



Proceedings of the International Conference on

GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT – ICGECS D'18.

April 4th & 5th, 2018



ORGANIZED BY

Department of Civil Engineering,
School of Mechanical and Construction



Vel Tech

Rangarajan Dr. Sagunthala
R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)



Global Environmental Changes and Sustainable Development

ICGECS D'18

on

April 4th & 5th, 2017

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Organized by

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School of Mechanical and Construction
VeltechRangarajanDr.Sagunthala R&D Institute of
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400 feet Outer Ring Road, Avadi, Chennai – 600062,
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INTERNATIONAL CONFERENCE
ON
GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPEMENT - ICGECSD '18.
April 4 & 5, 2018

Agenda

Registration

Date : 04.04.2018Venue : Near 2115 – 5 counters for ICGECSD'18.

8.00am – 9.00 am - Registration

Inaugural Session

Date : 04.04.2018Venue : Mahatma Gandhi Auditorium

09.00 -10.15 - Inaugural Session

10.15 - 10.30 am - Tea Break

TECHNICAL SESSION - M. G. AUDITORIUM

10.30 am - 11.30 am - **Special Session - I**

Topic : **Pre-Requisites for -Site Investigation Methods in Civil and Infra structural Engineering Projects-A Typical Analysis**

Speaker : **Prof. Dr. D. Venkat Reddy, Consulting Faculty L&T.**

11.30 am - 12.30 pm - **Keynote Address - I**

Topic : **Sustainability Developoment 21 Century Driver for Innovation and Growth.**

Speaker : **Prof. Dr. Deepak Thirumishi Jada, City University, Malaysia.**

12.30 pm - 12.45 pm - Meet & Greet Session.

12.45 pm - 01.45 pm - Lunch Break

01.45 pm – 02.00pm – Multi Media Presentation

02.00 pm - 02.45 pm- **Keynote Address - II**

Topic : **Design of Pile Foundation for Seismic Loading**

Speaker: **Prof. Dr. K. Premalatha, Head- Soil Mechanics & Foundation Engineering, Department of Soil Mechanics and Foundation Engineering, Anna University, Chennai.**

02.45 pm - 03.00 pm - Tea Break

TECHNICAL TRACK – I

03.00 pm - 04. 45 pm - Technical Sessions Paper Presentation
05.30 pm - 05.45 pm - Meet & Greet Session.
05.45 pm -06.00 pm - Tea Break
06.00 pm - 06.30 pm - Cultural
06.30 pm - 07.00 pm - Dinner

05.04.2018

09.00 am - 10.00 am – Keynote Session – III

Topic : **Global Environmental Changes.**
Speaker : **Dr. P. Vijaya Lakshmi, Scientist, TNPCB, Guindy.**

10.00 am - 11.00 am – Special Session – II

Topic : **Sustainable Waste Mangement - Local Challenges Global Solutions**
Speaker : **Prof. Dr. G. Janardhanan, Associate Professor, Department of Civil Engineering, NITTTR, Chennai**

11.00am – 11.10 am - Tea Break

11.10 pm - 12.00 pm – Keynote Session – III

Topic : **Progress in collapse of Structures.**
Speaker : **Prof. Dr. K.S. Sathyanaryanan**

12.00 pm – 12.45 pm Keynote Session – V

Topic : **Construction Management by using BIM, Virtual and Augmented Reality**
Speaker : **Prof. Dr. William (Ming Husi Tsai)**

12.45 pm - 1.45 pm – lunch

1.45 pm - 2.45 pm – Special Session – III

Topic : **Sustainable Development in Civil Engineering.**
Speaker : **Prof. Dr. A.R. Santhakumar**

2.45 pm - 3.00 pm – Tea break

03.00 pm - 3.45 pm -Valedictory Session

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ABOUT INSTITUTE



VeltechDr.RR& Dr. SR University believes in equipping its students to be driven by knowledge to confront the world's great challenges.

- A place to Progress and Prosper
- A paradise for Learners and Inventors
- A temple of Learning
- A Pedagogy in Education

We nurture excellence in teaching and learning. Incubate enquiry driven creativity, foster multidisciplinary research; inculcate scholarly leadership towards global competence and growth beyond self in a self in a serene and inspiring academic environment. According to National Institute Ranking Framework we have been ranked 10th among Engineering (Private) deemed universities in India. 2nd in Chennai, 4th in Tamilnadu, 6th in South India and 58 among 1007 Engineering Institutions by MHRD, Government of India. We have registered for many number of Patents.

ABOUT DEPARTMENT



The Department of Civil Engineering was established in 2009 with an aim of promoting high quality education in the field of Civil Engineering. The academic activities of the department emphasize deep understanding of fundamental principles, development of creative ability to handle the challenges of Civil Engineering and the analytical ability to solve the problems which are interdisciplinary in nature. The Department currently offers two B. Tech programmes in Civil Engineering (collaborated with National Ilan University, Taiwan) and Civionics, and three M. Tech programme in Structural Engineering, Construction Engineering and Management and Environmental Engineering. The department also offers Ph. D programmes in all areas. The department has well experienced faculty members with Ph. Ds who are young and dynamic, belonging to various field of Civil Engineering. They are also members in various professional societies. The department is doing many consultancy works and research works. Many students have participated in technical event and won prizes in reputed engineering colleges including IIT Madras and Anna University.

ABOUT THE CONFERENCE



ICGECSD-18 offers a unique opportunity to all students, researchers and practicing engineers to share the advances and knowledge in global environmental changes and sustainable development in Civil Engineering. ICGECSD-18 provides an excellent platform for academicians, researchers and industrialist to discuss various issues in civil engineering. This conference will facilitate in fostering close relationship among researchers and facilitate for strengthening their domain knowledge and field of research.

We have received 186 technical papers from various institutions including national and international universities and colleges among those 150 papers have been shortlisted related to the theme of the conference and quality of the paper.

Best papers will be published in Scopus indexed journal and all the selected papers for conference will be published in journals.

**MESSAGES FROM OUR CHIEF
PATRONS AND PATRONS**

Col.Prof. Vel. Dr. R. Rangarajan
Founder Chancellor & President



In my two decades of journey in the education field, I have experienced that just classroom learning alone is not enough for shaping the career of students. Exposure to various Seminars, Conferences, workshops etc plays a vital role in the learning process and often becomes an unforgettable experience. I am immensely happy to note that the Department of Civil Engineering has organized this Conference on GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT ICGECSD '18. This conference aims at bridging up the gap between the natural change in the environment and technological compatibility to face these changes.

I wish the organizers of the conference a great success.

Founder Chancellor
&
President

Dr SagunthalaRangarajan
Chancellor



It gives me great pleasure to know that the Department of Civil Engineering has organized a International Conference on the topic GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT, ICGECSD '18 on 04. 04.2018 & 05.04.2018. I whole heartedly congratulate the Department, the organizers and all the delegates.

It is the responsibility of the institute not only to impart education but also to create awareness on relative topics. The conference intends to focus on how global changes can be challenged with sustainable development. I hope that this conference will definitely pave way for such developments that are highly essential at this point of time.

I wish the staff of the department of Civil Engineering to make this into a grand success.

Chancellor

Mrs. RangarajanMahalakshmi Kishore
Chairperson & Managing Trustee



Change alone is unchangeable. Changes are a common and continuous phenomenon in today's world. Changes either natural or manmade have to be faced efficiently. As technical experts, it is the duty of the engineers to face changes and develop systems which helps us to adapt to the changes.

I congratulate the department of Civil Engineering for organizing the International Conference on "GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT" ICGECSD'18. The conference will help all the participants to understand the changing situations in the globe and develop the brainpower of the fraternity.

I wish all the members all success in their endeavors.

Chairperson & Managing Trustee

Mr.K.V.D. Kishore Kumar
Vice - President.



Dear Delegates,

I have great pleasure in receiving you all to the International Conference on "GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT" ICGECSD'18 on 11.04.17 organized by the Department of Civil Engineering of VeltechRangarajan Dr. Sagunthala R&D Institute of Science and Technology.

I congratulate the department of Civil Engineering for the apt theme chosen. The conference will definitely help all the delegates to understand the changing dimensions in the ever-changing globalized scenario better. I do hope that you all will contribute your might for the superfast growth of our motherland.

Vice President

Prof. Beela Satyanarayana B.E. (Mech), M.E. (MD), M.E. (IE), M.Tech. (CSE), Ph.D. (IIT, Delhi)
Vice Chancellor



It gives me a great pleasure to note that the Department of Civil Engineering is conducting an International Conference on "Global Environmental Changes and Sustainable Development" ICGECSD 2018 on 4th and 5th April in association with ASDF international, CI, ICI, IRJMRS and CCS societies. Global Environmental Changes integrates environmental considerations into development plans and strategies, to manage and sustainably use natural resources; ensure that natural wealth is used to promote economic recovery and livelihoods, and effectively target policies to reduce poverty and provide social protection for those in need. Arranging six keynote lectures on relevant topics in this conference will provide ample of knowledge to the participants which in turn develop research culture in this discipline. I wish all the participants to utilize this opportunity to interact, share their ideas and provide innovative directions to the student community for creating a safe environment and solutions to avoid disastrous atmospheric situations.

I am sure, that this conference will play a humble role in bringing together researchers, younger scientists, and students in an informal environment for discussing the latest advances

I congratulate the Head, Faculty & organizers for choosing an advanced topic of societal relevance and global importance.

I wish the International Conference a grand success.

Vice Chancellor

Dr.U.Chandrasekhar
Pro-Vice Chancellor



I congratulate the School of Mechanical and Construction Engineering for organizing a conference on GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT at our campus on 04.4.2018 & 05.04.2018. I take immense pleasure in welcoming the participants from across the nation and I wish it serves as a unified platform of innovation and development for our students and faculty members.

My best wishes for successful organization of the conference.

Pro-Vice Chancellor

Dr. E. Kannan
Registrar



I have great pleasure to welcome you all to the International Conference on Global Environmental Changes and Sustainable Development (ICGECSD '18).

Globalization has brought many benefits, yet there is growing contention over how these benefits are shared and increasing recognition that globalized markets require greatly improved global governance. Globalization is creating intense business pressures, and for many firms. Worldwide competition is fierce among organizations and the recession is making it even harder for many organizations to sustain their competitive advantage. To combat this challenge, organizations worldwide have been forced to look for innovation in their business practices. Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced. This conference will aims to bring together the national practitioners in the fields of Global Environmental Changes and Sustainable Development to exchange knowledge and understanding of the “need for change” with members of their own profession and members of the professional team. This conference is designed to maximize the development of collaborative links and provide an opportunity for informal discussions and recreation.

I am grateful to our Founder Chancellor & President Prof. Dr. Vel. R. Rangarajan, and Management of VeltechRangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai for all their help and support without which this event could not have taken place. I thank all the Keynote speakers, moderators and delegates whose contributions made ICGECSD '18a successful event. My special thanks go to the members of the conference committee whose involvement and their supports are greatly appreciated.

Registrar

Dr. Techn. Koteswara Rao Anne
Director Academics



It is now the necessity of striving the best of technologies to provoke the indigenous brilliance in harvesting energy, propinquity towards energy conservation and innovation in latest technologies. Multidisciplinary research has always been a key for evolution in Innovation. I have an immense pleasure for having a humongous number of students, research scholars & teaching fraternity willing to publish their research work in this conference hosted by our University. Publication is a necessity for the mode of work. We have made an expertise over hosting such national conferences. I thank and congratulate the entire team behind this one successful coherence of intuitive brains for the noble cause. This is one start for a mighty beginning into the unpredicted future of healthy and wealthy. To fulfill your passionate desire to accomplish sustainable growth in the project management practice, this year conference will showcase project management as means to the end i.e., sustainable growth.

Director – Academics

Prof.Dr.A.Abudhahir
Director (Quality Assurance)



Dear Colleagues,

Welcome to the one-day National Conference on Global Environmental Changes and Sustainable Development (ICGECSD) – 2018 organized Civil Engineering Department of our university.

ICGECSD provides an opportunity for the meeting of Researchers, Engineers, Scientists, and specialists in the various research and development fields of environmental changes and sustainable development.

I hope eminent speakers will cover the theme from different perspectives. I am privileged to say that this conference will definitely offer suitable solutions to the global issues. I am also most grateful to the supporting organizations, which have provided support to this conference financially and technically for its success.

The success of this Conference is solely on the dedication and efforts of innumerable people who started working on the preparations in many ways to make this Conference become a reality. Eventually I express my special thanks and appreciation to all.

The outcomes of the conference would be achieved only if the delegates of the conference should work collaboratively in future in addressing the societal issues through engineering solutions.

Having ranked #43 by Times Higher Education (THE) Asia University Rankings – 2017, #74 “World’s Best Young University Rankings – 2017 and #77 by National Institutional Ranking Framework (NIRF) India, our university is at high festive and celebrative mood, and Civil engineering department stokes further through ICGECSD. I wish this conference a grand success.

Director (Quality Assurance)

Dr.E.B.Perumal Pillai,
Director – HRDC



The “International Conference on Global Environmental Changes and Sustainable Development” (ICGECSD-2017) is organized by the Department of Civil Engineering, VeltechRangarajan Dr. Sagunthala R&D Institute of Science and Technology. The prime objective of this conference is to bring together the researchers, Scientists, Engineers, student scholars and Professionals to acknowledge the latest research, exchange and share new ideas face to face, and to explore and share innovative research work carried out by the individuals in the areas of Advanced Engineering and Environmental Engineering for the sustainable development. The Conference focuses on the identification of practical challenges encountered in these fields and their possible solutions through presentations and discussions. The conference intends to encourage inventions, scientific investigations and research for promoting their applications in these sectors and to appraise various aspects of sustainability. The department has received an overwhelming response from the date of announcement of the conference. 180 research papers, from various areas of Civil, Structural and Environmental Engineering are received from the researchers of the premier institutes across the country. These papers are reviewed by an elite review committee. 150 research papers are suggested acceptable after the peer review by minimum two reviewers. Their meticulous job has enabled the enhancement of quality of research papers and is profusely thanked. This bound volume of the conference proceedings would not have been possible without the technical contributions from the authors of these papers and the editors are thankful to them. We would also like to express our thanks to the colleagues, research scholars, and the Post Graduate students, who have helped us in different ways to bring out the bound volume of this conference proceedings.

I congratulate the faculty of Civil Engineering for organizing this wonderful conference and wish all the best for all the delegates.

Director – HRDC

Dr.S.Gowthaman,
Director – R&D



I am extremely happy to write preface for the proceeding containing contributions of researchers, eminent professors, and academicians of different fields of Civil Engineering for the ICGECSD-2017 organized by Department of Civil Engineering, VeltechUniversity Chennai. The aim of ICGECSD-2017 is to bring the researchers, academicians, teachers, PG students, industry professionals to a common platform and share their innovative ideas, research achievements for benefits of all academic fraternity in particular and nation as a whole. I am optimistic that this conference shall open new horizon in the field of Environmental and Structural Engineering by aggravating R & D activities.

Director – R&D

S.Sivaperumal
Director (i/c) - International Relations,



"It gives me immense pleasure to note that the Department of Civil Engineering is organizing a International Conference on Global Environmental Changes and Sustainable Development. The chosen themes of this conference are highly important to present conditions of environment and climate changes.

I congratulate the organizers for having chosen such a highly vital conference theme and on behalf of office of international programmes, I wish a grand success.

Thank you

Director (i/c) – International Relations

Prof.Dr.V.Parthasarathy
Director: Campus to corporate



Dear learner delegates, It is my great pleasure to welcome you all to the International Conference on “GLOBAL ENVIRONMENTAL CHANGES AND SUSTAINABLE DEVELOPMENT” ICGECSD’18. Various experiences of the Environmental Engineers all over the world tell us that the effective management of manmade environment issues call for immediate mitigation of damages caused and take appropriate measure for ensuring non occurrence of such issues in future. Sustainable development is maintaining a delicate balance between the human need to improve lifestyles and feeling of well being on one hand, and preserving natural resources and ecosystems, on which we and future generations depend. I certainly believe that the Conference will bear fruitful results and lay the firm groundwork for sustainable development in future. We look forward to seeing you on 4th& 5th April 2018.

My hearty thanks for your participation and best wishes for your all round success.

Director: Campus to corporate

Prof. Dr A T Ravichandran

Dean : School of Mechanical & Construction Engineering



I am extremely delighted to learn that the Department of Civil Engineering is organizing a International Conference on “**Global Environmental Changes and Sustainable Development**” (ICGECSD ‘18) on 4th& 5th April 2018 to bring out the research works done by the Faculty, Research Scholars and Students of Civil Engineering.

With increased lifestyle and industrialization, the environmental pollution has increased to an alarming level. This pollution has changed the climatic condition and leads to many associated problems. As a responsible engineers, we need to find the possible solutions for this. I am sure that, this conference will be platform for the researchers, faculty & students to share their views and progress further.

I, wholeheartedly, congratulate the members of Organizing Committee of the Conference wish the conference a grand success.

Dean :SOMCE

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1. OPTIMIZATION OF RESERVOIR OPERATION USING GENETIC ALGORITHM

K. V. Pranav¹ & R. Saravanakumar²

¹Assistant Professor, Gambella University, Gambella, Ethiopia.

*²Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India.*

pra_nav_006@yahoo.co.in & rsaravanakumar@veltech.edu.in

ABSTRACT

In India most of the rivers are intermittent in nature leading to large, spatial and temporal variation in the water availability. This problem has been greatly alleviated by constructing reservoirs. But still the water demand for various sections is increasing, manifold. Thus, it is essential for the effective and efficient utilization of the available water resources. Systems engineering in water resources is concerned with the decision making in relation to planning, designing, construction and operation of reservoirs. In recent past, one of the important advancement made in the system engineering of water resources is the evolution and application of optimization techniques. The optimization techniques are essential to derive reservoir operation policy. Reservoir operation policy concerns with the storage to be held in reserve at different times of the year. Because of the uncertainties in the quantities of inflows, the authorities generally revise their decision frequently regarding releases based on the quantity of water available and demand during the period. The optimized rule curve of the reservoir is a perfect guide for the authorities to operate the reservoirs.

Keywords: Reservoir, Optimization and Algorithms .

2.APPLICATION OF BIG DATA ON FACILITY INTEROPERABILITY USING PYTHON

Vikram Kumar¹& Su-Ling Fan²Sidagam Eswar³

¹PG Student, Tamkang University, Taiwan

²Director of Research & Development Center for Construction Law and Associate Professor, Tamkang University Taiwan

³UG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, India.

vkrmkumar4@gmail.com, fansuling@hotmail.com& eswarsidagam7@gmail.com

ABSTRACT

The Purpose of this study on Facility Interoperability is mostly to reduce the Injury and deaths happened by the Instruments and System in the Hospital. The preliminary study in this paper is to investigate the damages happen due to the Facility interoperability. This paper describes techniques from computer science, such as Python, decision tree induction and Association Mining Rules Pattern that are not normally applied to find the way to stop injury and deaths in the Hospital buildings and as an example applies them to a complex set of data from climate-responsive spaces in India. The findings illustrate the power of these techniques for using simplified measures as proxies to extract more sophisticated information about building operation, and for quickly identifying patterns in how different design and operational characteristics affected. By using PrefixSpan Algorithm, I am finding the relationship between two or more system. PrefixSpan (i.e., Prefix-projected Sequential pattern mining), which explores prefix projection in sequential pattern mining. PrefixSpan mines the complete set of patterns but greatly reduces the efforts of candidate subsequence generation. Moreover, prefix-projection substantially reduces the size of projected databases and leads to efficient processing. Our performance study shows that PrefixSpan outperforms both the Apriori-based GSP algorithm and another recently proposed method, FreeSpan, in mining large sequence databases.

Keywords: Python , Interoperability, Algorithm

3. BIOSORPTION OF LEAD FROM PAINT INDUSTRY WASTE WATER USING OSTER MUSHROOM BIOMASS

Feven Bulbula¹Lemlem Mulat²

¹PG Student, Addis Ababa Science & Technology, Ethiopia.

²PG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, India.

ABSTRACT

Investigations were carried out to evaluate the potential of oyster mushroom (*Pleurotus ostreatus*) biomass in removal of lead originated from paint industry, depending on biosorbent dose, biosorption contact time and different pH of wastewater samples. The experiments were conducted using factorial design and the analysis was carried out in triplicate for each sample. pH of wastewater samples, adsorbent dose (*Pleurotus ostreatus*), and contact time between adsorbent and adsorbate were investigated. The fitness of the biosorption data for Langmuir and Freundlich adsorption models was investigated. Fourier Transform Infrared analysis (FTIR) was conducted to determine functional groups in the *Pleurotus ostreatus* biomass. The highest content of lead from treated samples (7.35 mg/g) was obtained at the pH value of 2 and minimum contact time (30min) with the minimum amount (1.25g/l) of *Pleurotus ostreatus* powder. At pH 6, after 90min of the experiment, the concentration of lead was able to be achieved as low as 1.373 mg/l with 95.23% removal. Percent removal of lead was found to increase with the increase in biosorbent dosage and contact time. It was found that biosorption of lead (II) ions onto *Pleurotus ostreatus* biomass was more suitable to Freundlich than Langmuir adsorption model and it fitted with pseudo second order model with R² value of 0.999. The present data confirms that *Pleurotus ostreatus* can be used as efficient biosorbent for the removal of lead (II) ions from paint industry wastewater

Keywords: Biosorption, Wastewater, Paint, Lead, *Pleurotus Ostreatus*

4. EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT WITH SILICA FUME AND FLY ASH IN CONCRETE

S. Praveen kumar¹ & M.Chinnasamy²

¹Surveyor, DBB Contracting LLC, Dubai.

*²Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India*

praveenkumarsrinivasan@gmail.com & mchinnasamy@veltech.edu.in

ABSTRACT

During the last three decades, great strides have been taken in improving the performance of concrete as a construction material. Fly Ash and Silica Fume are indispensable in production of high strength concrete for practical application. The use of fly ash and silica fume as a pozzolana has increased worldwide attention over the recent years because when properly used as certain percent, they can enhance various properties of concrete both in the fresh as well as in hardened states like cohesiveness, strength, permeability and durability. The mineral admixture in concrete when it is mixed in cement concrete for workability, durability and strength of concrete using OPC (53 grade). Silica fume is supplementary cementitious material and fly ash is pozzolanic materials that can be utilized to produce highly durable concrete composites. In this study fly ash is considered as constant of 10% and silica fume varies 5% 10% and 15% by total weight of OPC. This study investigates the performance of concrete under influence of silica fume and fly ash in terms of compressive strength of cube for 28 days Flexural strength of prism 28 days and Splitting tensile strength of Cylinder for 28 days respectively.

Keywords: Silica Fume, Fly Ash, Optimum replacement.

5. SOIL REINFORCEMENT - GROUND IMPROVEMENT TECHNIQUE

Vikas Singh¹ & Saurav Anand²

^{1 & 2}UG Student, National Institute of Technology, Andhra Pradesh.

ABSTRACT

Construction of building and other civil engineering on weak or soft soil is highly risky, because such soil is susceptible to differential settlement, poor shear strength and high compressibility. Various soil improvement technique is used to improve the engineering properties of soil. In this paper we are dealing with how to improve the soil properties using soil reinforcement technique. Reinforcement technique is a technique where tensile element are placed in the soil to improve stability, bearing capacity and control deflections.

Keywords: Soil Reinforcement, Stabilization & Techniques.

6. AN EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF MUCKING SAND AS FINE AGGREGATE IN CONCRETE.

Vinoth Rajendran¹ & G. Kumar²

¹Quality Control Engineer, Jammu and Kashmir.

*²Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India*

ABSTRACT

In the construction industry, there is a high demand for natural river sand/Crusher sand, especially in the production of concrete, which creates major sustainability issues. The best way to deal with these environmental concerns is to use waste or recycled material, as substitute for natural river sand/Crusher sand. This paper deals with replacement of sand used in concrete as fine aggregates by the waste generated by the **Mucking particles**. This study has made an attempt to partially replace mucking dust in place of sand in M30 grade concrete. On experimentation, it was found that the partial replacement of sand with 40% of mucking dust has given the optimum results. Therefore, this study recommends that if partial replacement of sand with mucking dust up to 40% in M30 grade of concrete is done, the effective waste management can contribute towards saving of our environment. Tests were conducted on cubes to study the strength of concrete made of Mucking Dust and the results were compared with the crusher sand Concrete. It is found that the compressive strength of concrete made of Mucking Dust are nearly 25% more than the conventional concrete. Similar studies may be done with other concrete mix ratios and also for self compacting concrete.

Keywords: Mucking Sand, Fine Aggregate and Optimum replacement.

7. A REVIEW ON EVAPOTRANSPIRATION MODELS SUITABLE FOR AGRICULTURAL MANAGEMENT OF KANCHEEPURAM DISTRICT SOUTH INDIA

D.Soundar Rajan¹&Lobo²,

¹Professor of Civil Engineering, Aurora Scientific Technological and Research Academy, Hyderabad

*²Professor of Humanities and Science, Aurora Scientific Technological
and Research Academy, Hyderabad*

ABSTRACT

In recent years, except water availability has become an issue in Tamil Nadu state, as prolonged drought have stressed both agriculture and non-agriculture sectors. As population in Tamil Nadu increases, so does the water demand? The loss of water by evapotranspiration is an important factor in water resources and hydrological studies. Most of the hydrologic, water management and crop growth models require an accurate estimate of potential evapotranspiration (PET) for reliable application. Daily and mean yearly output from four evapotranspiration models with original constants (FAO-24 Penman-Monteith model, Blaney-Criddle model Hargreaves model, and coefficient constant of experimental method have been tested against reference evapotranspiration data computed by FAO Penman-Monteith model to assess the accuracy of each model in estimating paddy reference evapotranspiration in Kanchipuram district Tamil Nadu. Models were compared at Kancheepuram district of the India Meteorological Department observatories. From the models, were selected for evaluation. The criteria for selection was, the values of cross correlation (R^2), intercept 'a' and slope 'b' of regression line. The constants of each selected model were recalibrated using three different procedures. Identify suitable model for agricultural management of kancheepuram district south India

Keywords: Evapotranspiration, Crop Evapotranspiration, FAO Penman-Monteith Method, Climate Change.

8. EXPERIMENTAL STUDY ON SMOKE ADSORBING CENTRAL MEDIAN BARRIER FOR ROAD PAVEMENT

*Vaddi Naveen Kumar Reddy¹, N. Reddiah Reddy², Police Harikrishna Reddy³
¹⁻³UG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India.*

ABSTRACT

The purpose of this project is to reduce the building rate of pollution in our country. The scenario that everyone facing today is mainly due to air pollution. So this project aims to reduce air pollution to an extent. Vehicle emits a lot of pollution these days. Either when they are running or when they are standby in traffic signals. The project focuses on adsorbing the pollution that is produced by the vehicles, through a “Smoke Adsorbing Central Median Barrier”. The central median barrier is fixed with a chamber consisting of activated charcoal; these charcoals adsorb the polluted air and filters it as a clean air. Due to its adsorbing property it reduces the amount of carbon monoxide carbon dioxide and hydrocarbons present in the air pollution. The barrier was designed for the distance of 25 meter in each direction an internal chamber of 150 mm diameter was designed in the bottom portion of the barrier to adsorb air pollution near traffic signals. This is one of the most effective and efficient ways to reduce pollution.

By executing this project the pollution near the traffic signals can be treated effectively and efficiently.

Keywords: Smoke adsorbing Barrier & Road Pavement

9. EXPERIMENTAL INVESTIGATION ON STRENGTH OF BIO-SELF-CURED CONCRETE

N. Rishinath¹, S.U.Udhayakumar² & K.Kumaresh⁵

¹Assistant Professor, Adhiparasakthi College of Engineering, Kalavai, Tamilnadu.

*²⁻⁵ UG Student, Adhiparasakthi College of Engineering, Kalavai, Tamilnadu.
rishinathnehr@gmail.com*

ABSTRACT

High performance concrete is not only characterized by its high strength, workability, and durability but also by its smartness in performance without human care since the first day. If the concrete can cure on its own without external curing without compromising its strength and durability, then it is said to be high performance self-curing concrete. In this paper, an attempt is made on the performance study of internally cured concrete using biomaterial, named *Spinacea oleracea* as self-curing agents, and it is compared with the performance of conventional concrete. The present paper focuses on workability and strength study on M60 grade concrete replacing M-sand for river sand and using super plasticizers. The optimum dosages of *Spinacea oleracea* was taken as 0.3%, 0.6%, and 0.9% by weight of cement from the earlier research studies. From the slump tests performed, it was found that there is a minimum variation between conventional concrete and self-cured concrete. The strength activity index is determined by keeping compressive strength of conventionally cured concrete and self-cured concrete was observed that 7 days, 14 days and 28 days.

Keywords: High performance concrete, bio self-curing concrete, *Spinacea oleracea*

10. SOIL STABILISATION BY COCONUT PEAT AND RICE HUSK ASH

N.Madhiyazhaki¹, R.Jayanthi²&T. Mangaiarkarasi³

¹⁻³Assistant Professor, Sriram Engineering College, Chennai, India.

ABSTRACT

The main objective of this paper is to explore the use of Rise Husk Ash and coconut peat material in Geotechnical Engineering applications and to evaluate the effects of Rice Husk Ash and coconut peat material on the shear strength of unsaturated soil samples by carrying out Direct Shear Tests and Unconfined Compression Strength Tests. The results obtained are compared and inferences are drawn towards the usability and effectiveness of Rise Husk Ash and coconut peat material reinforcement as a replacement for deep foundation or raft foundation, as a cost effective approach.

Keywords: Rice Husk Ash, Coconut Peat & Soil Stabilization

11. EXPERIMENTAL INVESTIGATION ON LIGHT WEIGHT CONCRETE WITH STEEL SLAG AND M-SAND

*N. Rishinath¹ , P.Dinesh² N.Tamil Selvan³ , K.V. Silambarasan⁴ , V.R. Prem Kumar⁵ ¹Assistant
Professor, ²⁻⁵UG Student , Department of Civil Engineering,
Adhiparasakthi Engineering College, Kalavai, Tamilnadu, India
rishinathnehr@gmail.com*

ABSTRACT

This study presents an evaluation of steel slag aggregate, m-sand in concrete comparison with the conventional natural coarse, fine aggregate in concrete. Hardened concrete consist of more than 70% coarse aggregate 50% of fine aggregate due to the high demand in building materials and the increase of the amount of disposed waste material, suppliers and researchers are exploring the use of alternative materials which could preserve natural sources and save the environment. Steel slag was used as an coarse aggregate replacement and m-sand was used an fine aggregate replacement in conventional concrete mixes. Steel slag which is mainly consists of calcium carbonate is produced as a by-product during the oxidation process in steel industry and m-sand was collected from the quarries . Steel slag and m-sand was selected due to its characteristics, which are almost similar to conventional aggregates and the fact that it is easily obtainable as a by-product of the steel industry and quarries. As a result, utilization of steel slag and m-sand will save natural resources and provide clean environment. We have replaced fine aggregate completely by m-sand and coarse aggregate is replaced by 25%,50%,75% of steel slag. By utilising steel slag as coarse aggregate which also reduce the weight of the concrete there by we can reduce the cost of construction. Keywords: Steel Slag, M-sand, Light weight concrete.

Keywords: m-sand, Steel slag, conventional natural coarse.

12. VALUATION OF GROUND WATER QUALITY FOR DRINKING AND IRRIGATION PURPOSES IN ERODE DISTRICT

Gobinath G N¹, A. Geetha Selvani², S. Samson³

¹Research Scholar, Anna University, Chennai .

^{2&3}Professor, Vel Tech Rangarajan & Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai

gobicivil586@gmail.com

ABSTRACT

Groundwater quality of the Erode taluk was assessed to understand the contamination processes due to the presence of various contaminant sources and the suitability of groundwater for drinking and irrigation purposes. Ten groundwater samples have been collected from Erode taluk of Tamilnadu state of India. Their physicochemical parameters like colour, odour, turbidity, TDS, EC, pH, TA, TH, Ca^{2+} , Mg^{2+} , Na^+ , NH^+ , NO^+ , NO^- , Cl^- , F^- , SO^{2-} , PO^{2-} and DO were assessed. The results were compared with the drinking water guidelines of Indian Standard (IS) and World Health Organization (WHO). The important constituents that influence the water quality for irrigation such as Electrical Conductivity (EC), Total Dissolved Solids (TDS), Sodium Adsorption Ratio (SAR), Magnesium Adsorption Ratio (MAR), Kelly's Ratio (KR) and Soluble Sodium Percentage (SSP) were assessed and compared with standard limits.

key words: Groundwater, Electrical Conductivity, Sodium Adsorption Ratio

13. INVESTIGATION OF SUPPLEMANTRY CEMENTITIOUS MATERIALS IN CONCRETE

S.Thirumanisamy² & A.Jayesh

*^{1&2} UG Student, Vel Tech Rangarajan & Dr. Sagunthala R&D Institute of Science and Technology,
Avadi, Chennai
saram.civil@gmail.com, manithiru602@gmail.com*

ABSTRACT

In world 90% of CO₂ emission is due to production of cement. CO₂ causes ill effects to the environment and causes global warming. In order to minimize the CO₂ emission alternative cementation materials has to be identified. The supplementary cementitious materials are examined and optimum replacement is explained in this investigation. Waste materials, industrial by-products and agricultural waste also can be replaced as cementitious materials in concrete. The cost is also minimised and the strength is also high. Some of the supplementary cementitious materials are Flyash, GGBS, Rice Husk Ash, Baggase ash, Silica Fume, Metakoalin etc.

Keywords: Supplementary Cementitious Materials, Percentage of Replacement, Mechanical Behaviour.

14. COMPARITIVE STUDY ON SUPERPLASTICER WITH CONPLAST AND GELINIUM IN CONCRETE.

Bibek Guptha¹, Anish Kumar² & Maslab Ahamed³

*^{1&3}UG Student, Veltech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology. Avadi,
Chennai.*

ABSTRACT

Concrete paving blocks are ideal materials on the footpaths for easy laying, better look and finish. During this period, extensive research has been carried out on the engineering characteristics and structural performance of segmental block paving. This paper presents the feasibility of the usage of Quarry Rock Dust as hundred percent substitutes for Natural Sand in concrete. Tests were conducted on cubes and beams to study the strength of concrete made of Quarry Rock Dust and the results were compared with the Natural Sand Concrete. The mix ratios of 1:1:4, 1:2:4, and 1:3:4, are done as a part of trial and error method. From the results obtained from compressive strength tests, the ratio of 1:1:4 is taken out as the optimum mix. The test results showed a mirror image with respect to properties while there was a lesser foot print in economy. This also reduces the burden of dumping crusher dust on earth which reduce Environmental pollution.

Keywords: Quarry Rock Dust, Natural Sand, crusher dust.

15. CERAMIC WASTE: EFFECTIVE REPLACEMENT OF CEMENT FOR ESTABLISHING SUSTAINABLE CONCRETE

Sidagam Eswar¹, V.Krishna Sai Reddy², Viswanth Reddy³

^{1&3}UG Student, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of science and Technology, Chennai.

¹eswarsidagam7@gmail.com, ²kusulu2107@gmail.com

ABSTRACT

It is most essential to develop eco-friendly concrete from ceramic waste. Ceramic waste powder is settled by sedimentation and then dumped away which results in environmental pollution, in addition to forming dust in summer and threatening both agriculture and public health. Therefore, utilization of the ceramic waste powder in various industrial sectors especially the construction, agriculture, glass and paper industries would help to protect the environment. let's see some waste materials that can be used as a building material and save our environment and earth.

Keywords: Ceramic Waste, Compressive Strength, Eco-Friendly, Industrial Waste, Low Cost, OPC Cement, Sustainable.

16. A REVIEW ON MATERIALS USED FOR ANCIENT AND MODERN CONSTRUCTION

Ankith Kumar Soni¹, Pratik Pandey² & J. Anne Mary³

^{1&2}UG Student, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of science and Technology, Avadi, Chennai.

³Assistant Professor, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of science and Technology, Avadi, Chennai.

¹ankitrocks996@gmail.com , ³annemary@veltech.edu.in

ABSTRACT

With the passage of time, there has been a significant increase in the development of new technology. Science is getting more modernized day by day. With this there has been a great development in the construction technique which depends upon the materials used. From woods, bones which were used to construct houses to rod's which are used now days for construction and from water to chemical's made a great revolution in the field of construction. In Ancient days there were no consideration related to eco-friendly ie,waste materials and recycled materials. But the main moto for using materials,let it be Modern or Ancient , the main objective is to obtain high strength,long age and many other physicals & chemical properties. They focus on obtaining high strength within a short period time.Ancient construction materials were the new starting era for construction. But as per now the modern materials are the best and have high strength and the most important is they are Eco-friendly. They provide more advantages and many other good features as compared to ancient materials.

Keywords: Ancient materials, modern materials and techniques.

17. ANALYSIS OF SUPPLY CHAIN MANAGEMENT IN PPP PROJECT – ROAD PROJECT

N. Ganapathy Ramasamy¹ & M. Ramachandran²

¹ Assistant Professor, SRM University, Chennai.

² Executive Engineer, Indian Institute of Technology, Madras.

ABSTRACT

In recent times , the problem faced is connected with supply chain of materials. Specially in PPP project & in road project, where the completion date is quite important. Supply chain and its management plays a major role in efficient utilization of resources. It ensures resource utilization in an efficient manner and completion of project on time. However , there are still some defects in the system of supply chain management , that is why optimization of supply chain is required. It helps to improve the supply of materials which are influenced by various criteria that needs to be taken care of and optimized. These various factors that influence supply chain creates problem in the supply of materials. Thus SCOR and AHP models are used to analyze the supply chain.

Keywords: Supply chain, Management & PPP

18. EFFECT OF PARTIAL REPLACEMENT OF CERAMIC WASTE AND STEEL SLAG IN CONCRETE

R.M. Saravana Kumar¹, M. Annapurani², S. Sivaranjani³

*¹⁻³Assistant Professor, Vel Tech Rangarajan Dr.Sagunthala R & D Institute of Science and Technology,
Avadi*

sivaranjanishunmugam@gmail.com

ABSTRACT

Building industry is one of the fastest growing and a major energy consuming sector in India. Concrete has been the most significant building material for many generations and has not lost its market dominance over the years. The raw materials used for concrete are getting depletion now due to various reasons. The best possible solution to counter balance the depletion of natural sources of concrete would be the use of residual products of other industries in concrete. The added advantage with the use of residual products is the problem solving of disposal of those wastes. Thus protecting environment and avoiding dumping of the wastes is important in nowadays. This project presents the results of research of use of industrial by-products and waste material as coarse aggregate and fine aggregate in concrete. The objective is effectively use industrial by-products and waste materials in concrete without affecting the quality of concrete. Experimental investigations were carried out in M25 mix of concrete to study the effect of use of ceramic waste as partial replacement of fine aggregate and steel slag as partial replacement of coarse aggregate in concrete. Data on the physical and chemical properties of the constituents of concrete, compressive strength, split strength, flexural strength of controlled concrete and waste mixed concrete are presented. The mix ratio of 1:1.58:2.82:0.45 is used to cast cubes (150mm size), cylinder (ϕ 150x300mm) prisms (100x100x500mm). Ceramic waste is replaced Fine aggregate in the percentage of 10%, 20%, 30%, 40%, 50% and steel slag is replaced Coarse aggregate in the percentage of 75% by the volume and test specimens were cast. The strength development for various percentage of replacement of aggregates is compared to the strength of normal concrete at various ages and it was found that 30% of ceramic waste concrete mix produces higher strength than the controlled mix.

Keywords:Environmental Protection, Concrete, Natural Aggregates, Industrial Waste, Steel Slag, Ceramic Waste, Strength of Concrete

19. CONSTRUCTION QUALITY ASSESSMENT SYSTEM IN BORED CAST IN-SITU PILES

S.Sivaranjani¹, R. M. Saravanakumar², M. Annapurani³

*¹⁻³Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology,
Avadi, Chennai
sivaranjanishunmugam@gmail.com*

ABSTRACT

This paper examines the impact of workmanship and construction quality of new housing on their sale price and capital growth. To measure construction quality, we take advantage of a unique situation in Singapore where newly completed residential projects are assessed independently on their workmanship under the Construction Quality Assessment System..In spite of the proliferation of the activity, construction management is not a much studied or systematized subject. There are still only pockets of excellence in a sea of seat-of-the-pant and ad-hoc working. Most second level construction firms do not have systematic recording, documenting, planning and quality control procedures.

Keyword: Construction, quality, Piles

20. EXPERIMENTAL INVESTIGATION ON BIO ADMIXTURE IN CONCRETE

Nikhil Kumar¹

*¹PG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute Of Science And Technology, Chennai
nikhilkumar12786@gmail.com*

ABSTRACT

In this research work an attempt is made on the performance study of internally cured concrete using biomaterials, namely Aloe vera, Cactus and Calatropis gigantea as self-curing agents, and result will be compared with conventional concrete to know the performance difference. The present research focuses on workability, strength, and durability study on M20 grade concretes. The optimum dosage of Aloe vera, Cactus, and Calatropis gigantea was taken equally as 0.4%, 0.6%, and 0.8% by weight of cement. And optimum dosage is planned or selected on the basis of earlier research studies (national & international journal). From the slump tests performed, it was found that there is a minimum variation between conventional concrete and bio-admixture concrete. The strength activity index will be determined by keeping compressive strength of conventionally cured concrete for 7, 14, 28 and 56 days and for bio-admixture concrete. The performance study of concretes was made and the results are positive and encouraging in bio- admixture concretes which are ecofriendly, cost effective, high workability, durability, high compressive strength and high performance materials.

Keywords: Biomaterials, Calatropis Gigantea, Aloe Vera, Cactus, Self-Curing Concrete.

21. ENERGY EFFICIENT BUILDING

G. Indhumathi¹ & M. Sridhar²

¹PG Student, Indira Institute Of Engineering And Technology, Thiruvallur.

²Assistant Professor, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology.

ABSTRACT

This house can be made as energy efficient by adopting energy producing technologies like solar power generation by using gratzel cell solar roofing, fabric wind propeller and fixing an axial flow to propeller turbine in both water distribution system and overhead tank, piezo electric flooring and vertical axis wind propeller. By utilizing maximum day light, natural ventilation and thermal insulation using light pipes, with phosphorescence and anti-repellent painting, aerogel glass for glazing windows and (Ferro Cement) foam concrete for partition walls and polystyrene foamed panels. Water treatment and organic waste management can be done by using slingshot water purifier and commercially available vermicomposting pots and first flush rain water harvesting. At last vertical duct raisers are used to reduce stack effect and passive solar design.

Keywords: Echo friendly materials, day lighting, convergent-divergent mouth piece, Dial room, Thermal Insulation, Power generation

22. AN EXPERIMENTAL INVESTIGATION ON SELF-COMPACTING CONCRETE

G. Susmitha¹ & J. Susmitha²

*^{1&2}UG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India.*

ABSTRACT

The self-compacting concretes (SCCs) have undeniable advantages. Since the study on the behavior of SCC containing zeolite and complast sp40 with respect is very rare in literature, the purpose of this study is to focus on this subject. In this study, the influence of the partial substitution of 5%, 10%, 15% and 20% of Pozzallano Portland cement by zeolite and complast sp40 admixtures on the fresh state, compressive strength of self-compacting concrete (SCC) is investigated. For durability, resistance to acid attack, carbonation and marine environment is studied. The results show different behaviors depending on the nature of the pozzolan. In contrast, SCC based on zeolite has a lower resistance compared to the control concrete due to the presence of a large porosity formed during the preparation of the mixture. This study shows and quantifies the positive effect of the partial substitution of Pozzallano Portland cement by 5%, 10%, 15% and 20%. The carbonation study showed a lower resistance of SCCs containing pozzolan, this effect is more important for SCC with zeolite. Additional studies on the formulation and the properties at the fresh state of concrete containing zeolite in order to improve the mechanical strength will surely make it possible to obtain better performance.

Keyword: SCC, zeolite & % of replacement.

23. INVESTIGATION ON ALTERNATIVE COARSE AGGREGATE IN CONCRETE

Selvarathinam¹ & K. Mohamed Wasif²

*^{1&2}UG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai.*

mohammedwasif980@gmail.com

ABSTRACT

As there is a demand in construction industry for conventional materials there is an urgent need to find an alternative construction material. This investigation is done to identify the new construction materials and their mechanical behaviors in concrete. The optimum percentage of replacement also identified. The alternative coarse aggregates are ceramic waste, kadappa stones, broken glass, crumb rubber, plastic, broken tiles, etc. Numerous environmental problems and natural disasters are occurred because of the high extraction of natural resources. Due to that, researchers were focused on recycled materials for future development, while protecting the environment. Low cost, availability and simple process to recycle, glass concrete applications could be significantly applied in the construction industry.

Keywords: Alternative Coarse Aggregate, Optimum Replacement and Conventional Materials.

24. CLIMATE BASED ANALYSIS OF EXISTING BUILDING FOR FUNCTIONAL RETROFITTING

Rohini I¹, Ramchandran P², Pradeep Kumar A³, Mohamed Nazir M⁴

*¹⁻⁴Assistant Professor, Department of Civil Engineering, JSRREC, Chennai
irohini@gmail.com*

ABSTRACT

Energy efficiency retrofits in past construction buildings can reduce the lifecycle costs, and will attract tenants to gain a market edge. Retrofitting an existing building can oftentimes be more cost-effective than building a new facility. This research focuses primarily on modelling of an existing building using Revit architecture and importing the model in energy analysis software Green iii Building studio, applying the energy efficient parameters for light and thermal energy in order to obtain the optimum energy saving and minimise the loss of energy in the building. In this context, subject building refers to the existing building which is individual residential home located in Chennai. The results of the study is demonstrated using potential energy savings chart which is an output from energy analysis software Autodesk Green Building Studio. The potential energy savings chart depicts savings/losses potential of about 90% in the case of subject building where the additional parameters to improve light and heat energy is not taken into account. The most sensitive building features for energy use are the wall insulation, Plug Loads, and Infiltration. Lighting efficiency is improved significantly due to the inclusion of skylights in Hall, living room and dining area. For avoiding excess radiation of thermal energy, Low E glasses with 0.25 Solar Heat Gain Coefficient and Visible Light transmittance of 0.4 is used in the glazing of windows and skylights. The final results of study from Green Building Studio is the potential energy savings chart which shows 10% savings /Loss potential in light and thermal energy, thus showing a substantial reduce in loss of light and thermal energy which is due to inclusion of energy efficient parameters.

Keywords: energy building,retrofitting,green building studio, energy saving,modeling

25. EXPERIMENTAL STUDIES ON STRENGTH OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT AND COARSE AGGREGATE WITH WASTE LIME POWDER AND ROAD WASTE

R. Arunkumar¹, P. Srianu², G. Nandhinidevi³, V. Shankari⁴ and K. Madhubala⁵

¹Assistant Professor, Shri Angalamman College of Engineering and Technology, Trichy.

²⁻⁵UG Students, Shri Angalamman College of Engineering and Technology, Trichy.

errakcivil@gmail.com

ABSTRACT

The demand for construction materials is increasing rapidly, to meet the demand the waste materials should be replaced based on testing. The ROAD WASTE is generated whenever any demolition or construction of roads, bridges, flyover and remodeling etc. The huge amount of LIMESTONE WASTE is obtained as a by-product during the production of hydrated lime from quarries. These wastes may occupy considerable storage and environmental effect. Our project emphasizes on the use of these waste materials. The partial replacement of cement and coarse aggregate by waste limestone and road demolition waste in concrete. These two variant materials are mixed with different proportions (0% to 30%). The mix design is done for the grade of concrete. The experimental studies are based on the compression and tensile strength characteristics, workability and durability. These specimen results will be carried out for 28 days. This project shows economizing the construction cost and enables us to conserve construction material.

Keywords: Road Waste, Lime Powder, Mix Proportion, M₂₀ Grade Concrete.

26. STABILISATION OF SOIL USING BIO-POLYMER AND MARBLE DUST

Ramachandran P¹, Prabu M², Karuppaiya A³

¹⁻³Research Scholar, Anna University, AP, Department of Civil Engineering. JSRREC

ABSTRACT

In this research work, investigations have been carried out to find the effect of bio-polymer and Marble dust in a weak soil. The soil specimens were tested for index properties like specific gravity, sieve analysis, Atterberg limits and free swell index. Also, the standard proctor compaction test was carried out for determining the optimum moisture content and maximum dry density. The effect of change in soil properties with the combination of biopolymer and marble dust were determined for the proper stabilisation. The biopolymer (Chitosan) and marble dust added to the soil specimens in various ratios i.e 5%, 7% and 9% respectively. For the prepared specimens CBR test was carried out and the result was found to be in 7% of marble dust and CBR value gets increased to 200%. The effective stabilisation may be obtained by proper utilising of the biopolymer and the marble dust without affecting the natural properties of the soil.

Key words: CBR, Marble dust, biopolymer(chitosan), stabilisation.

27. EXPERIMENTAL ANALYSIS OF MORINGA OLEIFERA AND CITRULLUS LANATUS FOR TREATMENT OF RAW WATER

A. Pradeep Kumar¹, X. Recton Xavio², K. Saravanan³, A. Tamil Selvan⁴

¹Assistant Professor, Jeppiaar SRR Engineering College.

²⁻⁴UG Students, Jeppiaar SRR Engineering College.

ABSTRACT

In this paper, use of moringa oleifera seeds and citrullus lanatus seeds to improve the quality of drinking water was investigate Water sample of sembarapakam lake and synthetic water taken. Moringa oleifera seed powder was taken as 1g,2g,4g,6g,8g,10g as coagulant and tested in 500ml of water samples. citrullus lanatus seed suspension was taken as 5ml,10ml,15ml,20ml,25ml as coagulant and tested in 500ml water sample.Finally we treated water with combination of moringa oleifera seeds and citrullus lanatus seed suspension in ratio of 1:1 .we get the best result while using the combination of moringa oleifera seeds and citrullus lanatus seed suspension

Keywords: Moringa oleifera, Citrullus lanatus & Water treatment

28. DETERMINATION OF HYPERBOLIC STRESS STRAIN PARAMETER FOR SAND SILT MIXTURES

S.Banupriya¹, K. Maheswari² & Dr.K.Premalatha³

^{1&2} Assistant Professor, St. Joseph's Institute of Technology, Chennai, India.

³Professor, Dept of Soil Mechanics and Foundation Engg, College of Engineering, Guindy, Anna University, Chennai, India.

ABSTRACT

Analysis of some geotechnical problems using finite elements requires the implementations of a non-linear model for soil materials, to better represent their actual behaviour. Constitutive modeling of soil mass behaviour and material interfaces is an essential component of the solution of boundary and initial value problems. The hyperbolic model is a simple stress-strain relationship based on the concept of incrementally nonlinear elastic behavior. The hyperbolic stress-strain relationship was developed for use in finite element analysis of stresses and movements in earth masses. To estimate hyperbolic parameter values data used from the triaxial compression tests for the sand-silt mixtures. Triaxial test were conducted on sand-silt mixture in which sand is replaced by non-plastic silt by 10 to 100% with the confining pressure of 100 to 250kPa in dry state with loose state. From these data, the parameters which are required by Duncan-Chang model, 1970 can obtained. And results revealed the addition of non-plastic silt to sand which decreases the parameters.

Keywords— *Stress-Strain, Fines Content, Angle of Internal Friction, Hyperbolic Model*

29. MODEL STUDY ON MUNICIPAL SOLID WASTE LEACHATE CHARACTERISTICS USING 1-DIMENSIONAL COLUMN METHOD UNDER RAINFALL CONDITIONS

R.Rajapriya¹, T.Hemalatha², V. Murugaiyan³

¹Research Scholar, Pondicherry Engineering College, Pondicherry.

²PG Student, Pondicherry Engineering College, Pondicherry.

³Professor, Pondicherry Engineering College, Pondicherry.

ABSTRACT

Open dump sites are the most common way of Municipal Solid Waste (MSW) disposal option in India. Water percolating into the MSW open dump site principally by rainfall comes in contact with MSW which enhance the decomposition process, thus get contaminated and leach out the dumpsite. The Groundwater and soil contamination due to leaching from non-engineered MSW dumpsite mainly attributes conventional and non-conventional contaminants including heavy metals. In this work, column study method has been used to extract leachate from the MSW depending upon its density and exposure to rainfall conditions. Therefore six columns were used for MSW Leachate extraction which is tested for various chemical parameter tests like pH, EC, TDS, Chloride, Alkalinity, Hardness, Sulphate, Manganese and Heavy metals.

Keywords: Column Method, MSW, Leachate characterization

30. INFLUENCE OF GEOTECHNICAL CHARACTERISTICS ON CRACKS IN BUILDINGS: A CASE STUDY

¹B.Seralathan, ²M.Selvamsagayaradja, ³V.Murugaiyan

¹ Post Graduate Scholar, Pondicherry Engineering College, Puducherry, India

² Research Scholar, Pondicherry Engineering College, Puducherry, India

³ Professor, Pondicherry Engineering College, Puducherry, India

¹aravind_seralathan@gmail.com, ²ssrajarani10@gmail.com, ³vpmplee@gmail.com

ABSTRACT

Expansive soils are considered as problematic soils as they cause serious problems to Civil Engineering structures founded on them. Till recently the focus of investigations world over is on understanding the effect of swell-shrink on the swelling behaviour of such soils and their control. However, in recent years, focus of research is in understanding the influence of Geotechnical characteristics of such soils on the distress of buildings / structures founded on them. Only a few studies have been reported in the Indian context. Hence, in this study four recent buildings covering the entire Pondicherry region, wherein distress in the form of cracks have appeared, are selected and soil samples were collected and various Geotechnical characteristics were determined. It is found that the expansive natures of the soil in the selected area are responsible for causing distress in the forms of cracks in the buildings.

Keywords: Cracks, Expansive soil, Swelling, Shrinkage.

31. EXPERIMENTAL INVESTIGATION OF CONTROLLING DESICCATION CRACKING IN CLAY SILT BY USING VARIOUS ADMIXTURE

Raja Priya¹

¹ Research Scholar, Pondicherry Engineering College, Puducherry, India

ABSTRACT

Desiccation cracking is a major undesirable problem to many geo-engineering applications, particularly in compacted clay liners, which causes the significant change to the strength, stability, and permeability of soil. This study is used to investigate the effect and causes of desiccation cracking in the clay liners during wetting and drying conditions. Researchers measured the use of surface moisture barrier above the clay liner, but studies shows that repeated cycles with temperature changes in seasons results in significant desiccation of the clay layer and associated cracking. Recently most of the researchers have been focused on reinforcing the fibre with clay soil will reduce the crack formation. Mainly polypropylene fibres play a major role. The crack formation was measured using crack intensity factor (CIF). It was observed CIF of the soil without fibre will significantly higher than the soil with fibre. Use of fibres to reduce the desiccation cracking in compacted clay has caught the attention of geotechnical engineers. An effort consequently made to understand the formation of cracks in clay liner materials and to manage the desiccation cracks by use of fibres.

Keywords: Clay liners , Fibres ,crack intensity factor (CIF).

32. ANALYSING THE GEOTECHNICAL PROPERTIES OF SOILS DUE TO THE ENCROACHMENT OF SEA WATER IN SHORE REGION

R.Sakthivel¹, K. Aswini², V. Murugain³

^{1&2}Research Scholar, Pondicherry Engineering College, Pondicherry.

³Professor, Pondicherry Engineering College, Pondicherry.

ABSTRACT

Concrete research is the conventional strength-based approach to durability-centered in the past decades. Large number of structures are exposed to seawater either directly or indirectly. The experimental investigation is based on the concrete cubes buried in the three different types of natural and polluted (Seawater) soils. In the present study, design mix M-20 and M-30 are considered with slump between 70 to 100 mm with Ordinary Portland cement for concreting. For Compressive strength and non-destructive were tested on concrete for 7, 14, 28, 56 and 84 days. The effects of seawater and geotechnical properties on various types of soil were analyzed. The results of average compressive strength of concrete cubes are obtained after seawater intrusion between the ranges of 40.12 - 69.6 N/mm². The mean value of ultra-pulse velocity (UPV) is 22.9 and the average Rebound hammer (R) value for 28th and 84th days are 23 and 26, respectively at the temperature of 28±3°C. The results demonstrate that the influence of seawater affects the strength of the concrete specimens in soil due to loss of its stiffness.

Keywords: Sea Water, Ordinary Portland cement, Rebound hammer.

33. SEA WATER INTRUSION ON GEOTECHNICAL PROPERTIES OF VARIOUS TYPES OF SOILS AND STRENGTH OF CONCRETE.

V.Murugain¹, Sakthivel²

¹Professor, Pondicherry Engineering College, Pondicherry.

²Research Scholar, Pondicherry Engineering College, Pondicherry.

ABSTRACT

Concrete research is the conventional strength-based approach to durability-centered in the past decades. Large number of structures are exposed to seawater either directly or indirectly. The experimental investigation is based on the concrete cubes buried in the three different types of natural and polluted (Seawater) soils. In the present study, design mix M-20 and M-30 are considered with slump between 70 to 100 mm with Ordinary Portland cement for concreting. For Compressive strength and non-destructive were tested on concrete for 7, 14, 28, 56 and 84 days. The effects of seawater and geotechnical properties on various types of soil were analyzed. The results of average compressive strength of concrete cubes are obtained after seawater intrusion between the ranges of 40.12 - 69.6 N/mm². The mean value of ultra-pulse velocity (UPV) is 22.9 and the average Rebound hammer (R) value for 28th and 84th days are 23 and 26, respectively at the temperature of 28±3°C. The results demonstrate that the influence of seawater affects the strength of the concrete specimens in soil due to loss of its stiffness.

Keywords:ultra-pulse velocity (UPV), Rebound hammer (R).

34. STUDY ON INVENTORY MGT SYSTEM IN CEMENT MANUFACTURER SECTOR

S. Naresh

Assistant Professor, ASL Paul's College of Engineering and Technology, Coimbatore.

ABSTRACT

The purpose of inventory management is to ensure availability of raw material insufficient quantities as and when required and also minimize investment in inventories. This is essential to manage inventories efficiently and effectively in order to avoid excess investment. It is possible for a company to reduce the level of inventories to a considerable extent without any adverse effect on production and sales by using simple inventory planning and control techniques. The reduction of excessive inventories will create a favorable impact on the company profitability. Inventory turnover ratio, inventory conversion period are very helpful to know how effectively inventory plays a role in the organization. The use of EOQ analysis is very effective and is a useful tool for classifying, monitoring and controlling of the inventories.

35. DEVELOPMENT OF MANAGEMENT PLAN FOR POULTRY OFFALS IN AVADI MUNICIPALITY

Sudhakar¹J., Soundaranayaki² K

*M.E (Environmental Management)., Assistant Professor
COLLEGE OF ENGINEERING, ANNA UNIVERSITY, GUINDY.*

Farming of chickens for the purpose of meat production leads to the generation of significant volumes (estimated to be 89,000 tonnes per annum) of solid wastes, which include chicken manure, feed residues, litter, dead chicken carcasses and meat processing residues. Poor management of these wastes can create major environmental and public health issues. Further, poor handling and management of chicken industry waste is deemed preventable, and is poor environmental practice. The major wastes like poultry feathers, offal and litter have different field applications. Poultry offal contains certain nutrients and can be used as a dried poultry manure and fertilizer or as an organic raw material for methane production. Poultry offal waste from AVADI Municipality will be managed in this research. Quantitative and Qualitative analysis of poultry offal waste will be carried out for AVADI Municipality. Quantification was carried for about a week in each zone which covers offseason, festival holidays and seasonal periods. AVADI Municipality consists of about 149 shops among which 20 shops are working only during Sunday and the Municipality is divided into 3 zones.

Zone 1 comprises of Pattabiram and Muthapudupet where there are 36 retailers and 3 wholesalers generates about 800kg of offal waste. Zone 2 comprises of Chekkadu, Avadi market and Kovilpathagai where there are 39 retailers and 3 wholesalers generates about 700kg of offal waste. Zone 3 comprises of Paruthipet, Thirumullaivoyal and Annanur where there are 63 retailers and 5 wholesalers generates about 1600kg of offal waste. On an average AVADI Municipality generates about 3 tonnes of poultry offal waste for a week.

36.REMOVAL AND RECOVERY OF LEAD FROM ELECTROPLATING INDUSTRIAL WASTEWATER USING CHITOSAN

Rafik Raja

*Asst Professor, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

In recent years, environmental pollution with heavy metal has attracted the attention of many research groups worldwide. Contamination with these heavy metal has also increased public concerns because of their toxicities in relatively low concentration, their non-biodegradable nature and tendency of bioaccumulation. The increasing demand for the recovery of these metals from industrial effluents has stressed the development and the testing of new sorbing materials including use of abundant waste biomaterials. For last three to four decades, biopolymers have been extensively studied because of their interactions with metal ions. In this project, it is going to remove the lead metal from electroplating industrial waste water which was collected from an electroplating industry at Ambattur Industrial Estate, Ambattur, Chennai. Here, the adsorbent used is Chitosan, a Bioadsorbent in this project. Chitin is the main structural component of the exoskeleton of crustaceans (e.g., crabs, prawns, crabs, insects and shrimps) and the cell walls of fungi. Chitin is a polymer made up of acetylglucosamine units. In the case of some Mucorales species, chitin is replaced by chitosan, a polymer made up of glucosamine units.

Keywords: *Lead, Chitosan, Adsorption*

37. INFLUENCE OF TREATMENT METHODS ON RECYCLED CONCRETE AGGREGATE

S.Omprakash¹ & G.Divya²

*^{1&2}Assistant Professor, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of science and Technology,
Avadi, Chennai.*

ABSTRACT

In recent years the demolition and construction activities is increased due to development of urban and industrial areas, which lead to production of large amount of waste and large utilization of natural resources. The over use of natural resources for new construction activities without going for alternative or recycling materials in future will leads to environmental concern and price increase in the materials and high demand for materials. Scarcity of natural coarse aggregate has initiated the use of recycled aggregate obtained from crushed concrete rubbles in building industry. The quality of recycled aggregate concrete (RAC) produced depends on the quality of recycled aggregate obtained from old concrete. Several methods such as acid treatment, thermal treatment, mechanical treatment, etc. are available to improve the quality of recycled concrete aggregate. This paper aims to compare the effect of treatment methods on the physical, mechanical properties of these aggregates, and their compressive strength.

Keywords: Recycled Aggregate, Acid, Mechanical, Thermal Treatments, Compressive Strength

38. WATER QUALITY MAPPING USING GIS

L. Chandrakanthamma¹, S. Ramakrishna², T. Rajarajan³

¹Associate professor, Easwari engineering college, Chennai, India

^{2&3}UG Student, Easwari engineering college, Chennai, India

ABSTRACT

Ground water is the primary source of water supply in our city for all purposes. Although corporation of Chennai provides safe water through pipes its reach is limited and also its used as an additional source along with ground water. In places like the suburbs of Chennai, it might also be used in some industries. Hence assessment of ground water sources is a vital task that the authorities carry out from time to time and the variations are recorded timely to study the quality index of water. Chennai is the political and financial capital of our state. So it is densely populated in and around due to immigration and other aspects in the city. As majority of the population is found here, exploitation of ground water is high. Hence it is mandatory to assess our study area. The city is divided into five major boundaries based on the aquifer map and the well points inside each boundary are taken for sampling.

Keywords: Quality Index, Aquifer, Sampling.

39. THE EFFECT OF FIRE ON HIGH PERFORMANCE CONCRETE

P Shanmuga Raja¹, Alok Singh Yadav², Aravinth Kumar³

*¹⁻³UG Student, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of science and Technology, Avadi,
Chennai.*

ABSTRACT

Concrete material in structures are likely exposed to high temperatures during fire. The relative properties of concrete after such an exposure are of great importance in terms of the serviceability of buildings. In this paper the effects of the duration of curing and maximum temperature on the strengths of concrete were investigated. Tests were carried out on specimens at room temperature after heating. Compressive strengths of these concrete samples were compared with conventional concrete samples. On the other hand, strength loss curves of these concrete samples were compared.

Keywords:Concrete material, Conventional concrete samples, Compressive strengths.

40. A NOVEL APPROACH ON REDUCING HEATING ISLAND EFFECT USING ROOF TOP AQUAPONIC SYSTEMS

M. Santhosh¹, K. Kavyaa², M. Jeeva³, M. Surekha⁴

¹⁻³UG Student, Knowledge Institute of Technology, Salem.

⁴Assistant Professor, Knowledge Institute of Technology, Salem.

ABSTRACT

Now a day, people suffer mainly by the shortage of food in the world and the changing climatic conditions of the world. In order to overcome this problem, an emerging technology called Aquaponic is introduced. The aquaponic is a food production technology that combines the aquaculture and hydroponics to remain in a symbiotic relation. This forms a closed loop system by connecting the fish pond with the plant growing bed. The water from the fish growing pond is rich in nitrogen components which is the major requirement for the growth of plants. This involves the circulation of water along with the nutrients involved throughout the cycle and neglects all the contaminated residuals in it, in order to grow the terrestrial plants along with aquatic life. The water is fed from a well to the pond where it undergoes continuous estimation of the level of nitrates, nitrites and pH levels in water. The plant growing beds can be set up at the roof tops and side walls of buildings. Hence this circulation of water helps for the cooling of building environment and also there will be great yielding through the grown fishes and vegetables.

Keywords: Aquaponics, Aquaculture, Circulation, Hydroponics, Residuals, Symbiotic Relation.

41. WIND INDUCED PRESSURE EFFECTS ON AN IRREGULAR SHAPED TALL BUILDING: CFD APPROACH

Pradipta Roy¹, K. Pandurangan²

¹PG Student, Pondicherry Engineering College, Puducherry, India

*²Professor, Pondicherry Engineering College, Puducherry, India
itspradiptaroy@gmail.com, pandu@pec.edu*

ABSTRACT

Urbanization has led to increase in high rise buildings in areas where land availability and prices are the main concerns. Wind behavior is one of the key designing parameter for such buildings and the behavior of the structure needs to be assessed accurately. As most of the design codes have their own limitations in providing necessary guidelines for irregular buildings, the existing practice is to conduct wind tunnel test to study the behavior of buildings subjected to wind. However, performing wind tunnel tests require considerable resources and it is a time consuming and expensive effort. Application of computational fluid dynamics could be considered as an alternative option. This paper presents a comprehensive study of the wind pressure coefficients developed on different faces “+” shaped buildings under the incidence angle of 0°. Computational fluid dynamics package ANSYS CFX is used to analyze the structures. Peculiar pressure distributions on certain faces of the “+” shaped building has been observed due to interference effects. Further, the wind flow pattern around the irregular building has also been studied to understand the fluid flow occurring around the model.

Keywords: Wind, Tall Building, Pressure Coefficients, Computational Fluid Dynamics (CFD), Irregular Shaped Building.

42 ANALYSIS OF RAINFALL USING ENVELOPE CURVES

S.Baskar¹ & C.Suganya²

¹Assistant Professor, Department of Civil Engineering, School of Mechanical and Construction Engineering, Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, Avadi,

*²Assistant Professor, Department of BBA, Vel Tech Rangarajan Sanku Arts College, Avadi, Chennai-600062.
Tamil Nadu, India*

rhodabaskar@gmail.com, baskars@veltechuniv.edu.in

ABSTRACT

Water is the 'sine qua non' of all living things in nature next to air, Water is therefore assumes a paramount importance since it is the most precious and scarce commodity. Water is an elixir and is vital for all type rod advancement. Where there is life there must be water. There is no organism, plant or animal which is not highly dependent on water. Water is essential for the process by which food crops and all others oblation the principal nutrients for their growth from soil. Water plays a basic role for all living organisms in earth. The management and utilization of water resources are problems of major concern in all most all the developing countries. In humid as well as in arid regions, water is a serious limiting factor in the development of water and land resources is becoming scarce and costlier day by day and should be a major forces in managing the water resources. Without water the lifeline survival of mankind and flourishing of civilization is a big question.

Keywords: elixir, Water, sine qua non.

43. DESIGN OF PRIMARY HEALTH CENTRE

S.Vinodh Krishna¹ & S.Baskar²

¹ *Assistant Professor, Department of Architecture, St. Peter's Institute of Higher Education and Research, Avadi, Chennai-60006.*

² *Assistant Professor, Department of Civil Engineering, School of Mechanical and Construction Engineering, Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, 400 Feet Outer Ring Road, Avadi, Chennai-600062. Tamil Nadu, India*

rhodabaskar@gmail.com, baskars@veltechuniv.edu, vinodhkrishna@gmail.com

ABSTRACT

The concept of primary health care emerged in the 20th century as a strategy to comprehensive, effective health services for populations. Many forces and historic events shaped the evolution of primary health care. The duty of a civil is not only the building but also to design of aesthetic appearance and interior decoration. The design of landscaping and interior rendering is the most important aspect of the design to give good appearance of the building. The architectural effect improves the elevation of the structure. Proper design of interior decoration depending on the actual use of different rooms and areas inside the building is very important in the space planning and building. We have chosen this project specially to follow the principles of interiors decoration and landscaping for the design of a “PLANNING, DESIGNING OF PRIMARY HEALTH CENTRE”.

Keywords: The architectural effect, interior decoration.

44. DESIGN OF UPSIDE DOWN MUSEUM

S.Baskar¹ & S.Vinodh Krishna²

¹Assistant Professor, Department of Civil Engineering, School of Mechanical and Construction Engineering, Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, Chennai-600062.

*² Assistant Professor, Department of Architecture,
St. Peter's Institute of Higher Education and Research,
Avadi, Chennai-600062. Tamil Nadu, India*

rhodabaskar@gmail.com, baskars@veltechuniv.edu.in, vinodhkrishna@gmail.com

ABSTRACT

Nowadays, in this fast moving world the giving moment for past or history is becoming hardest thing. As everyone stepping on next generation, there is no one to take care about history of nation. To improve and support the history in this modern world in an innovative way is our aim. As an engineer, we planned to build an upside down museum which is a token of remembrance for our national leader. The architect of upside down elevation will easily attract the people to view a unique structure. By this, it's become good thing to spread history to all. Though the structure is upside, we designed it in a feasibility and economical way. We made the structure perfect by applying all design in limit state method as per IS 456 and SP 16 and also we use M_{20} and $F_{e 415}$ for strength of structure. We planned to provide sub- structure as isolated footing 'cause our soil is in drained condition. We decided to place our design project in OMR road as it will provide a peaceful environment. As this OMR road is special for many MNC companies, there are travel facilities to reach our spot.

Keywords: IS 456 , SP 16 , M_{20} and $F_{e 415}$ for strength of structure.

45. EXPERIMENTAL INVESTIGATIONS ON PARTIAL REPLACEMENT OF CEMENT USING GLASS POWDER

S.Baskar¹ & Dr.G.Kumar²

^{1 & 2} Assistant Professor, Department of Civil Engineering, School of Mechanical and Construction Engineering, Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, Avadi, Chennai, Tamil Nadu, India

Email: rhodabaskar@gmail.com, baskars@veltechuniv.edu.in, kumarggeo@gmail.com

ABSTRACT

Concrete is a blend of cement, sand, coarse aggregate and water. The key factor that adds value to concrete is that it can be designed to withstand harshest environments significant role. Today global warming and environmental devastation have become manifest harms in recent years, concern about environmental issues, and a changeover from the mass-waste, mass-consumption, mass-production society of the past to a zero-emanation society is now viewed as significant. Normally glass does not harm the environment in any way because it does not give off pollutants, but it can harm humans as well as animals, if not dealt carefully and it is less friendly to environment because it is non-biodegradable. Thus, the development of new technologies has been required. The term glass contains several chemical diversities including soda-lime silicate glass, alkali-silicate glass and boro-silicate glass. To date, these types of glasses glass powder have been widely used in cement and aggregate mixture as pozzolana for civil works. The introduction of waste glass in cement will increase the alkali content in the cement. It also help in bricks and ceramic manufacture and it preserves raw materials, decreases energy consumption and volume of waste sent to landfill. As useful recycled materials, glasses and glass powder are mainly used in fields related to civil engineering, for example, in cement, as pozzolana (supplementary cementitious materials), and coarse aggregate. Their recycling ratio is close to 100%, and it is also used in concrete without adverse effects in concrete durability. Therefore, it is considered ideal for recycling. Recently, Glasses and its powder has been used as a construction material to decrease environmental problems.

Keywords: Non-biodegradable, mass-consumption, mass-production.

46. STUDY ON FLY ASH BASED GEOPOLYMER CONCRETE

S.Baskar¹ & C.Arivarasi²

¹Assistant Professor, Department of Civil Engineering, School of Mechanical and Construction Engineering, Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, Avadi, Chennai-600062.

²Assistant Professor, Department of Civil Engineering, Jaya Engineering College, CTH Road, Chennai, Tamil Nadu 602024, India.

rhodabaskar@gmail.com, baskars@veltechuniv.edu.in, arivarasi08@gmail.com

ABSTRACT

Geopolymers are a new promising binder manufactured by activation of a solid aluminosilicate source material with a highly alkaline activating solution and aided by heat. Fly ash, considered to be a waste material is rich in silica and alumina and hence can be used as a source material for manufacture of Geopolymers. These binders have been reported to achieve high early strength and better durability as compared to Ordinary Portland cement based counterparts. The factors that influence the early age flexural strength such as molarities of sodium hydroxide (NaOH) have been studied. Sodium hydroxide and sodium silicate solution were used as an alkaline activator. An experimental study was conducted to assess the acid resistance of fly ash based Geopolymer mortar specimens having percentage Na₂O ranging from 5% to 8% of fly ash. The program consisted immersion of specimens in solutions of 10% Sulfuric acid up to a period of 7 days and 28 days and evaluation of its resistance in terms of surface corrosion, changes in weight and compressive strength at regular intervals. Geopolymer mortar samples did not show any noticeable change in colour and remained structurally intact though the exposed surface turned slightly softer. Through Optical microscope, corroded surface could be seen which increased with duration of exposure. Samples almost lost its alkalinity after exposure in the acid solution and showed very low weight loss in the range from 0.81% to 1.64% in Sulfuric acid. Results obtained in the present study indicate that Geopolymers are highly resistant to Sulfuric acid.

47. PLANNING, DESIGNING AND ESTIMATION OF A COMMUNITY HALL AT EACHANARY

S.Baskar¹ & E.Selvendiran²

*1 Assistant Professor, 2 UG Student, Department of Civil Engineering,
School of Mechanical and Construction Engineering,
Vel Tech Rangarajan Dr.Sakunthala R & D Insititute of Science &
Technology, 400 Feet Outer Ring Road,
Avadi, Chennai-600062. Tamil Nadu, India
rhodabaskar@gmail.com, baskars@veltechuniv.edu.in*

ABSTRACT

This project details with proposal of a community hall building. This is located at the Eachanari in Coimbatore district. This project consists of planning, designing, and estimation of a building. The community hall having ground floor and first floor. The ground floor having hall, passage, store room, verandah, kitchen and two bride rooms having a capacity of 500 seats are provided in this hall and staircase. The first floor having dining room, guest room, and toilet for men and women. The building is framed structure. The foundation is in R.C.C column footing and provided with plinth beams. The pillars are in R.C.C and tied with continuous lintel and beams. The super structure in brick work and plastered in cement mortar. The doors are wooden and metallic. The window are also metallic and glazed. The structural designed is based on limit state method using IS code (456-2000). The structural design part contains slab, column, beams, and lintel cum sunshade and staircase. The drawing part consists of plan, section and elevation of the building. The 2D and 3D drawings are prepared in AutoCAD and ArchiCAD software respectively.

48. ROLE OF CHEMICAL ADMIXTURES IN ENHANCING FRESH & HARDENED CONCRETE PROPERTIES

Dr.G.Kumar¹ & S.Baskar²

*1 & 2 Assistant Professor, Department of Civil Engineering,
School of Mechanical and Construction Engineering,
Vel Tech Rangarajan Dr.Sakunthala R & D Insititute of Science &
Technology, 400 Feet Outer Ring Road,
Avadi, Chennai-600062. Tamil Nadu, India.
rhodabaskar@gmail.com, baskars@veltechuniv.edu.in*

ABSTRACT

Construction industry around the world has been experiencing a tremendous growth pattern year by year with a major development. Thus it makes today's construction very expensive. Modern concretes almost possess additives, either in the mineral form or chemical form. Particularly chemical admixtures such as water reducers and set controllers are invariably used to enhance the properties of fresh and hardened concrete. Advancements in concrete technology because of newly developed materials such as chemical admixtures act effectively in improving the properties of concrete, including the strength and durability. This project aims in a detailed study about the role of chemical admixture in enhancing the properties of fresh and hardened concrete. The chemical admixture used in this experimental study is SNF (SULFONATED NAPHTHALENE FORMALDEHYDE) which is a superplasticizer type of admixture. A mix design of M40 which is a high quality concrete mix is used in this study with its constituents OPC (Ordinary Portland cement) of 53 grade, Manufacture sand and coarse aggregates of sizes 20mm and 12.5 mm used along with potable water. The tests conducted for the experimentation includes compressive strength, flexural strength and RCPT (Rapid Chloride Permeability Test). In the above listed tests it was found that the admixed concrete provided a good strength and workability along with a moderate durability value obtained when RCPT test conducted.

49. STRUCTURAL (NON-LINEAR) ANALYSIS OF STONEMASONRY RAILWAY ARCH BRIDGE USINGFINITE ELEMENT METHOD

C.Arivarasi¹ & S.Baskar²

*1Assistant Professor, Department of Civil Engineering,
Jaya Engineering College,*

CTH Road, Prakash Nagar, Thiruninravur, Chennai, Tamil Nadu 602024, India

*2 Assistant Professor, Department of Civil Engineering,
School of Mechanical and Construction Engineering,*

*Vel Tech Rangarajan Dr.Sakunthala R & D Insititute of Science &Technology,
400 Feet Outer Ring Road,Avadi, Chennai-600062. Tamil Nadu, India*

arivarasi08@gmail.com,rhodabaskar@gmail.com,baskars@veltechuniv.edu.in

ABSTRACT

In the present study, three dimensional numerical finite element modeling and analysis of the existing masonry arch bridge system have been carried out. The central objective of the study is to investigate the structural response by changing the properties of the materials due to environmental changes in that structure system of the arch bridge to check adequacy of the proposed modification. Three different types of loading arrangements were considered,ie, train load on 5/8th of the clear span of the end arch, train load on first span and train load on first two spans of the arch. Along with the line load in each case, ballast load and self weight of the structural components are also considered during analysis. To avoid any tension the fill and the arch masonry, special contacts elements with friction co-efficient is incorporated in the finite element model. For masonry arch, William-warnke model and for soil fill, Drucker-prager plasticity models are considered to incorporate the non-linearity in the material special care has been taken to ensure the mesh compatibility between the soil fill and the masonry arch further. From the structural behavior parameters obtained from the analysis of the existing arch bridge and the existing arch bridge with proposed modification by the ageing of materials in the arch to accommodate the broad gauge loading, the proposed modification of the arch bridge has been found to be generally efficient and adequate under the conditions examined.

50. KINETIC AND EQUILIBRIUM STUDIES ON THE REMOVAL OF CHROMIUM (VI) IONS BY ADSORPTION ON TO LOW COST ACQNC ADSORBENT

A. Christy Rani¹, S.Arivoli² and N.Ingarsal^{1}*

*¹PG and Research Department of Chemistry, Rajah Serfoji Government Arts College
(Autonomous), Thanjavur.*

*²PG and Research Department of Chemistry, Thiru.Vi.Ka.Government Arts College
Thiruvavur.*

ABSTRACT

The research of the present work was to investigate the removal of Chromium ion from aqueous solution by using Activated Cissus Quadrangularis Stem Nano Carbon. Generally, metal ions are used in chemical, textile, paper, printing, leather, plastics and various food industries. The need for the treatment of metal ion contaminated waste water passed out from the industry. In this study, Activated Cissus Quadrangularis Stem Nano Carbon was studied for its potential use as an adsorbent for removal of Chromium ions. The various factors affecting adsorption, such as initial metal ion concentration, contact time, adsorbent dose and effect of temperature, were evaluated. The experimental data were fitted into the pseudo-second order kinetic model. The equilibrium of adsorption was modeled by using the Langmuir and Freundlich isotherm models. The objective of the present work suggests the Activated Cissus Quadrangularis Stem Nano Carbon may be utilized as a low cost adsorbent for Chromium ions removal from aqueous solution.

Key words: Activated Cissus Quadrangularis Stem Nano Carbon (ACQNC); Chromium; Adsorption isotherm; Kinetics; Equilibrium models

51. PARTIAL REPLACEMENT OF FINE AGGREGATE BY SEA SAND IN GEOPOLYMER CEMENT CONCRETE

K. Jagadeeshwar Reddy¹, V Dhaval Mahendar² & K Vijay Kumar³

*^{2&3}UG Students, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India.*

ABSTRACT

To find the optimum replacement level of fine aggregate by sea sand in GPC and to study the properties of GPC with various replacement level of sea sand. **Methods/Statistical Analysis:** An experimental setup with Sea Sand has been made suitable for construction purpose by reducing the salt content to equalize its properties similar to the River Sand. **Findings:** By removing the salt from sand by washing with ample water the purified sea sand exhibited better strength than the unpurified sea sand. Hence, it is proved that the corrosion is controllable. **Applications/Improvement:** The removal of salt content from water is mandatory and hence improves the workability and durability of any construction works.

Keywords: River Sand, Salt Content, GPC, Sea Sand.

52. EXPERIMENTAL STUDIES ON CONCRETE WITH SUGARCANE BAGASSE ASH AS PARTIAL REPLACEMENT OF FINE AGGREGATE

Suresh Balaji S¹, Dr. Muthadhi A²

¹ PG student, M.Tech Structural Engineering, Pondicherry Engineering College, Puducherry, India.

² Assistant Professor, Department of Civil Engineering, Pondicherry Engineering College, Puducherry, India.

ABSTRACT

River sand, one of the essential materials used in the production of concrete has become costly nowadays and its usage is limited in construction industry for sustainable construction. Nowadays many agricultural and industrial wastes are used as replacement of fine aggregate in concrete to meet out the demand of natural river sand and also helps to create a sustainable and pollution free environment. Sugar-cane bagasse is one such fibrous waste-product of the sugar cultivating industry. In this research work, Bagasse ash has been partially replaced from 0 to 50% by volume (in increments of 10%) of fine aggregate in concrete. Fresh and hardened properties of concrete like workability, compressive strength, water absorption, modulus of elasticity and flexural strength was studied at different ages. Workability of concrete mixtures was reduced with increase in bagasse ash level. From the test results, it was concluded that the concrete containing 30% of Bagasse ash was achieved about 1.26 times higher compressive strength than the reference concrete and at 40% of Bagasse level, comparable compressive strength with that of reference concrete was attained. Modulus of elasticity of concrete was found to be decreased with increase in bagasse ash content. From this experimental study, it can be inferred that it is possible to manufacture concrete containing sugarcane bagasse ash with features similar to those of natural river sand aggregate concrete up to 40% partial replacement level.

Keywords: Sugarcane Bagasse ash, Concrete, compressive strength, Modulus of elasticity

53. SISAL FIBERS IN CONCRETE

Anudeep¹, Nikhil A² & P Jagadeeswara Reddy³

*^{1,2&3}UG Students, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology,
Chennai, India.*

ABSTRACT

Fibers are generally added to concrete to improve strength, durability, toughness. As fibers are a materials which is used to resist the development of tensile forces in concrete. Generally, steel, polypropylene, polyester, sisal, glass and carbon fibers are used as fibers. This paper deals with the results of mechanical properties of steel-sisal fiber reinforced concrete for various mix proportions. The specimens were casted with steel and sisal fibers in the mix proportion of 0%-40% with total volume fraction of 2%. The objective of this study to study the effect of inclusion of hybrid fibers on the compressive strength, modulus of elasticity and flexural strength. The results showed that the hybrid fiber reinforced concrete with mix proportion of 60% Steel and 40% Sisal shows consistently improved strength compared to the other mix proportions.

Keywords: Hybrid Fiber Reinforced Concrete, Compressive Strength, Modulus of Elasticity, Flexural Strength.

54. STUDY ON CONCRETE WITH REPLACEMENT OF CEMENT BY GGBS AND FINE AGGREGATE BY VERMICULITE

A. Nithin Krishna¹, A AKihil² & Srimanoj D³,

*¹⁻³UG Students, Department of Civil Engineering, Veltech Dr. RR & Dr.SR University,
Avadi, Chennai*

aniruddha.debnath0@gmail.com

ABSTACT

Over 5% of global CO₂ emissions can be attributed to Portland cement production. As demand for construction material increases day by day there is an urgent need of identifying and alternative construction material. In atmosphere 90% of CO₂ is emitted due to production of cement this can be rectified by replacing some other different supplementary cementations material (SCM) instead of cement GGBS has replaced instead of cement which will reduce the waste in environment and vermiculite is added instead of sand partially. These industrial waste and agriculture byproduct such as GGBS, Vermiculite, etc., can be used as cementing materials because of their pozzolanic behavior, which otherwise required large tracts of lands for dumping. Vermiculite is used as a filler material because of its low bulk density, high refractoriness, low thermal conductivity and adequate chemical inertness. All along vermiculite has high amount of silica content. Thus effective utilization of silica based materials as a building material. Presently, vermiculite is used for its light weight in the construction industry as a filler material above the deck slab. The special characteristics and usage of this material would decrease the structural weight can be decreased. Considering some other characteristics it is quite good material if it is replaced partial form gives better results. This investigation examines the physical and chemical parameters and influence that make in concrete. The GGBS is replaced 10%, 20%, 30%, 40% and 50% and vermiculite 20%, 40%, 60%, 80% and 100% respectively.

Keywords: GGBS, Vermiculate, Optimum replacement in concrete.

55. EFFECT OF M-SAND ON SELF-CURING CONCRETE

¹Mohana Priya.R, ²Mr.V.Prabakaran

¹ Post Graduate scholar, Department of Civil Engineering, Pondicherry Engineering College,
Puducherry, India

² Assistant Professor, Department of Civil Engineering, Pondicherry Engineering College, Puducherry,
India

ABSTRACT

The consumption of concrete by the construction industry is becoming very high. Sand is essential material in concrete which occupies 30% volume of concrete. But, natural sand has become a scarce material and it has to be preserved. So there is a need to find an alternative to natural sand. In order to overcome this problem, the use of manufactured sand as a replacement for fine aggregate has been increasingly emerging now a days. The development of concrete mainly depends on curing. The process of curing is maintaining adequate moisture in concrete and humidity to promote cement hydration. As there is shortage in usage of water in many practical cases, the concept of self-curing concrete helps to reduce water evaporation from concrete. In this study, Polyethylene Glycol is used as self-curing agent with manufactured sand as a replacement for fine aggregate. The mechanical properties such as compressive strength and flexural strength of self-curing concrete at different percentages of Polyethylene Glycol (PEG 400) from 0% to 2% with 0.5 % of intervals were studied for 100% replacement of manufactured Sand on M25 grade of concrete. The test results obtained were compared with conventional concrete specimens made with manufactured sand and natural sand.

Keywords : Manufactured sand, self-curing concrete, PEG- polyethylene glycol

56. FREE VIBRATION OF COMPOSITE REBAR IN REINFORCED STRUCTURES

¹ Arun Paul, ² Dr.Eswari

¹ Post Graduate scholar, Department of Civil Engineering, Pondicherry Engineering College,
Puducherry, India

² Assistant Professor, Department of Civil Engineering, Pondicherry Engineering College, Puducherry,
India.

ABSTRACT

Composite rebar technology has received considerable attention in recent years as it offers significant advantages over steel reinforced concrete structures. The effect of composite rebar in reinforced concrete beam-type structures on the natural frequencies and modes shapes is investigated through finite element analysis in this paper. Steel rebar has been replaced with composite rebar due to their better ability to resist corrosion in reinforced concrete structures for many infrastructure applications. The results of natural frequencies and mode shapes are to be analysed and compared for the different composite rebar shapes. The effects of various boundary conditions for different rebar shapes are also investigated. The obtained results are to be validated through shear deformation theory.

57.ECCENTRICALLY LOADED STEEL FIBRE REINFORCED CONCRETE INFILLED STEEL TUBULAR COLUMN

¹J.Seenuvasan,²Dr.P.Ramadoss

¹ Post Graduate Scholar, Department of Civil Engineering, Pondicherry Engineering College,
Puducherry, India

² Professor, Department of Civil Engineering, Pondicherry Engineering College, Puducherry, India
E-mail: ¹seenuvasan.j18@gmail.com, ²dosspr@pec.edu

ABSTRACT

This paper study about the behaviour of steel fibre reinforced concrete infilled steel tubular column (SFRCFST) when subjected to axial and eccentric loads. Finite element analysis is carried out to study the influence of steel fibre in CFST column. The major parameters considered in this work are thickness of steel tube (5 & 8 mm), fibre volume fraction (0-2 %), eccentricity (30, 40 mm), diameter to thickness ratio (D/t) and length to diameter ratio (l/D). The end condition is considered to be pinned end. The result shows addition of steel fibre increase the load carrying capacity when the fibre volume fraction over 1 %. Whereas addition of steel fibre increase the ductility of CFST column. The results shows that the steel fibre influence the behaviour of CFST column by increasing the composite action between outer steel tube and inner concrete core.

Key words: Composite column, steel fibre, eccentricity, ductility

58. EXPERIMENTAL STUDY ON SELF COMPACTING CONCRETE (HPC-M50) WITH A PARADIGM SHIFT ON ITS ANATOMY

Abirami.P¹, Keerthi.V.B², P.Vinay kumar Reddy³& Sivaranjani.S⁴

^{1,2,3} UG Students, Department of Civil Engineering, Veltech Rangarajan Dr.Sagunthala R&D Institute Of Science and Technology, Chennai.

⁴Assistant Professor, Department Of Civil Engineering, Veltech Rangarajan Dr. Sagunthala R&D Institute Of Science and Technology, Chennai.

[¹](mailto:abilohonda@gmail.com), [²](mailto:keerthiredy11122@gmail.com), [³](mailto:vinaykumar180197@gmail.com),
[⁴](mailto:sivaranjani@veltech.edu.in)

ABSTRACT

The prime aim of this experimental study is to manipulate the workability of a self compacting concrete with a paradigm shift on its anatomy. It is done by replacing chemical and mineral admixture with respect to the proportions of water and cement. Self compacting concrete or self consolidation concrete is a type which are well known for its higher flow ability and has the capacity to consolidate under its own weight in a homogeneous manner. These process are carried without undergoing segregation of aggregates even when placed in variety of moulds, but whereas this also have a drawback of lower yielding stress which can overcome by introducing a chemical admixture to attire substantial strength. Here in this experiment we used M50 grade of concrete which has been put under several tests to gain higher strength within the specified time limitation. Thereby, we also introduced reinforcement components such as plastic fibres and poly vinyl chloride(PVC) for different specimens to achieve maximal compression, flexural and ultimate load bearing capacity.

Keywords: Consolidation, homogeneous, substantial-strength, yielding-stress, , compression, flexure, ultimate load bearing capacity

59. A GSM BASED DRIP IRRIGATION SYSTEM FOR AGRICULTURE LAND

K.Akila^[1], V.Kowshika^[2], K.SaiSoundarya^[3], M.Surekha^[4]

*UG Student^{[1] [2] [3]}, Assistant Professor^[4], Department of Electrical and Electronics Engineering,
Knowledge Institute of Technology, Salem – 637504*

ABSTRACT

As the water requirement in irrigation is being large, there is a need for a smart irrigation system that can save about 80% of the water. This prototype aims us to save time and avoid problems like water wastage. It also helps in water conservation by automatically providing water to the plants/gardens depending on their water requirements with help of soil moisture sensor. It helps to control the pumping of water to the plants through GSM. It can also detect the water leakage (Breakage in the pipes) and over flow of water in agricultural fields, Lawns & Parks and intimate us through GSM. This system also helps in switching OFF the pump when the water level comes to minimum and it can be achieved by using water flow sensor. This system works with the help of microcontroller. This controller will monitor each and every data of the system and it will intimate us through GSM.

Keywords: Moisture sensor, Humidity sensor, Water flow sensor, Microcontroller and GS

60. AUTOMATIC VEHICLE IGNITION USING HELMETS

*M.J.R.Kirthika Sowmini*1, S.Nivetha*2, R.Suwathi*3*

**1,*2,*3Third Year Student, Department of EEE, Knowledge Institute of Technology, Salem*

ABSTRACT

In India during the previous year for an hour 17 numbers of deaths have been occurred. As per the data cited in the report, the country recorded at least 480652 accidents in 2016, leading to 150785 deaths. The number suggests that at least 413 people died every day in 1317 road accidents. The major number of death in these road accidents are caused by means of motor bike because of rash driving and for not wearing the helmet. The main aim of our project is to ignite the vehicles by using helmets of the passenger. It will be able only to start the vehicle whenever the rider wears the helmet. It's highly safe and control to use as person. This marvelous technique is highly confidential as we are the only persons who can access the whole system and control various activities through helmets by means of Frequency modulation techniques. It consists of transmitter with an encoder and receiver with decoder section. A relay driver circuit and a power supply circuit is fitted with the receiver which is used to control the ignition application. The bike can be ignited only when the person is wearing the helmet.

61. REVIEW ON ALTERNATIVE MATERIALS FOR GEOPOLYMER CONCRETE

R.Veerakumar¹, S.Samson²

*¹Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology,
Avadi, Chennai – 600062.*

*²Professor, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Avadi,
Chennai – 600062.*

sakthirgmv3@gmail.com

ABSTRACT

In the manufacturing process of cement a large quantity of CO₂ is emitted as a result of calcination and it also requires more input energy, which is a major challenge for the sustainable development. For instance 0.53 tonnes of CO₂ is found to be released during the manufacture of 1 tonne of cement. In addition to that 0.45 tonnes of CO₂ is released when carbon fuel is used as input. The main source material for the production of cement is Lime stone, and there is an acute shortage for the same, which will be depleted in one or two decades. Hence it is most essential to find an alternative binder. The output of industrial waste materials which can be suitably used as cement replacement materials (Fly Ash, Slags, Rice Husk Ash etc.) is more than double this amount of OPC annual production. The primary idea of this research work is focussing on producing Geopolymer Concrete (GPC) which may solve the above mentioned issues. Based on my observations from various literatures on Geopolymer properties, Geopolymer concrete doesn't use any OPC and the production of cement shall be reduced. Few important research works by various researchers have been discussed in the following sections.

62. STRENGTH CHARACTERISTICS OF BAMBOO REINFORCED SLABS

*Suppiah. S¹, Agnihotri,² S., Mishra,² S.,
¹ Professor, ² B. Tech. Scholar*

Department of Civil Engineering

Veltech Rangarajan Dr. Sakunthala R & D Institute of Science and Technology, Chennai.

ABSTRACT

The construction industry consumes large quantities of composite materials, such as steel, cement and other binding materials. This process emits enormous volume of carbon dioxide leading to global warming and other environmental degradation. As an alternative to steel, bamboo, rattan cane and other agricultural products have been used as reinforcement in different parts of world. However, the application of this nonfossil-fuel products has not been exploited to greater extent. In the present study the use of bamboo (*bambusa vulgaris*) has been adopted as an alternative to steel in fabricating slabs of dimension 1500 mm x 500 mm x 75 mm (length x breadth x thickness). M25 grade with water cement ratio as 0.5 was used. The slabs were tested using Non-Destructive Tests to determine the quality of concrete adopted. Subsequently, destructive tests were carried using a loading frame of capacity 1000 kN. The non-destructive tests and destructive tests were repeated on steel reinforced slabs and control slabs (without any reinforcement). The results indicate that the bamboo reinforced slabs comparatively weaker with respect to steel reinforced slabs and stronger with respect to control slabs. Therefore, it is recommended to adopt BRC slabs for low cost dwellings.

Keywords: Bamboo, steel, reinforcement, Non-destructive test, control slabs.

63. SEISMIC ANALYSIS OF MULTISTORIED BUILDING FRAMES WITH VERTICAL IRREGULARITIES

Sai Rajasekhar

*PG student, Department of Civil Engineering, Pondicherry Engineering College, Puducherry-605014,
india E.mail-rajasekharsayi@gmail.com Dr.S. PALANIVEL Professor, Department of Civil
Engineering, Pondicherry Engineering College, Puducherry , india.*

ABSTRACT

This paper is concerned with the effects of various vertical irregularities on the seismic response of a structure. The objective of the project is to carry out Response spectrum analysis (RSA) of vertically irregular RC building frames using IS 1893:2002. Comparison of the results of analysis and design of irregular structures with regular structure was done. According to our observation, the storey shear force was found to be maximum for the first storey and it decreases to minimum in the top storey in all cases. The stiffness irregular structure experienced lesser base shear and has larger inter-storey drifts. Index Terms: Response spectrum analysis, Storey displacement, Storey drifts, Setback, Vertical irregularity.

64. ESTIMATING AND PLOTTING OF GROUNDWATER QUALITY USING WQI IN ERODE DISTRICT

Geetha Selvarani Arumaikkani¹ & Samson Sisupalan²

^{1&2} Professor, Department of Civil Engineering,

Vel Tech Rangarajan Dr. Sangunthala R& D Institute of Science and Technology,

Avadi, Chennai, Tamil Nadu, India

geethacivil1201@gmail.com

ABSTRACT

Water is the prime natural resources, a basic human need and a precious national asset. It is indeed required in all aspects of life and health for producing food, industrial activities, energy generation and maintenance of environment and sustenance of life and development. Water is invariably polluted in all countries. India is no exception to this phenomenon. WQI is one of the most effective tools to communicate information on the quality of water to the concerned citizens and policy makers. It thus becomes an important parameter for the assessment and management of groundwater. Sixty Two locations in Erode district were selected in order to study the physico-chemical characteristics of groundwater samples in the premonsoon and postmonsoon by WQI. The samples were collected following the standard methods described for sampling. The standards prescribed by IS were used for the calculation of water quality indices. The observed range of water Quality Index in premonsoon and postmonsoon are 32 to 586 and 39 to 436 respectively. For both the monsoon no sample comes under excellent type. In premonsoon and postmonsoon 19% and 8% samples come under good type respectively. In premonsoon and postmonsoon 40% and 32% samples come under unfit for drinking type respectively. The above water quality index got raised because of excessive concentration in turbidity, total dissolved solids and hardness due to the rock water interaction and anthropogenic activities.

Keywords: Ground water , WQI& Erode District

65. DESIGN PRNCIPLES OF RESIDENTIAL COMPLEX

Nelson Ponnu Durai¹, Amerioca thangkhiw², Anusurya.P³ N.Hema Gaithri⁴

¹ Asst Professor, ^{2&3} UG Students, Department of Civil Engineering,
Vel Tech Rangarajan Dr.Sangunthala R& D Institute of Science and Technology,
Avadi, Chennai, Tamil Nadu, India

ABSTRACT

The present study is evaluating the behavior of residential building , namely Rohini Peniel Complex. Thus the residential building consists of G+2 storeys with a build-up area of 5640 ft². The structure is analyzed by non-linear static analysis using STADD PRO Vi8 software and the plan is drafted by AUTOCAD 2015. Gravity load and Lateral load is manually designed as per the Indian standard codes (IS 1893 PART-1:2002). Therefore the result is concluded that the maximum storey displacement and maximum storey drift values of G+2 residential building using Indian and American standard codes.

Keywords: AUTOCAD, Indian and American standard codes

66. CONSTRUCTION QUALITY & SAFETY MANAGEMENT OF G+4 BUILDING AT PALLAVARAM SITE.

Nelson Ponnu Durai, kalpana & Chandravadhana

*¹Asst Professor, ^{2&3} UG Students, Department of Civil Engineering,
Vel Tech Rangarajan Dr. Sangunthala R& D Institute of Science and Technology,
Avadi, Chennai, Tamil Nadu, India*

ABSTRACT

Reinforced concrete (RC) is the very common material all over the world since its evolution. Due to many reasons original lifetime of the structures have not been utilized fully. This is not only due to the causes like faulty design, construction practices and workmanship but also to the improper or nil maintenance. All over the country nearly 85% of the buildings are lacking from maintenance. This lack of maintenance leads to the deterioration of structures and finally ends with failure. This causes huge loss to the construction industry. The thing is problems due to the above said reasons can be easily handled by simple maintenance works. In the absence of maintenance it becomes necessary to apply the repair and rehabilitation works in the structures to regain the lost strength. In today's world, lots of efficient technique is available to repair and rehabilitate the structures. This study aimed in applying some of selective techniques among them after the nondestructive evaluation of the structure using Rebound hammer, Ultrasonic Pulse Velocity tests, Core drilling test, Carbonation test, and Half-cell potential. With the results of the non destructive tests the structure has been studied in detail. According with the results the structural and non-structural elements were repaired and post repair monitoring also has been carried out. Sketch up pro software is used to draw the 3D view of the building plan from which the above tests were carried out. Safety precautions and measurement are explained in the construction areas for the workers in the site.

Keywords: *NDT, Repair, Rehabilitation, Maintenance, Condition assessment, Sketchup pro, safety management.*

67. SEISMIC BEHAVIOUR OF RC FRAMED MULTISTOREY BUILDING WITH MEZZANINE FLOOR

A.Sangeetha¹

*¹Asst Professor, Department of Civil Engineering,
Vel Tech Rangarajan Dr.Sangunthala R& D Institute of Science and Technology,
Avadi, Chennai, Tamil Nadu, India*

ABSTRACT

The aim of the thesis is to arrive the Seismic behaviour of multi-storey Building with mezzanine floor. A G+4 storey building with plan dimension of 9.45m x 9.60m building have been chosen for analysis purpose . The model consists of two mezzanine floors one in the 1st floor and one in the 3rd floor. And two G+2 models are considered with plan dimension of 2.30m x 2.30m, one model is taken as normal framed structure and another one is taken as framed structure where mezzanine floor is introduced at ground floor. CATIA V5 for modelling and HYPERMESH 11, ANSYS 12 and STAAD Pro. software's have been used to analyse the structures.The displacement, overall Time period and shear stress of the models are calculated and it is found that building with mezzanine floor having less performance against lateral force. Because it is having less Displacement, Time period etc., while compared to building without mezzanine floor.

68. AN ECO-FRIENDLY CONSTRUCTION MATERIAL, GEOPOLYMER CONCRETE

C.Balaji¹

*¹Asst Professor, Department of Civil Engineering,
Vel Tech Rangarajan Dr.Sangunthala R& D Institute of Science and Technology,
Avadi, Chennai, Tamil Nadu, India*

ABSTRACT

In recent years, Concrete usage around the world is second only to water, Ordinary Portland Cement (OPC) is conventionally used as the primary binder to produce concrete .However, Portland cement concrete generates problems such as durability and carbon dioxide emission. There are several ways to reduce co₂ caused by production of Portland cement by the increasing waste material. Million tones of fly ash get assembled every year at the thermal power station in India. It becomes a serious problem due to inadequacy of land disposal. Pozzolanic material that is rich in silicon and aluminium like fly ash referred as “GEOPOLYMER CONCRETE”. Fly ash is a by-product of coal obtained from the thermal power plants. Fly ash is rich in silica and alumina reacted with alkaline solution produced aluminosilicate get that acted as the binding material for the concrete. The addition of GGBS shows considerable gain in strength .the alkaline solutions used in this study for the polymerization process are the solutions of sodium hydroxide and sodium silicate (Na₂SiO₃). This study is continued to investigate the behavior of geopolymer concrete under the room temperature for strength. Cubes of size 100mm X 100mm X100mm are tested for their residual compressive strengths.

KEYWORDS - Fly ash, GGBS, CO₂, Pozzolanic, Geopolymer concrete

69. STUDY ON LIGHTWEIGHT CONCRETE WITH VERMICULITE AS FINE AGGREGATE

S. Karthik¹, A. Muthadhi²

¹ PG Scholar, Pondicherry Engineering College, Puducherry, India

² Assistant Professor, Pondicherry Engineering College, Puducherry, India

¹karthik05051995@gmail.com, ²muthadhi@pec.edu

ABSTRACT

Generally, concrete with low density material will have its dead weight reduced which in turn takes up reduced earthquake load. This lightweight concrete can be obtained by replacement of aggregate by materials like Scoria, Cinders, Pumice, Polystyrene beads, Perlite, Vermiculite, etc.,. In this study, exfoliated vermiculite is used as partial replacement for fine aggregate and silica fume as mineral admixture. Fine aggregate is partially replaced for M30 grade of concrete with exfoliated vermiculite from 0 to 50% by volume and Cement is partially added with silica fume from 0 to 15% by weight. Compressive strength, water absorption and Young's modulus of the concrete were tested at various ages. Results shows that there is decrease in density of concrete with increase in exfoliated vermiculite content thereby making the concrete lightweight. The compressive strength and Young's modulus of the concrete decreases with increase in exfoliated vermiculite content and increases while increasing silica fume content. On replacement of fine aggregate by 20% with exfoliated vermiculite and addition of silica fume for 15% the compressive strength was found to be comparable to that of reference mix. Hence, lightweight concrete can be obtained by using the above combination of exfoliated vermiculite and silica fume without any considerable loss in compressive strength.

Keywords: Compressive Strength, Exfoliated Vermiculite, Lightweight, Silica fume, Water Absorption, Young's Modulus

70. INVESTIGATION ON THE REASON FOR THE COASTAL EROSION OF PUDUCHERRY FOR THE PAST TWENTY EIGHT YEARS

Anandabaskaran.V Dr.G.Vijayakumar

*Research scholar, Professor Department of Civil Engineering Department of Civil Engineering
Pondicherry Engineering College Pondicherry Engineering College Puducherry Puducherry*

ABSTRACT

Every year a large amount of land area is being occupied by vigorous ocean. Since large sum of money are being spent periodically for the coastal improvement and protection works. Various natural and manmade activities are the prime response for an unstable coastal zone. The important factor that governs the beach erosion is the long shore sediment transport. After construction of the Puducherry Fishing Harbour in the year of 1989 and the breakwaters in the Southern part of the Puducherry city, the coastal erosion on the Northern side has increased significantly and the entire beach area of Puducherry is lost. For protection of shoreline erosion, the Puducherry government has built seawalls using boulders weight of 0.50 tons to 1.50 tons for a total length of about 6 to 7 km. Protection of coasts against erosion is one of the challenging tasks for Coastal Engineers. Since the coastal stretch of Puducherry focuses a problem of erosion if it continues there is a possibility of losing the upland of the entire stretch . To over this phenomenon a suitable type of protective work is necessary. Since soft solution like artificial beach nourishment is not possible. Hard solution like groin ,breakwater, seawalls has to be developed based on various studies such as wave climate, and coastal morphology.

Key words: Coastal erosion, Soft solution, Hard solution, Groins, Breakwater etc.

71. FILLER SLABS ROOF

P. Vinay Kumar Reddy¹

¹student, ¹Department of Civil Engineering

Veltech RR & DR.SR R&D Institute of Science and Technology Deemed to be university

ABSTRACT

As we know that in a roof slab, the upper portion bears compressive loads whereas the lower is subjected to tensile load. While bricks or concrete absorb the compressive loads on the upper portion of the slab, tensile strength is imparted by the framework of steel rods on the lower side. The filler slab is a mechanism to replace the concrete in the tension zone. The filler material, thus, is not a structural part of the slab. By reducing the quantity and weight of material, the roof become less expensive, yet retains the strength of the conventional slab. After years of research and development, engineers came up with the filler slab as an alternative even with Coconuts shells or with handmade pots as roofing slabs. Despite initial hesitation in accepting the new technology, the filler slab One way to make a boring and expensive concrete slab lighter and cheaper is to use a 'Filler Slab'. A filler slab is where we replace a portion of concrete in the 'tension' zone of the slab with inexpensive lightweight filler materials such as coconut shells and pots

72. EXPERIMENTAL INVESTIGATION ON FLEXURAL BEHAVIOR OF MARBLE DUST AND SILICA FUME IN SCC

Robert Singh¹

*¹Assistant Professor, Department of Civil Engineering,
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology.*

ABSTRACT

This study presents an experimental investigation on self-compacting concrete (SCC) with various partial replacements of fly ash, marble dust and combination of both fly ash and silica fume. Also the study made with partial replacement of cement by silica fumes with fly ash percentage as 30%. After various replacements, cube and cylinder specimens are cast and cured. The specimens are cured in water for 3, 7 & 28 days. The slump, V-funnel and L-Box test are carried out on the fresh SCC and in hardened concrete compressive strength and split tensile strength values are determined. Attempts have been made to study the properties of such SCCs and to investigate the suitability of various replacements of fly ash, marble dust to be used in SCC.

73. TEMPERATURE CONTROL ON MASS CONCRETE

D. Iswarya¹, V. K. A. Arunprakash², S. Desiyan³, B. Kaviyan⁴

*¹Assistant Professor, VelTech Rangarajan Dr. Sagunthala R&D Institute and Technology, Avadi,
Chennai.*

²⁻⁴UG Student, VelTech Rangarajan Dr. Sagunthala R&D Institute and Technology, Avadi, Chennai.

ABSTRACT

In this project to control the temperature generated by the cementitious material. To reduce the temperature in concrete the coarse aggregate is replaced by granite and zycotherm is added as a admixture .Cubes are casted with and without replaced Coarse Aggregate and Zycotherm is added. The specimen are tested for 7, 14 & 28 Days. The results of conventional concrete and mass concrete are compared in temperature and compressive Strength. From the result, it is concluded that the mass concrete give more compressive strength and reduce temperature. Therefore granite and Zycotherm can be effectively used in the concrete members.

Keywords: Temperature, Granite, Zycotherm, Compressive Strength

74. IMPACT ON GROUND WATER QUALITY AROUND ENNORE THERMAL POWER PLANT, CHENNAI, TAMILNADU, INDIA.

Dr. K.R. Aswin Sidhaarth¹ & S. Baskar²

1 Associate Professor, Department of Civil Engineering,

2 Assistant Professor & Research Scholar, Department of Civil Engineering,

School of Mechanical and Construction Engineering,

Vel Tech Rangarajan Dr. Sakunthala R & D Institute of Science &

Technology, 400 Feet Outer Ring Road, Avadi, Chennai-600062. Tamil Nadu, India

aswincivil@gmail.com, rhodabaskar@gmail.com, baskars@veltechuniv.edu.in

ABSTRACT

The quality of groundwater is of paramount importance for drinking water and irrigation purposes especially in and around North Chennai regions (Ennore to Palaverkadu) 40 Kms. The objective of this study was to evaluate the impact of ground water (wells) quality on soil properties. Pulicat Lake formerly Palaverkaadu Eri is the second largest brackish water lake or lagoon in India, after Chilika Lake. Pulicat Lagoon is considered to be the second largest brackish water body in India measuring 759 km². Kosasthalaiyar is 136-kilometre (85 mi) long and originates near pallipet in Thiruvallur District and drains into the Bay of Bengal. Its northern tributary Nagari river originates in Chittoor district of Andhra Pradesh and joins the main river in the back waters of Poondy dam. Its catchment area spreads in Vellore, Chittoor, North Arcot, Thiruvallur and Chennai districts. It has catchment area in North Arcot District with a branch near Kesavaram Anicut and flows to the city as Cooum River and the main Kosasthalaiyar River flows to Poondi reservoir. From Poondi reservoir, the river flows through Thiruvallur District, enters the Chennai metropolitan area, and joins the sea at Ennore creek. The Kosasthalaiyar river water fully contaminated on industry waste water fully mixing to discharge to Kosasthalaiyar River. And also Hydrocarbon project near Ennore area ground water fully contaminated and finally mixing with ocean water through Palaverkadu lake water.

75. ANALYTICAL SOLUTION OF DECK SLAB FOR THE BRIDGE ACROSS THE KOSASTHALAIYAR RIVER

Robert Singh R¹, Avinash Karthick L², Nelson Ponnu Durai³

Assistant Professor, Department of Civil Engineering,

Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology.

ABSTRACT

The effect of various span on single-span reinforced concrete bridges are analysed using the finite-element method and results are presented in this paper. Investigations are carried out on RC slab bridge decks to study the influence of aspect ratio, span and type of load. The finite-element analysis results for bridges are compared to the reference analytical solution for dead load, IRC Class AA loading. Also comparative analysis response of RCC bridge deck with that of equivalent of FEM analysis of bridge deck is made and the number of bridge models is analysed and the variation of critical structural response parameters such as longitudinal bending moment, longitudinal stresses and support reaction with analytical solution is studied. The benefit of prestressing is reflected more significantly increase in longitudinal bending moment and longitudinal stresses.

Keywords: Bridge design, Deck Slab Analysis, Analytical solution, RC bridges

76. TREATMENT OF DAIRY INDUSTRY WASTE WATER - A NOVEL ADSORBENT TAMARIND KERNEL POWDER

Dr.D.Sivakumar^{}, Chandana Das⁺, K.Abarnadevi⁺, L.Iswaria⁺
^{*}Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

The effectiveness of tamarind kernel powder, a cheap agro-based product, was evaluated to remove BOD and TDS present in a dairy industry wastewater. Experiments were carried out by adding tamarind kernel powder to the dairy industry wastewater at different dosages, different rapid mixing contact time and slow mixing contact time. Maximum removal of 88.8 % and 92.1 % respectively for BOD and TDS was obtained at an optimum dosage of 70 g/l, an optimum rapid mixing contact time of 10 min. and an optimum slow mixing contact time of 30 min. In order to investigate the consistency, experimental data obtained in this study were validated with the removal of other parameters in a dairy industry wastewater against the identified optimum process parameters value. The study was extended to fit the experimental data into isotherm models. The model result showed that the Freundlich isotherm model was fitted well with the experimental data of dairy industry wastewater than the Longmuir isotherm. As well as the study was extended to fit the experimental data into kinetic models. The model result showed that the pseudo first order model was fitted well with the experimental data of dairy industry wastewater. Based on experimental and model studies, tamarind kernel powder is effectively used as adsorbent for reducing the BOD and TDS present in the dairy industry wastewater.

77. COLUMN EXPERIMENTAL STUDY FOR REMOVAL OF HEXAVALENT CHROMIUM USING CHITOSAN

Dr.D.Sivakumar^{}, K.Deepalakshmi⁺, R.Mahalakshmi⁺, K.Poovarasi⁺*

^{}Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

Wastewater generated from various activities in urban sectors and rural sectors is impacted on environmental degradation. The wastewater generated from various industries are having both organic and inorganic materials, which affects the human health when it exceeds the maximum permissible limits as prescribed in BIS Inland surface water. Among various industries the wastewater generated from tannery industry is selected for the present study. The tannery industry wastewater contains both Cr(III) and Cr(VI). Cr(VI) creates various effects on human beings like lung cancer, liver damage, kidney damage and skin irritation. There are several process used to remove Cr(VI) from tannery industry wastewater, of which adsorbent method is the best method because of less capital cost, high efficiency. In this project chitosan is used as adsorbent for the removal of Cr(VI) from tannery industry wastewater. For this study chitosan was prepared from the chitin which is available in prawn shell, further chitosan was characterized by using FTIR analysis. Experimental investigation was done against varying bed height, particle size, particle density and inlet flow rate with different contact time using column adsorbent reactor. The adsorbed Cr(VI) from the column adsorbent reactor was recovered for reuse. Yoon and Nelson kinetic model was developed against the experimental data. Finally, the experimental results are compared with model results and the same was compared with previous researchers results for the removal of Cr(VI) from tannery industry wastewater using chitosan.

78. GROUNDWATER QUALITY ASSESSMENT AROUND AMBATTUR INDUSTRIAL ESTATE

Dr.D.Sivakumar, D.Arun⁺, T.Durai Arasu⁺*

**Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

Groundwater is the most important natural resource required for drinking to many people around the world, especially in rural areas. Twenty Ground water samples were collected from Ambattur Industrial Estate of Chennai district, Tamilnadu (India) for investigation of their physicochemical parameters. These Twenty water samples are analyzed for their physicochemical characteristics. Laboratory investigations were carried out for analysis like, pH, Calcium, Magnesium, Sodium, Potassium, Bicarbonate, Sulphate, Chloride, Nitrate, Fluoride, TDS, Total Hardness, Total Alkalinity. These parameters are effectiveness in calculating quality of ground water. Physicochemical parameters were analysed and values obtained were compared with standard values recommended by Indian Standards (IS) and World Health Organization (WHO). The corresponding water quality index (WQI) were also worked out and reported. Using Geographic Information System (GIS), spatial distribution maps of physico-chemical parameters and Water quality index have been created. The analysis reveals that the groundwater of the area needs some degree of treatment before consumption, and it also needs to be protected from the perils of contamination.

79. STRENGTH BEHAVIOUR OF POLYSTYRENE INSULATED CONCRETE BLOCK FOR HIGH THERMAL RESISTANCE BUILDING

Dr.D.Sivakumar^{}, M.Preethi⁺, A.Rehana⁺*

^{}Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

Insulating forms wall system of building construction is an emerging technique to address the issue of shortage of building materials and faster construction. This technique numerous advantages over traditional brick wall and RCC construction. It provides energy saving, needs no special foam works, faster construction, sound proof, less maintenance, disaster resistance etc. This paper deals with experimental results carried out to study the strength behaviour of polystyrene insulated concrete blocks. Expanded polystyrene sheets of thickness 150 mm and 110 mm were used for this study. The polystyrene sheets are reinforced with wire mesh of 50×50 spacing and having diameter of 1.6 mm. The size of the model was $400 \times 190 \times 190$ mm. The block were subjected to compression load and it's behavior and strength was studied. Results shows that after the concrete crushed the EPS sheets hold the concrete from falling and ductility was increased.

80. GROUNDWATER STABILITY FOR IRRIGATION IN AND AROUND MADHAVARAM

Dr.D.Sivakumar^{}, C.Gowdham⁺, V.M.Ragothaman⁺*

^{}Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

The present study focuses on evaluating suitability of groundwater samples, collected from Madhavaram, Chennai, Tamil Nadu, for irrigational purposes during last year. Various water quality indices like SAR, SSP, RSC, MAR, PI and KR have been calculated for each water sample to identify the irrigational suitability standard. According to most of these parameters the groundwater The Piper's trilinear diagram used to determine drinking water suitability depending on the water type indicates groundwater in the study. The spatial distribution is done using ArcGIS showing the contour representing the variation in the level of each parameters and indices.

81. REMOVAL OF COPPER FROM ELECTROPLATING INDUSTRY WATER USING DEAD SACCHAROMYCES CEREVISIAE

Dr.D.Sivakumar*, M.Mahalakshmi⁺, T.M.Modhini⁺

*Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062

ABSTRACT

The present study focused to reduce Cu(II) ions from electroplating industry wastewater of Ambattur Industrial Estate, Chennai using dead *Saccharomyces cerevisiae*. The experiments were conducted against the effect of different pH, biomass, agitation speed and dilution ratio to know the effectiveness of dead *Saccharomyces cerevisiae* for removing Cu(II) ions from electroplating industry wastewater. The results showed that the maximum removal of Cu(II) by *Saccharomyces cerevisiae* at an optimum pH of 6, an optimum biomass of 4 g, agitation speed of 150 rpm and an optimum dilution ratio of 3 was found to be 98.3 % with the contact time of 80 min. Also, the study focused on validating the removal of Cu(II) ions from electroplating industry wastewater the other parameters present in the electroplating industry wastewater using the same *Saccharomyces cerevisiae*. The validation results showed that maximum removal of total dissolved solids (TDS), total solids (TS), chemical oxygen demand (COD), biochemical oxygen demand (BOD), and sulphate (SO_4^{2-}) by *Saccharomyces cerevisiae* species was found to be 92.1%, 94.7%, 96.7%, 97.2% & 95.3% respectively and Cu(II) in aqueous solution is about 99.2 % at the same optimum pH of 6, an optimum biomass of 4 g, agitation speed of 150rpm and an optimum dilution ratio of 3 against contact time of 80minutes. From the kinetic model, it was found that Intra particle diffusion kinetic model was best fitted with the experimental data with the R^2 value of 0.98 and from the Isotherm model, it was found that Freundlich Isotherm model was best fitted with the experimental data with the R^2 value of 0.999. Thus, this study was concluded that the *Saccharomyces cerevisiae* species might be used as sorbents for removing not only Cu(II) ion in a electroplating industry wastewater but also remove any other contaminants in a electroplating industry wastewater.

82. REMOVAL OF NICKEL FROM AQUEOUS SOLUTION USING BAMBOO

Dr.D.Sivakumar, M.Mohana⁺, S.Mariavensa⁺*

**Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

Humans consume metallic elements through both food and water. Heavy metals like cadmium, mercury, lead and arsenic which are in the list of 10 chemicals of major public concern in the World's Health Organization. Nickel is a natural element obtained from the core of the Earth. It has silver white color with a shining base and golden tint in it. Nickel is extracted from two ores - magmatic sulfides and laterites. The presence of Nickel ions in drinking water in concentrations that exceeds the permissible limit of 0.02 mg/L may cause adverse health effects such as anemia, diarrhea, encephalopathy, hepatitis, lung and kidney damage, gastrointestinal distress, pulmonary fibrosis, renal edema, skin dermatitis, and central nervous system dysfunction. The various characterization tests are as follows: pH, Decolorizing powder, Hardness, Iodine adsorption value, Particle size. Characterization Test Results for pH is 8.21, hardness no is 0.366, Decolorizing powder is 570, Iodine adsorption value is 1165 and particle size are 600 μ , 250 μ , 125 μ , 75 μ . The aim of the project is to study the removal of nickel from aqueous solution using bamboo activated carbon at different dosage (0.5 g/l, 1.0 g/l, 1.5 g/l, 2.0 g/l), different agitation speed (25 rpm, 50rpm, 75 rpm, 100 rpm), different particle size (2.36 mm, 1.18 mm, 600 microns, 300 microns), and different concentration (25%, 50%, 75%, 100%) using jar test apparatus at the duration of 120 min. For the equilibrium concentration, Langmuir and Freundlich models are plotted to analyse which model is fitted with the experimental data. Removal of nickel from aqueous solution using bamboo activated carbon at dosage of 1.5 g/l, agitation speed of 25 rpm, particle size of 300 microns and concentration of 25% is 98.8%. For the equilibrium concentration, Freundlich model is best fitted. The FT-IR analysis shows the presence of functional groups like alcohols, alkanes or alkyl, aromatic ring compounds.

83. EQUILIBRIUM AND KINETICS STUDY ON REMOVAL OF POLLUTANTS FROM TEXTILE INDUSTRY WASTEWATER

Dr.D.Sivakumar^{}, B.Deepika⁺, J.Divya⁺, M.Narmadha⁺
^{*}Professor, ⁺Final Year Student, Department of Civil Engineering
Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College,
Avadi, Chennai 600062*

ABSTRACT

Textile industries consume a large volume of water and chemicals for making various textile goods and as a result, large volume of wastewater discharged on land with partially or without treatments. These wastewater contaminate the soil while flowing through it and contaminate the water body when these wastewater reach it. The main parameters identified in the textile industry are colour, pH, electrical conductivity, chloride, sulphate, phenols, total dissolved solids, biochemical oxygen demand and chemical oxygen demand and other solution substances. Hence, it is necessary to remove dye colour from the textile industry wastewater and also other parameters before being discharged to the environment. Thus, this project mainly focused on equilibrium and kinetic study for removing pollutants from the textile industry wastewater. In this project, characterized the lignite adsorbent for removal of colour from textile industry wastewater. Studied the effect of adsorbent dosage, particle size, concentration, and agitation speed for removing colour from textile industry wastewater. Validated the performance of lignite on removal of colour with other parameters of this study with previous researches study. Developed the kinetic model based on the experimental results using lignite adsorbent. Compared the performance of lignite on removal of colour with other parameters of this study with previous researches study.

84. REUSABLE OF AUTOMOBILE, ELECTRONICS AND PLASTIC WASTAGES IN CONSTRUCTION

S. Sundarapandi¹, Antony Arul², Y. Joselin Mary³

¹Professor, Indian Institute of Industry Interaction Education and Research

*²Assistant Professor, Indian Institute of Industry Interaction Education and Research
sundar@iiiier.org, Antony@iiiier.org, joselinmary.y@gmail.com*

ABSTRACT

The management of automobile, electronics and plastic wastages are important today. We decided to make Automobile, electronics and Plastic scraps materials into usable construction materials so as to make an existing thing more sustainable. In construction sector the usage of plastic is about 23.6% all over the world and in automobile sector the tire waste are burned as fuel they are not used properly. In building construction the false ceiling are a way of adding sophistication to the indoors. Sagging is possible in case of false ceiling and the ceiling gets decoloured or stained after frequent use for few years. So we decided to replace the false ceiling material (gypsum) with automobile waste materials like tires and plastic. So as to improve the life time and to reduce the repair cost. As we use automobile tires mixed with crushed waste plastics it keeps the environmental much cool than gypsum. And it may used as sound proofing in partition works. Use of plastic waste in road construction will help in disposal of vast quantities of plastic. Blending plastic with a bitumen results in a mix is amenable for road laying. These roads have withstood loads due to traffic, heavy rain and variation of temperature. Electronic waste is grained in to fine chips accordingly to replace coarse aggregate. The effect of adding electronic waste in concrete reduced the dry density of the concrete and showed the high deformability behavior before failure. The lesser density may be having advantage in self-weight reduction in structural elements which leads to lesser attraction of pseudo inertia forces in the seismic prone area.

85. EFFECTIVE STUDY OF DYNAMIC PILE LOAD QUALITY

M.Annapurani, S.Sivaranjani, R.M.Saravana Kumar

*Assistant Professor, Department of Civil Engineering, Vel Tech Rangarajan Dr.SakunthalaR & D
Institute of science and Technology , Avadi.*

annapuranim@veltech.edu.in

ABSTRACT

The structural integrity of the building is of paramount importance as the costs of failure and repairs are very significant. The assessment of structural work comprises Site inspection of formwork , steel reinforcement and finished concrete during construction .The assessment shall include structural steel and pre-stressed concrete if each constitutes more than 20% of the total structure cost . Precast elements will also be assessed if the precast concrete volume exceeds 20% of total structure concrete volume. Laboratory testing of compressive strength of concrete and tensile strength reinforcement, Non-destructive testing of the uniformity were examined. Adoption of quality management should be a strategic decision of an organization. The design and implementation of an organization's Quality management system is influenced by various procedures carried out in Structural works and in the architectural works.

86. STRENGTH STUDIES ON GEO-POLYMER CONCRETE USING RECYCLED FINE AGGREGATE

S. Manoj Mani Rathnam¹, S. Jagan², E. Vignesh³, P.Revathi⁴

¹UG Student, Pondicherry Engineering College, Puducherry.

⁴Assistant Professor, Pondicherry Engineering College, Puducherry.

ABSTRACT

The production of Ordinary Portland Cement and the usage of normal river sand are increased due to the rising demand of concrete in Construction Industry. In order to account for this current demand, flyash activated with alkaline solutions is used for making concrete, termed as “Geo-polymer Concrete”. So that the demand on cement is reduced along with emissions into atmosphere which are released by cement factories. In this paper, an attempt is made to study the Mechanical properties of Geo-polymer concrete produced with construction waste as replacement for fine aggregate. Class F flyash from Ennore Power Plant is used as binder material to make Geo-polymer concrete. Coarse aggregate of size between 10mm-4.75mm is used. The broken concrete cubes from the laboratory is crushed into fines of size less than 4.75mm using jaw crusher and is used for replacing the fine aggregate. The strength of Geo-polymer concrete such as Compressive Strength, Split Tensile strength, Flexural strength are studied. The experimental scheme includes Geo-polymer Concrete produced by varying the sodium hydroxide concentration from 8M to 10M and alkaline to flyash ratio between 0.6 and 0.7. The compressive strength of this concrete ranges from 31MPa to 52MPa. It is concluded from the experimental results that Geopolymer concrete with recycled fine aggregate can be used in the construction industry for both in-situ and precast concrete applications.

Keywords: Geo-polymer Concrete, Fly ash, Recycled Fine Aggregate, Compressive Strength.

87. COMPARITIVE STUDY OF RAMMED EARTH USING WASTE PRODUCTS

Ankit Kumar soni¹, S. MD. Zamin², D. Iswarya³

^{1,2}UG Students, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology

³Assistant Professor Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology

¹ankitrocks996@gmail.com, ²mdzamin46@gmail.com, ³iswaryadharmar@gmail.com

ABSTRACT

The purpose of this experiment is to compare the study of rammed earth using waste products which give an overview of the efficiency of rammed earth using waste product over conventional rammed earth to reduce the cost and to improve its performance. Coconut fibre are used as waste products which are from dumping. Coconut fibre and cement can be easily incorporate into the soil mixture which adds strength and durability to the structure. This experiment highlights the salient observation from a systematic investigation on the effect of coconut fibre on the performance of stabilized rammed earth blocks. The analyzation of the result recommends the use 0.8% fibre and 5-10% cement by weight of soil to achieve consideration strength. This project may add a value in the area of green & sustainable housing ,waste utilization.

88. ENVIRONMENTAL FLOW REQUIREMENT OF GODVARI RIVER BY TENNANT'S METHOD

Saurav Anand¹, Vikas Singh²

^{1&2}UG Students, National Institute of Technology, Andhra Pradesh

ABSTRACT

Environmental flow is great significance for maintenance of ecological services in the riverine ecosystem. Development of surface -water resources in river basin for agriculture ,urban use ,hydropower, industrial use and such other uses beneficial to human as well world or environment .Recent awareness of environmental and ecological aspect of our planet has to led to development as well as conservation water resources. The flow of many rivers has been reduced or seasonally altered changing of size and frequency of flood. It is also affected by length as well severity or droughts. The ecosystem of some of the rivers have been so severely and adversely impacted that they appear to be beyond redemption. It is estimated that over one half of the world's major river system are presently adversely affected by flow regulation.

89. DEGRADATION OF PAPER CUPS BY SYNTHESIZED AND COMMERCIAL CELLULASE

Mahalakshmi Mathivanan^{1*} Gollakota Prathamesh¹ Lakshmi Priya R¹
Sree Valliammai C¹

¹School of Civil Engineering, SASTRA Deemed University, Thanjavur-613402. Tamil Nadu

*Corresponding Author : mahalakshmi@civil.sastra.edu

Paper cups are usually just thrown away once they are used. They are either incinerated or dumped in the land as waste. But, these paper cups take a very long period of time around 12 to 20 years to get degraded because of the polyethylene layer coating. Of course they can be recycled but it would be better if they are degraded to get a useful product out of it. Cellulose being the major constituent of the paper cups, they are degraded using cellulase enzyme synthesized from *Bacillus subtilis*. The paper cups are degraded using the synthesized and the commercial enzyme under various changing parameters such as temperature and pH conditions. Both the degradations are compared and the quantity of glucose production is estimated.

Keywords: Paper cups, Cellulose, *Bacillus Subtilis*

90. FLOOD VULNERABILITY ASSESSMENT IN URBAN AREAS USING NUMERICAL MODELLING AND GEOSPATIAL TOOLS –A CASE STUDY OF CHENNAI FLOOD 2015

K.S. Harish Kumar¹ M. Shanmugam¹ Tune Usha² G. Gopinath² M. Iyyappan²

¹ Institute of Remote Sensing, Anna University, Chennai-Tamil Nadu

² Integrated Coastal and Marine Area Management Project Directorate, Ministry of Earth Science,
Chennai-Tamil Nadu

ABSTRACT

The present study was undertaken to understand the impact of urbanization on flooding in the Adyar watershed and to assess the tangible damage due to urban and riverine flooding. The methodology is subdivided into two parts: Part I – Hydrologic-Hydraulic analysis and Part II – Socio-Economic analysis. Flooding may be caused due to a combination of heavy rain, blockage in the channel, development along the stream channel and urbanization in the upstream of the watershed. Watershed database was created using GIS, remote sensing data, data gathered from the government departments, field verification and enquiries with key informants. Land use/land cover changes (LUCC) and Hydrological Soil group data were prepared for the year 2015. Rainfall – runoff model, in combination with the Arc GIS extension HEC-GeoHMS was used to convert the precipitation excess to overland flow and channel runoff. The model framework developed in the study considered the spatial variation in the runoff response through the use of SCS curve numbers based on soil type and land use. It also included the spatial distribution of the rainfall by using rainfall data from eight rain gauge stations located in different parts of the watershed. The peak flow of the hydrograph derived from HEC-HMS was used as an input in USACE's hydraulic model, HEC-RAS for producing flood inundation maps and it was overlaid to socio-economic datasets, to assess flood vulnerability zones.

Keywords: Adyar watershed Chennai flood, HEC-HMS and HEC-RAS

91. INTEGRATED APPROACH TO ASSESS VULNERABILITY OF COASTAL REGION OF TAMIL NADU USING INVEST MODEL

M A Mohammed Abdul Azeez 1 M Shanmugam1 Tune Usha 2 M Iyyappan 2 G Gopinath 2

1 Institute of Remote Sensing, Anna University, Chennai, Tamil Nadu.

*2 Integrated Coastal and Marine Area Management Project Directorate, Ministry of Earth Sciences,
Chennai, Tamil Nadu*

ABSTRACT

As a consequence of changes in global climate, there is an increase in frequency of natural hazards such as storm surges, tsunamis and cyclones, which is bound to have dramatic effects on the coastal communities and ecosystems by virtue of devastation they cause during and after their occurrence. The current study focuses on assessing the vulnerability of the coastal districts of Tamil Nadu. The December 2004 tsunami devastated the coastal regions of India. Since then many studies have been carried out to assess the vulnerability of Indian coasts. However, no study has considered the role of natural habitats in mitigating these disasters. This study focuses on assessing the biophysical vulnerability of Tamil Nadu and role of natural habitats using InVEST 3.3 model. To simulate the model nine parameters have been considered, such as geomorphology, relief, bathymetry, wind, wave exposure, natural habitats, surge potential, sea level rise and population. All the parameters were preprocessed, analyzed, rescaled, and ranked from very low to very high vulnerabilities ranges from 1 to 5. First the coastal vulnerability model was run along the coast with and without natural habitats. From this the Coastal Vulnerability of the coast with and without natural habitats was assessed. And finally the impact on coastal population has been presented as Population Vulnerability Index. Hence this paper can be used to make decision of whether the natural habitats is useful in that region or not and their effectiveness in damage mitigation will be made clear. This can be used by stakeholders to make sensible managerial decisions regarding the region under focus. Further, this study can be easily extended to other coastal regions.

Keywords: InVEST, coastal vulnerability, population vulnerability, natural habitats.

92. ENVIRONMENTAL IMPACT ASSESSMENT OF CORAL BLEACHING BY REMOTE SENSING

S Raghavendran¹ M Shanmugam¹ Prakash Chandra Mohanty²

¹ Institute of Remote Sensing, Anna University, Chennai, Tamil Nadu, India.

² Indian National Centre for Ocean Information Services(INCOIS), Hyderabad, Telangana, India

ABSTRACT

Coral bleaching is a phenomenon where in the coral reefs appears white, due to the biological process which causes them to expel their algal cells from their polyps that lives inside their tissues. The biological process is triggered when the corals are subjected to environmental stress for a greater time to an extent where corals capacity to readapt is lost. The current study focuses on assessing the vulnerability of the corals with regards to bleaching event along the gulf of mannar region of Tamil Nadu. Coral bleaching is mainly studied in terms of temperature of the water it is subjected to, turbidity of the water it is in and ecological characteristics of the corals. Reef health assessment is being done worldwide, most often considering Sea Surface Temperature(SST) as the single most important parameter. In this study, to analyse the thermal stress accumulated in the coral environs, the detection of coral bleaching was dealt upon with respect to SST derived from NOAA MODIS-AQUA satellite data during the months of January to July, 2016. To understand the cause of this thermal stress, additional environmental parameters namely latent heat flux, sensible heat flux and wind speed were compared with SST. Hence, the remote sensing analysis carried out gives an insight into the statistical analysis of the bleaching intensity and the results stated bleaching warning as 'Alert Level-2'. Bleaching reported from NOAA Coral Reef Watch(CRW) and Coral Bleaching Alert System(CBAS), a service providing by INCOIS corroborates the validity of the information produced in the study.

Keywords: Sea Surface Temperature, Thermal Stress, Hotspot, Degree of Heating Weeks, Time-Series, Gulf of Mannar islands.

93. STUDY ON GEOPOLYMER CONCRETE IN MARINE ENVIRONMENT

¹S.Aravindhan,²Dr.G.Vijayakumar

¹ Post Graduate Scholar, Department of Civil Engineering, Pondicherry Engineering College,
Puducherry, India

² Professor, Department of Civil Engineering, Pondicherry Engineering College, Puducherry, India
E-mail: ¹aravindswamy97@gmail.com, ²gvk@pec.edu

ABSTRACT

This paper emphasis the study of Geopolymer concrete (GPC) exposed to marine environment. The Geopolymer concrete made of Ground Granulated Blast Furnace Slag (GGBFS) was partially replaced with Metakaolin (MK) up to 30%, the alkaline liquid used in this study for the polymerization process were sodium hydroxide (NaOH) and sodium silicate (Na₂SiO₃). 10M molarity of sodium hydroxide solution used to make the GPC concrete. For the above mix proportion the fine aggregate replaced with manufactured sand and the values compared with River sand as fine aggregate. Totally 144 numbers of 150mm x 150mm x 150mm cubes specimens were tested for compressive strength. The specimens were cured in ambient room temperature for 28 days after that exposed to marine environment. The compressive strength test was carried for the period of 7, 14, 28 days for ambient curing and 14, 28, 60 days for the cubes exposed to marine environment. The result shows that the M-sand based GPC has high compressive strength when compared to River sand based GPC. The compressive strength was high for the GPC mix proportion of 80% of GGBFS and 20 % MK in ambient curing and at 90 % of GGBFS and 10 % of MK when exposed to marine environment.

Keywords: Geopolymer, GGBFS, Metakaolin, M-Sand, Marine Environment.

94. IMPROVING THE PRACTICE OF CONSERVATION: A CONCEPTUAL FRAMEWORK AND RESEARCH AGENDA FOR CONSERVATION OF CORAL REEF AND MARINE BIO-DIVERSITY.

yaswant kumar.l.¹, Adapala naga jyoti.², Sai Akash.g³.

*^{1,2 & 3}.B.Tech Student , Department of Civil Engineering, Veltech Dr.Rangarajan & Dr.Sagunthala R&D
Institute of Science & Technology, Chennai*

ABSTRACT

This paper presents an experimental study on the conservation of the rare coral species from the various climatic changes occurring in the ocean atmosphere , the experiment also introduces an concreted base which is in the form of blocks which has the composition of calcium in it which enhances the supplement of the necessary calcium to the coral specimens this research work mainly concentrates in the betterment of the reef areas to promote healthier marine ecosystem in the areas wherein we have less coral population the research work brings new possibilities in the field of the Geo-marine sciences in finding new and cheaper form of coastal and off-shore conservation which can easily adopt in any coastal region which has depth up to 15, 20, 45, 100 even deeper blocks may be provided along with an casing to overcome the strong geo-thermal form in the marine base due to strong currents, this design of coral adoption brings changes as time does it work bringing out enlarged reef structures which serves as an home for other fishes and marine creatures and bringing an well balanced Bio-diverse atmosphere.

Keywords: Casing, Coral, Calcium, Concrete Blocks, Marine creatures, Coastal reef.

95. STUDY ON SAFETY AND LABOUR CONDITIONS IN CONSTRUCTION SITES

A. Nithin¹, A. Nikhil² & A. Akhil³

¹⁻³ UG Students, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology

ABSTRACT

Construction is the second largest economic activity in India next to agriculture. Construction industry has recorded enormous growth worldwide and particularly in last decade. Constructing safe structures and providing safe working environment to the personnel is a vital factor in successful construction business. Thus safety is an important function in the management of construction projects. The concern of safety has to start from the design stage and continues till the facilities are delivered to the owner. Construction is also a high accident prone industry employing major work force, most of them being labourers and skilled workers. Besides, construction sector is a highly unorganized sector and is a high risk Industry for clients, contractors and workers. In India comprehensive and universal safety rules and regulations have not been developed. Workers are generally unskilled or semiskilled, poorly paid, temporarily employed and often migrate in a group from one place to another in search of work. Typically labourers are not trained in safe work practices and there tend to be a lack of management commitment to safety programs and procedures. Considering the safety and labour criterions that are essential for a safe worksite a questionnaire was developed. This paper presents the results of a questionnaire survey, which was distributed among the construction sites and formal interviews with the key personnel at sites.

KEYWORDS - Safe working environment, accident prone industry, not trained, questionnaire survey

96. AN EXPERIMENTAL INVESTIGATION ON SELF-COMPACTING CONCRETE

*B. Anudeep , P. Jagadeeshwara Reddy & Sri Manoj,
¹⁻³ UG Students, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology*

ABSTRACT

The self-compacting concretes (SCCs) have undeniable advantages. Since the study on the behavior of SCC containing zeolite and complast sp40 with respect is very rare in literature, the purpose of this study is to focus on this subject. In this study, the influence of the partial substitution of 5%,10%, 15% and 20% of Pozzalano Portland cement by zeolite and complast sp40 admixtures on the fresh state, compressive strength of self-compacting concrete (SCC) is investigated. For durability, resistance to acid attack, carbonation and marine environment is studied. The results show different behaviors depending on the nature of the pozzolan. In contrast, SCC based on zeolite has a lower resistance compared to the control concrete due to the presence of a large porosity formed during the preparation of the mixture. This study shows and quantifies the positive effect of the partial substitution of Pozzalano Portland cement by 5%,10%,15% and 20%. The carbonation study showed a lower resistance of SCCs containing pozzolan, this effect is more important for SCC with zeolite. Additional studies on the formulation and the properties at the fresh state of concrete containing zeolite in order to improve the mechanical strength will surely make it possible to obtain better performance.

97. WATER RESOURCE MANAGEMENT IN MADIPAKKAM

L. Chandra Kanthamma¹, S. Ramakrishna², T.Rajarajan³, R. Ramasubramani⁴, S.Sabaris⁵

¹Associate Professor, Easwari engineering college, Chennai, India

²UG Student, Easwari engineering college, Chennai, India

ABSTRACT

Chennai is the fifth largest city in India having 1189 sq.km metropolitan area with population of 9 million. It has an average annual rainfall of 1200 mm. Water demand required as per year 2026 is 2248 MLD. Hence, the total volume of water demand is 820 million cubic meters. Rainwater in Chennai can be harvested by constructing storm water drain filters across many checkpoints in each area of Chennai. Location is selected as ward 188 of Chennai Corporation. Blue print of storm water drain is required to formulate checkpoints and to find discharge of the drains. Based on the discharges and checkpoints, storm water drain filters are needed to be designed and constructed and then they should be sent to the storage lakes and aquifers from which the water would be reused. Quantity estimation of the work and cost estimation of the work with comparison for efficiency is to be done. This would decrease the gap between supply and demand of water supply requirement. In upcoming days, it would save that ward of Chennai City Corporation from water scarcity.

Keywords: Storm water, Aquifer, Lakes, Rainfall, Water Demand

98. INNOVATIVE STUDIES ON THE POTENTIAL USE OF POND ASH ON LARGE SCALE IN BUILDING & CONSTRUCTION SECTORS

Dr.M.Murali Krishna¹ & S.Baskar²

*1 Professor & Director, Department of Civil Engineering, Vel Tech,
Avadi, Chennai-600062.*

*2 Assistant Professor, Department of Civil Engineering,
School of Mechanical and Construction Engineering,
Vel Tech Rangarajan Dr.Sakunthala R & D Insititute of Science &
Technology, 400 Feet Outer Ring Road,
Avadi, Chennai-600062. Tamil Nadu, India*

rhodabaskar@gmail.com, baskars@veltechuniv.edu.in, dr_mmkrishna@yahoo.com

ABSTRACT

There is a growing demand for electric power in India and hence numbers of coal based thermal power plants are established in India. There are about 100 thermal power stations present in India. This number is likely to increase in the near future. From these power stations lot of waste material in the form of pond ash, which is a mixture of fly ash and water, is disposed off to the open areas and thus huge quantity of this waste material is getting accumulated and not only, is creating a disposal problem, but also is affecting the environment. Hence there is a need to utilize this waste pond ash to the maximum extent possible. It is to be mentioned here that two types of materials viz Fly ash and pond ash are being released from the thermal power plants. The material that is coming out near Electro-static precipitator (ESP) is called Fly ash. This is a fine uniform sized material and it is almost like cement. The remaining Fly ash is mixed with water at the plant and is disposed-off to a distant place through pipes and this is called pond ash. As no effort is made so far on large scale to utilize this material, this is creating environmental and disposal problems.

99. EXPERIMENTAL INVESTIGATION OF BENDING BEHAVIOUR OF CONCRETE USING STEEL FIBRE AND POLYETHYLENE SHEET

¹Dinesh Kumar. R, ²Abujam Wanglen Meitei, ³Balaji. v, ⁴Mohan Raj. R

^{1,2,3}B.E-Civil Engineering Student, DMI college of Engineering, Chennai.

⁴Assistant Professor, Dept. of Civil Engineering, DMI college of Engineering, Chennai.

g6dineshkumar@gmail.com ,wanglenbmw@gmail.com ,mohan651603@gmail.com,

ABSTRACT

Concrete is most widely used building material in the world, as well as the largest user of natural resources with annual consumption of 12.6 billion tons. Basically it consists of aggregates which are bonded together by cement and water. The major part of concrete besides the cement is the aggregate. Aggregate include sand and crushed stone / Gravel. Use of these conventional materials in concrete is likely to deplete the resources unless there is a suitable substitute. In this project we are using steel fiber and polyethylene sheets. Fiber are generally used as resistance of cracking and strengthening of concrete and also we are wrapping the polyethylene sheet for providing a plastic protection to the concrete. Polyethylene sheet usually increases the lifetime of the concrete .so by using both steel fiber and polyethylene sheet we can achieve the strength more than the target strength we expected.

Key Words: Steel Fiber, Polyethylene Sheet, Compression test, Flexural test.

100. POTENTIAL APPLICATIONS OF SLAGS IN CIVIL ENGINEERING – A REVIEW

J.Logeshwari¹ & M.Bharath²

*^{1&2}Assistant Professor, Department of Civil Engineering, Vel Tech Rangarajan Dr.Sagunthala R&D
Institute of Science and Technology, Chennai.*

ABSTRACT

Industries are one of the major source for the generation of wastes. Of all the industries, metallurgical industries generate tonnes of wastes in the form of sludges and slags. In this review article, a detailed study is made on the various types of slags that are widely generated and its characteristics properties. Study is made on secondary lead slag, copper slag, iron and steel slag. The physical, mechanical and chemical properties of these slags are studied and compiled. The obtained values are compared with the requirement standards given by various institutions. The study reveals that most of these slags can be effectively used as pavement material, ballast stones, partial replacement or alternative to coarse & fine aggregate and as fill material. Utilization of these slags in bulk quantity is highly recommended as they reduce the consumption of the conventional natural material. Moreover, disposal of such industrial wastes are costly in terms of money and space as well. However, the leaching potential of the slags has to be verified before application.

101. VARIATION OF PARTICLE SIZE DISTRIBUTION WITHIN A HEAP OF SOIL

M.Bharath¹ & J.Logeshwari²

*^{1&2}Assistant Professor, Department of Civil Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D
Institute of Science and Technology, Chennai.*

ABSTRACT

A soil heap is formed when dry soil is subjected to free fall. The influence of height of fall in the packing or arrangement of the grains is studied in this paper. 1000 g of dry sand particles of size lesser than 4.75 mm is used throughout the study. The sand is made to flow from a funnel of 10 mm opening. The heights of free fall that were chosen for this study are 150, 200, 250, 300, 350, 400, 450 and 500 mm. The heap formed from each condition is examined and compared with each other. It is found from the results that with the increase in height of free fall, the finer particles tend to move away from the heap. This makes the influence zone wider and wider. However, the height of the heap remained almost constant for all conditions. It is also observed that the heavier particles tend to arrange themselves at the bottom and most precisely on the outer side of the heap invariably for all height of fall condition.

102. STUDY ON UTILIZATION OF WASTE PRODUCT TO ENHANCE THE STRENGTH CHARACTERISTICS OF CONCRETE

Shasank Agnihotri¹, Mishra S²

*^{1&2}.B.Tech Student , Department of Civil Engineering, Veltech Dr.Rangarajan & Dr.Sagunthala R&D
Institute of Science & Technology, Chennai.*

ABSTRACT

The construction industry has been responsible for degradation the environmental due to the ecological imbalance caused during the extraction and production of building materials. To make this production of construction materials cleaner, the dependency on conventional material has to be reduced. The production of 1 ton of cement leads to emission of 1.25 ton of CO₂ to the atmosphere which results in environmental pollution. Huge amount of construction materials accumulating day by day results with depletion of natural resources so, the recycling and reuse of material is important it was found that using partial replacement of cement, sand and aggregate by coal fly ash, coal bottom ash, GGBS, micro silica, FLDRCA (field produced RCA), LABRCA (lab produced RCA), can be used with different ratios to achieved the strength. For these 3 cubes of each mix proportions were prepared to evaluate the compressive strength and split tensile strength. The mixture were evaluated for their fresh, physical and the results were compared with the conventional mix. It was were proved in this study that it is light weight and perform better than conventional concrete.

Key Words:- CFA, CBA, GGBS, Micro Silica, FLDRCA, LABRCA, split tensile, compressive strength.

103. UTILIZATION OF NATURAL ADMIXTURES IN CONCRETE

J. Nivetha¹, G. Susmitha² & J. Anne Mary³

^{1&2}.B.Tech Student, ³Asst Professor, Department of Civil Engineering, Veltech Dr.Rangarajan & Dr.Sagunthala R&D Institute of Science & Technology, Chennai

ABSTRACT

In today's world, concrete is most popular and widely used material in construction sector due to its good compressive strength and durability. Curing of concrete involves maintaining satisfactory moisture content to develop the desired properties. Properly cured concrete has improved durability and surface hardness, and makes concrete less permeable. The use of self-curing agents is to reduce water evaporation for concrete, and hence increase its water retention capacity compared to conventional curing. The effect of this curing compound on compressive strength of concrete after 28 days also to analyze their effect on workability, modulus of rupture and split tensile strength.

104. IMPROVING CONCRETE STRENGTH USING WASTE PLASTIC FIBERS

Shimless Eshete¹, Abel Alemayehu², Sisay Alebachew³, Lemlem Mulat⁴

*^{1&4} M.Tech Student, Department of Civil Engineering, Veltech Dr. Rangarajan & Dr. Sagunthala R&D
Institute of Science & Technology, Chennai*

ABSTRACT

The strength and durability characteristic of waste plastic mix concrete with and without the addition of waste plastic was investigated, Several industrial wastes can be made use in the concrete. Among them waste plastic fibers can be used as fibers for productions of fiber reinforced concrete. Different percentages of fibers in concrete affect various strength aspects such as compressive strength, tensile strength, flexural strength. Hence, an effort has been made in the present research to study the influence of addition of polythene fibers (domestic wastoplastics) at a dosage of 0.2, 0.4, and 0.6 % by weight of cement. The properties studied include compressive strength and flexural strength. The studies were conducted on a M25 mix and tests have been carried out as per recommended procedures of relevant codes. The results are compared and conclusions are made. The proposed concrete which is made up by adding waste plastic in concrete may help to reuse the plastic bottles as one of the constituent's material of concrete, to improve the certain properties of concrete. The properties of concrete containing varying percentages of plastic were tested for compressive strength and Split tensile strength and shows that an appreciable improvement in the properties of concrete can be achieved by introducing cut pieces of plastic water bottles.

105. AN EXPERIMENTAL INVESTIGATION ON BLENDED CEMENT CONCRETE WITH SILICA FUME AND METAKOALIN

Karthik Raja¹

*¹Asst Professor, Department of Civil Engineering, Veltech Dr.Rangarajan & Dr.Sagunthala R&D
Institute of Science & Technology, Chennai*

ABSTRACT

As the manufacturing process of Portland cement increases the emission of CO₂ in to the atmosphere also increases, so there is an urgent need in construction industry to find an alternative construction material. The main objective of this investigation is to compare a strength parameter and behavior of fresh and hardened concrete with conventional concrete and quaternary blended cement concrete in various percentages. The SCM's used are GGBS, MK, RHA in concrete not only reduces the carbon dioxide emission, but also impart significant improvement in workability and durability. The blend is quaternary type and the materials used are agricultural by products and industrial waste. The workability and strength characteristics of quaternary bend was found out by the replacement of 5%, 10%, 15% and 20% of GGBS, RHA and MK. Out of all pozzolonic material GGBS gives highest strength in Compression after 28 days. By replacing cement with and 10% MK, 5% RHA and 15% GGBS gives the compressive strength 50% more than the reference mix for 28 days respectively.

Key words: Ground Granulated Blast Furnace Slag, Rice Husk Ash, Metakoalin

106. REPLACEMENT OF STEEL SLAG AS COARSE AGGREGATE IN CONCRETE MIXTURE LEADS TO A HEAVY DENSITY CONCRETE

A.Mohan, M.Tholkapiyan

*Department of civil engineering, Vel tech high tech Dr.Rangarajan Dr.Sakunthala engineering college,
Chennai 600062, India.*

Email: m.tholkapiyan@gmail.com, drtholkapiyan@velhightech.com

ABSTRACT

The main scope of this research is to investigate the properties of concrete with steel slag coarse aggregates. The tests to be conducted are workability and strength of the concrete like compressive test, split tensile strength and flexural strength. Durability of concrete with steel slag coarse aggregate concrete is also to be included. The percentage replacement of coarse aggregate will be done in 25%, 50%, 75% and 100% by the steel slag aggregate. Thus replacing the natural coarse aggregate in concrete applications with steel slag would lead to considerable environmental benefits and would be economical. Steel slag aggregates generally exhibit the potential to expand due to the presence of unhydrated free lime and magnesium oxides which hydrate in humid environments. If such a product is used in the concrete, it influences both the mechanical and physical properties of concrete along with its durability. The purpose of this research is to explore the feasibility of utilizing the steel slag produced by steel industries as a replacement for natural coarse aggregate in the concrete.(Abdullah A. Almusallam, 2004)

107. PROCESS DESIGN & EXPERIMENTAL ANALYSIS OF LAB SCALE MOVING BED BIOFILM REACTOR USING ECO-FRIENDLY CARRIER

R.Santhosh kumar¹

*¹M.Tech Student, Department of Civil Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute
of Science and Technology, Chennai,
santhoshbala146@gmail.com*

ABSTRACT

In the present study, an attempt has been made to reduce the secondary pollution footprint in our eco-system. On ground realities, we have worked on Moving Bed Biofilm Reactor with an eye on carrier. We have done a comparative study on two different carriers i) Eco-friendly carrier (Ridge gourd) & ii) conventional carrier (AnoxKaldnes™K1). The experiment was carried out by varying the carrier fill fraction of both carriers as 40%, 50% and 60%. The physical characteristics of both carriers were found out and the reactor has been designed based on lab scale and industrial scale conditions. The lab scale Moving Bed Biofilm Reactor having the dimension of 30X30X30 (all dimensions are in cm) and the Hydraulic Retention Time was kept as 15days. Carrier Performance was analyzed at a stroke of 7th, 10th & 15th days with the help of Biofilm Generation. It was observed that for Eco-friendly carrier (Ridge gourd), the BOD removal was high at 50% of the carrier fill fraction while the conventional carrier (AnoxKaldnes™K1) the BOD removal was high at 60%.

Keyword:- Study of MBBR, Sampling, Wastewater Quality Assessment, Design of MBBR, Carrier Characteristics, optimum carrier fills percentage.

108. SHORELINE CHANGES AND ASSOCIATED COASTAL LAND LOSS ALONG THE COAST OF PONDICHERRY AND CUDDALORE DISTRICT USING REMOTE SENSING AND GIS.

R. Aswini¹,

*¹Asst Professor, Department of Civil Engineering, Veltech Dr. Rangarajan & Dr.Sagunthala R&D
Institute of Science & Technology, Chennai*

The shoreline is one of the rapidly changing landforms in coastal areas. They are the key element in coastal GIS and provide the most information on coastal land form dynamics. Therefore, accurate detection and frequent monitoring of shorelines is very essential to understand the coastal processes and dynamics of various coastal features. The resent study is to investigate the shoreline changes along the coast of Pondicherry and Cuddalore district of Tamil Nadu (where hydrodynamic and morphological changes occur continuously after 2004 tsunami and constructions of anthropogenic activities such as sea wall, groins, jetties etc.) by using Digital Shoreline Analysis System (DSAS) an extension of ArcGIS. In this study low resolution satellite imagery Landsat TM and Landsat ETM+ data is used for mapping shoreline position using Remote Sensing and GIS technology and Multidate Landsat Satellite data are used to extract the shorelines. The data is processed by ERDAS IMAGINE 9.1 software and analysed by Arc GIS. The rates of shoreline changes are estimated by statistical method namely End Point Rates (EPR), Linear Regression Rate (LRR), Net shoreline moment using DSAS. One among the mathematical modelling technic called linear regression model is used for future prediction analysis. Rate of change of land area is analysed. Thus this study will help for various applications like coastal zone management, beach nourishment, and to overcome the erosion, accretion rate

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