





International Conference  
On  
**Sustainable Construction Materials and  
Recent Innovations in Civil Engineering**

**SCRICE-18**

On 19<sup>th</sup> & 20<sup>th</sup>, July, 2018

Organized By



Department of Civil Engineering

**VAAGDEVI COLLEGE OF ENGINEERING**

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In association with



**Association of  
Consulting Civil Engineers (India)**  
Karimnagar Chapter



Viswambhara Educational Society

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**INTERNATIONAL CONFERENCE ON  
SUSTAINABLE CONSTRUCTION MATERIAL AND RECENT  
INNOVATION IN CIVIL ENGINEERING (SCRICE-2018)  
19-20 July, 2018  
ABSTRACTS VOLUME**



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**ABOUT THE INSTITUTION**

Vaagdevi College of Engineering is established in the year 1998 and sponsored by in the year 1993 Viswambhara Educational Society (Estd. In the year 1993) of Warangal established by philanthropists and elite people, with a view to impart technical education to, students, of rural background. Since its commencement of Vaagdevi College of Engineering has produced more than 15000 graduates who are technically sound in their fields and thus enjoy the enviable reputation among the reputed institutions. The institution has been constantly growing in every aspect including infrastructure, placements and strength of students. The campus is located in a sprawling area of 24.9 acres land with picturesque surroundings prevailing serene and calm atmosphere. It is situated on the Khammam highway about 10 km from Warangal railway station. Today Vaagdevi College of Engineering is known for its academic excellence with well planned classrooms, well-equipped laboratories, seminar halls and an auditorium with 600 seating capacity and built-in audio-visual aids and good sport facilities along with gymnasium. The college has a huge collection of books and also subscribes various national and international journals. A state-of-art digital library has been established in order to provide access to NPTEL video lectures, several e-books and e-journals. The campus is Wi-Fi enabled and excellent infrastructure, and well designed buildings with aesthetic beauty.

It gives us immense pleasure to share our happiness that our college has been granted First Autonomous Engineering College status in Warangal by UGC, New Delhi for the period of six years from 2014-2015 to 2019-2020. Accredited by NBA, ISO 9001: 2008 certified institution and also applying for NAAC accreditation.

We have large number of doctoral faculty (49) and senior faculty members from reputed institutions like IIT and NITs, nearly 52 faculty members are pursuing their Ph.D.



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**ABOUT THE DEPARTMENT OF CIVIL ENGINEERING**

The Department of Civil Engineering was established in the year 2013 with an intake of 60 students for undergraduate degree programme, which was later increase to 180 students from the academic year 2014. The Master's program Structural Engineering was eatblished in 2014 with 24 intake. The department has experienced and well talented faculty members including Doctorates. The department provides state of the art lab facilities in areas of Structural Engineering, Transportation Engineering, Geotechnical Engineering, Environmental Engineering, Hydraulics and Surveying.



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**THEME OF CONFERENCE**

Innovation leads to development of products in accordance with the need and situations; Civil Engineering has grown on par with other fields by adopting innovations and technologies. The conference aims to share the innovative ideas and practices developed in the field of Civil Engineering and allied branches. Researchers and Faculty members who are involved in developing and promoting generating new concepts / products in these fields can make use of this opportunity by participating in this conference.



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## KEYNOTE SPEAKERS

### Topic 1: Relooking the role of Engineers in Water Resource management

**Dr. K.V.Jayakumar** currently serves as Professor at the department of Civil Engineering, NIT Warangal. He pursued his Doctorate of Philosophy and M.Tech from Indian Institute of Technology Kanpur



### Topic 2: Dawn of Smart buildings: The Impacts of LOT, Bid Data and Analytics

**Dr. Valliyappan David Natarajan** serves as Head of Research(Grant Acquisition) at Research management centre at Institute of Research management and Innovation, Universiti Teknologi Mara, Malaysia.



### Topic 3: Composite construction and Composite Beam Column Connection

**Dr. Saddam M. Ahmed** currently serves as Assistant Professor at the department of Civil Engineering, Mosul University, Iraq. Previously worked as an assistant Professor at Pryuss, Turkey as assistant professor, He is consultant at ATALON (branch from India and Singapore).





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**Topic 4: Prediction Modeling in Structural Engineering Machine Learning Applications**

**Dr. Ahmet Emin Kurtoglu** currently serves as an assistant professor at department of Civil Engineering, Istanbul Gelisim University, Turkey.



**Topic 5: Behaviour of Concrete subjected to fire**

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**Topic 6: Behaviour of Concrete subjected to fire**

**Dr. M. K. Haridharan** currently serves as Assistant Professor (Sr. Gr.) at the department of Civil Engineering, Amrita School of Engineering, Coimbatore Campus. He pursued his M.Tech (Structural Engineering) and Doctor of Philosophy from National Institute of Technology, Tiruchirappalli





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**Paper ID: SCRICE001**

**Standardized Small Hollow Pan System for Low Cost Housing**

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**ABSTRACT**

The housing industry is a fundamental and strategic sector linked to improving the standard of living. The housing sector depends highly on technological innovation as a constant driving force. Technological innovation creates added value, it improves the product, and cuts the costs, thus allowing for a greater distribution of the product on the market. The rapid urbanization, explosion of population and infrastructure development is demanding for a faster construction technology having cost effective and environmental friendly construction system. The conventional construction technique, due to the slow pace of construction and higher cost, it is not able to meet the housing demand. In the light of such situation a partially prefabricated system of construction has been developed in this Institute. Quality, speed of construction and savings in labour and material cost are main features in the proposed housing system which can be handled by semi-skilled labour. This paper will be an attempt to provide an easy to erect, portable and reasonable for cost using standardized prefabricated housing components. In India, adoption of prefabrication building techniques has many advantages in the context of availability of materials, labour and technical skills. Small hollow panel units of dimension 15 x 45 x 30 cm have been fabricated with 3.5 -6 cm thick concrete sections. It is designed on one side as male and other side as female part to give proper connectivity. Low cost housing can be successful if they are rooted in the community, present innovative solutions to real problems, enable others to imitate it and build partnerships between the private and public sector.



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**Paper ID: SCRICE002**

**Experimental Investigation of Elemental Beam Using Composite Slab Section**

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**ABSTRACT**

This paper briefly discuss on experimental investigations on shear bond conduct or behavior of composite elemental beam specimens made using cold-formed profile sheeting. The main principle objective of this experimental investigation is to develop a new alternative small scale bending test method for evaluating the shear bond behavior and also for determining the performance of composite beam specimens. The analytical investigation is carried out to determine whether this test data from the small scale bending tests can be used for the shear bond (m-k) and Partial Shear Connection (PSC) methods, to predict and improve the PSC design procedure which is used for the strength prediction in the composite slabs. The results from the investigations demonstrate that the small scale bending test is feasible alternative tests for the full scale bending test. The data's from the small scale bending test can be used in numerical analysis and to improve the existing analytical methods. This small scale bending test eliminates the push-out or push-over analysis test. The enhanced PSC method is compared with the existing empirical m-k values are presented in this paper.



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**Paper ID: SCRICE003**

**A study of optimizing the Processing time for Building permits Study Case**

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**ABSTRACT**

There are rules in urban development and the construction industry, which encourages organizations to work according to standards and approved codes. For example: it is required by law for all property owners to apply and obtain a permit in order to carry out an action in construction building. Often, the permit process takes a great deal of time to process. Currently, there is a lack of constructional project for residential buildings in Stockholm region, and there is critique toward the municipalities for having a long processing time for reviewing building permits. This study is about ways to optimize the processing time for building permits. As a first step, it was important to study parameters, which maximizes the quality and efficiency. Since, time is often one of the restricted factors in urban development, optimizing the processing time issuing a construction permit can be one of the quality elements in service oriented business organizations like a municipality. This study aims to analyze the building permit processing time, and investigate different factors that have influence on it. The case for this was Tyresö municipality, a municipality with approximately 45 000 inhabitants in the south east of the Stockholm region. Required information has been developed based on interviews with the municipality's personnel and professional construction developer who have applied for building permit in Tyresö region. In addition, previous reports, statistics, and cases from the municipality archive have been used to identify important concepts as empirical material. Long processing time is a current existing problem in many municipalities. A service oriented organization like a municipality should try to increase clients' satisfaction by a continual and proper communication with public. The municipality can identify the costumer needs and expectations and improve the quality efficiency by communication. Optimizing of processing time in the building permit cases is one of the issues of process optimization that can increase customer satisfaction. Using Total Quality Management strategy in the organization, help the municipality to optimize the processing time continuously. It means quality improvement and leads to long term costumer satisfaction. Since functional team develops solutions to problems in TQM style it often shortens the time taken to produce services. The focus of this management style is on importance of the relationship between costumer and organization and it is directly linked to their communication. By service guarantee as a tool, municipality which is a politically governed organization makes assurance for public as its costumer to provide community services with proper quality. A well defined service Guarantee has been contributed the improving quality of the services. It helps the planning and building department of municipality to increase the costumer satisfaction and attract more building developer to invest in the municipality region.



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**Paper ID: SCRICE004**

**Review and analysis of affordable housing typologies and their socio-economic models**

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**ABSTRACT**

For nearly 100 years the design of highways has incorporated safety through the application of criteria to each individual design element. Design elements are items like the horizontal curve, vertical curves, the cross-section, clear zone and roadside slopes. As a result, safety is only indirectly addressed since the design elements are developed in isolation without a good understanding on the impact of one element on another. To make matters worse, design elements communicate messages to the driver about the appropriate speed for the highway. Long straight tangent sections encourage drivers to drive faster whereas curved highway segments communicate a lower operating speed. This can lead to inconsistent message to the driver when design elements are not coordinated with each other. A new method is proposed that accounts for the interaction between design elements in such a way that the designer can estimate the frequency and societal cost of motor vehicle crashes. With this estimate of cost, the designer can base design decisions on what would minimize the societal cost of both the infrastructure improvement and safety. This method will allow designers to formulate highway designs that achieve a specific level of safety and communicate consistent information to drivers. This research provides a valuable planning and design tool for practitioners and policy makers alike. It represents an important shift in the highway design paradigm.



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**Paper ID: SCRICE005**

**Planning, Scheduling and Resource Optimization for Road Construction Using  
Primavera**

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**ABSTRACT**

The foundation advancement plays an essential part being developed of nation. Street transport plays an imperative part in monetary development for a creating nation like India. The development of streets achieves an assortment of advantages by every one of the divisions of economy. Thruway developments are the measuring stick to quantify the advancement of nation. Task administration is the main enter part in the development industry. Any development venture requires appropriate arranging and planning for its fruition inside time and cost. In this undertaking the prevalent primavera apparatus/programming is utilized. Arranging and booking is extremely critical in construction ventures for decreasing and controlling postponements of the venture. Considerable measure of time, cash, assets are squandered every year in a development industry because of uncalled for arranging and planning. With globalization the development ventures have become immense and complex. Arranging of such requires colossal measure of paper work, which can be lessened with the assistance of venture arranging programming. Giving great arranging, adequate of stream of assets to a venture can be consequently accomplished wanted outcome



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**Paper ID: SCRICE006**

**Numerical Study on Vibration and Buckling Characteristics of Laminated  
Composite Plates**

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**ABSTRACT**

Composite materials are as a rule progressively utilized as a part of car, common, marine, and particularly weight delicate aviation application, principally in light of its particular quality and solidness. This requires concentrates on vibration and buckling conduct of the structures. The majority of the investigation on vibration of composite plates is done either systematically or by various numerical strategies. Next to no is accounted for on the trial examination of overlaid composite plates utilizing the current situation with the craftsmanship instrumentation or estimation. The present examination is generally test study in view of vibration estimation and buckling conduct of industry driven woven fiber composite boards for various layer thickness. The impacts of various geometry, limit conditions, perspective proportion and sort of fiber on the normal frequencies of vibration of woven fiber composite boards are contemplated in this examination. The impacts of variety in temperature and dampness fixation because of hygrothermal molding, on the normal frequencies are additionally examined. Basic buckling burden is resolved for overlays with different thicknesses. Tests have likewise been led to examine the vibration and buckling attributes of carbon/glass half breed plates for various cover succession and rate of carbon and glass fiber. A limited component bundle, ANSYS 13.0 was utilized to acquire the numerical results and plot the mode shapes for different methods of vibration.

The composite plates of various layers are fabricated utilizing woven carbon fiber by hand lay-up strategy took after by slicing to required measurement. The free vibration attributes are contemplated with First Fourier Transform (FFT) analyzer, accelerometer utilizing impact hammer excitation. The Frequency Response Function (FRF) is concentrated on utilizing Pulse Lab Shop to acquire a reasonable comprehension of the vibration attributes of the example. The basic buckling burden is resolved utilizing INSTRON 1195.

The studies on crossover plates demonstrate that they have the upsides of both their constituent strands and have properties transitional to the properties of individual filaments. The impact of rate piece and arrangement of cover of the strands on vibrational and buckling attributes of the composite plates were watched. It was watched that the disappointment because of malleable burden in half and halves is administered by delamination between layers. The estimations of vibrational investigation present comparative conclusions as to firmness of plates as got from the tractable tests. The buckling results demonstrate that stiffer materials on peripheral layer give most extreme buckling quality contrasted with those with carbon filaments in inward layers.





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**Paper ID: SCRICE007**

**Review and analysis of affordable housing typologies and their socio-economic models**

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**ABSTRACT**

Housing forms as basic necessities of safe human survival. It is necessary for protection against natural and manmade adversities. Any modern society can be classified based on economic and social diversification. The economic status of a country and the distribution of the wealth can be easily being guessed by the pattern of housing establishments. In developing and underdeveloped countries it becomes the responsibility of the government to take care of the housing needs of majority of its citizens. In this context affordable housing becomes a very important issue. Housing generally consists of cost of land, design, material and construction cost. If mass housing is taken up by the government, then cost of the land can be neglected as governments would generally give land at very low price to the economically weaker section. Hence to make housing still affordable it is necessary to optimize the design and material costs.



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**Paper ID: SCRICE008**

**DESIGN OF EARTHQUAKE RESISTANT BUILDING**

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**ABSTRACT**

An earthquake is the vibration, sometimes violent to the earth's surface that follows a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of segments of the crust, by a volcanic eruption or even by a manmade explosion. The dislocation of the crust causes most destructive earthquakes

The crust may first bend and then the stresses exceed the strength of rocks, they break. In the process of breaking, vibrations called seismic waves are generated. These waves travel outward from the source of the earthquake along the surface and through the earth at varying speeds depending on the material through which they move. These waves can cause disasters on the earth's surface.

No structure on the planet can be constructed 100% earthquake proof; only its resistance to earthquake can be increased. Treatment is required to be given depending on the zone in which the particular site is located. Earthquake occurred in the recent past have raised various issues and have forced us to think about the disaster management. It has become essential to think right from planning stage to completion stage of a structure to avoid failure or to minimize the loss of property. Not only this, once the earthquake has occurred and disaster has taken place; how to use the debris to construct economical houses using this waste material without affecting their structural stability



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Paper ID: SCRICE009

**High Performance Asphalt Pavements Incorporating Recycled Polymers as  
Aggregates and Binder Modifier**

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**ABSTRACT**

The main objectives of the European road administrations are to develop long-term bituminous pavements and guarantee the environmental preservation. These objectives include the development of new solutions, technically and environmentally sustainable, which can be reached simultaneously through the promotion of the use of recycled polymers in bituminous mixtures, in order to improve its performance and the durability of the pavement.

Thus, this work will contribute to the improvement of life quality through the integration of recycled polymers in bituminous mixtures, mainly when its use is more difficult or not so viable in other industries. In fact, many recycled polymers are sent to landfill, incinerated or used as reducing agents in furnaces. They could be applied with larger technical, economic and environmental advantages in the construction of road pavements. These residues can work as additives to be introduced in bituminous binders (polyethylene, PE) or as aggregates in bituminous mixes (crosslinked PE or PEX/XLPE), so as to improve certain performance characteristics and increase the durability of road pavements.

In order to improve the performance of the bituminous mixes with recycled polymers, the research team presents different competences (road materials, polymers, rheology, physics and chemistry) will carry out a study of the bitumens, of the recycled polymers, of the modified binders and of the affinity between them when used in asphalt mixes. The global performance of the mixtures incorporating recycled polymers will be also evaluated in lab

This work will make use of chemical techniques of separation and quantification (chromatography), physical evaluation of materials, surfaces and contact energies (microscopy and spectroscopy), assessment of the affinity between the different materials (thermal analysis) and rheological characterization of binders. Nanoindentation techniques will be also used to characterize the stiffness modulus of small polymer particles and fine films of bitumen. Finally, the mixtures incorporating recycled polymers will be characterized concerning the main mechanisms of degradation of the pavements, namely through their disaggregation resistance.

The work will lead to the development of new high performance mixtures incorporating residues of difficult reuse and will contribute to a larger durability of the mixtures, thus increasing the period of life of the pavement and reducing the negative impact associated with the rehabilitation of the road network. At the same time, a useful reuse of residues will be possible, which would be probably deposited in sanitary embankments for special materials, thus diminishing the use of new materials in paving and contributing to the sustainability in the road construction.



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**Paper ID: SCRICE010**

**Micro structural study of Non-Bio Degradable Fibers in High Performance  
Concrete**

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**ABSTRACT**

In the recent years there has been a renewed emphasis on improving durability and increasing service life of structures. Concrete has been the major instrument for providing stable and reliable infrastructure since the days of the Greek and Roman civilization. HPC has been evolved as a high strength and durable concrete by eliminating the voids in the concrete matrix which are main cause of the deterioration. Though the concrete is rich in compression and possess durability due to various innovative methods of preparing the matrix, the lack of tensile strength leads to its brittle nature. To transform the brittleness to ductility the HDPE fibers which possess high tensile strength are selected as an additive in the fiber reinforced HPC. Experimental studies have been made on 100 BIS specified samples of high performance concrete reinforced with HDPE fibers. HDPE fibers improved the strength of high-performance concrete considerably. An overall improvement in the properties of HDPE fiber reinforced HPC concludes that the HDPE fibers play vital role in improving the strength and durability of HPC. The analysis of the microstructure of the specimens is done by SEM to identify the morphology of the structure. The test results are presented in terms of load-deflection behavior and permeability through time.



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**Paper ID: SCRICE011**

**Seismic Response of Rc Structures Using Different Types of Dampers**

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**ABSTRACT**

In present analysis, high rise RC frame building of G+ 12 storeys of 39m height is analyzed with and without dampers for different zones and for different dampers. During analysis the Bending Moments, Shear forces, Displacement, and Time periods were found and were compared for various cases. Buildings are modeled and analyzed using standard package ETABS 2016.



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**Paper ID: SCRICE012**

**Comparative study on design of triangular tower using schifflerized angles**

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**ABSTRACT**

Telecom industry is growing rapidly which require more number of towers. Triangular towers are being used as an alternate to square towers due to their lesser wind resistance which results in significant weight reduction compared to square towers. Hot rolled 90° steel equal angle sectional are generally used in lattice towers for both leg and bracing members since the 60° angles are not readily available. In triangular based towers, the included angle between the two flanges of the main leg member shall be 60° for a smooth connection between the leg and bracing members. The bracing members are connected to both the flanges of the leg members (made of 90° angle section) using 15° bent gusset plates. The gusset plate thickness shall be 2mm higher than the bracing member that it connects with the leg member based on code recommendations, resulting in a heavier tower. The required included angle of 60° between the two flanges of a leg member can also be achieved by 'schifflerized' hot-rolled 90° Angle. The current paper focuses on the effect of schifflerized angles in overall structure weight compared to towers with hot rolled 90° angle towers of same configuration and antenna loading. During this study, two different height of tower are considered i.e., 40m and 60m height and performed analysis with 90° angles and schifflerized angles. Comparative summary is obtained between two cases and conclusions are drawn on overall impact of structural weight





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**Paper ID: SCRICE013**

**Preparing a Cmp Of Proposed Smart City - A Case Study of Erode City**

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**ABSTRACT**

The demand of transportation infrastructure arises when the supply of transportation service become increases. The free flow accessibility of transportation is a big challenge in the fast growing cities depends on the intensity of the traffic density, existing street layout pattern and adjacent land use. It describes that increase in demand of infrastructure alerts change in alteration of land-use pattern and community lives for future transportation routings and planning for public transit. This paper deals with the study of planning a transportation infrastructure in a pre-defined path for future transportation scenario through Comprehensive Mobility Plan (CMP) along with the design of green vegetation for specified sight distance specified in the past papers.



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Paper ID: SCRICE014

**Effect of Utilization of Ground Granulated Blast Furnace Slag in the Behavior of  
Flyash Based Geopolymer Concrete Under Different Curing Conditions**

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**ABSTRACT**

Many research works have been focused on the utilization GGBS in Geopolymer concrete but only few works threw light on the blended usage of flyash and GGBS in Geopolymer concrete. This research work aimed at investigating the impact of addition of GGBS as a partial replacement of class F type Flyash based Geopolymer concrete in various proportions such as 20%, 40%, 60%, 80% and 100% were casted. The properties of Flyash, GGBS, and Course Aggregate, Fine Aggregate and Alkaline solutions were found out and the Geopolymer concrete was designed using the B.V.Rangan modified geopolymer mix design which was relevant to IS 10262-2009. Based on the previous research works an optimum molarity of 13M was preferred. Different curing conditions used in order to consider the effect of curing for the early attainment of strength. Geopolymer concrete were tested for fresh properties and hardened properties such as compressive strength test and split tensile strength test. Flyash- GGBS blend was found to improve the mechanical properties of Geopolymer concrete at both the ambient and heated conditions.



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**Paper ID: SCRICE015**

**Effect of Molarity of Activator Solution in the Behavior of Flyash Based  
Geopolymer Concrete Under Different Curing Conditions.**

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**ABSTRACT**

Geopolymer provides a vast area for research. This research work aimed at investigating the influence of molarity of alkaline solution and curing condition in Geopolymer Concrete. Class F type of Fly ash was used as the binder material. The combination of Sodium hydroxide and Sodium Silicate solution was used as the alkaline activator solution. M-sand was used as Fine aggregate. Design was based on B.V. Rangan's proposed mix design which was relevant to IS 2062-2009. The concentration of the sodium hydroxide solution was varied in the range of 8M, 10M, 13M, 16M and 18M. In order to account the effect of curing, the specimens were casted in two batches and were cured separately under ambient condition and heated conditions. Workability of the fresh concrete was determined by the compaction factor test. Mechanical properties such as Compressive strength and split tensile strength were determined for hardened concrete. Oven Cured specimens were found to yield better results than the ambient cured specimens. The optimum molarity of the Sodium hydroxide solution to be used as a part of activator solution was determined for both the curing conditions.



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**Paper ID: SCRICE016**

**Comparative Studies on Performance of Overhead Tank Structures with  
Different Support and End Conditions**

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**ABSTRACT**

Earthquake has now become a major cause of destruction and fatalities, and this continues at a higher rate. The consequence of strong earthquake ground shaking has become more threatening to both human and assets. Water tank is one among the important component of lifeline and public utility. RC Elevated liquid storage tanks were heavily damaged, some even collapsed to ground during the events recorded in India. Plan of the building is one of the major aspects. Building should be symmetrical such as a square, rectangle, octagon etc. i.e., it must be symmetrical with respect to axis. In symmetrical plans torsion does not occur. Efficacy of prototype-scaled elevated water tank models in a bi-axial shake table with varied geometries and staging systems were planned and corresponding values were analysed and compared with experimental results. The project emphasizes on the fact that most efficient geometry of staging is octagon with column at the centre and they were analysed under various types of bracings and results were also obtained such that the most efficient prototype model that withstands vibration for longer period of time was the one with octagon staging and diagonal bracing at a h/d ratio of 0.45-0.47



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**Paper ID: SCRICE017**

**A Qualitative Study and Analysis of Causes and Disputes in Construction Claims**

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**ABSTRACT**

To develop the infrastructure, Indian government spends huge crores every year. Claims are applicable where projects are lacking in design, plans, effective management, skilful supervision, and close coordination from client side. Today, Construction industry is ruling the claims when compared to other industries. Claims are undesirable to client due to excess of project time and project cost. Claim process facing more problems in current situation which creates dispute between Contractor and Client. This paper discuss about the various potential claim area, most influenced causes and disputes in construction claims which can be overcome through the modified methodologies in construction claim management.



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**Paper ID: SCRICE018**

**Study on Strength and Self-Healing Properties of Bacterial Concrete**

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**ABSTRACT**

Concrete is a heterogeneous material which has the ability of accepting whatever added to it. But one such important snag is the low tensile nature of concrete which makes it more liable to cracking. Sustained loading on the crack increases the crack mouth opening which makes it prone to entry of harmful oxides and atmospheric air into concrete. This in turn reduces the durability of the concrete. This research focuses on enhancing the strength and durability of concrete by addition of bacterial species in concrete. In this research, *bacillus subtilis* cultured on *Luria Bertani* agar for 30 days was used as bacterial species. Bacterial species was added at the rate of 10ml, 20ml and 30ml in concrete. Calcium lactate was used at the rate of 0.1mol/l in concrete for the calcium mineral precipitation to fill up the cracks in concrete. Various strength studies like compressive strength, split tensile strength, flexural strength and water absorption capacity were discussed. Self-healing mechanism of concrete through calcium lactate was also discussed.





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**Paper ID: SCRICE019**

**Strength Characteristics of Concrete with Partial Replacement of Fine  
Aggregate using Recycled Concrete Aggregate and Bottom Ash**

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**ABSTRACT**

Mining of rivers for sand has been banned by the Tamilnadu, India in order to protect water bodies. This resulted in identifying alternatives for river sand for construction activities. On the other hand, large quantities of industrial wastes such as fly ash, bottom ash, construction wastes, etc are disposed as land filling, which can be effectively utilized for construction. This research focuses on the utilization of Recycled concrete aggregates derived from demolished construction wastes and bottom ash obtained from thermal power plants for concrete. Studies on mechanical properties such as compressive strength, split tensile strength, water absorption and durability properties such as Sorptivity and rapid chloride penetration test of concrete were carried out by partially incorporating fine aggregate from fine recycled concrete aggregates (FRCA) at 50%, 40%, 30%, 20% and 10% by weight; bottom ash (BA) at 0%, 10%, 20%, 30% and 40% with 50% constant quantity of Manufactured Sand (M-Sand). It was observed that the mechanical properties of fine aggregate modified concrete are in agreement with the conventional concrete. Also low to moderate penetration ion was noticed under durability studies. Sorptivity results indicated higher capillary rise than controlled concrete. For control concrete, SEM pictures shows thick, compact and continuous C-S-H gel and large crystals of Portland deposits in the cement paste when compared to the replacement of fine aggregate with industrial waste materials.



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**Paper ID: SCRICE020**

**Behavior of Interlock Block Masonry under Compressive and Lateral Loading**

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**ABSTRACT**

Interlock block constructions have been initiated and developed across the world with research studies within limitations. Masonry is the most executable and adaptable building material in worldwide, but the lateral and seismic performance of masonry structures has always been a big concern. Interlock is a technique that is making objects to hold each other without any connections and by means of connecting objects with their complicate dimensions. Interlocking systems are generally used in all industries including construction fields. Generally cement is used as a binding material in buildings. It could be replaced with interlocking mechanism. The major part of the building structure is wall, if walls are casted with interlock mechanism, 50% of use of cement material will be reduced. Interlock system is more suitable for this rapid growth of 21<sup>st</sup> century. This discussion is based on the salient features of interlocking-block masonry with different materials keeping in view the requirements of shape simplicity and ease of manufacture. Testing of specimens will be carried out under compressive and lateral loading. Validation of results with material based Interlock-block masonry. Failure pattern of interlock block system under loading condition and Comparison of analytical approach with experimental test is being discussed.



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**Paper ID: SCRICE021**

**Experimental Studies on the Mechanical and Durability Properties of Geopolymer  
Concrete**

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**ABSTRACT**

Construction activities are increasing tremendously due to economic developments worldwide. Cement consumption is on the rise due to the enormous construction activities. The production of cement adds approximately an equal weight of CO<sub>2</sub> to the atmosphere which is a serious environmental problem. In order to avoid this scenario, usage of cement should be minimised. Geopolymer concrete is one kind of concrete in which cement is completely eliminated. Geopolymer concrete is a concrete produced using supplementary cementitious materials such as flyash, Ground Granulated Blast Furnace Slag (GGBS) and activator solution such as sodium hydroxide and sodium silicate. In this research, geopolymer concrete was developed using GGBS and sodium hydroxide and sodium silicate solutions at different molarities (4M, 6M, 8M, 10M and 12M). The ratio of NaOH to Na<sub>2</sub>SiO<sub>3</sub> was fixed at 1:2.5 for all the mixes. The concrete specimens are cured at room temperature till the date of testing. Mechanical properties such as compressive strength, split-tensile strength and flexural strength were studied at the end of 7, 14 and 28 days. Water absorption test was also conducted at the end of 28 days. Results on compressive strengths revealed that at the end of 7 days, a compressive strength of 45MPa was obtained on 12M mix. Results also revealed that 12M mix is better than other mixes in all the aspects tested except water absorption.



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**Paper ID: SCRICE022**

**Study on Strength and Durability Property of Zero Cement Mortar**

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**ABSTRACT**

In this present study, an attempt has been taken in complete eradication of cement with alternative pozzolanic materials such as Ground Granulated Blast Furnace Slag, Bagasse Ash and Rice Husk Ash. This research focusses mainly on evolving a Zero cement mortar by supplementary cementitious materials with chemical activators like Sodium hydroxide in combination with Sodium silicate. Five different levels of replacement Z1, Z2, Z3, Z4 and Z5 were adopted to study the optimum level of replacement of pozzolanic materials. Chemical activators prepared at 9M at by ratio of 2.5% and 5% was used to bind the pozzolanic materials and workability property like slump cone test with mechanical properties like compressive strength, split tensile strength and durability properties like water absorption and fire resistance were studied. Results shows that production of zero cement concrete with optimal level of pozzolanic materials and activators would be a best eco-friendly method.



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**Paper ID: SCRICE023**

**A Study on Utilization of Copper Slag in Fly Ash Based Geopolymer Mortar as a Replacement for Fine Aggregate**

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**ABSTRACT**

Use of fly ash based geopolymer can help to reduce CO<sub>2</sub> emissions of concrete and act as a Sustainable development. This paper studies the behavior of fly ash based geopolymer mortar having copper slag as a replacement for sand at various percentages. The compression strength, physical properties and micro structural characteristics were studied for the various mixes. From the compression strength results it was observed that as the percentage of copper slag increases strength of the mortar also increased. The molarity used in this study was 16, 14 and 12 and the greater strength attains on 16 molarity. Geopolymer concrete of varying mix proportions such as M0, M2, M4, M6, M8 & M10 is prepared, i.e. the gradual increasing of the amount of copper slag as 20%. In that replacement of copper slag by 100% and molarity of 16 used gives the higher strength. The maximum compression strength of 80.19 Mpa was achieved in this study. The results showed that chemical changes of the alkaline activators and copper slag had a significant effect on the early strength with higher molarity. Hence the geopolymer mortar server as a feasible alternative material of cement mortar.



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**Paper ID: SCRICE024**

**A Study on Effect of Steel Mill Scale in Compressed Stabilized Mud Block**

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**ABSTRACT**

Excessive use of materials leads to industrialization, which has an adverse impact on the environment. From the industries large amount of chemicals or other suspended particles as waste were largely dumped. To reduce the environmental impact, we the civil engineers may use it in constructional practice to evolve an alternative building material. This may be a solution for waste disposal and for cost inflammation of the building components. Brick is a major building component widely used in construction industry. These bricks can be replaced by Compressed Stabilized Mud Blocks an emerging technology in construction field. It is also a cost effective and eco-friendly technology since it can be made of locally available materials. This study focused on stabilized mud blocks using Steel mill scale, a locally available industrial waste. From this study it was found that 20% of replacement of steel mill scale along with lime gained better strength of 7.501 MPa, also it performed good in durability studies such as waster absorption of 6.89% a satisfactory value is obtained. Better compaction of blocks was confirmed from the Ultrasonic pulse velocity test also. Hence from the above study it was found that the steel mill scale can be effectively used in stabilized mud blocks.





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**Paper ID: SCRICE025**

**Modelling Of Pre-Tensioned Concrete Slab Subjected To Fire**

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**ABSTRACT**

Prestressing technique has been widely used in civilian and military constructions. The prestressed reinforced concrete structural components usually outperform the non-prestressed reinforced concrete components because prestressing not only increases the structural stiffness and load carrying capacity, but also has higher crack resistance than non-prestressed component. As a result, it usually leads to light structures. It is known that the bond strength between both steel and concrete deteriorates at elevated temperature and that concrete tends to an explosive spalling failure when subjected to a fire. At high temperatures, concrete and steel expand differently and their cooperation is severely impaired. The bond strength reductions in fire and their impacts on the load-bearing capacity of prestressed concrete elements remain largely unknown. The effect of spalling of the cover layer can sometimes expose the reinforcement directly to the temperatures of a fire, which accelerates the degradation of the reinforcement and thus the structure's overall load-bearing capacity as well. Increasing the temperature the vertical mid-span deflection first tends to increase up to 150 C; then to remain constant up to about 250–300 C and to increase again for higher temperatures.

This paper focuses on the behaviour of pre-tensioned concrete slab subjected to fire. Two stages of analysis is carried out using Finite Element package ABAQUS to find thermal response of structural members namely thermal analysis and structural analysis. In the first step, the distribution of the temperature over the depth during fire is determined. In the next step, the mechanical analysis is made in which these distributions are used as the temperature loads. The responses of structure depend on the type of concrete and the interactions of structural members. The pre-tensioned concrete slab was modelled. When exposed to fire loading the load–deflection behaviour, de-formed shape at failure, stresses in the tendons and failure modes obtained from the finite element analysis were evaluated and compared with the experimental results. Effects of both materials in pre-tensioned slab at elevated temperatures are also evaluated.



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Paper ID: SCRICE026

**Mode-I and Mode-II fracture toughness of fiber reinforced concrete using  
Arduino based sensor**

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**ABSTRACT**

Mode-I fracture and Mode-II fracture toughness tests of fiber reinforced concrete (FRC) has been widely investigated under patterns of test specimen geometries. In the current studies an experimental investigation of evaluating of hybrid fiber embedded in high strength concrete matrix has been reported. Using different types of fibers: namely Steel (S), Polypropylene (PP), Kevlar (K), Jute (J). HFRC composite beam specimens were cast and tested using the RILEM recommended three point bending test. The four point shear test set up reflected the lowest values of mode II fracture toughness  $K_{IIc}$  of concrete. The non-damage defect concept proved that, double edge notch prism test setup is the most reliable test to measure pure mode II of concrete. The main variables were the fiber volume content and combinations of different fibers. In an attempt to estimate the load versus deflection and crack mouth opening displacement (CMOD) using the Arduino based sensors were introduced during the test to the HFRC Beam specimens. Mode II fracture toughness of concrete  $K_{IIc}$  was found to decrease with the increment of a/w ratio for all concretes and test geometries. Mode II fracture toughness  $K_{IIc}$  was sensitive to the hybridization patterns of fiber. The mode-I and mode-II fracture failure is compared based on the sensor obtained results and manual results. A model for predicting the (CMOD) fracture, the sensor results shows conformity with the experimental results.



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**Paper ID: SCRICE027**

**Temperature Effect on High Performance Concrete by Adding Jute When  
Subjected To Fire**

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**ABSTRACT**

Temperature effect on high performance concrete by adding jute when subjected to fire is conducted and its effects are being studied. Concrete when exposed to different climatic condition will cause many problems like cracking ,so in order to reduce these effect HPC and jute are being used. Jute are added additionally to HPC so that it improves the strength , durability and many more properties being improved by adding jute and also here pretreated jute is being used so that it will gain more properties which helps the building to be strong and will last for long .studies are being conducted and the performance of the each material is being noted and its effect when its being used with HPC are studied and corresponding relationship between the material are being noted .HPC mainly used because they provide more strength and durability while comparing to normal concrete .In these paper it will reflects the effects of concrete when its being exposed to fire ,buildings are normally being effected by fire and climatic conditions so in order to reduce these Various durability tests are being conducted to analyse the effect . For these atleast 6 cubes are being casted and its been exposed to fire of different temperature , a small furnace is being made and the test for fire is being performed. The tests are being performed under various temperature and its been exposed to fire and its performance are being noted and its effect are being studied.



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**Paper ID: SCRICE028**

**Numerical simulation on the studies of concrete stiffened steel plate shear wall**

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**ABSTRACT**

In this paper, studies on concrete stiffened steel plate shear wall (CSSPSW) is done. Concrete stiffened steel plate shear walls are designed to resist lateral loads and is predominantly used in tall buildings. The elastic buckling of steel plate shear wall is prevented by introduction of reinforced concrete panel. High strength bolts are used to ensure the composite behavior of shear wall and the spacing between the bolts are kept constant. Bolts are designed conservatively in order to prevent fracture of bolts due to tensile forces. Steel washers are also used for perfect bonding in CSSPSW. This study is divided into two parts-aspect ratio and sizes. In phase one the aspect ratio of concrete stiffened steel plate shear wall and steel plate shear wall is changed. In phase two effect of openings are studied. Four opening sizes such as small, medium, large, very large are selected to study the location of opening. Degradation of seismic factors such as initial stiffness, the ductility ratio, and the ultimate shear strength and energy absorption are noted. For numerical simulation finite element software ABAQUS is used. This software is used for modelling, analyzing and visualizing the result. During lateral loading, the percentage of absorbed shear force in CSSPSW is greater than steel plate shear wall. From the studies it is concluded that the behavior of concrete steel plate shear wall with opening is entirely different from steel plate shear wall. Initial elastic stiffness of CSPSW with opening is independent of opening location and moreover the ductility ratio is increased by the aspect ratios.



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**Paper ID: SCRICE029**

**Study on Strength Parameters of Stabilized Mud Blocks at Various Stabilizers**

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<sup>2</sup>Centre For Rural Technology, Gandhigram Rural Institute – Deemed University, Dindigul, Tamil Nadu, India.

**ABSTRACT**

In this paper studies on concrete stiffened steel plate shear wall (CSSPSW) is done. Concrete stiffened steel plate shear walls are designed to resist lateral loads and is predominantly used in tall buildings. The elastic buckling of steel plate shear wall is prevented by introduction of reinforced concrete panel. High strength bolts are used to ensure the composite behavior of shear wall and the spacing between the bolts are kept constant. Bolts are designed conservatively in order to prevent fracture of bolts due to tensile forces. Steel washers are also used for perfect bonding in CSSPSW. This study is divided into two parts-aspect ratio and sizes. In phase one the aspect ratio of concrete stiffened steel plate shear wall and steel plate shear wall is changed. In phase two effect of openings are studied. Four opening sizes such as small, medium, large, very large are selected to study the location of opening. Degradation of seismic factors such as initial stiffness, the ductility ratio, and the ultimate shear strength and energy absorption are noted. For numerical simulation finite element software ABAQUS is used. This software is used for modelling, analyzing and visualizing the result. During lateral loading, the percentage of absorbed shear force in CSSPSW is greater than steel plate shear wall. From the studies it is concluded that the behavior of concrete steel plate shear wall with opening is entirely different from steel plate shear wall. Initial elastic stiffness of CSPSW with opening is independent of opening location and moreover the ductility ratio is increased by the aspect ratios.



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**Paper ID: SCRICE030**

**Translucent Wood as construction material**

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<sup>1</sup>Architect, Image N Shape, B-410, Tirupati Plaza, Surat, Gujrat-395001.

**ABSTRACT**

An advancement is made with wood which is an Optically Transparent Wood which can be utilized as substitute of Glass and has higher quality than the Glass. The way toward transforming wood into windows is a really basic process. Initially, setting up squares of wood in a bubbling shower loaded with water, sodium hydroxide and different synthetic substances for around two hours. This caused a polymer known as lignin to filter out of the cell dividers in the wood. Lignin is a standout amongst the most widely recognized mixes in the plant world, and its central capacity is making plant cells more unbending. Critically for the scientists, lignin is additionally what gives wood its shading — with the compound gone the wood turned white.

At that point, splashing the wood with an epoxy, which both reinforced the wood and turned the wood clear. The mystery lies in the common design of the wood, joined with the refractive characteristics of the epoxy. Despite the fact that its shading was gone, the hidden structures in the wood continued as before, including the modest channels that trees use to transport supplements. At the point when loaded with the epoxy, these channels transformed into courses for light, centering it and enabling it to go through. The final result looks more like a bit of plastic than something that once remained in a woodland.

These translucent boards couldn't just be utilized as a part of windows and exteriors to let in daylight while protecting the tenant's security, yet additionally would be a powerful material for the surfaces of sun oriented cells - especially when covering vast spans of cells, where the wood's shoddy generation expenses would offer a huge money saving advantage.



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**Paper ID: SCRICE031**

**Solar Roadways and Smart Highways**

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**ABSTRACT**

Shrewd parkway and brilliant street are terms for various distinctive recommendations to join advances into streets for creating sun powered vitality, for enhancing the activity of independent autos, for lighting, and for checking the state of the street. The primary reason for sun powered roadways is to supplant black-top streets with Solar Panels which create vitality through the sun that can be utilized by neighbourhood houses or organizations that are associated with the framework from either the house's carport or the organizations parking area. The boards will likewise expand the quantity of charging stations for electric autos if that station is associated with the sun based roadway. Each board is about 12' by 12' of interlocking boards that have their own particular LED lights that will be utilized as the street lines, and can likewise be utilized to illuminate words like "Lessen Speed" or "Movement Ahead" to help the stream of activity. There are 3 layers that make up the sun powered boards:

- The Road Surface Layer - The Road Layer is the High Strength layer that has the photovoltaic cells which draws in the sun's beams, it has footing so vehicles don't slide off the street, and it's waterproof to ensure the layers underneath.
- The Electronic Layer - The Electronic Layers contain a small microchip board that helps control the warming component of the boards, this innovation can help dissolve the snow that terrains on the boards so unsafe street conditions will never again be an issue in the more northern locales. This layer can detect how much weight is on the boards and can control the warming component to liquefy the snow.
- The Base Plate Layer - The Base Plate Layer is the layer that gathers the vitality from the sun and conveys the ability to the homes or organizations that are associated with the sun oriented roadways. This will likewise be utilized to exchange the vitality to autos as they roll over the strip to revive the battery.

The boards will warm the street and shield snow and ice from aggregating. They will likewise highlight LED diodes that will build the perceivability of street lines. The LEDs would likewise twofold in keeping paint from repressing sun based power age.





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**Paper ID: SCRICE032**

**. Construction Technologies in Civil Engineering**

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**ABSTRACT**

In India as well, with development being the second biggest financial action after agribusiness, and the nation quick rising as an intense new economy on the worldwide stage, it is basic that we receive more up to date, better development advancements to meet our goal-oriented objectives of foundation and natural surroundings development. In an offer to take in more about the most recent innovations in building development in India and abroad, we filtered through a before main story on building tall, made up for lost time with a few specialists, and gathered significant experiences into the theme. The business land division has effectively embraced green building ideas in driving metros; now, the private segment, as well, is keeping pace. The idea of green development includes utilizing development material that is naturally mindful and asset productive all through a building's life cycle - ideal from development to task, support, redesign and annihilation. It satisfies a designer's social duty commitment as well as cost-productive and sought after.



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**Paper ID: SCRICE033**

**Comparison of Restoration Techniques for Public Heritage Buildings**

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**ABSTRACT**

Heritage buildings represent past history, culture of country and constitute architectural heritage of the region. Many of the heritage buildings are still in workable condition and they are deteriorating rapidly. Heritage building conservation is a complicated task that follows some strict guidelines and procedures. Hence their conservation and restoration is civil engineer's obligation. This paper reviews about the classification of the common defects occurring in heritage buildings and the methods to repair the defects. The methodologies to handle common problems with respecting the integrity of the structure. It represents the comparison of the methods of repair and restoration on the basis of cost and time. The objective of the paper is to identify the differences in the duration to restore building by repairing the defects theoretically and actually on the field. Also it seeks to highlight the cost increase of the project due to variation between market rates and estimated rates as per DSR. The major defects identified are discussed with the help of case study and a suitable and economical solution for a particular defect is suggested.



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**Paper ID: SCRICE034**

**Mitigation Techniques to Improve Shortage of Skilled Labour in Mumbai,  
Construction Industry**

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Technological Institute, Mumbai 400019, Maharashtra, India.

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**ABSTRACT**

The Construction industry is rapidly growing industry in India with large ongoing project also every construction projects runs with multi-tasking activities. To carry out these activities effective construction workers are working. Today's competition in the industry and this heavy workload is responsible to put great demand on employees. The objectives of this study are to find the causes for the shortage of skilled labour in the Mumbai, construction industry, the subsequent effects due to the shortage and to derive up with effective mitigation measures. The investigation was shown via two types of questionnaire surveys; pointing Planners, Engineers, Managers, Technical Officers and other comparable grades. As well as pointing skilled labours. Included skilled labour types were: bar bender, carpenter, concrete worker, mason, electrician's, painter, plasterer, pipe fitter, stuffer, and tiler. Mean method was applied for the ranking of reasons and opposing effects as well as data analysis using the Microsoft Excel. Change in technologies / change in education system effect on the labour as well as Lack of vocational education on labour major reason for shortage of skilled labour it is attempted in Mumbai, construction industry, then arranging different suitable mitigation measure to overcome the issue.



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**Paper ID: SCRICE035**

**Integrated Approach of GIS and GPS for Equipment Management in  
Construction Industry in Mumbai City**

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**ABSTRACT**

Good project management includes effective and efficient use of labour, material and equipment resources on construction site. Construction equipments are considered to be one of the most important resources. It is important to choose proper capacity and types of equipments for a particular work which requires selection of the most feasible construction equipment supplier of the city. Improper supplier selection may result in the problems of cost and time overrun. There are many methods for selection of supplier which involve statistical analysis, making them time consuming. With the help of GIS database, supplier selection can be done in very less time, as it being a very effective tool for database management. The spatial and non-spatial data for this study is formed by collecting Name of supplier, address, location, type of equipment, number of equipments, rental and purchase policy, cost of equipment, rental price of equipment and delivery facility, by carrying out a questionnaire survey. This spatial and non spatial data about equipment suppliers is then stored into the GIS database using GIS software. Queries have been developed in GIS software to find out supplier's location, equipment availability, and shortest route from the site. This study stands as a guide for the use of GIS software for ideal supplier selection in very less time



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**Paper ID: SCRICE036**

**Application of Geospatial Technology to Freeway Management System**

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<sup>2</sup> Associate Professor, Civil and Environmental engineering department, Veermata Jijabai Technological Institute, Mumbai 400019, Maharashtra, India.

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**ABSTRACT**

Corresponding with the increase in development in Freeway constructions in India, it requires intensifying standard and highly effective Freeway management system. The study entailed review of literature outlining the available lane management techniques (LMT) for freeways to apply these techniques to manage the lane traffic of newly constructed Freeways. Also, literature recommends the speed criteria's depends on the basic principles of speed limit includes safety, economic and constant for the vehicles on the freeways to avoid accidents on the freeways. This study aims to study various operations of Freeway Management System (FMS) such as Lane use control, Ramp Control, Incident management etc. An application strategy of Geographic Information System (GIS) in Freeway Management System is proposed specially for Incident management on the freeways. This strategy includes collection of the previous accidental data on the freeway, analysis of the data according to various parameters such as type of vehicle incurred in the accident, speed of that vehicle at the time of accident, cause of accident; according to above information defining the black spots on the freeways, providing some accident prevention measures on that spots, indicating the nearest available hospitals and closest path to that hospital from the accident spot using Gram++ software according to available time, traffic and road conditions. It fully utilizes the advantage of computer and GIS technology to modernize the management of freeway.



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**Paper ID: SCRICE037**

**Activity Delay Analysis and Schedule Updating Using Fuzzy Logic System**

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**ABSTRACT**

This study presents a Fuzzy Logic model that integrates daily site reporting of activity progress and delay. With a schedule updating and forecasting system for construction project monitoring and control. The model developed assists in the analysis of the effects of delay on a project's completion date and consists of several components. An as-built database integrated with project scheduling; a list of potential causes for delays; a procedure to categorize delays, a method of estimating delay durations utilizing fuzzy logic; a procedure that updates the schedule; and a procedure that evaluates the effect and likely consequences of delay on activity progress. This model is of relevance to researchers since it makes a contribution in project scheduling by developing a complete approach for handling the uncertainty inherent in schedule updating and activity delay analysis, it also advances the application of fuzzy logic in construction. It is of relevance to construction industry practitioners since it provides them with a useful technique for incorporating as-built data into the schedule, assessing the impact of delays on the schedule, and updating the schedule to reflect the consequences of delays and corrective action taken. The use of fuzzy logic in the model allows linguistic and subjective assessment to be made, and thereby suits the actual practices commonly used in industry.



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**Paper ID: SCRICE038**

**An Experimental Comparative Study on the Mechanical Properties of Nano  
Silica Based Normal Aggregate and Recycled Aggregate Concrete**

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**ABSTRACT**

Concrete is the most commonly used construction material on earth.. A method to reduce the cement content in concrete mixes is the use of silica fines.Among the Nano materials presently used in concrete, Nano silica possess more pozzolanic nature. It has the capability to react with the free lime during the cement hydration and forms additional C-S-H gel giving strength, impermeability and durability to concrete. In the present investigation an attempt has been made to comparative study the properties with 50% and 100% replacement of Recycled Concrete Aggregates (RCAs) concrete and for Normal aggregates (NCA) by incorporating nano silica (water soluble type with 30% suspension by name CemSyn-XTX) added by weight of cement for M30 (Standard grade) of concrete and The design mix method adopted for M30 was IS 10262:2009 The properties studied here are Compressive Strength, Flexural Strength and Splitting Tensile Strength. The results indicate that nano silica is able to improve the mechanical properties of RCAs concrete for M30 .For M30 grade the Compressive Strength, Flexural Strength and Splitting Tensile Strength were increased for 0%, 0.5%, 1%, 1.5% of nano silica and strength gradually decreased for 2% nano silica concrete.





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**Paper ID: SCRICE039**

**Concrete Composite Construction: State of the Art**

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**ABSTRACT**

In the recent trends emerging day by day in the construction industry, composite construction method has gained its popularity for its economical usage of materials and providing higher sustainability than conventional concrete construction system. Several factors that affect the degree of slippage deterioration in composite slab, e.g. embossments, shape of profiled sheeting and shear connector types. The common types of failure modes in composite slabs are flexural failure, shear failure and combination of flexural-shear failure mechanism. Small scale test helps to determine the shear resistance capacity, slip and shear action between the corrugated steel and harden concrete. Small scale tests usually used Push out, Pull out, Pull over or elemental bending tests. The reduction in the size of the structural components, thereby decreasing the dead loads which results in the construction of more floors (i.e.) increasing the service living area. The shear action between the sheet and the concrete can be achieved by providing frictional interlock (shape of the profiled sheeting), mechanical interlock (embossments on the sheet) and end anchorage interlock (studs on the profiled sheeting). The advantages of composite construction over steel reinforced concrete construction are reducing the thickness of the floor slab with a simultaneous proving in the load bearing capacity of the slab. This paper also discusses an attempts on quantifying the slippage in terms of m-k method. Finally, the areas that need further research are highlighted and the need for incorporating composite slab contribution into building design guidelines is emphasized.



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**Paper ID: SCRICE040**

**Performance of CFRP Strengthened Circular Hollow Steel Sections Using External Warpping**

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**ABSTRACT**

This investigations has been formed on Hollow steel section to analysis their structural performance under compression, torsion and bending in all the directions. Now day's hollow sections are widely used in construction of industrial structural member, public buildings and other common building constructions etc. Carbon Fibre Reinforced Polymer (CFRP) is one of the most widely used material for strengthening to concrete structure and recently it has been applied for steel structures. It has more benefits compared to conventional strengthening technic, like high strength to weight ratio and more ductile. This investigation carried out on the axial capacity and crushing behaviour of CFRP strengthened Circular Hollow Section with different carbon fibres matrix. The application of CFRP to short column will increase the ductility of the section and also increases axial load carrying capacity. Carbon fibre warping externally may successfully applied to improve the performance of existing strucutres.



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**Paper ID: SCRICE041**

**A State of Art – Review of Composite Deck Systems**

R.

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**ABSTRACT**

This paper deals with the state of art-review on shear bond characteristics of composite deck slab made of cold formed steel sheet. The composite floor slabs are used extensively for exploiting its advantages in many countries. These slabs lead to faster, lighter and economical construction of buildings. The profile sheet has been prepared from a plain cold rolled sheet in the shape of profile deck has been varied dovetailed to trapezoidal shape. The cold formed profile sheets which is an integral part of the deck slab and provided with shear connectors and embossments to improve their bond with concrete. All the composite slab systems were prepared using M<sub>20</sub> grade concrete. The general provisions in Eurocode 4, Part 1.1 General rules & rules for buildings. The effect of the geometry of the cross-section, embossments, sheet thickness and surface treatment on the bond strength are discussed in this paper.



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**Paper ID: SCRICE042**

**Experimental investigation on mechanical and durability properties of fiber  
reinforced concrete with sustainable waste**

Dr.C.Vijayaprabha<sup>1</sup>, Dr.A.Siva<sup>2</sup>, K.Sowmya<sup>3</sup>

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**ABSTRACT**

Concrete is going to be an eco-friendly, sustainable and energy efficient by adding some recyclable material or any waste by products like blast furnace slag, fly ash and rice husk ash etc. Likewise copper slag is a waste by product produced in the form of molten slag from copper industry, can be used in concrete productions. Copper slag has the potentiality to perform like a pozzolans in hydration process. Previous studies were made to analyze the effect of copper slag as a replacement of cement, fine aggregate and combination with other wastes like silica fume, fly ash and ferrous slag etc. Here an attempt has been made to study the possibility of copper slag(CS) replacement (0% to 60%) in fibre reinforced concrete (Polypropylene fibre(PPF) 0% to 0.8%). Compressive strength at 7,28,56,90 and 180 days, water absorption and chloride penetrability of concrete were presented. From the observed results copper slag upto 80% replacement achieves higher compressive strength than control mix upto 0.6% of polypropylene fibre. PPF 0.8% shows lesser strength due to poor workability. Water absorption varies from 1.67% to 4.61%. There is no severe condition of chloride penetration in any concrete mix subjected to rapid chloride penetration test.



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**Paper ID: SCRICE043**

**Experimental Study on Geopolymer Concrete Using Fly Ash and GGBS**

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**ABSTRACT**

Cement is the core content for the concrete mix. Manufacturing of cement causes CO<sub>2</sub> emission more which leads to the pollution, health and environmental problems like global warming to control over the adverse effect we can prefer geopolymer concrete which is no cement concrete. Factory wastes such as fly ash, ground granulated blast furnace slag (GGBS), silica fume and Metakaolin can be used for alternate for cement. This study mainly focus on the ratio of fly ash and ground granulated blast furnace slag (GGBS) for optimum levels which nearly matches the cement concrete properties. This study involves the various tests like initial setting time, consistency, slump flow, compressive strength.



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**Paper ID: SCRICE044**

**Construction of Low Cost House using Hemp based Composite Material**

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**ABSTRACT**

This project will investigate the micro-structural interaction between lime based binders and hemp material to develop hemp-lime composite materials. It could also be used to build environmentally-friendly homes. The chemical and micro-structure properties of various hemp based lime materials will be investigated. These will be supported by strength, vapour permeability, density and thermal characteristics to find the physical properties of hemp based lime material. As well as investigation of pozzolans, water-retaining agents, hydraulic and non-hydraulic binders (cement, lime, air-lime), aggregates and other special additives. The investigation will develop binders using hemp-lime composite materials.



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**Paper ID: SCRICE045**

**Study of Extreme Loadings Scenario on Modular Steel-Concrete Composite  
Structures**

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**ABSTRACT**

Modular steel concrete composite structures are basically pre-fabricated structures transformed into larger infrastructures. The use of pre-fabricated structures goes back over a hundred years. It started gaining popularity very early in the 20th century. Modular construction has been used regularly in residential construction for more than a century. The concept of building in modular units is not new for the construction industry but some recent advances in modular construction technology have made it very attractive to certain project types and conditions. The modular construction is entirely different from that of the manufactured homes. The most significant difference between these types of structures is that modular construction must be built in accordance to the standard building codes as conventional method of construction and be placed on a permanent foundation, while manufactured homes are built to the less-stringent housing and urban development standard and may not be required to be installed on a permanent foundation. The end of World War II caused the modular market to truly explode and greatly evolve. This demand for homes was greater than the marketplace could handle with the traditional building process. This led people to look for solutions to increase efficiency and lower the cost of new home construction. The modular building process answered both of these needs. There are still modular homes being used that were built in the 1950s. These early modular homes were much simpler than today's modular buildings. The modular construction process involves the construction of modules – three dimensional sections or boxes in a factory and then transported to the permanent building construction site and lifted into place by means of a crane. The modules are manufactured in a controlled environment. Constructing within a controlled environment allows the materials to remain dry and protected. The protected environment also promotes worker comfort, which in turn increases productivity. In the last twenty years the sophistication has greatly increased with the pioneering work of assembling homes with overhead cranes that have capacity to lift 100 tons. This allowed for larger modules to be constructed. The only limitation is the size of each individual module due to the width of the road from the factory to the building site. Today's modular buildings normally consist of 3-6 different modules. Modular construction requires specialized detailing to accommodate the connection of the modules and additional ceiling to floor space to allow for framing in the top of the lower module and in the floor of the upper module. These modules are typically manufactured with a structural steel frame and concrete floor deck.





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**Paper ID: SCRICE046**

**Use of Polyethylene Plastic Waste as Replacement of Aggregates in Concrete**

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**ABSTRACT**

Plastic material consumption has been in pace worldwide and its annual consumption is about 120 million tons in recent times. Huge quantities of plastic waste generation are taking place every year. Out of this waste, a significant part is recycled but the majority of the plastic waste is disposed off in the form of land filling. The disposal of post-consumer plastic waste leading various environmental hazards such as reduction in soil fertility, reduction in water percolation, emission of toxic gases, health hazard to animals and birds, poor drainage due to landfill, pollution of ground water due to leaching of chemicals. In the recent past concentrated efforts are being made by the researchers towards utilization of plastic wastes as a partial replacement of concrete constituents so as to follow safe and environmental friendly way of disposal of these wastes. In this study locally collected plastic waste is used as a partial replacement of aggregate in the concrete. The proportions of plastic wastes used are 0%, 5%, 7%, 10%, 15% and 20% by dry weight of aggregate. The mix design is carried out as per the Indian Standard method of mix design for M25 concrete and accordingly standard cubes are prepared to verify the compression strength of plastic waste replaced aggregate concrete. From the results, it is noticed that the compression strength of plastic modified concrete is linearly decreasing at slow rate as compared to the untreated concrete. Up to 15% of plastic waste modified concrete showed about 10% reduction in strength whereas the decrease in compression strength is found to be 30% when aggregates are replaced with 20% plastic waste. But this decrease in strength is found to be nominal and hence plastic waste can be effectively utilized as partial replacement of aggregates in the concrete for unimportant structures.



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**Paper ID: SCRICE047**

**Role of Civil Engineer in Pharmaceutical Organisation**

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**ABSTRACT**

Organizational structure is the bureaucratic set-up of an institution/company/industry by which its staff, facilities and other resources are organized in such a manner as to be most effective in accomplishing the purpose for which the organization is established. A pharmaceutical company as well as its close relatives, proprietary drugs and toiletries companies are complex organizations. Under its roof a team of scientists, technicians and other specialists come together for representing virtually all the sciences, along with the contribution made by the management executives, lawyers, accountants, engineers, system analysts and many others whose abilities and talents maintain the viability of this unique business enterprise. Current scenario demands for a different organizational structure for a large scale pharmaceutical company and for a small scale pharmaceutical company. Now days when the pharmaceutical companies are becoming gigantic a need for new structure arises. In the new structure a specialist is needed for every individual job because every job today demands for specialization.

Pharmaceutical engineers are involved in the conception, design, construction, and operation of research facilities and manufacturing plants. Civil Engineers help have to maintain a level of personal and environmental safety in pharmaceutical industry. Civil engineers ensure that the sites meet all legal, health and safety recommendations apart from this they help in Managing, directing and monitoring the progress of each project as it happens.



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**Paper ID: SCRICE048**

**Experimental Investigation on Hybrid Fibre Reinforced Concrete**

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**ABSTRACT**

The addition of fibres into the brittle concrete shall imparts tensile nature. The addition of two or more fibres in the concrete named as Hybrid Fibre Reinforced Concrete(HFRC) which derives more benefits from each of the individual fibres than the Single Fibre Reinforced Concrete (SFRC). The present experimental investigation focus on the properties of HFRC using various percentages of Polypropylene and steel fibres for M20 grade of concrete. To control the propagation of micro crack to macro crack, polypropylene fibres of Recron 3s (PPF - 0.1%, 0.2%, 0.3%, 0.4%) have used, while the double hooked end steel fibres (SF- 0.5%, 1.0%, 1.5% and 2%) are used to impart the tensile nature in the concrete. The objective of the study is to observe the transformation of concrete from brittle to ductile and to find the optimum performance of fibres in HFRC. The stress strain behavior of Hybrid Fibre Reinforced Concrete is studied by comparing with individual fibre incorporation. The study conclude that the hybridization of metallic and non- metallic fibres has the ability to arrest the propagation of micro and macro cracks in the cement matrix of the concrete with increased extensibility and tensile nature.



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**Paper ID: SCRICE049**

**New Age Construction Materials - A Review**

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**ABSTRACT**

India is witnessing construction of fascinating projects in developing Infrastructures like high rise structures, RC chimneys etc. Majority of structures are utilizing structural concrete. The demand for structural concrete includes the usage of durable materials. Due to unexpected growth in population and increased use of natural resources for construction intimidates the environment in terms of emissions and waste. The use of conventional materials is intricately linked with change in climate. This necessitates the use of new and innovate materials and technologies in promoting and implementing better quality of structure and faster construction solutions without depleting the environment. The use of new and innovative materials and technologies is thermally efficient, produce less emissions and waste. The present study broadly reviewed the literature and suggest the paradigm shift in utilization of natural energy resources to sustainable energy source. The comprehensive review highlights some of the recent developments on new-age construction material and technologies



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**Paper ID: SCRICE050**

**A Quick Method for Estimating the Storey Stiffness of A Building By Using Sap-2000**

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**ABSTRACT**

This research the formulation of storey stiffness is done by conceptual simplification of converting actual stiffness matrix into tri diagonal matrix by converting actual frame into shear frame. This method is applicable for all type of buildings to calculate storey stiffness without applying corrections factors at boundary stories. A simple example is included to illustrate the ease with which the proposed expression is applied. The high efficiency and satisfactory precision of this method are ascertained by comparison with shear building for different response spectrum analysis and time history analysis.



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**Paper ID: SCRICE051**

**Study of fly ash and silica fumes on strengthening properties of concrete**

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**ABSTRACT**

A step to this kind of research have brought light to use of industrial waste in place of binding material that could reduce the cost and bring enough strength required This project work have been executed by selecting two mineral admixtures which are available easily for working condition like Silica fume and Fly ash. Test sample of cylinders, cubes and prisms have been cast, cured, dried and tested for split tensile, compressive strength and flexural strength respectively. The tests have been conducted at curing periods of 7-days, 28-days and 56-days.



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**Paper ID: SCRICE052**

**Experimental Study on Concrete with Ureolytic Bacteria**

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**ABSTRACT**

In the present scenario where the constructions are increasing, the need to find a supplementary cementing material for the improvement of strength and which has less environmental effects is of great significance. Ureolytic bacteria are the ones which can improve the strength of cement mortar by the precipitation of calcium carbonate in the presence of urea and a calcium source. In the present study *Bacillus sphaericus* is used to check its applicability in this regard. Various tests like consistency and initial setting time are done to find out the effect of bacterial solution on cement. Tests such as compression strength and sorptivity test are used in the present study to identify the variation in the mechanical properties of cement mortar. To know the mineralogy and morphology of the calcium carbonate precipitated by the bacteria XRD and FESEM analysis are carried out.

Compressive strength (at 7-day and at 28-day) of mortar cube found to be increasing with the increase of bacteria concentration up to  $10^7$  cells/ml. The optimum doses of bacteria found to increase the average compressive strength by 58% (at 7-day) and 23% (at 28-day) over the control specimen. The more increase in strength after 7 day curing may be due to the presence of nutrient medium and it getting depleted as it reaches 28 days and causing death of bacteria. The minimum cumulative water absorption is obtained for a cell concentration of  $10^9$  cells/ml. The mineralogy and morphology of the calcium carbonate precipitated by the bacteria test was able to confirm that the bacterially precipitated calcium carbonate is calcite and is having lamellar rhombohedra or hexagon shape.





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**Paper ID: SCRICE053**

**Three-Dimensional Analysis of The Soil Samples Reinforced with Sisal Fibre  
Using Optum G3**

Gobinath, R.<sup>1</sup>, Madhuri.T<sup>2</sup>, Bhavani.Ch<sup>2</sup>, Vanaja.P<sup>2</sup>, Supriya.P<sup>2</sup>, Roshan Singh Rathore<sup>2</sup>

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**ABSTRACT**

Cohesive soils need a soil reinforcement to withstand its stresses arising due to several conditions. Natural fibres are adopted in this study to show their strength and properties when they get mixed with the soil. Natural are degradable and it is not harmful to the soil after its association with the soil. Sisal fibre is utilised in this study for the stabilisation purpose and to evaluate the strength properties of the soil samples by using software founded on finite element analysis. This study conducted to envisage the failure pattern and to locate the major and minor principle stress in the soil samples of various proportions. The soil samples were prepared for both unconfined compressive strength and freeze and thawing resistance properties of the soil for 5 alternate cycles. This paper aims to compare the laboratory and software analysis of the soil sample and to promote the usage of natural fibres into the stabilisation rather than using conventional chemical methods.



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**Paper ID: SCRICE054**

**Grass Root on the Stability of Slope – A Case Study on Nilgiris District**

k.prathibha<sup>1</sup>, k.gouthami<sup>2</sup>

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**ABSTRACT**

This study aims to have a significant impact on stabilizing property of slopes by the establishing Lemon grass as a negotiator which provides hydrological and mechanical support by enhancing shear strength reducing water locking (pore pressure) by Evapo-transpiration. In reason of growing the crop as support to resist sliding that it is well recognized for roots contribution in slope stability research in the framework of plants is still in juvenile stage. This paper is made to ascertain utilization of Indian plant lemon grass which is capable of mechanical strength for pull-out resistance equipment is done in this research. Even though it is a preliminary study done with numerous boundary condition result obtained where comprising on the software's results which are promising roots enhance the soil cohesion which attributes towards total shear strength increase and thus the factor of safety. Root topology is analyzed for the plant in the slope of the area using Geo-studio.



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Paper ID: SCRICE055

**Freeze Thaw Resistance of Nilgiri Soil Stabilized with Ecosand and Metakaolin –  
Polypropylene Fibre (Synthetic Fibre)**

Md. Hafeez Ur Rahaman<sup>1</sup>, B.Sandeep<sup>2</sup>, Syed Hafeez Uddin<sup>3</sup>, B. Chandu<sup>4</sup>, J. Praveen<sup>5</sup>

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**ABSTRACT**

Research was undertaken to study the combined reinforcing and stabilising effect of Ecosand, Metakaolin added with Polypropylene fibers in silty soil obtained from Nilgris district. In this work an effort is made to obtain the impact of adding polypropylene fibers in fixed ratios (eco sand 10%\_metakaolin 5%) tandem with two novel stabilising agents in various proportions (polypropylene fibre 0.1% & 0.2%) is the effects of non-traditional additives on the geotechnical properties of soils have been the focus of much investigation in recent years. It has been well established that the plasticity index and also the size, shape, and arrangement of soil particles will affect the treatment process of natural soils with additives.

Stabilization of soils that are subjected to a regular variation in the temperature require most probable selection of suitable stabilizers and admixtures to improve the strength of the soil. This study investigates the resistance of the nilgiris soil over the freeze thaw reaction. The soil is stabilized with EcoSand, Metakaolin and polypropylene fibre (synthetic fibre). Index and engineering properties of the soil were determined in the laboratory. The soil is stabilized with 2 variants of equal proportion of EcoSand-10%, Metakaolin-5% and varying the polypropylene fibre in proportion of 0.1% and 0.2% with the weight of the soil. UCS test were conducted for the virgin sample as well as the sample after four freeze-thaw cycles. The soil sample is kept at 0° for 24 hours and later at 28° for 24 hours to complete a cycle. It is determined that the admixtures added has increased the resistance of the soil over the freeze-thaw reaction after the cycles. The polypropylene fibre has increased the bonding of soil and hence it stabilizes the soil during a large periodical variation in the temperature of the soil.



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**Paper ID: SCRICE056**

**Study on Shear Strength Behaviour of Geotextile Reinforced and Cement  
Modified Marginal Soils**

M.Gopikrishna<sup>1</sup>, D.Triveni<sup>2</sup>, S.Yeshwanth Kumar<sup>3</sup>, Y.Shruthi<sup>4</sup>

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Hasanparthy (M), Warangal, Telangana, India.

**ABSTRACT**

Reinforced earth has made ever-increasing trades in the field of civil engineering. The effectiveness of soil-reinforcement interaction depends on the characteristics of backfill soil in terms of its drainage and frictional properties. However, due to non-availability of favourable backfill soils in many instances, it is compelled to use poor backfill soils known as marginal soils. Several failures of reinforced earth structures were reported by various investigators due to the use of such marginal backfills. Hence, there arises the need to improve the behaviour of such materials to make use of them in construction works. Few attempts were made by different researchers to improve such soils by reinforcing with different materials. In the present work, an attempt is made to modify the marginal soils to overcome their ill effects in terms of their excess fines and plasticity using cement as admixture and geotextile as a reinforcement layer while serving the function of drainage within the marginal backfill.

In this study, triaxial tests were conducted to understand the shear behaviour of reinforced marginal soil without and with cement modification under drain condition and compares its performance with that of original soil. Triaxial tests were carried out on 3.8cm diameter and 7.6cm height test samples with varying number of reinforcing layers and to know the drainage effect, undrained tests are also conducted on reinforced soil sample. This study revealed that the cement modified reinforced marginal soil has shown significant improvement in shear strength parameters under drained conditions by overcoming the ill effects of plasticity



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**Paper ID: SCRICE057**

**Reduction of Pavement Thickness By Using Geogrids**

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**ABSTRACT**

Geogrid reinforcement is gaining acceptance as an effective way of improving on the properties of naturally occurring soils for road pavement construction. In many tropical countries, weak subgrades are common and often rejected after proof rolling during construction due to poor strength. The specific objectives of this research were to determine the bearing capacity of unstabilized and stabilized Red soil subgrade material by using the California bearing ratio test under soaked and unsoaked conditions and designing the flexible pavement by using the method of California bearing ratio. Even though red soil has high strength but if we apply Geogrid results going to be checked. Then by placing a layer of a geogrid at different heights like one layer at  $h/2$ , two layers at  $h/6$  from top and bottom, in three layers one is at  $h/2$  and other two at  $h/6$  from top and bottom, the effects of geogrid reinforcement on California Bearing Ratio values are investigated. The California Bearing Ratios of the soil-geogrid subgrade was used to determine the pavement thickness. The results indicate that the pavement thickness is reduced by 17.5 % ( 137.9mm of 788mm) by using double layered Geogrid in the unsoaked condition and thickness is reduced by 21.37 % ( 178.9 of 837.5) by using double layered geogrid. We consider soaked condition i.e. worse condition.



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Paper ID: SCRICE058

**The Behaviour of Swelling Soils using Ceramic powder and Polyester  
Fibre**

Sk.Khader Vali Ababa<sup>1</sup>, Sai Prasanna<sup>2</sup>, Md.Saqlain Mustha<sup>3</sup>, Md.Osman Jauha<sup>4</sup>

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(M), Warangal, Telangana, India.

**ABSTRACT**

Expansive soils exhibit recurrent volume changes with the change in moisture content, causing serious problems to the civil engineering structures. Expansive soils are found in some regions of India and many other countries. These soils pose major foundation problems, causing damage to the super structure if proper precautions have not been taken. The amount of volume change in expansive soil is related to initial dry density and water content, amount of clay fraction and type of minerals. These soils undergo volumetric changes with the increase in moisture content. This is due to the presence of the montmorillonite mineral.

Industrial development has led to production of large amount of waste causing problems of disposal and scarcity of construction land. To solve this problem to a minor extent, in this project, we studied the effect of polyester fibre and ceramic powder on the black cotton soil when used as admixture to stabilize the soil.

Subgrade soil is an integral part of road pavement structure as it provides support from beneath the soil hence stabilization of it is one of the primary and major processes in the construction of any highway; also environmental authorities are concerned about the growing amount of polyethylene bottles produced by household sectors. Presence of poor sub grade conditions and expansive sub grade is one such problematic situation. This research is intended to study on properties of black cotton soil with ceramic powder and reinforcing with polyester fibre. Especially shear strength and California Bearing Ratio (CBR). Polyester fibres were mixed with soil in four different percentages 0%, 2%, 4% & 6% and 8% combination with ceramic tile powder mixed with soil in three different percentages 5%, 10%, 15% & 20%. The CBR, atterberg limits of treated samples were measured by direct shear test and CBR test and atterberg limits test. Experiments results show this fact that using of polyester and tile powder leads to increasing shear strength and CBR and reduction, plasticity index. The bonding properties of soil are enhanced by the addition of ceramic powder and by the addition of polyester fibre load carrying capacity of the soil is also increased as it acts as reinforcement. The peak value of CBR test in soaked condition was attained at 15% ceramic powder and 8% polyester fibre.



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**Paper ID: SCRICE059**

**Usage of Piezo-Electric Materials in Sustainable Highway**

Venkat.T<sup>1</sup>, Shahid Afridi<sup>2</sup>, Ananya Smarani.R<sup>3</sup>, Srija.S<sup>4</sup>, Faisal Sikander<sup>5</sup>

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**ABSTRACT**

This article aims to assess the functionality of piezoelectricity in roads to utilise energy executed from the moving vehicles. The energy is converted into electrical energy using piezoelectric technology to replace fossil fuel in streetlight applications. The vitality of this technology arises as fossil fuels is being over consumed which makes it challenging to provide sufficient power in the next era as an effect of growing population. Being dependent on renewable energy to account for a greater global consumption level is essential to overcome the risks associated with fossil fuels. Piezoelectric road is a new energy evolution to provide a sustainable solution in terms of environment, economy, and social needs.



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**Paper ID: SCRICE060**

**Plant Root Contribution on Slope Stability**

P. Sai Sree<sup>1</sup>, S. Bhavani<sup>2</sup>, Y. Akhila<sup>3</sup>, A. Sindhuja<sup>4</sup>, T. Dhedipya<sup>5</sup>

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**ABSTRACT**

Presence of vegetation provides hydrological and mechanical support by increasing shear strength reducing water storage (pore pressure) by evapotranspiration etc. In spite of the reason that it is well documented about roots contribution in slope stability research in context of Indian plants is still in juvenile stage. An attempt is made to ascertain utilization of Indian plants for slope stability is done in this work. Even though it is a preliminary study done with numerous boundary condition result obtained are promising roots enhance the soil cohesion which attributes towards total shear strength increase and thus the factor of safety.





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**Paper ID: SCRICE061**

**Stabilisation of Black Cotton Soil Using Shredded Rubber Tyres**

P. Sai Sree<sup>1</sup>, S. Bhavani<sup>2</sup>, Y. Akhila<sup>3</sup>, A. Sindhuja<sup>4</sup>, T. Dhedipya<sup>5</sup>

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**ABSTRACT**

Presence of vegetation provides hydrological and mechanical support by increasing shear strength reducing water storage (pore pressure) by evapotranspiration etc. In spite of the reason that it is well documented about roots contribution in slope stability research in context of Indian plants is still in juvenile stage. An attempt is made to ascertain utilization of Indian plants for slope stability is done in this work. Even though it is a preliminary study done with numerous boundary condition result obtained are promising roots enhance the soil cohesion which attributes towards total shear strength increase and thus the factor of safety.



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**Paper ID: SCRICE062**

**Stabilisation of Black Cotton Soil Using Shredded Rubber Tyres**

S. Siva Sai Pratap Reddy<sup>1</sup>, Almas Khan<sup>2</sup>, Pashikanti Praneeth<sup>3</sup>, Nalakonda Sai Kumar<sup>4</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>UG Student, <sup>3</sup>UG Student <sup>4</sup>UG Student

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(M), Warangal, Telangana, India.

**ABSTRACT**

Soil is an unconsolidated material composed of natural aggregate of mineral grains which have resulted from the disintegration of rock. The type and characteristic properties of the soil depend on its formation and deposition by transportation agents. When suitable ground condition is not encountered at shallow depth or to improve the performance of borrow soil a geotechnical engineer opts for the modification of the soil. In ground improvement methods, waste materials are also used to improve geotechnical properties of soil. Waste materials such as scrap tires, ETP sludge and fly ash offers a viable alternative from economical, technical and environmental stand points. Large amount of soil is needed for the construction of highways and embankments if the industrial waste by products can be effectively used then natural soil can be preserved. Discarded tires are becoming globally problematic because recycling them, may cause environmental related problems. Thus, making use of them needs to be considered, and solutions must be sustainable.

Utilization of industrial waste materials in the improvement of problematic soils is a cost efficient and environmental friendly method. It helps in reducing disposal problems caused by the various industrial wastes. However, it is essential to understand the performance of these waste products prior to use. The present project evaluated the utilization of crumb rubber as geo materials by mixing them with low strength soil and stabilized for road and embankment construction. Two standard test methods were conducted: (1) California Bearing Ratio test and (2) proctor compaction test. Results revealed that use of shredded rubber up to 6% has considerable effect on maximum dry density and CBR values of the reinforced soil.



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**Paper ID: SCRICE063**

**An Experimental Study on Behaviour of Black Cotton Soil with the Addition of  
Polypropylene**

A.Nookapathi Raju<sup>1</sup>, P.Jayanth<sup>2</sup>, K.Lingaswamy<sup>3</sup>, K.Gouthami<sup>4</sup>

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Warangal, Telangana, India.

**ABSTRACT**

Engineering applications such as land reclamation, construction of highways, railway and canal embankments require a very large quantity of soil of desirable properties. It is often difficult to obtain good quality soil for above applications from nearby quarries. In such a situation, engineer is forced to use the locally available problematic soils having low shear strength, high compressibility and swelling nature after stabilizing the same with addition of admixtures. Use of sand, lime, cement etc for the improvement of problematic soils is costly because of high demand in other civil engineering applications.

To overcome the difficulties experienced with the problematic soils in geotechnical applications on one side and safe disposal of solid wastes on the other side (polypropylene), an attempt is made in this study to explore the possibilities of utilizing polypropylene fiber to improve the engineering behaviour of black cotton soil. In this study black cotton soil is mixed with polypropylene fibre at different proportions varying from 0 to 3%. The CBR values were studied.

It was observed that the optimum % of polypropylene fiber inclusion was at 1.5% addition and it was impracticable to add more than 3% of the polypropylene fiber to the soil. After this it becomes very difficult to mix the soil with the fiber properly.



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**Paper ID: SCRICE064**

**River Pollution and Parameters Reckoning**

S. Rashmika<sup>1</sup>, N. Nithin Reddy<sup>2</sup>, R. Gouthami<sup>3</sup>, B. Sriteja<sup>4</sup>, P. Amulya<sup>5</sup>

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**ABSTRACT**

Water is a source of life and regarded as the most essential of natural resources. Water covers most of our; however, approximately 98% of this water is seawater and is unusable for drinking because of the high concentration of salt. About 2% of the planet's water is fresh, but 1.6 % is locked up in polar ice caps and glaciers. Another 0.36 % is found underground in aquifers and wells. Therefore, only about 0.036% of the planet's total water supply is accessible in lakes and rivers. WHO/UNICEF survey states that in 45 developing countries, women and children bear the primary responsibility for water collection in the vast majority (76%) of households. This is time not spent working at an income-generating job, caring for family members, or attending school. Furthermore, existing freshwater resources are gradually becoming polluted and unavailable due to human or industrial activities. The increasing contamination of freshwater systems with thousands of industrial and natural chemical compounds is one of the key environmental problems facing humanity worldwide. The ever increasing world populations and rapidly advancing industrialization is causing more demand than ever for the dwindling supply of water, which makes it precious in more and more countries.



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**Paper ID: SCRICE065**

**Strength evaluation based on replacement of natural minerals in concrete**

M.K. Zohebuddin<sup>1</sup>, V. Shruthi<sup>2</sup>, Md. Yousufain Fara<sup>3</sup>, R. Akhil<sup>4</sup>, Siri Chandan<sup>5</sup>

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**ABSTRACT**

Concrete is the most versatile construction material because it can be designed to withstand the harshest environments while taking on the most inspirational forms. Engineers are continually pushing the limits to improve its performance with the help innovative natural materials and supplementary of sand and cementations materials. Lots of research has been done to replace the river sand, in this study we replace the river sand with precipitated silica with partial replacement of cement by GGBS. The mix-1 containing the river sand is 100 percentages used to make the concrete, further mixes from mix-2 to mix-4 are gradually reduce the usage of river sand and gradually increase the precipitated silica like 10%, 20% & 30% also GGBS 50% replace with cement, the experimental mainly focus on compute the strength of harden concrete compressive, flexure, and split tensile on the specimens were tested at 7, 14 and 28 days. It was concluded that replacing about 10% of precipitated silica and 50% of GGBS attain good compressive strength in the range of 25-30N/mm<sup>2</sup>.



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**Paper ID: SCRICE066**

**Design of Partial Magnetic Repulsion Foundation Building by Using U-Boots and  
Autoclaved Aerated Concrete Bricks**

P Shivashanker<sup>1</sup>, T.Naresh<sup>2</sup>, N.Thirupathi<sup>3</sup>

<sup>1,2,3</sup>Assistant professor, Christu Jyothi Institute of Technology and Science

**ABSTRACT**

Civil Engineering demands for more and more structures with the present rate of growth of population. This increase in structures, is becoming a reason which increases the stresses and burden on the earth. So, for decreasing this over-pressure, it is a need for lightweight buildings. I am going to see the design of slabs using this U-Boot technology and conventional brickwork with AAC blocks. U-Boot Baton is recycled polypropylene formwork which was manufactured to create light weighted slabs and rafts. Because of its exceptional characteristic features, AAC stands for Autoclaved Aerated Concrete and the density of this block is considerably less than that of conventional brick. Hence it would reduce the self weight of structure. I have also used magnetic repulsion technique in the foundation of the structure so as to resist any possible deflections and other additional loads.



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**Paper ID: SCRICE067**

**Structural Analysis and Design of Commercial Building for Earthquake  
Resistance**

N.Thirupathi<sup>1</sup>, T.Naresh<sup>2</sup>, P Shivashanker<sup>3</sup>

<sup>1,2,3</sup>Assistant professor, Christu Jyothi Institute of Technology and Science

**ABSTRACT**

This report has been prepared as part of project work to fulfill the requirement of course syllabus prescribed to Civil Engineering final year course. Among several projects which were offered to us, we have chosen the project entitled “Structural Analysis and Design of Commercial Complex for Earthquake Resistance” under the guidance of our dedicated supervisor and Department of Civil Engineering.

Comparing various models of building structures, we found public building as the most challenging project. Thus, we have given preference to the construction of the frame structured nine-stories commercial building with basement, shear wall, lift, escalator, dome roof. Building frame is the three dimensional structure as space which consist of rigidly interconnected beams, slab and columns. It produces greater number of the redundancy thus reduces the moments and facilitates the even distribution of the load.

This project enabled us to acquire knowledge on proper analysis and design of building for earthquake safety including the capability of solving and tackling the field problem to somewhat. It has taught us to work in team which will surely help us in the future to come.

The results of calculation are presented in tabular form and sample calculations are provided in details to reduce the bulkiness of the report. Sufficient figure and sketches have been introduced to illustrate the theories. Reference to the appropriate clauses of standard codes of practices has been made wherever necessary. It is clear that for understanding the process physically and realizing the structure behaviour, manual steps by steps procedure is necessary. However due to the time constraint and to be familiar to the modern technology, the structural analysis and design part is performed using computer software “SAP 2000 V-14”. The burden of repeated calculations in analysis has been reduced due to use of computer software. Report is focused on the design of slab, beam (primary and secondary), column (square and circular), staircase (open newel and spiral), concrete dome roof and foundation (raft foundation and isolated footing).



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**Paper ID: SCRICE068**

**Development of Hybrid Fiber Reinforced Concrete**

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**ABSTRACT**

It is well known that concrete is a brittle material under tensile loading. The mechanical properties of concrete can be improved by randomly oriented short discrete fibers which prevent or control initiation, propagation, or coalescence of cracks. The addition of fibers to concrete in the said amounts has a significant influence on hardened concrete properties; improvement in toughness and energy absorption; achievement of higher resistance to dynamic load and reduction in crack spacing and width. By using hybrid fibers in a concrete mixture the same properties of concrete can be obtained as those exhibited by conventional fiber reinforced concrete but with the addition of a smaller amount of fibers. Moreover, the use of a single type of fiber may improve the properties of FRC to a limited level. However the concept of hybridization, which is the process of adding two or more types of fibers into concrete, can offer more attractive engineering properties as the presence of one fibers enables the more efficient utilization of the potential properties of the other fibers.





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**Paper ID: SCRICE069**

**Strengthen Studies in Bitumen Mix by Using Polythene for Flexible Pavement**

Theegala Vinay Raj<sup>1</sup>, Vyamsani Revanth<sup>2</sup>, Mohd Sajjaduddin<sup>3</sup>, Bukala Manasa<sup>4</sup>, Sriramoju Viharika<sup>5</sup>  
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**ABSTRACT**

Bitumen concrete is a composite material mostly used in construction projects like road surfacing, airports, parking slots etc. it consists of asphalt or bitumen(used as binder) and mineral aggregate which are mixed with together and laid down in layers then compacted.

Now a days steady increments in high traffic intensity in terms of commercial vehicles, and significant variation in daily and seasonal temperature put us in a demanding situation to think of some alternatives for the improvisation of the pavement characteristics and quality by applying some necessary modifications which shall satisfy both the strength as well as economical aspects.

Also considering the environmental approach due to excessive use of polythenes in day to day business, the pollution to the environment is enormous. Since the polythenes are not biodegradable, the need of the current hour is t use the waste polythene in some beneficial purposes.

This paper presents a research conducted to study the strength variations in bitumen mixes with adding of polythene. Various percentages of polythene are used for proportion of mixes with selected aggregate grading as given in IRC code. The role of polythene mix is studied for various engineering properties by preparing marshal samples of BC mixes with and without polythene. Marshal properties such as stability, flow value, unit weight, air voids are used to determine optimum polythene content for the given grade of bitumen (80/100).



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**Paper ID: SCRICE070**

**Demonstrating Hybrid Concrete Construction Performance through Virtual  
Simulation - A Case Study Approach**

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**ABSTRACT**

The development keeps on confronting the test of getting together with execution targets, for example, time and cost in view of customers' necessities. Cross breed solid development (i.e. the mix of precast and in-situ concrete and different materials) offers the development business partners an extensive variety of advantages. Contingent upon the fitting determination of basic materials, the strategy reverses a proficient cost and efficient administration in the usage of development ventures. Nonetheless, the need to survey these execution benefits before (and as a reason for arranging) the development period of the undertaking is vital. A strategy of exhibiting execution through the virtual recreation of the key execution markers of time and cost as a reason for embracing cross breed development is thusly displayed. A run of the mill steel-outline development venture was utilized as a contextual investigation in which the remarkable parts of the plan, program/development strategy and advance were caught on-site. Information grouped were utilized to recreate the improvement progressively utilizing the model of the VR show virtual reality demonstrate. Future work involves the age of elective cross breed development plans and looking at the execution of these against the steel outline elective.



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**Paper ID: SCRICE071**

**Dry Municipal Sewage Sludge Waste Used As Ingredient in Making of Bricks**

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**ABSTRACT**

Bricks are the major common building material used for constructional purpose. In earlier days mud blocks were used and now-a-days clay bricks were being used. In the manufacturing of clay bricks the clay and sand be used more. Many attempts have been made to overcome this problem to reduce clay and sand quantity. So the municipal sewage sludge producing large amount waste every day. Here we gave incorporated the municipal sewage sludge to get the better binding and compressive strength to the brick. The disposal of this waste into the environment causes the land pollution so the attempt made will be a better solution for this problem. In this present study an experimental investigation has been conducted on bricks to check the compressive strength, Water absorption, Bulk density, effluence for different mix rations. The municipal sewage sludge is added at different percentages such as 10%, 15%, 20%, 25%, 30%, 35% and 40%. The tests were conducted and the optimum percentage is obtained.



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**Paper ID: SCRICE072**

**The Properties of Concrete Incorporating Red Sand (RS) as Fine Aggregate**

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**ABSTRACT**

The aggregate comprises a substantial portion of concrete. Including coarse and fine aggregates it is normally obtained from natural sources. Fine aggregate in India is usually extracted from River. As the demand for concrete production increases, more natural sand is needed. The need for fine aggregate should be addressed in an environmentally friendly manner, considering the diminishing sources of natural sand. Various industrial by-products, such as fly ash, ground granulated blast-furnace slag and silica fume, have been used in concrete to improve its properties. This also enables any environmental issues associated with their disposal. Another material that is available in large quantities and requiring alternative methods of disposal is the Bauxite Residue (Red Sand) from the Bayer process used to extract alumina from bauxite. Enormous quantity of Red Sand is generated worldwide every year posing a very serious and alarming environmental problem. Hence an investigation was carried out to establish its potential utilization as a sand replacement material in concrete. In addition to fresh properties of concrete containing Red Sand up to 100% by mass of Portland cement, mechanical and durability properties were determined. These properties indicated that Red Sand can be used to replace natural sand up to 100% by mass of cement to improve the properties of concrete without detrimentally affecting their physical properties. Combining these beneficial effects with environmental remediation applications, it can be concluded that there are specific applications where concretes containing Red Sand could be used.



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**Paper ID: SCRICE073**

**Study the Socio Economic Impact of Highway Failure**

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**ABSTRACT**

Transportation has in its scope “all direct and indirect social and economic effects of transportation systems both within the transportation corridor and within the larger regions affected, including those bearing on present and future transportation needs and services.”

This scope now includes research in five primary areas:

- The economic and social impacts of transportation projects, policies, and trends.
- Methods of impact assessment.
- The identification and valuing of externalities related to the use of the transportation system.
- Sustainable transportation.
- Environmental justice as it relates to transportation.

Some of these areas overlap, and some of these fields might merit more attention than others, but they all fall within the domain of social and economic research. This paper examines each area, emphasizing current research directions and future research needs and challenges.



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**Paper ID: SCRICE074**

**Sustainable Construction Materials in Earth Dams for Protection of  
Environment during Kakatiya Dynasty**

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**ABSTRACT**

The Several Studies of distresses structures & dams in recent past have clearly indicated that the failures have been more due to lack of proper durability considerations during construction stage of a structure. Durability of a structure is affected due to various physical chemical and biological factors and also with the construction materials used in addition to man made mistakes.

Initially, the Earth Dams deteriorate slowly due to cyclonic temperature variation, overloading, physical causes, Wear and Tear, and Improper maintenance of free board & Seepage due to environment changes. Later, these deteriorate rapidly and fail to meet its designed service of life.

The Technology of Kakatiyas was great and unbeatable. It is observed during restoration of the tank, no cut off trench is found and they made homogeneous sections everywhere. The simplest type of an earthen embankment consists of a single material and is homogeneous throughout. Sometimes a blanket of relatively impervious may be placed on the upstream face. But as per observations it is found neither horizontal drainage filters nor rock toe is provided.

This white paper provides a brief summary of the use of materials in embankment dams. It is not intended to serve as an exhaustive treatise on the characteristics of the various materials that comprise these types of dams. It is, rather, an outline of important points that need to be recognized and understood when selecting materials for use in the embankment dam.



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**Paper ID: SCRICE075**

**Study on Pavement Materials and Construction Methods**

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<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

Connectivity between towns, cities and different areas is an essential component in the development of a Nation. Roads and railways provide this connectivity. High speed road corridors have been one of the most vital infrastructures in the overall socio-economic development of the country.

A highway pavement is a structure consisting of super imposed layers of processed materials above the natural soil sub-grade, whose primary function is to distribute the applied vehicle loads to provide a surface of acceptable riding quality, adequate skid resistance, favorable light reflecting characteristics and low noise pollution.

The goal of this project is to maintain the quality of materials that can be used in the construction of highways. For the maintaining of quality materials in the construction of highway system to control the damaging of highway roads and the life highway road should also increases.

Finally to conclude we have studied the details of national quality control of highway construction materials and we can say that highway can be useful for the advancement of the community, economic prosperity and general development of the country.



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**Paper ID: SCRICE076**

**Effect of Steel and Polypropylene Hybrid Fiber on Concrete**

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**ABSTRACT**

Since ancient time, fiber reinforced concrete has been replaced with plain concrete which is brittle material. Although, the inclusion of single type fiber may improve mechanical properties of concrete, the hybridization can compensate the disadvantages of two fiber types and represent their advantages.

This thesis explores the effect of using steel fiber and polypropylene fiber for reinforcing the concrete to quantify the mechanical properties of concrete matrix. For this purpose, 45 specimens of fiber reinforced concrete which contains different fibers dosage were casted. All mixes were tested for slump and VeBe test in fresh state, and 28 days compressive strength, flexural strength and impact resistance tests were carried out in hardened state. According to the test results, the regression analysis was carried out to predict the value of compressive strength, flexural strength and impact resistance.

The experimental results show that the hybrid form of fiber has slight effect on compressive values, while it causes increase in modulus of rupture, toughness and impact resistance values.





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**Paper ID: SCRICE077**

**Performance Evaluation of Modified Bitumen by Using Coconut Fibers**

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<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

Coconut fibre is also known as coir fibre, coco fibre or coconut fibre. It is the byproduct of coconut coir processing. Coconut fibre is waste product from the copra and coconut oil production are found there abundantly.

Structural changes in the asphalt mixture cause an increase in the temperature of the surface of the road, approaching the softening point of asphalt. Powder of coconut fibre is waste from coconut processing. The addition of 2%, 3%, 5%, 7% powder of coconut fibre changed the characteristics of the asphalt. The powder of coconut fibre is used to determine its effect on the asphalt characteristics. The temperature of the mixing fibers powder in the asphalt must be below the flash point of the powder of fibre during the heating of the asphalt-fiber powder mixture. Bitumen grades 60/70 are used to determine the characteristics of asphalt mixtures. Flash and Fire point, Ductility, Softening point and penetration test and marshall stability test are conducted to determine the asphalt characteristics.



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**Paper ID: SCRICE078**

**A Study on Development of Polymer Modified Asphalt Using Fillers**

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<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

The modified asphalt is used to improve the performance of pavement when traffic loads are applied with changing environmental conditions. In this study, the bitumen was modified by adding Low Density Polyethylene as such as 2%, 4%, 6% and 8% of total bitumen content. These physical properties of modified bitumen samples were also investigated through conventional laboratories tests as such penetration test, softening point test and ductility test. The burning limestone, paddy husk ash and rubber dust were used as trial material to modify the asphalt with 1%, 2%, 3%, 4% and 5% of total aggregate content and Marshall Tests of asphalt samples were conducted with 4.6% bitumen content. The 3.2% of burning limestone was preferred to prepare for the asphalt mixture with optimum 6% Low Density Polyethylene content of modified bitumen. The Marshall Test was conducted to obtain the physical properties of modified asphalt mixture. The adhesion between aggregates and bitumen was analysed with bond mechanism which was confirmed that modified asphalt with burning limestone filler would be to increase the durability of pavements.



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**Paper ID: SCRICE079**

**Enhancing the Soil Properties of by Using Calcium Carbide Residue and Fly Ash**

A.Sravanthi<sup>1</sup>

<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

The main objective of this experimental study is to improve the properties of the soil by adding the waste material which can cause environmental pollution. Calcium Carbide Residue and Fly Ash mixture which are waste product of acetylene gas factories and steel plant respectively has been selected to add in the soil sample in different ratios. The soil properties with and without adding of waste materials (Calcium Carbide residue and Fly Ash) have been studied. An attempt has been made to use these waste material for improving the strength and CBR values of soil which will also prove environment friendly. Thus, from this experimental study will help in reduction of pollution and improvement of soil strength.

Portland cement is commonly used for soil improvement in both unsaturated and saturated states because it is readily available at reasonable cost. The high unit cost and energy intensive process for the production of Portland cement are the driving forces for the constant need within the industry to seek alternative cementitious binders. Geopolymer is an environmentally friendly cementing agent and better engineering performance than ordinary Portland cement. The main objective of this research is to investigate the viability of using Fly Ash (FA) based geo polymer to stabilize unsaturated collapsible silty clay and saturated marine clay. Calcium Carbide Residue (CCR), by-products from acetylene gas, is used as a calcium-rich additive to stimulate the geo polymerization reaction.



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**Paper ID: SCRICE080**

**Enhancing the Soil Properties of by Using Calcium Carbide Residue and Fly Ash**

K.Sumana Sree<sup>1</sup>

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**ABSTRACT**

Flat slabs system of construction of one in which the beams used in the conventional methods of constructions are done away with. The slab directly rests on the column and load from the slab is directly transferred to the column and then to the foundation. To support heavy load, the thickness of slab near the support with the column is increased and these are called are drops, or columns are generally provided with enlarged heads called column heads or capitals.

Absence of beam gives a plain ceiling, thus giving better architectural appearance and also less vulnerability in case of fire than in usual cases where beams are used. Plain ceiling diffuses light better, easier to construct and requires cheaper from work.

The aim of the project is to try and illustrate the method used to design the flat slab in different cases and compare the result obtained for each type of design with other. The flat slab is designed considering four different types (slab without drop panel and column head, slab with drop panel and without column head, slab with column head and without drop panel and slab with column head and drop panel)

The result indicates that the flat slab provided with drop panel and column head has more shear resistance that remaining three.



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**Paper ID: SCRICE081**

**INFLUENCE OF SILICA FUME ON MECHANICAL AND DURABILITY  
PROPERTIES OF CRUMB RUBBER AGGREGATE CONCRETE**

**Sangeetha.D<sup>1</sup>, Dhilipkumar R.G<sup>2</sup>, Divya.M<sup>3</sup>, Dr.M.Sivakumar<sup>4</sup>**

<sup>1,2</sup> PG student of PSNA College of Engineering and Technology, Dindigul

<sup>3</sup> Research Scholar at National Institute of Technology, Tiruchy.

<sup>4</sup> Associate professor, PSNA College of Engineering and Technology, Dindigul

**ABSTRACT**

This paper presents a study of the combined effect of Fly ash(FA) and Rice husk ash(RHA) with Egg shell powder(ESP) incorporating durability properties of concrete. Portland cement was replaced with five different percentages (5%, 10%, 20%, 30%, and 40%) of fly ash and rice husk ash (combined) and adding 5% egg shell powder for every replacement. This paper was analyzed physical and chemical characteristics of fly ash, rice husk ash and egg shell powders. The properties of concrete investigated include total charge-passed derived from rapid chloride permeability test (RCPT), rate of chloride ion penetration in terms of diffusion coefficient, acid resistance (H<sub>2</sub>SO<sub>4</sub>, HCl), sulfate resistance (Na<sub>2</sub>SO<sub>4</sub>), corrosion rate derived from Potentio-dynamic polarization test and A.C impedance measurements. The results showed that the durability of concrete made with fly ash, rice husk ask with egg shell powder is superior to the blended cement concrete.



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**Paper ID: SCRICE082**

**Experimental Study on Industrial Waste Using Recon Fibers to Improve the  
Properties of Concrete**

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**ABSTRACT**

With the ever-increasing population of the world, in general, and the developing countries, in particular, there is tremendous pressure on Civil Engineers to develop cost-effective and eco-friendly structures to fulfill the needs of the mankind. Within current practices of utilization, cement and concrete construction industries throughout the world has been the largest user of fly ash, an industrial by-product, whose use and production have increased many fold during last three decades and have exploited it to the best advantage. Fly ash nowadays is a fourfold issue: reduction in air/water pollution, beneficial conversion of waste into wealth, reduction in expenditure on disposal and augmenting the demand of much needed construction materials which is economical and sound. Fibers on other hand have provided to improve strength, stiffness and ductility of reinforced concrete members with their addition. They act as crack arrestors, change all modes of failure, and increase ultimate strain of the composite.

Experimental investigation has been carried out to study the effect of the fly ash content with recon 3s (polypropylene) fibers on the properties of concrete. Cement has been replaced by mass with 20, 40 and 60 per cent fly ash content. Three percentages of recon 3s fibers (0.2, 0.4 and 0.6 per cent) have been used in the investigation. Tests have been performed for Compressive strength, split tensile strength and flexural strength of different specimens.

Test results indicate with the increase in percentage of fly ash content, the compressive strength, split tensile strength and flexural strength of concrete decreases but this decrease is compensated by the use of fibers in concrete. With the percentage increase in fiber content, the strength increases.



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**Paper ID: SCRICE083**

**Design and Construction of Rigid Pavement by Using Natural and Artificial  
Waste Materials**

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<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

The rising cost of construction materials in developing countries has necessitated research into the use of alternative materials civil engineering construction and also now a day recycling of was materials is very important technique to protect our environment. in India about 960 million tones of solid waste is being generated annually as by-products during industrial, mining, municipal, agricultural and other processes. Among this India produces 10,894,000 tons of coconut waste as per 2010 estimation and glass materials waste also day by day increasing so we are selected two different materials to recycling process by concrete they are Natural waste comprises of Coconut waste. Artificial waste comprises of broken glass pieces and Bangle waste. The main objective of the present study is to reduce the coarse aggregate and increase the strengthen properties of a rigid pavement. For this study we analyze the deflection, roughness, compressive strength. To improve strengthen properties of a rigid pavement, quantity of mixing the wastages are individually and testing of the waste these waste materials adding concrete.

To study effects of these waste with concrete & workable mixing water content, density, compressive strength, water absorption, initial & final setting time, consistency, workability, compaction factor. After obtaining the suitable engineering properties of a concrete so accurate mixed design is carried out & ready to construct the pavement with calculated quantity of C.B.R value of the sub grade soil as per IS 875-1983. After the completion of curing period observe the roughness of the pavement surface & deflection is obtained.



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**Paper ID: SCRICE084**

**Self Curing Concrete**

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**ABSTRACT**

The rising cost of construction materials in developing countries has necessitated research into the use of alternative materials civil engineering construction and also now a day recycling of was materials is very important technique to protect our environment. in India about 960 million tones of solid waste is being generated annually as by-products during industrial, mining, municipal, agricultural and other processes. Among this India produces 10,894,000 tons of coconut waste as per 2010 estimation and glass materials waste also day by day increasing so we are selected two different materials to recycling process by concrete they are Natural waste comprises of Coconut waste. Artificial waste comprises of broken glass pieces and Bangle waste. The main objective of the present study is to reduce the coarse aggregate and increase the strengthen properties of a rigid pavement. For this study we analyze the deflection, roughness, compressive strength. To improve strengthen properties of a rigid pavement, quantity of mixing the wastages are individually and testing of the waste these waste materials adding concrete.

To study effects of these waste with concrete & workable mixing water content, density, compressive strength, water absorption, initial & final setting time, consistency, workability, compaction factor. After obtaining the suitable engineering properties of a concrete so accurate mixed design is carried out & ready to construct the pavement with calculated quantity of C.B.R value of the sub grade soil as per IS 875-1983. After the completion of curing period observe the roughness of the pavement surface & deflection is obtained.





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**Paper ID: SCRICE085**

**Soil Bioengineering Techniques for Riparian Restoration**

Karnakanti Mounika<sup>1</sup>, Syed Viqar Malik<sup>2</sup>

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**ABSTRACT**

Soil bioengineering is the utilization of living plant materials to play out some building capacity. Soil bioengineering methods can be utilized to treat disintegrating banks, overabundance rock and precarious inclines and can give a completed item that regards the issue and in addition giving proper riparian vegetation. The regular successional process related with improvement of a solid, working riparian vegetation cover is the model that is utilized to configuration repair frameworks that energize rebuilding of riparian qualities. By giving a living, developing framework for repair of harmed destinations, conceivably with wood and shake, the repair can add to living riparian zone.

Soil bioengineering frameworks have been utilized to treat an assortment of corrupted riparian zones. Live bank insurance can be utilized to shape guarded dividers of vegetation along the disintegrating banks of waterways, streams and lakes. Live palisades can be utilized to restore riparian timberlands rapidly. Live rock bar staking can be utilized to treat territories where over the top rock stores from up-incline disintegration debilitates downstream channel morphology. Wattle wall, live shaft channels, live grins and an assortment of different procedures can be utilized to treat bank hazards. This paper presents depictions of where soil bioengineering medications have been utilized for riparian restoration. Examples are drawn from over twenty years of experience by the author.



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**Paper ID: SCRICE086**

**Development, conception and industrialization of innovative products: A set of  
tools useful to easily cast on-site concrete stairs**

Penukula Ramya<sup>1</sup>, Syed Viqar Malik<sup>2</sup>

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<sup>2</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

The profession of staircase developer is a difficult activity. In fact complex, it requires strong abilities and certain know-how to get great quality outcomes and to have the capacity to contend financially with ease precast stair makers. Towards the development of that markdown showcase, the exchange of conventional development has advanced a ton in the course of recent years. For purpose of streamlining Cost-Quality-Delivery models, Choquet Co., the organization I have worked with has honed persistent change for over 10 years, settling on key choices to locate the best idea for stairs development.

The present investigation comes back to all the historical backdrop of solid staircase fabricating, the changes made or to make to facilitate the acknowledge of those developments, to get high complete review and quicken the procedures. Truth be told, in spite of the extension of our innovations and of our control on materials, this exchange stays hard to deal with and is regularly acknowledged by incompetent artisans and in an old way. This can be clarify socially by the way that the building exchange is in France a family custom, created on extremely old uses that individuals of this world tend to keep alive.

The principle part of the investigation is about the origination of creative systems going for the acknowledgment of formworks for straight and winder stairs. A specific consideration has been devoted to mechanical issues, selection of materials and innovative answers for confront issues which incorporate power, weakness, weight, dependability and fouling matters. Beginning the origination technique by thoughts, drafts and imaginative drives, we at that point created set of details to portion and delimit the necessities of our relative items. Subsequently, we could begin the plan by understanding some simple models from which we could assess the future needs thus the fields needing more exact investigations. FEM investigations have been performed on the key parts of the component, with the goal that we could refine some geometrical and material parameters.

Likewise, an introduction will be made separately on all the arrangement of instruments thought to be parts of the types of gear of the ideal staircase developer. From molds to the workshop truck, it is a genuine idea of a calling that is as yet not perceived in a world that is truly difficult to contribute yet that could acquire a genuine change the best approach to work later on.



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**Paper ID: SCRICE087**

**Analysis and Design of shopping mall against lateral forces**

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<sup>2</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

The paper displays the arrangement, demonstrate, examine and plan of a vertical sporadic shopping center structure of G+10 story and explore its execution under different parallel stacking conditions. The fundamental objective is to survey current Indian Standard plan rehearse and to give outline rules utilizing ETABS and to discover a specifying methodology which will guarantee an adequate level of security for different levels of stacking requests.



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**Paper ID: SCRICE088**

**Extensive Green Roof Substrate Composition: Effects of Physical Properties on  
Matric Potential, Hydraulic Conductivity and Plant Growth**

Gangarapu Shilpa<sup>1</sup>, Syed Viqar Malik<sup>2</sup>

<sup>1</sup>UG Student, Department of Civil Engineering, Vaagdevi College of Engineering

<sup>2</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

While green rooftop (GR) frameworks have picked up prominence as tempest water administration apparatuses, more accentuation has been connected to examining execution angles, including stormwater maintenance. Of specific significance is the substrate layer in which the vegetation develops, which contributes the dominant part of stormwater maintenance abilities. This examination explored numerous parts of GR substrate execution, including segment toughness and segment consequences for water powered conductivity, matric potential, and plant development. A few business substrate mixes were tried for strength against progressive stop/defrost cycles with when treatment granulometric circulation investigations. All substrate mixes demonstrated huge ( $p < 0.05$ ) molecule corruption after 30 solidify defrost cycles, contrasted with German (FLL) rules. The pressure driven conductivity and matric capability of three trial GR substrates with expanding volumetric extents (10%, 20%, 40%) of natural issue (OM), were resolved utilizing the HYPROP® technique, which broadens the customary estimation extend for soils. Be that as it may, the high porosity of GR substrates brought about tensiometer water section cavitation close - 30kPa. Additionally thinks about with the same trial substrates and OM proportions included both development chamber concentrates to thoroughly evaluate the consequences for plant development and evapotranspiration and open air stage analyses to decide impacts of OM content on stormwater maintenance. Development chamber thinks about with *Sedum kamptschaticum* demonstrated that expanding substrate OM expanded plant root and shoot biomass. Continuous times of water pressure demonstrated no distinctions in evapotranspiration between planted substrate OM medicines levels, however more prominent water misfortune was noted from the planted medications contrasted with unplanted controls ( $p < 0.05$ ). Substrate volumetric water content (VWC) amid the pressure time frames came to 5% VWC for every single planted treatment and all dry-down periods, featuring contrasts in plant-accessible water amongst these and the lab comes about. While open air stage ponders demonstrated no impacts of OM content on stormwater maintenance, expanding natural substance expanded plant overhang scope ( $p < 0.05$ ).



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**Paper ID: SCRICE089**

**Flexure Performance of Self-Curing Concrete with Partial Replacement of  
Coarse Aggregate with Fly Ash Pellets**

Bharathi Murugan.R<sup>1</sup>, Haridharan M.K.<sup>2</sup>, Brahmaiah<sup>3</sup>, Natarajan.C<sup>3</sup>

<sup>1</sup>Department of Civil Engineering, Vaagdevi college of Engineering, Warangal, Telangana, India

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**ABSTRACT**

Now a days drinkable water is becoming a scarce, there is an urgent need to do research work in saving of water for making concrete. Curing of concrete is very important for maintaining satisfactory moisture content in concrete during its early stages in order to develop the desired properties. Good curing is not always possible in practical in many cases. Curing of concrete plays a major role in developing the concrete microstructure and hence improves its durability and performance. Keeping importance to this, an attempt has been made to develop self- curing concrete (SCC) by using water-soluble Polyethylene Glycol (PEG 400) as self-curing agent and partial replacement of coarse aggregate (CA) with fly ash in the form of pellets. The main aim of this investigation is to study the strength properties of concrete using water-soluble PEG-400 as self-curing agent and partial replacement of coarse aggregate with fly ash pellets (FAP) by 25% and without fly ash pellets and find the optimum dosage of self-curing agent required for maximum strength properties. This paper reports on the M25 grade of concrete mix having different proportions of PEG-400 without and with partial replacement of CA with Fly ash in the form of pellets by 25%. The results shows that optimum dosage of PEG-400 for maximum Compressive strength, split tensile strength and flexural strength was found to be 0.75% by weight of cement for M25 grade of concrete when CA was replaced with FAP by 25% and 0.65% by weight of cement for M25 grade of concrete when CA was not replaced with FAP. Strength property results of self-curing concrete is better than conventional concrete and Self-curing concrete with FAP. As percentage of PEG-400 increased slump of M25 grade of concrete increasing. Partial replacement of coarse aggregates with fly ash pellets leads to decrease the weight of concrete around 4.17%.



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**Paper ID: SCRICE090**

**Study on Use of Fly Ash as a Green Material in Concrete**

Radhika Shetty<sup>1</sup>

<sup>1</sup>Assistant Professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

Concrete is always expected to be stronger and more durable than in the past, while being cost and energy efficient. Moreover, the three major advantages that concrete possesses over other construction materials have to be conserved: the possibility of being fabricated practically anywhere; the ability to take the form imposed by the shape of a mould; and low cost of the components and the manufacture. These factors have driven the advances in improving the performance of concrete over years, and continue to do so. The need for improving the performance of concrete and concern for the environmental impact arising from the continually increasing demand for concrete, has led to the growing use of alternative materials component. It is now clear that materials such as silica fume, rice husk ash, fly ash, ground granulated blast furnace slag and metakaolin be produced from abundant natural material which are waste material have to be used to partially substitute cement or to complement it when high performance is needed.

This investigation presents the results of experimental work on mechanical properties of concrete containing flyash. The aim of the study was to investigate the effects of binder systems containing different levels of fly ash on fresh and mechanical properties of concrete that pertains to applications in highways and bridge decks etc. The work focused on concrete mixes having a fixed water/cementations' ratio 0.49 and a mix proportion of 1:1.85:4.32. The percentages of flyash that replaced cement in this investigation were; 0%, 10%, 20%, 30% and 40%. Apart from measuring the workability of fresh concrete, the mechanical properties evaluated. The result of this research on fresh concrete indicate that as the proportion of fly ash increased, the workability of concrete increased up to 30% replacement. This increase in workability of concrete is due to the "ball bearing" action of the spherical particles of fly ash.

Regarding mechanical properties of hardened concrete such as 28-day strength are improved up to 30% replacement. This increase can be linked with fly ash particles filling the micro voids among the cement grains in the paste fraction of the concrete and pozzolanic action of fly ash.



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**Paper ID: SCRICE091**

**Silty Soil Stabilization Using Bituminous Emulsion**

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**ABSTRACT**

The application of asphalt emulsion technology to the silty soil Stiffness has been in the process Since 1987. several research efforts were made by different agencies in different countries to improve the silty sub-grade soil strength by using bituminous emulsion. The present research work has been undertaken to investigate the possibility using bituminous emulsion of stabilization of silty soil. Silty soil sample has been obtain the nadergull, ranga reddy district. Several laboratory tests were conducted to characterize the soil and determine its soil class including its permeability and CBR strengths. Medium setting type bituminous emulsion has been used in the present study. for stabilizing the silty soil. After several combinations of bituminous emulsion content it has been found that the soil sample tested was improved with reference to CBR value load decreased the rate of permeability.

Economic analysis was also carried out and find the benefit of reduction in over the cost of the pavement by using emulsified siltysoil results of the tests presented demonstrate the degree of effectiveness of the stabilization process totally the stabilization of soil with bitumen emulsion is to increase the strength of the soil. The soil strength were increased with use of medium setting bituminous emulsion



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**Paper ID: SCRICE092**

**Experimental Study on Soil Stabilization in Soil Stabilization using Lime and  
Polypropylene Fiber**

G. Vishal Kumar<sup>1</sup>, S.Sunil Pratap Reddy<sup>2</sup>

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**ABSTRACT**

In India, a major portion of total land area is covered by clayey soil, of this a large proportion is expansive soil. Structure constructed over this expansive soil may be severely damaged due to its high swell shrinkage behavior. So such soils need to be stabilized to increase its strength, durability and to prevent erosion. Various study has been carried out on expansive soil to improve its properties. Soil stabilization is one of the promising techniques used to improve the geotechnical properties of soil and has become the major practice in construction engineering.

Expansive soil is one among the problematic soils that has a high potential for shrinking or swelling due to change of moisture content line has been known as one of the good soil stabilization material, specially for clay stabilization properties that have large swelling and generally contain high levels of clay, but its swelling properties will be much reduced, even eliminated, if the soil mixed with lime.

In order to satisfy this soil properties the soil stabilization is very important so that the addition of lime and polypropylene fiber makes soil stabilization by arresting the cracks so that improve strength. The addition of lime and polypropylene fiber decreases the optimum water content and increases unconfined compressive strength and shear strength, maximum dry density and reduces the swelling potential, liquid limit, plasticity, index and increases the CBR value. here, in this project, soil stabilization has been done with the help of randomly distributed polypropylene fibers obtained from waste materials.

This project aims to conduct a study to check the improvements in properties of clayey soil by adding polypropylene fiber and lime. By varying percentage of fiber reinforcement as (0.25%, 0.5%, 0.75% and 1%), with a constant 4% lime, the soil parameters such as WL, WP, IP, UCS, MDD, OMC, CBR, may be studied.





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**Paper ID: SCRICE093**

**Experimental Investigation on the Performance of Triple Blended Concrete and  
Its Durability Aspect**

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**ABSTRACT**

The present investigation is focused on the evaluation of the effect of concrete long-term maturity with respect to Magnesium sulphate and Sodium Sulphate related durability. The binary and ternary high performance concrete mixtures have been analyzed. Many admixtures can be used for a ternary concrete, among which Fly ash, Silica fume and Recron fiber is used. Replacement of cement has been done by Fly ash and silica fume in various percentages. The optimum percentage for replacement of Fly ash and Silica fume with cement on the Durability properties of Ternary blended concrete and Expansion behavior of Ternary blended concrete exposed to various sulphate environments has been studied. The results show that addition of recron fibers along with fly ash is more suited.



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**Paper ID: SCRICE094**

**Pavement Surface Unevenness Evaluation**

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Warangal.

**ABSTRACT**

The research deals with the measure and evaluation of the unevenness and texture of road pavements, by means of unified procedures both for surveys and processing of acquired data, with the aim to represent the surface characteristics as a spectrum in the domain of spatial frequencies (or wavelengths). The texture properties in fact can be referred to many aspects of pavements performances, so allowing to establish thresholds for the acceptability of new construction or to ensure good working conditions for existing road infrastructures. The advantages of the proposed unified procedures are that the measurements are taken with modern and advanced equipment, minimizing the impact on the normal road exercise; moreover, it is possible to propose an optimized area in the frequency vs texture level graph, where the spectrum has to fall into in order to balance some conflicting requirements. The boundaries of the area can be also referred to the specific characteristics of the examined infrastructures if a spectrum fits into the area an optimal behavior of the surface is ensured, respect to the interaction phenomena between tires and pavement which are influenced by surface texture. The proposal was tested with a case study in which thresholds of performance parameters and boundaries of the optimized area were decided onto the basis of correlations between road indexes and texture properties coming from the scientific literature or proposed on the basis of empirical results.



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**Paper ID: SCRICE095**

**Use of Sugar Cane Bagasse Ash as Partial Replacement of Cement in Concrete**

A.Santosh Kumar<sup>1</sup>, Syed Viqar malik<sup>2</sup>, S.Sunil Pratap Reddy<sup>3</sup>

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**ABSTRACT**

India is the second largest in major sugar producing countries after Brazil. Due to that there is increase in bagasse as a by product from the sugar mill. Bagasse is the fibrous residue of sugar cane after crushing and extraction of juice. Sugar cane bagasse ash is the waste product of the combustion of bagasse for energy in sugar factories. Sugar cane bagasse ash is disposed of in landfills and is now becoming an environmental burden. In this experimental research work concrete cubes, beams and cylinders of M25 grade were casted and tested to examine various properties of concrete like workability, compressive strength, split tensile strength, modulus of elasticity and flexural strength. Sugar cane bagasse ash was partially replaced with cement at 2, 4, 6 and 8 % by weight of cement in concrete. From the results we can conclude that optimum amount of sugar cane bagasse ash that can be replaced with cement is 6% by weight without any admixture.



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**Paper ID: SCRICE096**

**Study on the strength parameter of concrete with recycled aggregates**

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Warangal.

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**ABSTRACT**

Concrete is always expected to be stronger and more durable. Moreover the major advantages the concrete possesses over the construction have to be conserved. The possibility of being fabricated practically anywhere the ability to make the from imposed by the shape of any mould and a low cost of the component and manufacture easily. These factors have driven the advances in improving the performance of concrete over years and continue to do so the need for improving the performance of concrete and concern for the environment impact arising from the material components. it is noted that the construction and demolition waste shows perspective application in replacing natural crushed aggregate in concrete.

The present investigation is to study the mechanical properties of concrete when coarse aggregate replaced by RCA .The work is focused on concrete mix of M25 grade having a mix proportion of 1:1.5:3 and w/c ratio of 0.53.The % of RCA replaced by NA in concrete i.e, 30%, 60%, 100% and fresh concrete properties such as workability, bleeding, segregation etc should be recycled coarse aggregate strength reduction was noticed and these are well within the limits i.e. greater than M25.

So we have succeeded in the experiments but the slump values gradually decreased and it did not Shoe much effect on compressive strengths of concrete. However the removal of the residue Concrete was tough and it becomes much harder with the age of concrete. As some importance to the demolished concrete can be given, instead of dumping those as scrap or for filling and Countries have also produced codes too.



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**Paper ID: SCRICE097**

**Analysis of Multi-storeyed Building with Floating Columns**

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**ABSTRACT**

In present scenario buildings with floating column is a typical feature in the modern multi-storey construction in urban India. Such features are highly undesirable in building built in seismically active areas. This study highlights the importance of explicitly recognizing the presence of the floating column in the analysis of building. Alternate measures, involving stiffness balance of the first storey and the storey above, are proposed to reduce the irregularity introduced by the floating columns.

FEM codes are developed for 2D multi storey frames with and without floating column to study the responses of the structure under different earthquake excitation having different frequency content keeping the PGA and time duration factor constant. The time history of floor displacement, inter storey drift, base shear, overturning moment are computed for both the frames with and without floating column.



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**Paper ID: SCRICE098**

**Stabization of Soil Using Rice Husk Ash and Cement**

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**ABSTRACT**

Civil Engineering projects located in areas with soft or weak soils have traditionally incorporated improvement of soil properties by using various methods. Soil stabilization is being used for variety of engineering works, the most common application being in the construction of road and pavements, where the main objective is to increase the strength or stability of soil and to reduce the construction cost by making best use of locally available materials. Over the times, cement and lime are the two main materials used for stabilizing soils, these materials have rapidly increased in price due to sharp increase in the cost of energy. Thus the use of agricultural waste (such as rice husk ash-RHA) will considerably reduce the cost of construction and as well reducing the environmental hazards they cause. Rice husk is an agricultural waste obtained from milling of rice, about 10<sup>8</sup> tons of Rice Husk is generated annually in the world. Hence, use of RHA for upgrading of soil should be encouraged.



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**Paper ID: SCRICE099**

**Experimental Study on Execution of Sub Structure of Integrated District  
Collector Office**

Syed Riyaz<sup>1</sup>, K.Rithish<sup>2</sup>, S.Prashanth<sup>3</sup>, S. N.Shailaja<sup>4</sup>, A.Akhil Babu<sup>5</sup>

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**ABSTRACT**

The design process of sub structural planning and design requires not only imagination and conceptual thinking but also sound knowledge of science of structural engineering besides the knowledge of practical aspects, such as recent design codes, bye laws, backed up by ample experience, intuition and judgment. In the present study of ground +4 floors of **INTEGRATED DISTRICT COLLECTOR OFFICE**, Warangal, Telangana, India is considered for the study. The study involves the construction of substructure of building, which includes site selection, soil test, leveling, earth work, foundation (footing pedestal, plinth beam , FFL )& retaining wall .In order to design them, it is important to first obtain the plan of the foundation& retaining wall that is, positioning of the particular type of foundation. Thereby depending on the suitability; plan layout of footings, plinth beams are fixed. The reinforcement provided is TMT BARS FE500 COMFORMING TO IS 1893-2002. The Safe bearing capacity of soil is 350KN/ M2 AT 2M. The grade of concrete mix for footings, plinth beam is M25. Retaining wall is constructed to retain the excavated soil. Footings are designed based on the safe bearing capacity of soil. Isolated, combined footings , shear walls ,bracings are constructed in the site.



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**Paper ID: SCRICE100**

**Experimental Study on Construction of 10kl Capacity to 250kL**

Syed Riyaz<sup>1</sup>, Md.Roman<sup>2</sup>, D Chandra Shekar<sup>3</sup>, P Vijay Kumar<sup>4</sup>, B Maharshi<sup>5</sup>

<sup>1</sup>Assistant professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

Telangana Drinking Water Supply Corporation Limited (TDWSCL) is the nodal agency for implementation of Telangana Drinking Water Supply Project (TDWSP) in the state. TDWSP is a flagship programme of the newly constituted state of Telangana. The Objective of the project is to ensure safe and sustainable PIPED drinking water supply from surface water sources at 100 LPCD (litres per capita per day) for rural areas, 135 LPCD for Municipalities, 150 LPCD for Municipal Corporations and 10% to meet Industrial requirements. The Project comprises of 26 segments in 9 districts and supply water to 62, 01,552 habitations which covers the pipeline of entire state is of about 1.697 lakh Km and it includes 19 nos. of intake structures, 549 nos. of Over Head Balancing Reservoirs, 550 nos. of Ground Level Balancing Reservoirs & sumps, 35,573 nos. of Village Over Head Service Reservoirs and 153 nos. of Water Treatment Plants. The Works costing of about Rs. 37813.01 Cr has been sanctioned. All intake structures, transmission lines, WTP structures are in advance stage and are currently in very good progress.





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**Paper ID: SCRICE101**

**An Experimental Investigation on Bituminous Mix Design for 4-Lane Highway Road**

Syed Riyaz<sup>1</sup>

<sup>1</sup>Assistant professor, Department of Civil Engineering, Vaagdevi College of Engineering

**ABSTRACT**

This documents extensive study on the Bituminous Mix Design for 4-Lane Highway Road. The requirements for bituminous pavement. Phase two included the description of prime coat over granular base. Phase three included the design and laying of tack coat. Phase four included the bituminous macadam. Phase five included the bituminous penetration macadam. Phase six included the built-up spray grout. Phase seven includes dense graded bituminous macadam. Phase eight includes the semi-dense macadam. Phase nine includes supply of stone aggregates for pavement courses. Three layers of the pavement were considered in this study like base course, granular sub base and dense bituminous macadam (DBM). The various laboratory tests conducted on soil were: California bearing ratio (CBR), Free swell index (FSI), Liquid limit, Plastic limit, determination of maximum dry density and optimum moisture content and on aggregates were: aggregate impact value, aggregate crushing strength, aggregate abrasion value, sieve analysis, water absorption and on Bitumen were: Specific gravity of bitumen, softening point of bitumen, flash and fire point of bitumen, Marshall stability of bituminous mixture. All these tests were conducted according to Indian Road Congress (IRC) and MORTH's specifications. For the fixed pavement the thickness of the layers like base course is suggested not to be less than 500mm where as it should not be less than 250mm for granular sub base where as the minimum thickness for dense bituminous macadam layer is 150mm. The outcome of the research suggests that suitable quality control tests should be conducted to maintain the quality of various layers of pavement and also the mixing proportions of the bituminous and other materials used in the construction of bituminous road pavement.



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Paper ID: SCRICE102

**A Study Characteristics of High Performance Concrete with Partial  
Replacement of Cement and Sand with Flyash And M-Sand**

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**ABSTRACT**

River sand is the one of the basic material in the manufacture of concrete. High Performance Concrete (HPC) is a concrete meeting special combinations of performance and uniformity requirements that cannot be always achieved routinely by using conventional constituents and normal mixing. Recently natural sand is becoming very costly because of its demand in the construction industry and BAN of sand mining in rivers. So research for the alternatives of natural sand is going to find in economical way. In this path the manufactured sand (M-SAND) called ROBOSAND is the new material i.e., arrived in the world of concrete to fulfil the requirements of natural sand. The other material FLYASH comes from the industries as a by-product which is freely available is a good replacement for cement. Codes such as ACI are also suggesting that flyash will be useful material to replace cement and most of the branded cement industries are using flyash as partial replacement for OPC. This present paper mainly focuses on achieving high performance characteristics of concrete of M80 and M90 grades. The strength and workability properties for both grades are compared by varying the percentages of ROBOSAND with natural sand by 0%, 25%, 50%, 75%, and 100% together with flyash. The compressive strength, split tensile strength and flexural strength are compared for both grades and results are concluded



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Paper ID: SCRICE103

**Experimental Investigation On Waste Glass Powder As The Partial  
Replacement Of Cement In Concrete**

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<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

The interest of the construction community in using waste or recycled materials in concrete is increasing because of the emphasis placed on sustainable construction, the waste glass from in and around the small shops is packed as a waste and disposed as landfill. Since glass is non-biodegradable, landfills do not provide an environment friendly solution. Hence, there is strong need to utilize waste glasses.

Concrete is the most widely used construction material developed by man. Because of its superior specialty of being cast in any desirable shape, it has replaced stone and brick masonry. In spite of all this, it has some serious deficiencies which, but for its, remarkable qualities of flexibility, resistance and ability to redistribute stress, would have prevented its use as a building material. Prediction of concrete strength and stress strain behavior of concrete is an important issue in the concrete industry, since the traditional laboratory approach to determine the strength of concrete attracts some drawbacks such as manual involvement, time consumption and chances of creeping of human error.

An attempt is made to evaluate compressive and flexural strength of concrete made of local materials. Experimental program was carried out on concrete specimens to evaluate various parameters involved. This study looked at the feasibility of waste glass inclusion as partial cement replacement. In determining the compressive, split tensile strength and flexural strength glass powdered concrete by incorporating waste glass as partial substitution for Portland cement in amounts of 0%, 5%, 10%, 15%, 20%, 25% and 30% were investigated. For M<sub>20</sub> grade of concrete and for each replacement a total of 3 cubes, 3 cylinder and 3 prism are casted to study the compressive strength, split tensile strength and flexural strength behaviour respectively. The specimens are tested after 7, 14 and 28 days of curing to investigate the development of strength.



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Paper ID: SCRICE104

**Effect Of Mineral Admixtures And Polypropylene Fibres On Mechanical  
Properties Of High Strength SCC**

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**ABSTRACT**

Concrete has become basic material in day to day life of humans. Low tensile strength and brittle nature are the basic defects in concrete. These defects are enhanced due to improper compaction due to congested reinforcement in detailing. Addition of fibers enhance energy absorption capacity and delays crack propagation. Self compacting concrete is being developed in recent years to avoid these defects. It is the concrete which consolidates due to its own weight without any compaction. The present investigation is mainly focused on the effect of mechanical properties of SCC with supplementary materials. In this investigation concrete having compressive strength M80 with Lime sludge (LS) and polypropylene fibers. LS added to the concrete with 0 to 20 % by weight of cement. Polypropylene fibers are added to the concrete with 0 to 0.2 % to volume of concrete.

The investigation was aimed at studying the effect of LS and polypropylene fibers on compressive strength, split tensile strength, flexural strength of M80 grade of concrete. Mix proportioning of concrete will be done based on NanSu mix design method. To study on strength of concrete the specimens will be tested for 28 days of curing. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties. Tests on fresh properties will be done according to EFNARC specifications due to GGBS and PF. The replacement of LS ash will be varied from 0 to 20% with an increment of 10% i.e 0, 10%, and 20% replacement to cement. PF will be varied from 0 to 0.2% with 0, 0.05%, 0.1% and 0.2% replacement to cement.



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**Paper ID: SCRICE105**

**A study on effect of recycled aggregate based sisal fiber reinforced concrete**

<sup>1</sup> Imran Abu <sup>2</sup>B.Dhavaleshwar

<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

Fiber reinforcement is commonly used to provide toughness and ductility to brittle cementitious matrices. Reinforcement of concrete with a single type of fiber may improve the desired properties to a limited level. There is an urge to produce sustainable concrete by using recycled aggregates. This study aims to characterize and quantify the mechanical properties of sisal fibers and recycled aggregate concrete. Volume percentage of fiber inclusion was varied from 0 to 2%. Slump test and compaction factor test was carried out for each mix in the fresh state. Compressive strength, Split tensile strength, flexural strength tests will be performed in the hardened state on M20 grade of concrete. The use of recycled aggregates will be used with a replacement levels of 50% and 100%.

The investigation was aimed at studying the effect of sisal fibers and recycled aggregates concrete on compressive strength, split tensile strength, flexural strength of M20 grade of concrete. Mix proportioning of concrete will be done based on IS 10262: 2009. To study on effect on strength of concrete the specimens will be tested for 28 days of curing. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties. Slump and Compaction factor will be done to test the effect on workability of concrete due to recycled aggregates and sisal fibers. The addition of sisal fibers will be varied from 0 to 2% with an increment of 0.5% i.e 0, 0.5%, 1%, 1.5% and 2% replacement to cement. Recycled aggregates will be used to replace the natural coarse aggregates by 50% and 100%.



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Paper ID: SCRICE106

**An experimental investigation on the use of crumb rubber as fine aggregate in  
concrete**

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<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

Waste tire rubber constitute a serious worldwide problem due to the lack of landfills and the health hazards associated with these landfills. In addition to the environmental motivation for providing a means of recycling large quantities of waste tire rubbers, the use of tire rubber particles provides a new type of concrete that has unique mechanical and fracture criteria. This paper presents the results of recent experimental investigations on rubber concrete. Chipped and crumbed tire rubber particles were used to replace coarse and fine aggregate with different volume replacement levels. With increase in demand of concrete, more and more new methods and new materials are being developed for production of concrete. In this study, the scope of research will be focused on the partial replacement of fine aggregate using Crumb Rubber (CR) material. In present investigation is mainly focused on the effect of mechanical properties on M20 and M80 grade concrete with CR replacement to fine aggregate. CR is used to replace cement in the concrete with 0 to 40 % by weight of cement.



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**Paper ID: SCRICE107**

**A Study On Glass Fibers On Outer Core Of The Concrete**

<sup>1</sup>B.Nagarjuna <sup>2</sup>V.Rajeshwar

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**ABSTRACT**

Concrete is a weak building material in tension. Inherently, micro cracks will be present in concrete. The formation of micro cracks normally due to shrinkage of concrete. Moreover, concrete suffers from low tensile strength, limited ductility and little resistance to cracking. In order to improve these properties, an attempt has been made to study the effect of addition of glass fibers in ordinary Portland cement concrete. In this study, the scope of research will be focused on the effect of length of glass fiber on outer core of the fiber. In present investigation is mainly focused on the effect of mechanical properties on M30 grade of concrete by providing glass fiber reinforced around the outer core of standard specimens.

The investigation was aimed at studying the effect of length of glass fibers on outer core of the standard specimens. Compressive strength and stress-strain properties will be evaluated in this study on M30 concrete. Mix proportioning of concrete will be done based on guidelines of IS 10262: 2009. To study effect on strength of concrete the specimens will be tested for 28 days of curing. Standard cubes (150x150x150 mm), prisms (150x150x300 mm) will be cast to investigate the behaviour on mechanical properties and stress-strain behaviour. Cubes of size 100x100x100 mm and prisms of size 100x100x300mm will be cast and cured in the first stage of investigation and later outer core to these specimens will be provided with glass fiber reinforced concrete with 6mm length. Slump and Compaction factor will be done to test the effect on workability of concrete due to glass fibers. The inclusion of glass fibers will be varied from 0 to 0.009% with an increment of 0.03% i.e 0, 0.03%, 0.06%, 0.09% by volume of concrete.



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**Paper ID: SCRICE108**

**Study on improving mechanical properties of concrete in Marine Environment**

<sup>1</sup>G.Naveena <sup>2</sup>K.Sumanasree

<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

As a part of ductility investigation of cement presented to ocean water condition, the paper portrays the impact of ocean salts on the physical and mechanical properties of cement under substantial hydrostatic weight. Uncommonly planned weight vessels with temperature control framework have been utilized to recreate the remote ocean natural impacts. Quickened test procedures, for example, expanded salt centralization of relieving water, little estimated examples, and upgraded ecological temperature have been utilized.

The deteriorative impacts are estimated by concentrate visual appearance, weight and volume change, compressive quality, porousness attributes and X-beam diffraction examples of solid examples presented to counterfeit ocean water condition over a time of multi year. The test outcomes uncover that surrounding weight effectsly affects the weakening of cement in remote ocean water condition





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**Paper ID: SCRICE109**

**Execution and Evaluation of construction chemicals in building construction**

<sup>1</sup>O.Rachana <sup>2</sup>Syed Viqar Malik

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**ABSTRACT**

The theoretical period of capital undertakings is of key significance - a monetary assessment at this beginning time is basic to the proprietors' basic leadership with constrained data. The present investigation built up an extensive however pragmatic framework that can be utilized as a part of such an early stage for monetary assessment of capital building development ventures.

The framework coordinates four scientific advances: venture arranging, development costs estimation, projection of livelihoods and uses, and monetary assessment. Because of the coordination, the framework adequately deals with the data spill out of the intending to the assessment, in which any progressions from the underlying arrangement are completely represented numerous interchanges. In the framework, clients foresee development cost utilizing a joined assessing technique with verifiable venture information and get together expenses.

The framework plays out the organization everything being equal and uses in light of the mechanized estimation and additionally clients' sources of info and after that the monetary assessment in light of undertaking income, which is created utilizing a robotized booking strategy. Framework execution has been tried as far as its exactness and productivity through contextual investigation.



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Paper ID: SCRICE110

**A Study On Properties Of Concrete Cured Using Colored Polythene Sheets**

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<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

Supportability is basic to the welfare and persistent development of society. Concrete is a standout amongst the most broadly utilized reasonable development material. It is steadily experiencing contemporary improvements because of its flexibility. Directly, maintainability in concrete is being accomplished by a few procedures including halfway supplanting of bond with supplementary cementitious materials like fly fiery debris. These high-volume fly slag blends impel fastidious investigation of relieving strategy took after. It would be likewise be of generous importance to look for an earth maintainable restoring strategy that works similarly well for customary solid blends and fly powder blends. The present investigation tends to restoring of cement with shaded polythene sheets. The shaded polythene sheets reflect/assimilate/transmit sun oriented radiation to solid individuals in an unmistakable division relying on their thickness and optical properties. The imperative goal of present examination lies in recognizing a restoring strategy that provisions ideal measure of sun based radiation to a solid part for wanted compressive quality improvement.



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**Paper ID: SCRICE111**

**The Effect Of Metakoline And Rice Husk Ash On High Strength Concrete**

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**ABSTRACT**

Concrete has become basic material in day to day life of humans. In recent years lot of research is going on the development of high strength concrete by using supplementary materials for cement and aggregates. The present investigation is mainly focused on the effect of mechanical properties and durability of high strength concrete with supplementary materials. In this investigation concrete having compressive strength M70 with rice husk ash (RHA) and Metakoline as supplementary materials. RHA added to the concrete with 0 to 20 % by weight of cement. Metakoline is replaced by 0 to 20%. Fresh properties of concrete like slump and hardened properties like compressive strength, split tensile, flexural strength after 28 days of curing are conducted along with durability.

The investigation was aimed at studying the effect of RHA and metakoline on compressive strength, split tensile strength, flexural strength of M70 grade of concrete. Mix proportioning of concrete will be done based on IS 10262: 2009. To study on effect on early strength of concrete the specimens will be tested for 28 days. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties. Slump and Compaction factor will be done to test the effect on workability of concrete due to RHA and metakoline. The replacement of Rice husk ash will be varied from 0 to 20% with an increment of 10 % i.e 0, 10% and 20% replacement to cement. The replacement of metakoline will be varied from 0 to 20% with an increment of 10 % i.e 0, 10% and 20% replacement of cement



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Paper ID: SCRICE112

**Study of strength and durability parameters of concrete made using recycled aggregates**

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**ABSTRACT**

In India, a massive amount of production and demolition wastes is produced every year. These waste materials want a big region to dump and hence the disposal of wastes has emerged as a trouble and the continuous use of natural resources for making traditional concrete results in the reduction of their availability and results in the increase of the cost of the coarse aggregate and fine aggregate. The viable use of recycling demolition waste as coarse aggregate in the construction industry is for this reason increasing significance. In addition to the environmental benefits in lowering the demand of land for disposing the waste, the recycling of demolition wastes can also help to preserve the natural resources. When recycled coarse aggregate is used in structural concrete, the assessment of physically, mechanical and durable characteristics of recycled coarse aggregates may be very crucial. The physical and mechanical properties of concrete with the recycled coarse aggregate (RCA) are to be evaluated to assess its application as structural concrete. The present work is directed in the direction of the assessment of concrete the use of complete replacement of natural coarse aggregate (NCA) with RCA. The experimental results of mechanical and durability properties are also evaluated and as compared with NCA concrete. Recycled coarse aggregate used within the concrete preparation became obtained from the tested laboratory concrete specimens. Tests had been carried out to obtain the mechanical properties of RCA such as compressive strength and durability of concrete the usage of rapid chloride permeability test (RCPT). The main trouble with RCA concrete is high percentage of water absorption. RCA has high compressive comparable to the natural coarse aggregate concrete. This is especially because of excessive amount of connected mortar at the surface of the recycled coarse aggregate and highly angular nature of RCA results in bad satisfactory of coarse aggregate. In RCPT, the chloride penetrating rate is “Moderate” for all grades of concrete with NCA and “High” for all grades of concrete the use of RCA.



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**Paper ID: SCRICE113**

**Experimental study on multi blended concrete containing flyash and silica fume**

<sup>1</sup>B.Shashi Kumar <sup>2</sup>Syed Viqar Malik  
<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

This investigation exhibits the plan and aftereffects of exploratory work on compressive quality and functionality of High Strength Concrete (HSC) utilizing flyash and silica smolder as mineral admixtures following rules of Seem to be: 10262-2009. The point of study was to plan high quality cement having compressive quality of over 90 MPa and great usefulness by changing level of two distinctive mineral admixtures.

The work focussed on concrete blends having a consistent aggregate folio substance of 635 kg/m<sup>3</sup> at steady dose of super-plasticizer. The compressive quality tests were led up an age of 90 days. Add up to eight blends were thrown having 0, 20%, 25%, and 30 % flyash and 5% and 10% silica smolder. One blend contained fine flyash with a specific end goal to examine its impact on properties of cement. Aside from these, one ternary mixed solid blend having both flyash and silica smolder together with 20% and 10% individually was additionally considered.

The discoveries of this examination show that both flyash and silica rage assume a huge part in the long haul pick up of quality in concrete. Flyash lessens the early age quality pick up while silica smolder sue to its high reactivity, quickly improves the early quality pick up in concrete. On one hand, expansion of flyash builds the functionality of blend while then again expansion of silica seethe takes after an invert slant. Additionally the ternary mixed solid blend created attractive outcomes with transitional functionality and compressive quality contrasted with plain blend.



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**Paper ID: SCRICE114**

**Performance Evaluation of Metakaolin based Geopolymer concrete**

<sup>1</sup>G.Soumya <sup>2</sup>M.Nireesha

<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

Experimental tests were used to identify the optimum mix of metakaolin (MK) geopolymer mortars needed to achieve high early compressive strength. These tests investigated compressive strength, drying shrinkage, and sodium sulfate expansion of binary and ternary MK-based geopolymer mortar samples containing Parawood ash (PWA) and oil palm ash (OPA) in different replacement levels. The accompanying measures of PWA and OPA were utilized: 10 %, 20 %, 30 % and 5 %, 10 %, 15 % by weight of MK, separately. Sodium hydroxide, sodium silicate and a relieving temperature of 80°C for 2 h were utilized as parameters to enact the geopolymerization of mortars. Thirteen geopolymer mortar definitions containing PWA and OPA were readied, and the compressive qualities at 2 h, 6 h, 24 h, 7 days and 28 days were resolved. The most elevated compressive quality of 62 MPa, after 2 h at 80°C and 2 h at encompassing temperature, was gotten with 5 % OPA.



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**Paper ID: SCRICE115**

**Performance of hybrid fiber reinforced fly ash concrete with polypropylene fiber  
and glass fiber**

<sup>1</sup>Vamshi <sup>2</sup>K.Sumanasree

<sup>1</sup>Student, <sup>2</sup>Assistant Professor, Vaagdevi College of Engineering

**ABSTRACT**

Concrete is a weak building material in tension. Inherently, micro cracks will be present in concrete. The formation of micro cracks is normally due to shrinkage of concrete. Fibers act as bridge towards crack propagation and increase the energy absorption capacity of the concrete. Moreover, concrete suffers from low tensile strength, limited ductility and little resistance to cracking. In order to improve these properties, an attempt has been made to study the effect of addition of polypropylene, glass fibers in ordinary Portland cement concrete along the cement replacement with flyash. In this study, the scope of research will be focused on the effect of hybrid fibers on mechanical properties. Present investigation is mainly focused on the effect of mechanical properties on M30 grade of concrete by providing polypropylene and glass fibers. Two different fibers will be used with different dosage levels by volume of concrete along with flyash.



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**Paper ID: SCRICE116**

**Study on strength and durability of concrete by using glass powder (GP) and  
municipal solid waste (MSW)**

<sup>1</sup>P.Venkateshwarlu <sup>2</sup>Syed Riyaz

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**ABSTRACT**

Concrete is the most undisputable and indispensable material being used in infrastructure development throughout the world. Glass is commonly used in building / construction industries and large amount of glass is powdered daily. The disposal of waste glass is an environmental issue as waste glass causes disposal problem. Today the construction industry is in need of finding cost effective materials for increasing the strength of concrete structures. The appropriate utilization of Municipal Solid Waste Incineration (MSWI) residues is a worldwide studied topic over the last decades. One of the possibilities is to use MSWI ashes in concrete production, as it is done with coal combustion products. Glass powder and municipal solid waste finer than 600  $\mu$  is reported to have pozzolanic behaviour. An attempt is made to investigate the possibility of using the waste glass powder, municipal solid waste as the partial replacement of ordinary Portland cement in concrete.

The study has been made to evaluate the effect on mechanical and durability properties of M40 grade concrete made with replacement of cement with Glass powder, (0%, 5%, 10%, 15%, 20% and 25%) and Municipal solid waste, (0%, 5%, 10%, 15%, 20% and 25%) by weight. For each set mechanical properties were studied by performing Compression test for Cubes, Flexural test for beams and Split Tensile test for cylinders and durability properties were studied by performing acid attack, alkaline attack and Sulphate attack test for cubes.





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ABSTRACTS VOLUME**



**Paper ID: SCRICE117**

**A study mechanical and durability properties of concrete with rice husk ash**

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**ABSTRACT**

Concrete has become basic material in day to day life of humans. In recent years lot of research is going on the development of high strength concrete by using supplementary materials for cement and aggregates. The present investigation is mainly focused on the effect of mechanical properties and durability of high strength concrete with supplementary materials. In this investigation concrete having compressive strength M30 with rice husk ash (RHA) as supplementary material. Rice husk added to the concrete with 0 to 20 % by weight of cement. Sulphuric Acid ( $H_2SO_4$ ) and Hydrochloric acid (HCl) has been used as curing media in this investigation apart from the water. Fresh properties of concrete like slump and hardened properties like compressive strength, split tensile, flexural strength after 7 and 28 days of curing are conducted along with durability.

The investigation was aimed at studying the effect of rice husk ash concrete on compressive strength, split tensile strength, flexural strength of M30 grade of concrete. Mix proportioning of concrete will be done based on IS 10262: 2009. To study on effect on early strength of concrete the specimens will be tested for 7 and 28 days. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties. Slump and Compaction factor will be done to test the effect on workability of concrete due to rice husk ash. The replacement of Rice husk ash will be varied from 0 to 20% with an increment of 5% i.e 0, 5%, 10%, 15% and 20% replacement to cement. A total of 250 specimens will be cast to study the hardened properties of concrete in the first phase of investigation. Based on hardened properties of concrete durability studies will be done for the optimal replacement of rice husk ash.



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**Paper ID: SCRICE118**

**A study on effect of limestone powder on high strength concrete**

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**ABSTRACT**

With increase in demand of concrete, more and more new methods and new materials are being developed for production of concrete. Making concrete is an art which has to be perfectly done, otherwise that will end up with bad concrete. The production of cement is an energy intensive process, resulting in emission of green house gases which adversely impact on the environment. At the same cost of production of cement is increasing at alarming rate and natural resources giving the raw material for its manufacturing are depleting. In this study, the scope of research will be focused on the partial replacement of cement using Limestone Powder Waste (LPW) material. In present investigation is mainly focused on the effect of mechanical properties on high strength concrete with lime stone powder replacement as supplement. In this investigation concrete having compressive strength M80 with LPW as supplementary material. LPW is used to replace cement in the concrete with 0 to 50 % by weight of cement. A study will be to assess the effect of LPW on Modulus of Elasticity of high strength concrete.



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Paper ID: SCRICE119

**The experimental investigation on performance of waste coconut shell as partial replacement of natural coarse aggregate in concrete.**

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**ABSTRACT**

A large amount of waste coconut shell is generated in India from temples and industries of coconut product and its disposal need to be addressed. Researchers have proposed to utilize it as ingredient of concrete. This experimental investigation was aimed to quantify the effects of replacing partially the conventional coarse aggregate by coconut shell to produce concrete. Concrete has become basic material in day to day life of humans. Low tensile strength and brittle nature are the basic defects in concrete. The present investigation is mainly focused on the effect of mechanical properties of concrete with coconut shell replacing coarse aggregate. In this investigation concrete having compressive strength M60 is used. Coconut shell is replaced in concrete from 0 to 40 % by weight.

The investigation was aimed at studying the effect of replacement of coarse aggregate with coconut shell on compressive strength, split tensile strength, flexural strength of M60 grade of concrete. Mix proportioning of concrete will be done based on IS 10262:2009. To study on strength of concrete the specimens will be tested for 28 days of curing. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties. The replacement of coconut shell will be varied from 0 to 40% with an increment of 10% i.e 0, 10%, 20%, 30% and 40% replacement to coarse aggregate.



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**Paper ID: SCRICE120**

**The effect of hybrid fibers on mechanical properties of self compacting concrete**

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**ABSTRACT**

Concrete is a weak building material in tension. Inherently, micro cracks will be present in concrete. The formation of micro cracks normally due to shrinkage of concrete. Low tensile strength and brittle nature are the basic defects in concrete. These defects are enhanced due to improper compaction due to congested reinforcement in detailing. Self compacting concrete is being developed in recent years to avoid these defects. Fibers act as bridge towards crack propagation and increase the energy absorption capacity of the concrete. Moreover, concrete suffers from low tensile strength, limited ductility and little resistance to cracking. In order to improve these properties, an attempt has been made to study the effect of addition of steel, glass fibers in ordinary Portland cement concrete. In this study, the scope of research will be focused on the effect of hybrid fibers on mechanical properties. In present investigation is mainly focused on the effect of mechanical properties on M30 grade of concrete by providing steel, glass fibers. Two different fibers will be used with different dosage levels by volume of concrete.

The investigation was aimed at studying the effect of glass fibers and steel fibers on the standard specimens. Compressive strength and split tensile will be evaluated in this study on M30 concrete. Mix proportioning of concrete will be done based on guidelines of IS NanSu method of mix design. To study effect on strength of concrete the specimens will be tested for 28 days of curing. Standard cubes (150x150x150 mm) will be cast to investigate the behaviour on mechanical properties. Tests on fresh properties will be done according to EFNARC specifications. The inclusion of glass fibers will be varied from 0 to 0.09% with an increment of 0.03% i.e 0, 0.03%, 0.06%, 0.09% by volume of concrete. The inclusion of steel fibers will be varied from 0 to 1% with an variation of 0, 0.25%, 0.5%, 0.75% and 1% by volume of concrete.



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**Paper ID: SCRICE121**

**A study on flexural fatigue characteristics of steel fiber reinforced concrete**

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**ABSTRACT**

Pavement concrete is mostly used for airfield runways, road surfaces, bridge decks, parking lots and industry floors. Due to passing vehicles, these structures often endure repetitive cyclic loads during their service lives, the fatigue characteristics of concrete in these structures are important performance and design parameters. It is necessary to predict the fatigue life and parameters for structures that have been endured repeated loading. Fatigue failure occurs when a concrete structure fails at less than design load after being exposed to a large number of stress cycles. Fatigue may be defined as a process of progressive and permanent internal damage in a material subjected to repeated loading. In this study, the scope of research will be focused on the flexural fatigue behaviour of steel fiber reinforced concrete. The fatigue life data of SCFRC containing 0.5 %, 1.0 % and 1.5 % by volume of steel fibres have been obtained by conducting flexural fatigue tests on approximately prism specimens of size 100 x 100 x 500 mm under third point loading at stress level 0.70.

The investigation was aimed at studying the effect of steel fibers on compressive strength, split tensile strength, flexural strength of M50 grade of concrete. Mix proportioning of concrete will be done based on guidelines of IS 10262: 2009. To study the effect on strength of concrete the specimens will be tested for 28 days. Standard cubes (150x150x150 mm), cylinders (150 mm diameter, 300 mm height), prisms (100x100x500 mm) will be cast to investigate the behaviour on mechanical properties and flexural fatigue behaviour. Slump and Compaction factor will be done to test the effect on workability of concrete due steel fibers. The inclusion of steel fibers will be varied from 0 to 1.5% with an increment of 0.5% i.e 0, 0.5%, 0.1%, 1.5% to volume of concrete.



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**Paper ID: SCRICE122**

**Study On Fresh And Hardened Properties Of Self Compacting Concrete With  
Ggbs, Silica Fume As Mineral Admixture**

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**ABSTRACT**

Concrete has become basic material in day to day life of humans. Low tensile strength and brittle nature are the basic defects in concrete. These defects are enhanced due to improper compaction due to congested reinforcement in detailing. Self compacting concrete is being developed in recent years to avoid these defects. It is the concrete which consolidates due to its own weight without any compaction. The present investigation is mainly focused on the effect of mechanical properties of SCC with supplementary materials. In this investigation concrete having compressive strength M40 with Ground granulated blast furnace (GGBS) and silica fume (SF) as supplementary materials. GGBS added to the concrete with 0 to 30 % by weight of cement. SF added to the concrete with 0 to 12 % as an admixture.



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Paper ID: SCRICE123

**A GIS-Based Modified DRASTIC Model for Assessing Coastal Aquifer  
Vulnerability Prone Zone in the South East Coast of Tuticorin (Thoothukkudi),  
South India.**

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ABSTRACT

Water is one of the most important natural resources essential for the survival of living organisms. Aquifer vulnerability assessment aims at predicting areas, which are more likely than others to become contaminated as a result of activities at or near the land surface. Aquifer consisting primarily of Gneiss, Charnockite and Recent alluvium. The Hindu reported on Citing Tuticorin as the most highly polluted city in State, said that not only people but also coastal waters bore the brunt of the ill effects of pollution. Coastal water temperature reached eight degrees beyond its normal level after the effluents from the thermal stations were deposited in sea, On the whole, the Tuticorin coast was being treated as a dumping ground and all industrial effluents were let into sea. Most of the water bodies in the study area affected due to sewage, chemicals, oil, industrial effluents and undesirable extraneous matters. Manufacture of aluminum flouride, urea, ammonium chloride, caustic soda manufacturing factories is located in Tuticorin district. The river water is used downstream for irrigation or drinking by people/livestock, contamination of the river has increasingly become a serious problem in Tamirabarani river basins of the Study area. To study the Identification of coastal Aquifer vulnerability prone zone using Modified DRASTIC model approaches in Remote sensing and GIS techniques. DRASTIC parameters are Depth to water table, Net Recharge, Aquifer media, Soil media, Topography, Impact of vadose zone, and Hydraulic Conductivity. These all the thematic layer are generated using GIS environment. The study of the aquifer vulnerability reveals that the different thematic layers to pertaining to the Water level, Geomorphology, Soil, Geology, Hydraulic conductivity, Landuse /landcover and slope map were assigning weightages based on potential magnitude to vulnerability each thematic layers features are classified, to using the rank calculation each layers and all the thematic layer were integrated in GIS environment and the finally to identify the coastal aquifer vulnerability prone zone, and the range of index values has been classified into four different classes. The area is found in the highest range of index values falling under high vulnerability. The site specific vulnerability status has been cross-verified by the spatial distribution characteristics of selected hydrochemical parameters.



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Paper ID: SCRICE124

**A GIS-Based Modified DRASTIC Model for Assessing Coastal Aquifer  
Vulnerability Prone Zone in the South East Coast of Tuticorin (Thoothukkudi),  
South India.**

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**ABSTRACT**

The foundation is very important to any land-based structure and it has to be strong to support the structure. In order to support the structure, the soil around the foundation plays a very critical role. It is very essential to check the properties of the soil and to improve the properties of the soil when it is a problematic soil. In this paper, the properties of soil enhanced by the Chemical Additives. Terrasil and Zycobond are the chemical additives used in this study to improve the properties of soil. The experimental tests are carried out to evaluate the potential of Terrasil and Zycobond to stabilize the problematic soil. The geotechnical characteristics of the soil investigated including the Free Swell Index, Atterberg's Limits, Standard Proctor Test and California Bearing Test. Results of this study showed that the increase in strength and decrease in swell characteristics when stabilized with chemical additives.