown in all spheres such as student strength, physical infrastructures and central and department library. The department has well qualified and experienced faculty. The department develops a long term relationship with industries and guides the student effectively. The students are provided with high level “Pathways” that enable them to gain access to high tech career opportunities.



VISION

To provide world class technical education with ethics and professionalism and to create civil engineer with high technical competencies who would full fill the challenges and needs of today's scenario with the help of green technology.

MISSION



- **To impart quality technical education, imbining lifelong learning and concern for environment.**
- **To create job opportunities in research, industry and consultancy both nationally and internationally.**
- **To provide technical skills, leadership qualities and team spirit among the students.**
- **To establish center of excellence in emerging areas of research to find solution to the problem faced by the society.**

Program Outcomes (POs)

- 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.**
- 2. Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.**
- 3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.**
- 4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.**
- 5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.**
- 6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.**

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.

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

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

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Program specific Outcomes (PSOs)

PSO 1 : Applying concepts and solving problems in the branches of Civil Engineering such as Structural, Environmental, Hydraulics, Construction Management, and Geo technical Engineering.

PSO 2 :Assess the environmental impact of various projects and take required measures to curb environmental deterioration

PSO 3 :Able to use latest soft wares pertaining to various streams of Civil Engineering.

Program Educational Objectives (PEOs)

●PEO1: Graduates will have a successful career in the field of Civil Engineering by meeting the needs of industries or will become entrepreneurs.

●PEO2: Graduates will have a sound foundation in engineering fundamentals which is necessary to analyse engineering problems and the ability to persue higher studies.

●PEO3: Graduates will work collaboratively on multi-disciplinary projects by engaging in life-long learning process throughout their professional life.

Environmental Engineering Laboratory

In this laboratory the students will be able to know the common environmental experiments relating to water and wastewater quality.



List of Equipments

Oxygen analyzer, Spectrophotometer, Ion – selective electrode, Sodium Potassium Analyzer – Flame Photometer 5. Gas Chromatography, Atomic absorption spectroscopy (Ni, Zn, Pb), Nephelometer, BOD Analyser, COD Analyser, Jar Test Apparatus.

List of Experiments

Determination of Ammonia Nitrogen in wastewater, Coagulation and Precipitation process for treating waste water, Determination of suspended, volatile, fixed and settleable solids in wastewater, B.O.D. test, C.O.D. test, Nitrate in wastewater, Phosphate in wastewater, Determination of Calcium, Potassium and Sodium, Heavy metals determination - Chromium, Lead and Zinc. (Demonstration only)

Soil Mechanics Laboratory

Students will be able to identify physical and mechanical properties of soil in the field and laboratory settings. This includes preparing soil samples for testing, performing the test, collecting and analyzing data, interpreting the results and writing technical reports.



List of Equipments

Sieves, Hydrometer, Liquid and plastic limit apparatus, Shrinkage limit apparatus, Proctor compaction apparatus, UTM of minimum of 20KN capacity, Direct shear apparatus, Thermometer, Field density measuring device, Triaxial shear apparatus, Three gang consolidation test device.

List of Experiments

Determination of index properties, Permeability determination (constant head and falling head methods), One dimensional consolidation test (Determination of coefficient of consolidation only), Direct shear test in cohesion-less soil, Unconfined compression test in cohesive soil, Laboratory vane Shear test in cohesive soil, Tri-axial compression test in cohesion-less soil (Demonstration only), California Bearing Ratio Test.

Strength of materials Laboratory

Demonstrating the basic principles in the area of strength and mechanics of materials and structural analysis to the students through a series of experiments.



List of Equipments

UTM of minimum 400 kN capacity, Torsion testing machine for steel rods, Izod impact testing machine, Hardness testing machine, Beam deflection test apparatus, Extensometer, Compressometer, Dial gauges, Le Chatelier's apparatus, Vicat's apparatus, Mortar cube moulds.

List of Experiments

Tension test on mild steel rod, Compression test on wood, Double shear test on metal, Torsion test on mild steel rod, Impact test on metal specimen (Izod and Charpy), Hardness test on metals (Rockwell and Brinell Hardness Tests), Deflection test on metal beam, Compression test on helical spring, Deflection test on carriage spring, Test on Cement.

Computer Laboratory

To outline the basic principles associated with CADD and to demonstrate common drafting techniques and shortcuts used by professionals. CAD (Computer Aided Design) provides a convenient mean to create designs for almost every engineering discipline.



List of Equipments

Computer system of Pentium IV or equivalent (1 for each student) ,AUTOCAD (software).

List of Experiments

Principles of planning, orientation and complete joinery details ,Buildings with load bearing walls 3. Buildings with sloping roof,R.C.C. framed structures, Industrial buildings – North light roof structures,Unconfined compression test in cohesive soil , Building Information Modeling.

Survey Laboratory

Students learn techniques for gathering field data with both traditional and modern instruments and demonstrate their proficiency on weekly lab exercises and a comprehensive semester project and final exam.



List of Equipments

Total Station, Theodolites Atleast 1 for every, Dumpy level, Plane table, Pocket stereoscope, Ranging rods, Levelling staff, Cross staff, Chains, Tapes, Arrows, Hand held GPS.

List of Experiments

Study of theodolite, Measurement of horizontal angles by reiteration and repetition and vertical angles, Theodolite survey traverse, Heights and distances - Triangulation - Single plane method, Tacheometry - Tangential system - Stadia system - Subtense system, Setting out works - Foundation marking - Simple curve (right/ left-handed) - Transition curve, Field observation for and Calculation of azimuth, Field work using Total Station. Principles of planning, orientation and complete joinery details, Buildings with load bearing walls 3. Buildings with sloping roof, R.C.C. framed structures, Industrial buildings - North light roof structures, Unconfined compression test in cohesive soil, Building Information Modeling.

Soil Mechanics Laboratory

The behavior and properties of structural materials, e.g. concrete, asphalt and steel can be better understood by detailed, well-designed, first hand experience with these materials. The students will become familiar with the nature and properties of these materials by conducting laboratory tests.



List of Equipments

Concrete cube moulds, Concrete cylinder moulds, Concrete Prism moulds, Sieves, Concrete Mixer, Slump cone, Flow table, Vibrator, Trowels and planers, UTM – 400 kN capacity, Vee Bee Consistometer, Aggregate impact testing machine, CBR Apparatus, Los - Angeles abrasion testing machine, Marshall Stability Apparatus.

List of Experiments

Tests on fresh concrete, Test on hardened concrete, Theodolite survey traverse, Test on aggregates, Tests on bitumen, Test on bitumen mixes.

Hydraulics Engineering laboratory

The main objective of this lab is to build fundamental concepts combined with strong analytical and problem solving abilities that would form the backbone of many other subjects in higher educations.



List of Equipments

Bernoulli's theorem – Verification Apparatus, Calculation of Metacentric height water tank Ship model with accessories, Measurement of velocity Pitot tube assembly, Venturimeter, Orificemeter, Flow through mouthpiece, Centrifugal pump assembly with accessories (single stage), Centrifugal pump assembly with accessories (multi stage), Reciprocating pump assembly with accessories, Deep well pump assembly set with accessories.

List of Experiments

Flow measurement, Losses in pipes, Pumps, Turbines, Determination of metacentric height.

Our Teaching Faculty



Name: Dr. R.K. Madhumathi
Designation: Head, Associate Professor
Qualification: M.E, Ph.D



Name: Mr. T.Ragin
Designation: Assistant Professor
Qualification: M.Tech



Name: Mr.S.Ravi Kumar
Designation: Assistant Professor
Qualification: M.E



Name: Ms.Sahaya Sofia
Designation: Assistant Professor
Qualification: M.E



Name: Mrs. N. Agnes Flora
Designation: Assistant Professor
Qualification: M.E



Name: Mrs.P.Sony
Designation: Assistant Professor
Qualification: M.E



Name: Mrs. S. Indira
Designation: Assistant Professor
Qualification: M.E



Name: Ms. M. Ashni
Designation: Assistant Professor
Qualification: M.Tech



Name: Mr. V. S. Sreekumara Ganapathy
Designation: Assistant Professor
Qualification: M.E

Our Non-Teaching Faculty



Name: Mr. Satheesh
Designation: Lab Instructor
Qualification: B.E



Name: Mrs. J. John Abisha
Designation: Lab Assistant
Qualification: B.E



PLANNING ANALYSING AND DESIGN OF MULTI-SPECIALTY HOSPITAL BUILDING

ABSTRACT :

The aim of the project is to develop a multispecialty hospital building with economical design techniques and computer aided design. Here the multispecialty hospital building is of G+3 story RCC structure with 200 no. of beds and capacity of 12056 sq.ft. Which is planned by using Auto CAD for floors plans and STAAD pro for analysis. The multispecialty hospital building is located in karungal area in Kanyakumari District. The design to be done according to the limit state method using M20 grade concrete and fe500 steel. The multispecialty hospital has contains the various departments like ENT, neurology, cardiology, paediatrics, Diabetics, urology, and etc. And the extra facilities are lab unit, operation theatre emergency care unit, scanning and x-ray facilities, ECG, Medical pharmacy and sufficient number of room are available. In this hospital it is helpful to all kinds of people like poor or rich. The patients not necessary to go outside of campus, all the facilities are available inside the campus. The Design of RCC slab, beam, column, footing and staircase is based on limit state method with help of IS 456:2000, SP.16 Codes. IS 456:2000 (plain and reinforced concrete), SP : 16 code (Design Aids for reinforced concrete to IS 456-1978) .

NECESSITY OF THE STUDY :

Health care is gaining increasing importance in recent years. The concept of health care is emerging from providing treatment to the disease to the improvement of overall health status and also maintenance of good health. The expectation was that with adequate investments in health infrastructure and appropriate mix of Public health strategies, the country would be well-placed to meet this laudable goal. However, even in the target year, we can at best claim partial success in meeting the goal of a healthy population. In order to achieve the targets and thereby improving the health status of people in the country, tremendous efforts are required to be made not only by government but also by people. It is in this perspective development of health care assumes significant importance. New Challenges and new opportunities for investing in health care i.e. in hospitals and nursing homes etc. have arisen.

**- V.S.Sreekumara Ganapathy
Asst.Professor**



ANALYSIS, DESIGN AND ESTIMATION OF LODGE

ABSTRACT :

Junction railway station of Nagercoil is located in Kottar of Passengers from various district and state arrive the station everyday. But there is no proper lodge are any facility for the passenger to stay here. The passenger who visite Nagercoil for buisness. Tourist and for other purpose need travel to Ngercoil town which is away from station. Hence the design project aims in designing a lodge in 2300sqm near the railway station. Which includes various rooms, gym, and hotel. Hence the analysis is done by STADD.pro by considering all loads and designing is done by proper design technique.

CONCLUSION :

The structural elements of the building like beam, column, slab, are designed successfully.

To make the analysis is process much simpler we adopted moment distribution method. In

design part we designed all the main structural components as per Indian standard code.

The analysis is done by using software and results are verified. The reinforcement details

of all R.C.C members are determined accurately so as to make the entire structure is more

economical. To the actual load acting on the structure an additional factors of safety is

added so that the structure withstand load one and half time more than its actual load.

All the drawing presented in the project report were drafted by using Autodesk Auto-

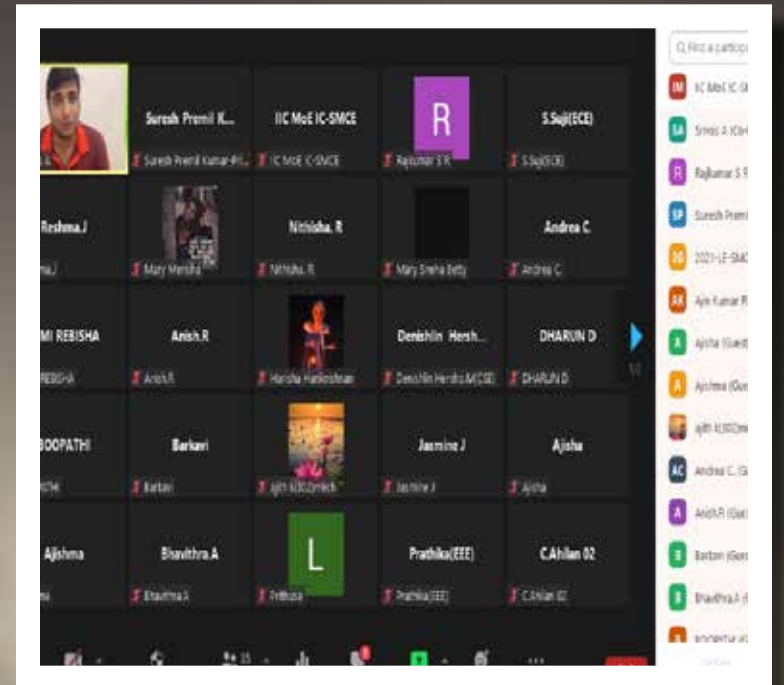
CAD2016.

**- Mrs.N.Agnes Flora
Asst.Professor**

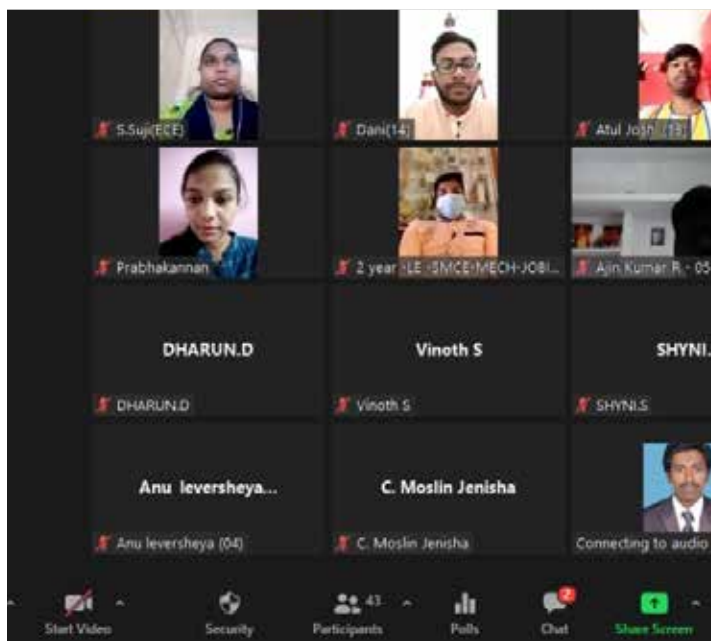


Events Conducted

Webinars were conducted in the topics of current trends in order to impart technical and practical knowledge in students. Resource from various industries were invited to share their knowledge with faculty and students.



Orientation program were conducted for newly joined students in order to improve their skills in communication, basic civil engineering, basic mathematics and various soft skills.



An online Instagram event “Aditi 2.0” was conducted to encourage the students to unleash their creative abilities and to showcase them to all the stellamarians. Our department students participated in the event and won exciting prizes

Aditi 2.0

Artificial Intelligence in Civil Engineering

In the field of Civil Engineering, many problems, especially in engineering design, construction management, and program decision-making, were influenced by many uncertainties which could be solved only with the help mathematics, physics, and mechanics calculations. These problems also depend on the experience of practitioners. As this involves complex and long calculations it is very difficult to solve using our traditional approach. However with artificial intelligence we can solve complex problems to the levels of experts .

for eg:

- 1. Bassuoni and Nehdi developed neuro-fuzzy based prediction of the durability of self-consolidating concrete to various sodium sulfate exposure regimes.**
- 2. Prasad presented an artificial neural network (ANN) to predict a 28-day compressive strength of a normal and high strength self-compacting concrete (SCC) and high performance concrete (HPC) with high volume fly ash.**

**- R.Ajay Kumar
8th Semester**



PLAXIS 2D Displacement Analysis Of Geotextile Tube Technology To Prevent Coastal Erosion At Sangudurai Beach Of Kanniyakumari District

NECESSITY OF THE STUDY :

As we all know that ocean plays a major role in human life especially to the people who are living at the coastal region. It acts as a major source of food and give income to support their family and life. Around 71% of the earth is covered with ocean and it contains 98% of all water on earth. But due to some climatic changes coastal erosion occurs. In erosion tides plays a vital role. These tides rise and fall throughout the day and throughout the year. The pull of a force called gravity between earth and moon. Due to the erosion the concrete structures that are constructed near the sea shore are affected. So as a civil professional we should help the people who are staying at the coastal regions from erosion. So In this research we have attempted to control the coastal erosion for that we have used geotextile tube technology. Here we have analyses a place called sangu durai beach which is located in Kanniyakumari district of Tamil-nadu. It is one of the severely affected beach by the coastal erosion and the structures those are constructed on the seashore are affected so badly . We have used PLAXIS 2D which is a finite element analysis software to determine the displacement of the soil of the sea shore before and after the application of geotextile. Here we have de-

signed a single lined geotube for the length of 1.5km. From the analysis result , it clearly shows that the value of soil displacement before the application of geotube is lesser than the value of soil displacement after installation of geotube.



**- S.Indira
Asst. Professor**



Editorial Board

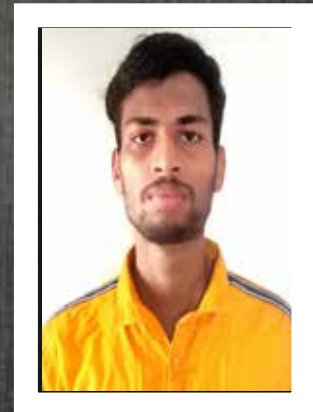


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