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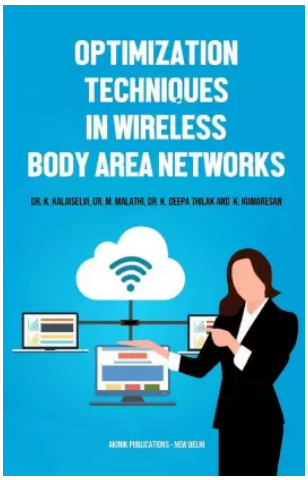

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OPTIMIZATION TECHNIQUES IN WIRELESS BODY AREA NETWORKS

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CULTURAL STUDIES: SIGNIFICANCE AND REPRESENTATION IN LITERATURE

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P.KULALMOLIAL D.JAISANKAR C.VAIRAVAN

Representation of Woman Self-Surveillance in *Helen* Fielding *Bridget's Jones Diary*

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Abstract

The term post-feminism was coined when an article called "Voice from the Post-feminist Generation," (Bolotin, 1982) was published in New York Times. The goals of post-feminism are different from the first and second-wave feminism. Post-feminist ideas went viral through the campaigns that happened in social media and even before that in the primary forms of media like print and visual media in western countries. One of the main post-feminist theme-based books is Bridget Jones Diary by Helen Fielding, which is also taken as a film in visual mode. In this film, the post-feminist characterization of self-surveillance has strongly portrayed the post-feminist views. This paper analyses woman's self-surveillance in their education, home, life and works concerning Bridget's life in home and society.

Key words: Post-feminism, Media, Characterization, Self-surveillance

Introduction

Post-feminism focused on all groups of people and they are called a post-feminist generation. It always supports woman as an individualist in her work and career. Post-feminist people promote their identity through self-surveillance in society. Gill (2008) argued that "post-feminism tasks girls and women with increasing requirements for self-surveillance and the demand to 'remodel one's interior life'."(Paulo, and Femanda, 2003). One of the main post-feminist concepts is about woman self-surveillance. Post-feminism promotes and supports self-surveillance in women in their lives in a manner that they can achieve their identity. One of the most post-feminist novels *Bridget Jones' Diary* (1996) by Helen Fielding got successfully rooted in the United States. It is an autobiographical novel published first in a newspaper

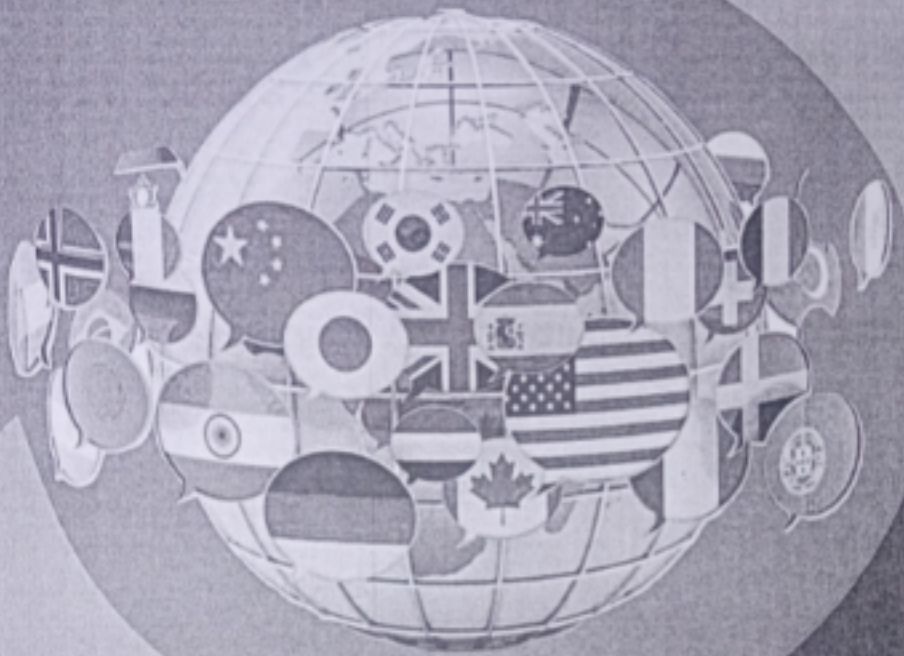
column. Then this novel was shot as a film with the same title "Bridget Jones' Diary" (2001) in the United States and ran successfully in western countries. The protagonist of the story is Bridget Jones, a 32 year-old single woman. The film projects Jones' life, career, education, selection of life partner, love, etc. She is launched as a modern woman with post-feminist views. It has widely reached too many female audiences in western countries and many research scholars have researched this film and book. Bridget Jones's Diary, many films have been released worldwide with post-feminist views.

Life of Bridget Jones and Self-Surveillance

The lead female character and the protagonist of the film Bridget Jones Diary is Jones, who is 32 years old. Her characterization needs to be analysed deeply across post-feminist views of woman self- surveillance. The film portrays women's self-surveillance, self-confidence empowerment and it breaks the stereotypes of women. It has reached success in the United States and other parts of the world. This film is an important medium that has spread post-feminist concepts to many young women in western countries. It focuses on the post-feminist views and characterisation of self-surveillance to the audience. Based on the analysis, it has been found that Bridget learned from her mother's life the importance of a mother and wife in the family. Fielding (1996) stated that "she started saying she wanted to be paid for doing the housework, and she'd wasted her life being our slave." Bridget thinks that her mother loses her identity in every situation and does not understand her real character in her family.

Bridget thought that her mother feels demeaned and doubts waiting for her life living with her husband as a patriarchal society. She understands the situation that her mother is casting her power over men seeking revenge for the wasted years of her life. Fielding (1996) "She's discovered her power. She has power over Dad [...] She has power over Julio and the tax man and everyone is sensing her power and wanting a bit of it, which makes her more irresistible." Self-surveillance should enable women to realize what they can achieve and change their life. It is the state of mind that is established by the interaction with fellow beings in society and also by the recognition of society. A woman's self-surveillance is when she struggles to achieve as a perfect woman being in the society and family. A woman can be identified as a wife, mother, and daughter whom she accepted naturally but it does not change their real-life environmental situation in home and society. Therefore Bridget wants to stand freely on her feet like a human being, equal to men in the society with post-feminist views. Post-feminist opinion stated that "Self-surveillance is usually understood as the attention one pays to one's behavior when facing the actuality or virtuality of an immediate or mediated observation by others whose

ETHNIC PLURALISM AND THE POLITICS OF DIFFERENCE: MULTICULTURALISM IN THE SELECT NOVELS OF AMITAV GHOSH



Dr.Ramesh Manickam

Dr.D.Gowrisankar

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About the Book

The book traces the growth of Indian fiction, and an attempt is made to assess the place of Amitav Ghosh. A brief history of his life and his carrier as a writer and a concise summary of his novel are presented. This book tries to explore the Indian writers and their works. This book project that how ethnic pluralism and the politics of differences portrayal of two novels in *The Circle of Reason* and *The Shadow Lines*. The book examines the multicultural perspective of theological, ethical, cultural views on the protagonist of the story in *The Circle of Reason* and protagonist of the story in *the shadow lines*, life and social changes, relationship has been discussed with the multicultural views used by Amitav Ghosh.

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CONTENTS

A STUDY ON SUGARCANE BAGASSE ASH AND GGBS BLEND GEO-POLYMER CONCRETE

N.Deepak[1], V.Revathi[2]
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ABSTRACT: The present study aims to investigate the various combination of Sugarcane bagasse ash (SG) and GGBS as a source material to produce geopolymer under ambient curing. In geopolymer, GGBS and sugarcane ash acted as binder and NaOH and Na_2SiO_3 were alkaline activators. The mix was designed for molarity of 10M, and 12M and alkaline ratio of 3 and 3.5. The compressive strength of mixes was determined at 7 days and 14 days. The test result show that geopolymer mortar made with 75% sugarcane bagasse ash and 25% GGBS has resulted higher compressive strength with sodium hydroxide concentration 10M and alkaline ratio 3.5 at early age under ambient curing

KEYWORDS: *Geopolymer, Alkali, Sugarcane bagasse ash, compressive Strength*

INTRODUCTION

For all types of construction, supplementary materials in concrete are preferable to enhance the strength properties and serviceability requirements. Such supplementary materials are blast furnace slag, fly ash, silica fume, steel fibers, glass fibers, rice husk, crushed stone dust etc. Every 1 ton of concrete leads to CO_2 emissions which vary between 0.05 to 0.13 tons into the atmosphere. About 95% of all CO_2 emissions from a cubic yard of concrete are from cement manufacturing. It is important to reduce CO_2 emissions through the greater use of substitute to ordinary Portland cement (OPC) such as fly ash, clay and others geo-based material. In the recent decade, geopolymer concrete is emerged as a promising material to advocate waste materials and reduce the use of raw materials with environment friendly.

Davidovits [1991] has proposed that an alkaline liquid could be used to react with the silicon (Si) and the aluminum (Al) available in a source material of geological origin or in by-product materials such as fly ash and rice husk ash to produce binders. Because the chemical reaction that takes place in this case is a polymerization process, he coined the term geopolymer to represent these binders. Geopolymer concrete does not utilize any Portland cement in its production. Geopolymer concrete is being studied extensively and shows promise as a substitute to Portland cement concrete. Research is shifting from the chemistry domain to engineering applications and commercial production of geopolymer concrete.

Geopolymer concrete is used extensively as they have low greenhouse gas emissions in the production and has similar applications like Portland cement concrete in the construction field (Hardjito *et al.* 2004). Geopolymer utilizes silica and alumina rich industrial waste material and alkaline activators.

There are two main constituents of geopolymers, namely the source materials and the alkaline liquids. The source materials for geopolymers based on alumina-silicate should be rich in silicon (Si) and aluminum (Al). These could be natural minerals such as kaolinite, clays, etc. Alternatively, by-product materials such as fly ash, silica fume, slag, rice-husk ash, red mud, etc could be used as source materials (Duxson et al, 2007). The choice of the source materials for making geopolymers depends on factors such as availability, cost, type of application, and specific demand of the end users. The alkaline liquids are from soluble alkali metals that are usually sodium or potassium based. The most common alkaline liquid used in geopolymerisation is a combination of sodium hydroxide (NaOH) or potassium hydroxide (KOH) and sodium silicate or potassium silicate(Revathi et al, 2014).

In this background, the present study aims to study the geopolymer concrete using sugarcane bagasse ash and GGBS.

2. EXPERIMENTAL PROGRAM

Materials

The materials used in this study includes Sugarcane bagasse ash, GGBS, sodium hydroxide (98% purity in pure form), sodium silicate solutions (10M, 12M), coarse aggregate (12.5 mm & 20 mm) and fine aggregate (fineness modulus 2.6 — 2.8). Sugarcane bagasse ash was obtained from **Sivagiri, Erode.** Ground Granulated Blast Furnace Slag (GGBS) was purchased from JSW Cement Company. Sodium silicate (Na_2SiO_3) mixed with sodium hydroxide (NaOH) are used as alkaline. NaOH was in pellet form with 97% purity. Na_2SiO_3 consists of Na_2O=9.4%, SiO_2=30.1% & H_2O=60.5%, with weight ratio SiO_2/Na_2O = 3.20-3.30).

EXPERIMENTAL INVESTIGATION ON PLASTIC SAND AGGREGATE AS A PARTIAL REPLACEMENT FOR COARSE AGGREGATE IN CONCRETE

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ABSTRACT
The attempt is made on using plastic-sand aggregate as a partial replacement for coarse aggregate in concrete. In this project work, conventional aggregate is replaced by 5, 10 & 15percentage of plastic-sand aggregate in M20 grade of concrete. The compressive strength and split tensile strength of concrete mix at 7th, 14th and 28th day of curing period is determined along with the workability property of fresh concrete and results are analyzed and compared with the conventional mix.

KEYWORDS: plastic-sand, partial replacement, compressive strength, split tensile strength

1. INTRODUCTION

Concrete is a composite material composed of coarse and fine aggregate bound together with fluid cement and harden over time. Most concrete used are Portland cement based concrete made with other hydraulic cements.
Besides, abundant raw materials are exhaustively utilised in cement production and their availability becomes challenging in near future. The river sand used as fine aggregate is being met huge demand in construction industry. Good quality coarse aggregate is also not available everywhere. Further, enormous quantities of solid wastes are generated in the world. According to the "Swachhata Sandesh Newsletter" by the MoHUA, as of January 2020, 147,613 metric tonnes (MT) of solid waste is generated per day. Among various solid wastes, it is noticed that plastics wastes are about 8% by weight of the total solid wastes. Being a non-biodegradable, the disposal of plastic wastes is a big concern in the world. Reuse of plastic could be a solution in effective way instead of land filling[1].One of the ways is to use it as coarse aggregate in concrete. Several works were attempted to use plastics as aggregates in concrete[2-8].
In this work, the waste plastic bags are taken as partial replacing material for coarse aggregate for construction practices. The waste plastic product is named as PLASTIC SAND AGGREGATE (PSA) which is having similar characteristic like coarse aggregate. The study leads about strength and behaviour of partially replaced plastic sand aggregate in concrete.

Plastic Sand Aggregates

Plastic-sand aggregates (PSA) are obtained by mixing the fine aggregate (sand) with the molten waste plastic bags to get a hard aggregate like substance. The plastic bags are heated at the range of 90ºC-110ºC to get a molten gel like substance.

Preparation of Plastic Sand Aggregate

.

Fig1.1PlasticSand aggregate

Waste plastic bags are collected and unwanted waste is removed from it. River sand used for the construction is used in the manufacturing of the aggregate. River sand should be free from impurities and any organic matters. A

STUDY ON QUALITY MANAGEMENT IN CONSTRUCTION

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ABSTRACT

The Quality Management System (QMS) in construction industry refers to quality planning, quality assurance, quality control. The main goal of construction industry is to ensure that construction projects are successfully completed within the constraints of best quality, stated period and at minimum possible cost. The research based on QMS recommended that construction companies should create a flexible and conducive organizational atmosphere which encourages the development of quality management system in all aspects of their work.The questionnaire survey has been carried out in the present study by taking interviews of participants of project. The participants of project include owner/builder, project management consultant, contractor, various consultants and suppliers. The questionnaires have been prepared by authors based on quality aspects in construction project for builder / contractor, consultants and customers / occupants of buildings. This paper describes the analysis of data collected during interviews & questionnaires with builder /contractor.

INTRODUCTION

Quality is one of the critical factors in the success of construction projects. Quality of construction projects, as well as project success, can be regarded as the fulfilment of expectations (i.e. the satisfaction) of the project participants. The construction industry in India has been struggling with quality issues for many years. A significant amount of the budget is spent each year on infrastructure and other development projects. Since the quality outcomes of the projects are not according to required standards, faulty construction takes place. Consequently, additional investments are required for removal of defects and maintenance work. A construction project in its life span goes through different phases. The main phases of a project can be described as: conceptual planning, feasibility study, design, procurement, construction, acceptance, operation and maintenance. For the implementation of quality management in construction

projects, the concepts of quality planning (identification of quality standards), qualityassurance (evaluation of overall project performance) and quality control (monitoring of specific project results) in the quality management processes were defined by Project Management Institute (2000). Several tools and techniques were identified as part of the implementation process, like benefit-cost analysis, benchmarking, flow-charting, design of experiments, cost of quality, quality audits, inspection, control charts,pareto diagrams, statistical sampling, flow-charting and trend analysis.

LITERATURE REVIEW

David Arditti, et al (1997) stated that there is capacity for improvement of quality in the field of construction and author explained total quality management (TQM). Total quality management (TQM) aims at best team work and co-operation, and not only for the meeting and dispute, it is long life for the construction industry.

Peter Hoonakker, et al (2010) discussed the difficulties in construction industry for define quality, determined benefits quality implementation, and at barriers to implementation of quality in construction. They collected data with the help of questionnaire.

H. James Harrington, et al. (2012) defined the quality and productivity problems, and main aim of this paper is, improvement of quality most is needed to remove waste in the construction industry. Author stated that there is not enough research on better approach for managing quality.

P.P.Mane, et al (2015)explained the role of quality management fora construction company. Author mentioned that Quality Management System (QMS) can be applied either at the size of organization or at the project size. The paper described about the rating characteristics

RISK MANAGEMENT IN BUILDING CONSTRUCTION

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Abstract

This paper is about the various types of risk faced by the construction site and the assessment by Analytic Hierarchy Process give the control measures. Construction risks are generally the events that influence the project objectives of cost, time and quality. Some of the risks are associated with the construction process are fairly predictable or readily identifiable. Identify the key factor that causes the risk in the construction industry. Collecting the data by questionnaires survey. Analysis the collected data by Analytic Hierarchy Process (AHP) by ms excel using this method.

INTRODUCTION

The construction industry is subjected to the more risk and uncertainty than the many other industries. The process of taking a project from the initial investment appraisal of completion and use is complex. It requires a multitude of the people with different skills and interests and the co-ordination of the wide range of disparate. Such complexity is the further compounded by the many uncontrollable external factors. The construction industry has the poor reputation in the risks, many projects failing to meet the deadlines and cost targets. Clients, contractors and the public and others have suffered as the result.

In project management terms, the most serious effects of risk can be summarized as follows

- failure to keep within the cost estimate
- failure to achieve the required completion date
- failure to achieve the required quality and operational requirements

RISK MANAGEMENT

An organized way to understand risk, identifying of sources of risk, analyzing and management of that risk through the process of risk management is known as risk management. It may affect the risk through the process of risk management is known as risk management.

Risk are mainly classified into two types they are

- Internal risk
- External risk

INTERNAL RISK

- It refers to the risk arising from the events within the business organisation.
- It can be controlled by appreciable extent.

EXTERNAL RISK

- It refers to the risk arising due to the events occurring outside the organisation.
- These events are generally uncontrolled and results in risk.

SCOPE OF THE STUDY

- To reduce the risk in construction project
- To reduce the delay in construction and cost of the project.
- To identify the preferences of risk management in building construction.

OBJECTIVE OF THE STUDY

- Identify the various type of risk faced in the construction project
- Analysis using Analytic heirarchy process

STUDY AND ANALYSE OF DELAY IN COMMERCIAL CONSTRUCTION PROJECT

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ABSTRACT

This project deals with the study of various delays incurred in project life cycleandalsoanalyzetheconstructionproject.Forthisstudy,Iprepareadetailedinvestigation report on delay which is collected from various firm located around theSalem district by conducting questionnaire survey. This survey helps of study of delayandtheireffectsinconstructionprojectcycle.FromdetailedanalysisofdelayIsuggestthe solution for delay causes. This study also focuses on that cost planning of projectthrough MS-Project software analysis to find the cost and schedule performance. Itidentifies the delay experience in project leads to unusual cost and schedule variationrelation.Estimatesofconstructioncostsandschedulerepresentthesustainable development of the firm. The economic impact of a construction cost overrun is possible tolossventureofproject.

INTRODUCTION

Delay is generally acknowledged as the most common, costly, complex and risky problem encountered in construction. Comes due to the dominant importance of your time for each the Owner (in terms of performance) and also the Contractor (in terms of money), it's the supply of frequent disputes and claims resulting in lawsuits. To regulate this case, a contract is developed to spot potential delay things beforehand and to outline and fix obligations to preclude such controversies. A considerable variety of General Condition's clauses address this subject in a method or another. Construction delays are important factors to be considered as time lag in completion of activities in the project. It create undefined schedule ms communication between contractors and owners. It leads to increase the expenses of project, wages of labour rise the rate of interest if the project established with loan amount.

1. TYPES OF DELAYS

1. critical and non – critical delays
2. excusable and non – excusable delays
3. concurrent and non- concurrent delays

- ✓ **Critical delays**
  A delay responsible for extending project duration is called Critical delay
  Example; Extended overhead cost
- ✓ **Non – critical delays**
  Non extending project duration is called non -Critical delay
  Example; Ideal equipment cost
- ✓ **Excusable delays**
  Contractor does not have any control on the activity.
  Example; Natural acclimates, approvals
- ✓ **Non – excusable delays**
  Contractor is fully responsible for activity does not getting delayed.
  Example; improper planning and scheduling, delayed procurement.
- ✓ **Concurrent delays**
  It affects more than one activity at same time of project.
- ✓ **Non- concurrent delays**
  It affects only one activity.

2. CAUSES OF DELAYS

There are two kinds of causes for delays in construction projects: external and internal reasons. Internal causes delay causes, which include four parties involved in the project come from. These parties include the owners, designers, contractors and consultants. Other delays, which do not come from these four parties, for example, material supplier, are based on extraneous reasons from the Government or whether the followings are some of the possible delay of the construction industry is

PERT ON EXPERIMENTAL STUDIES OF FLOATING COCONUT SHELL LIGHT WEIGHT AGGREGATE CONCRETE WITH VARIOUS ADDITIVES

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ABSTRACT*:*
Behavior of the Coconut Shell Concrete Ceiling was formulated from the parameters of heat flow and heat exchange with air. At the Heat insulation, the effects of different Coconut Shell Ceiling materials on the outdoor air temperature (Tao) and indoor air temperature (Tai) were measured at 150cm above floor level. Thermal comfort is possible when Cement-Lime-Sand with Over Burnt Clay, Coconut Shell and natural additive soap nuts with foaming agent can be used as our innovative and invention concrete mix. Various foaming agents will be effectively used to attain high quality of floating Crete. Finally, efficient foaming agent with suitable additives of Coconut Shell Concrete will be recommended to protect our Nation. Due to these experiments, we will attain thermal insulated floating coconut shell concrete ceiling. Thus, we can attain our goal which is about comfort ceiling. Eco-friendly products will be made powerful environment in economical way. Heat flow of building will be reduced and good ventilation can be gained. To maintain our economy, we will utilize our quality Coconut Shell as main ingredient to manufacture Floating Coconut Shell Concrete which can used as statue in Amusement Park on the top of water. Carbon sink is possible because we use coconut shell with soap nuts as additives. the utilization of coconut shell (CS) as a substitute for natural gravel aggregate in concrete is an effective way for a sustainable concrete construction @ 40% replacement ratio was to be necessary criteria for thermal insulating concrete according to codal provisions. Various color cement will be used to change outlook of the Floating Coconut Shell Crete to attain aesthetic appearance. To attain floatable Light Weight Coconut Crete products by using coconut shell as a light weight aggregate with soap nut as a natural additive. Floatability of coconut shell concrete, Light weight coconut shell concrete, Coconut shell Crete, Sustainable foam concrete are the novelty of this concrete. Thermal insulation behavior is our main aim in our concrete work. Due to global warming, day by day, we tackle more type of phycological and ecological problems in our body as well as in our environment. To improve human comfort in our routine life with help of Coconut Shell Crete falls ceiling and to make healthy environment to ensure safety of future generations. At different environmental situations, we can make all our dwellings with Coconut Crete falls ceiling for Modernization.
KEY WORDS*:* *Thermal insulating concrete, Carbon sink, Thermal comfort, Human comfort*

INTRODUCTION

The utilization of coconut shell with soap nut additive as a substitute for natural gravel concrete is an effective way for a sustainable concrete construction practice and it acts as a carbon sink. In the present study, the thermal properties of coconut shell with soap nut additive analysed. The most relevant thermal properties such as thermal conductivity, specific heat and thermal diffusivity found at 0%, 10%, 20%, 30% and 40% replacement of coarse gravel. Experimental investigation on mechanical properties and fracture toughness of eco -friendly concrete produced, using coconut shell as coarse aggregate, blast furnace slag as a partial replacement for cement and manufactured sand as fine aggregate. The stress-strain behaviour of coconut shell concrete incorporating ground granulated blast furnace slag and manufactured sand was obtained and it was in good fit with popovics mode. (Mo et d., 2015). (1)Coconut shell concrete of grade M20 was achieved using 401Kg/m3 of cement by conceal curing. The flexural behaviour of under reinforced and over reinforced coconut shell concrete designed by limit state method using the actual stress-strain behaviour is analogous with the experimental values. The deflection and crack width of coconut shell concrete is comparable with the permissible values given by IS456:2000, ACI-318 and EC 2: 1992(2) The bond properties were determined through pull-out test. Coconut shell concrete can be classified under structural lightweight concrete. The results showed that the experimental bond strength as estimated by BS 8110 and IS 456:2000 for the mix selected.(3) Foamed concrete possesses characteristics such as high strength-to-weight ratio and low density. Foamed concrete reduces dead loads on the structure, saves energy and lowers the labour cost during construction. The foaming agent used to generate foam is sodium lauryl ether sulphate. (4) Foam concrete can have 10% to 70% air, which results in a material that is light weight but may compromise the compressive strength and durability properties.(5) The thermal conductivity of foamed concrete varies from 0.021 –

STUDY ON BEHAVIOUR OF PERMEABLE CONCRETE IN THE UTILIZATION OF CHEMICAL PROCESSING OF ASH

V.Geetha[1], Dr.M.Gunasekaran[2]

[1]PG Student, [2]AssociateProfessor, K.S.R. College of Engineering, Tiruchengode.

ABSTRACT

Permeable concrete is a distinctive kind of concrete with excessive porosity used for concrete flat work functions that enable the water from precipitation and different sources to ignore without delay through, thereby decreasing the runoff from a web page and permitting floor water recharge. This porosity is attained via a surprisingly interconnected void content. Typically permeable concrete has little or no pleasant mixture and has simply adequate cementing paste coat the coarse combination particles whilst maintaining the interconnectivity of the voids. Permeable concrete is historically used in parking areas, areas with excessive traffic, stroll methods in parks and gardens, residential streets, pedestrian walkways and inexperienced houses, basketball and volley ball courts etc. Porous concrete is an essential utility for the sustainable building and is one of many low affect improvement methods used via builders to defend waterquality.

KEYWORD: Silica Fume, Permeable Concrete, Fly Ash, Compressive Power

1. INTRODUCTION

Permeable concrete is additionally a special and fine skill to tackle essential environmental troubles and sustainable growth. When it rains, permeable concrete robotically acts as a drainage system, thereby placing water again the place it belongs. Permeable concrete is tough textured, and has a honeycombed surface, with reasonable quantity of floor ravelling which happens on closely travelled roadways. Carefully managed quantity water and cementitious substances are used to create a paste. The paste then types a thick coating round combination particles, to stop the flowing off the paste for the duration of mixing and placing. Using ample paste to coat the particles hold a device of interconnected voids which enable water and air to bypass through. The lack sand in permeable concrete consequences in a very harsh combine that negatively influences mixing, Delivery and placement.

2. MATERIAL USED FOR PERMEABLE CONCRETE

2.1 CEMENT

Cement is a key to infrastructures industry and is used for various purposes and also made in many compositions for a wide variety of uses. Cements may be named after the principal constituents, after the intended purpose, after the object to which they are applied or after their characteristics property.

2.2 AGGREGATES

Aggregates were first considered to simply be filter for concrete to reduce the amount of cement required. However, it is known that the type of aggregate used for concrete can have considerable effects on the plastic and hardened state properties of the concrete. They can form 80% of the concrete mix so their properties are crucial to the properties of the concrete.

2.3 WATER

Water is a key in the manufacture of concrete. Water used in concrete mixes has two functions: the first is to react chemically with the cement, which will set and harden, and the second function is to lubricate all other materials and make the concrete workable. Although it is an important ingredient of concrete, it has little to do with quality of concrete.

2.4 SILICA FUME

Silica fume is one of the artificial pozzolanas, commonly used as mineral admixtures. Micro silica is very fine non-crystalline silica, produced in electric arc furnaces, as a by-product of the production of the elemental silicon or alloys containing silicon also known as condensed silica fume or micro silica.

2.5 FLY ASH

Fly ash closely resembles volcanic ashes used in production of earliest known hydraulic cement. The reason to use in concrete is the increased life cycle expectancy and increased in durability. Concrete designers use as a partial replacement for Portland cement up to 30% of the total cementitious composition.

EXPERIMENTAL STUDY ON PERFORMANCE OF METAKAOLIN IN PERVIOUSCONCRETE

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Abstract
Lately, part of examination center around growing new Supplementary cementitious material to fortifying the solid. These materials are utilized as a piece of concretes. Metakaolin is one of the beneficial cementitious materials which are part of the way traded for concrete. Properties of cement with metakaolin are generally favored added substances in concrete.
Pervious cement is an uncommon kind of cement with a high porosity utilized for solid flatwork applications that permits water from precipitation and different sources to go straightforwardly through, in this manner diminishing the spillover from a site and permitting groundwater re-energize. It likewise called as Porous concrete, Permeable concrete, No fines concrete and Porous asphalt. Pervious cement is generally utilized in stopping zones, territories with light traffic, Residential roads, Pedestrian walkways and nurseries. It is a significant application for manageable development. Metakaolin will be added at various rates or percentages such as 1%,1.5%,2%,2.5% by the heaviness of concrete.
To make concrete cubes and cylinders at every percent. The effect of metakaolin at various percents in pervious concrete will be finding by conducting compression test.

***Key Words*-Metakaolin, Porous Concrete or Pervious Concrete, Compression Strength.**

1.INTRODUCTION

Pervious cement is a unique sort of cement with a high porosity utilized for solid flatwork applications that permits water from precipitation and different sources to go straightforwardly through, consequently decreasing the spillover from a site and permitting groundwater re-energize. It likewise called as permeable concrete, penetrable concrete, no fines concrete and permeable asphalt. Pervious cement is made utilizing huge totals with almost no fine totals. The solid glue at that point covers the totals and permits water to go through the solid chunk. Pervious cement is generally utilized in stopping territories, regions with light traffic, private roads, passerby walkways, and nurseries. It is a significant application for reasonable development and is one of many low effect improvement methods utilized by manufacturers to ensure water quality.

1.1 Aim

To find the strength behavior of pervious concrete at various percents of metakaolin and compare with the unmodified pervious concrete.
1.2ResearchObjectives
- To achieve economy in concrete construction and to utilize metakaolin in an effective environment friendly manner.
- To meet the scarcity of cement and fine aggregates in future.
- To meet the strength improvement in pervious concrete.
- Todeterminetheeffectofmaterialproportionontheengineeringpropertiesoftheperviousconcrete.
- Investigatetheperformancecharacteristicsofthepervious concretesuchasporosity,compressivestrength,andinfiltrationrate.

2 .LITERATURE REVIEW

2.1Effect of Fly Ash and MetakaolinOn Pervious Concrete Properties- Nikhil Saboo, ShekharShivhare, Krishna Kumar Kori,AnushK. Chandrappa(2019*)*

The literature is reviewed on effect of fly ash and metakaolin on pervious concrete properties. In this study, supplementary cementitiousmaterials are the byproducts of productions which processes all from industries, several environment concerns and it is imperative toutilize for partial replacement. The research was done by the author to determine the porosity, density, compressive strength, andpermeabilitybydoingvarioustests.Thereplacementofflyashwasfoundtobebetween5and15%.Andasresult,cement canbepartialreplaced by SCMs, which not only increases the workability but as well aid in achieving higher strength with lesser cement contentsrendering optimal solution for usage of industrial by-products. Different method were performed like specimen preparation and curing,determinationofdensityandporosity,permeabilityandcompressivestrength.withincreaseinporosity,densityreducedandpermeabilityincrease.
The following are result researched by the author to explore the discussion to find the improvements by replacing with fly ash andmetakaolin.

STUDY ON KEY DETERMINANTS OF CONSTRUCTION DELAY

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ABSTRACT

The aim of this study was to investigate the causes of construction delay and its impact on client dissatisfaction. The factors were recognized from literature and using these factors questionnaire was organized and it consists of total of 40 factors causing delay. In order to collect data from the respondents, questionnaire method was adopted. The structured questionnaire form was sent to various construction companies through email. This study had been conducted in and around Erode district. The study recognized six dimensions of construction delay. These were design, human, finance, machinery, operation, practice. From the identified dimensions, proposed model had been generated and hypothesis had been assumed. Using the proposed model and hypothesis, statistical analysis had been administered. The statistical analysis includes Correlation, Multiple regression, Factor analysis, Reliability statistics. By identifying the most influential factors causing delay from the statistical analysis, would help the construction industry, suitable remedial measures may be given to minimize the delay in construction.

INTRODUCTION

GENERAL

Delay factors are considered to be significant role in the delivery of a construction project on time, within budget and at the required quality (Shebob et al, 2007). The success of the construction project requires sound strategies, good practices and careful judgement for completion of project on schedule and with estimates cost (Adnan Enshassi et al, 2016). Delays are the most common and costly problem encountered on construction projects. Construction delays are significant part of the project's construction life. Even with present advanced technology, and management understanding of project management techniques, construction delay projects continue to suffer in case of delays and project completion dates. The major reasons for delay includes strikes, rework, deficit organization, shortage of materials, machinery failure, change orders. Delays are costly to all parties involving in the construction industry and often result in litigation. The time and expense incurred to produce a claims document in itself is substantial. There is room for improvement in present practices for keeping track of delays. Therefore, introducing aexible and more accurate delay analysis technique can be valuable.

Delays adversely affect the project stakeholders including owners, design professionals and other users and professionals. The main objectives of construction projects are time, cost, quality and safety, which are jeopardized by delays. Delays result in extension of project time, which leads to extra overheads that increase the cost. Delay is an adverse problem that has to be dealt with in any construction project. Hence it is significant to measure the significant causes of delay and find remedial ways to avoid them and mitigate their impact **(**ArshiShakeelFaridi et al, 2006).

Delay could be stated as the time overrun either beyond date of completion specified by a contract, or by delivery of a project. It means that the project is running over its planned schedule and is recognized as potential disputes in construction projects. By owner, delay can be defined by capital loss through improper production facilities and rent-able space on present facilities. By means of contractor, delay defines high costs due to overheads because of long time work, higher cost of materials by inflation and due to increase labor costs.

Completion of projects on scheduled time is an indicator of efficiency, but the construction process is subjected to different variables and factors, which results from many sources. It includes the performance of parties, availability of resources, environmental factors, other party's involvement, and contractual relations. The main objectives include identification of delay causes in construction, to analyze the importance of the causes of delay, to mitigate the differences in perceptions of owners, contractors and consultants (Sadi A. Assaf and Sadiqi Al-Hajji, 2006).

With these studies, we conclude that delays in construction can cause a number of changes in a project such as late completion, lost productivity, acceleration, increase in costs and contract termination. However, in general delay situations are complex in nature.

A STUDY ON DURABILITY CHARACTERISTICS OF PERVIOUS CONCRETE USING MARBLE POWDER AS PARTIAL REPLACEMENT OF CEMENT

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ABSTRACT

This project represents a study on durability characteristicsof perviousconcrete made with marble powder as partial replacement of Portland PozzolonaCement (PPC) with different coarse aggregate sizes for sustainable pavementconstruction. The size of coarse aggregate (CA) ranging from 6.3 mm to 12.5 mmwas used in this study. Aggregate to binder ratio and water to binder ratio wasconsidered as 3.3 and 0.35. Durability properties such as oil resistance, mud water resistance, water absorption test, Abrasion resistance testhave been carried out for PPC binderand Partial replacement of marble powderwith PPC binder pervious concrete. In this projectthe durability results are to becompared with pervious concrete made out of PPC binder and partial replacementofmarble powderwithPPC binderperviousconcrete.

1.INTRODUCTION

Pervious concrete is a special type of concrete with high porosity usedfor concrete flatwork applications that allows water from precipitation andother sources to pass directly through, thereby reducing the runoff from a siteand allowinggroundwaterrecharge. Themarble has been commonlyused as a buildingmaterial sinceancienttimes.Disposalofthemarblepowderfrommarbleindustry,consistingofveryfinepowder,isoneofthe environmentalproblemsworldwide today. The marble powder is obtained as a by-product of marblesawing and shaping process. It is rather confirmed as a waste, and is thereforethe cause of certain serious problems such as the waste of natural resourcesandenvironmentalpollution.Utilizationofmarblepowderinconcreteproductionwillpreserve the cleanEnvironmentandnaturalresources.

2. MATERIALS USED

a). PortlandPozzolonaCement

Table2.1 PropertiesofPPCbinder

Properties	Results
Specific gravity	3.13
Consistency	35%
Fineness test	300
Soundness test	10
Initialsetting time	30
Finalsettingtime	600

b). Marble Powder

Table2.2.Physical properties of marble powder

S.No	Property	Result

INVISTIGATION OF FACTORS INFLUENCING COST ANALYSIS ON COMPLETION OF THE PROJECT

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ABSTRACT

Delays in the construction industry are a universally observable fact, which effects the construction participants. The project mainly spotlights on determining the prevailing postponement issues in the central Tamil Nadu, depending on the scrutiny of the construction participants namely the client, consultant, and the contractor. Based on the study from the literature, the questionnaire was framed, obtained, shortlisted to know about their perception on the causes of delays which are categorized into 4 groups say Improper project planning, Design related issues, Finance related issues and Resource related issues and are analyzed using the SPSS software tools. Hence the dominant factors will be found. This research investigates the critical factors that affect cost performance across both the preconstruction and construction phases of projects and also the factors that affect the profit and success of the construction industry.

INTRODUCTION

GENERAL

Large scale development activities are taking place in Indian construction industry and are closely associated with nation's economy. Cost overruns have become the hallmark of construction projects in India. It has become a global concern amongst the practitioners and academic researchers because the construction projects are very rarely completed within the estimated cost limit. Cost is amongst the major considerations throughout a project management life cycle and is considered as prime factor of success. However, it is uncommon to see project completed within the estimated cost. The magnitude and causes behind these cost overruns remain understudied.

Cost is a major concern in every part of the construction project. Cost overrun is the total increased value compared to the budgeted cost. Cost overruns have become the basic factor for determining the success in the construction project. The construction activities are rarely completed within the estimated cost limit and so it has become a global concern. The cost overrun concerns the quality and success of the overall nation's economy.

In general, cost overruns reduce the productivity of available economic resources, edge the development potential and diminish the effectiveness of the economy. Despite the importance and the significance of the construction sector in India, it is noted that the owners, consultants, and contractors don't give its importance to evaluate the time and cost overruns at the end of project. It is therefore essential to identify actual causes of time overruns to minimize and avoid delays and increasing cost in any construction project.

It was felt that a survey into the causes of cost overruns in the construction processes might provide some insight into their solutions. It was also felt that it would be beneficial for the study to investigate the viewpoints of the contractor, the consultant and the client.

METHODOLOGY

This research includes 7 phases. The first phase of the research is to identify the problem and objective of the study. The second phase of the research includes collecting necessary data from the previous literature reviews. The third phase of the research is the questionnaire design through which includes demographic data of the respondent and the factors for cost overrun. The fourth one is the questionnaire distribution through which the data will be collected. The fifth phase of the research includes Response Collection. The sixth phase is the analysis using Statistical Package for Social Sciences (SPSS) software used to statistical analyses of the questionnaire. The seventh and last phase of the research is to conclude.

REPLACEMENT OF COARSE AGGREGATE WITH CONSTRUCTION DEBRIS IN PPC CONCRETE

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Abstract

The disposal of this waste is a very serious problem because it requires huge space for its disposal and very little demolished waste is recycled or reused. Huge quantities of construction and demolition wastes are generated every year in developing countries like India. The cost of concrete production will reduce considerably compared to conventional concrete produced by using freshly obtained coarse aggregate. Since it is readily available at very low cost, its application will reduce the construction pollution and enhances the effective use of construction waste which helps in controlling Solid Waste Management. This study is a part of comprehensive program wherein experimental investigations have been carried out to assess the effect of fully replacement of coarse aggregate by demolished waste on workability and compressive strength of recycled concrete for the study at 7 and 28 d. In this experiment use of construction debris instead of coarse aggregate with mix of 1:1.5:3 in M20 concrete. Test results showed that the compressive strength of recycled concrete fully replacement of coarse aggregate by demolished waste at the end of 28 d has been found to be comparable to the conventional concrete.

1. INTRODUCTION

Concrete is the most widely used construction material on this earth. In fact, concrete is used in virtually everything and there is still no substitute available for many of its applications. Without concrete, the community and society cannot exist. Therefore, lots of researches are going to find the new varieties of concrete which are economical for the construction. All these researches are focused on the replacements of different ingredients of the concrete which makes the concrete cheaper and even stronger too.Worldwide, cities generate about 1.3 billion tones of solid waste per year.Building materials account for about half of all materials used and about half the solid waste generated worldwide. The waste, generated in the construction, maintenance, repair and disposal phases of a building, is called Construction and Demolition (C&D) Waste.

1.1 Demolition Waste

Demolishing the old building produces large amount of waste products. When structures made of concrete are demolished or renovated, concrete recycling is an increasingly common method of utilizing the rubble. Concrete once routinely trucked to landfills for disposal, but recycling has a number of benefits that have made it a more attractive option in this age of greater environmental awareness, more environmental laws, and the desire to keep construction costsdown.Concrete aggregate collected from demolition sites is put through a crushing machine. Crushing facilities accept only uncontaminated concrete, which must be brick debris, free of trash, wood and other such materials. Metals such as rebar are accepted, since they can be removed with magnets and other sorting devices and melted down for recycling elsewhere. The remaining aggregate chunks are sorted by size. Larger chunks may go through the crusher again. After crushing has taken place, other particulates are filtered out through a variety of methods including hand-picking and water flotation.Crushing at the actual construction site using portable crushers reduces construction costs and the pollution generated when compared with transporting material to and from a quarry. These systems normally consist of a rubble crusher, side discharge conveyor, screening plant, and a return conveyor from the screen to the crusher inlet for reprocessing oversize materials. Compact, self-contained mini-crushers are also available that can handle up to 150 tons per hour and fit into tighter areas. With the advent of crusher attachments - those connected to various construction equipment, such as excavators - the trend towards recycling on-site with smaller volumes of material is growing rapidly.Smaller pieces of concrete are used as gravel for new construction projects. Recycling concrete can create more employment opportunities.

2.MATERIALANDMETHODS

2.1 GENERAL

The construction waste material is also very suitable for replacing the coarse aggregate in concrete. It contains mostly the demolished building pieces like a portion of slab, beam, column & masonry elements.Moreover, some materials are wasted while construction works like bricks pieces, stone pieces, etc., those materials will perform well with concrete.

EXPERIMENTAL INVESTIGATION ON GEOPOLYMER BRICKS AND ITS APPLICATIONS

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ABSTRACT

The purpose of the present study is to investigate the behaviour of Fly ash based Geopolymer Bricks, the size of the brick adopted was 230mm x 230mm x 100mm. The brick were cast with fly ash to river sand, M-sand and eco-sand (silica sand) with the ratio of 1:2.5 and 1:3 by weight. Sodium hydroxide and Sodium silicate solution were used as the alkaline activators. The binder solution consists of a combination of NaOH and Na2SiO3 solution in the ratio of 1:2.5. The optimum water/ binder ratio of 0.416 was selected as per available literature. The water/binder ratio is the ratio of solution (NaOH, Na2SiO3 and water) to fly ash. Ambient curing was adopted in this study. Ten bricks were prepared for ambient curing. The bricks were cast with different types of sand with river sand, M-sand and eco-sand (silica sand). The experimental results obtained were compared with locally available bricks like Clay bricks and Flyash bricks.

1.INTRODUCTION

Fly ash is generally captured by electrostatic precipitators or other particle filtration equipments before the flue gases reach the chimneys of coal-fired power plants, and together with bottom ash removed from the bottom of the furnace is in this case jointly known as coal ash. Fly ash is generally stored at coal power plants or placed in landfills. About 43 percent is recycled, often used to supplement Portland cement in concrete production. From laboratory experiments, it was revealed that concrete made of stone powder and stone chip gained about 15% higher strength than that of the concrete made of normal sand and brick chip [1]. The concentration of alkaline activator increases, the compressive strength of Geopolymer mortar also increases. Specimens cured at temperature of 65oC for 1 day showed the highest 28 days compressive strength. The mass ratio of activator/fly ash of 0.4 produced the highest 28 days compressive strength for the specimen [2,3]. Specimens cured at temperature of 65^{o}C for 1 day showed the highest 28 days compressive strength. The mass ratio of activator/fly ash of 0.4 produced the highest 28 days compressive strength for the specimen [4,5]. Concrete of stone powder and brick chip gained about 10% higher strength than that of the concrete normal sand and stone chip concrete. The highest compressive strength of mortar found from stone powder which is 33.02 Mpa, shows that better mortar can be prepared by the stone powder. The compressive strength of concrete from stone powder shows 14.76% higher value than that of the concrete made of normal sand. On the other hand, concrete from brick chip and stone powder produce higher compressive value from that of brick chip and normal sand concrete [6-8].

2. MATERIAL AND METHODS

In this chapter the materials which are used to make Geopolymer brick and their physical and chemical properties where explained.The materials used for making fly ash-based Geopolymer brick specimens are low calcium fly ash as the source material (Class 'F ') , fine aggregates (river sand, M-sand, eco sand), alkaline such as sodium hydroxide solution, sodium silicate solution were as binders and water as workability measure.

2.1 Fly Ash

In this Geopolymer bricks, fly ash is obtained froMettur power plant, their physical and chemical properties are given below in table 1.

Table. 1 Physical properties of fly ash

Properties	Value
Finesses modulus (Passing through 45 micron sieve)	7.86
Specific gravity	2.30

ANALYSIS OF FACTORS AFFECTING PRODUCTIVITY IN CONSTRUCTION PROJECT

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Abstract

Worldwide the construction industry faces the lot of challenges associated with the productivity of the labour and the equipment and problems linked with the productivity of the same in the industry. In the construction industry, the changes are the most common thing to occur in any level of the project. It is important to look on the things which changes the productivity and losses in the project. The main factors which are associated with productivity are the labour and the equipment. The main objective of this study is to find and analyze the factors which affects the productivity of the construction project. A questionnaire survey is made on the construction companies and the contractors to identify the factors affecting productivity. A set of questions are prepared on the factors involving the labour and equipment productivity. The collected data is used to analyze and the ranking is done with the relative importance index(RII) method. The results from this review can be used as a reference for the future researches in this field and the construction projects and contractors can also make use of this in their projects.

Keywords: *Productivity, labour, equipment, Relative Importance Index.*

INTRODUCTION

The construction industry is one of the largest industries in the world, it is the largest contributor of gross domestic product in the developing countries. Among the various construction sectors, building construction sector is the important and it is gaining momentum in the recent years. In the most of countries, the labour and the equipment costs comprises from 30 to 50% in all over cost of the project and that is regarded as the true reflection of economic success in the operation and the satisfaction of the clients. Despite of the technical and the technological advancements in the industry, the availability of the construction materials, labour, tools, and the financial power of the contractors, the cost of the construction is increasing in a rapid manner. The time taken for the completion of the construction is also increasing so that the most of the project are irregular. To achieve the objectives, a questionnaire survey was conducted among the construction companies and the contractor, comprising with the set of 25 questions on the labour productivity and 20 questions in the equipment productivity respectively. After the data collection the data are analysed using Relative Importance Index method.

Productivity

Productivity = Output / Input

1.1 NEED OF THE STUDY

- To analyze and know about the economical and the statistical conditions of the country
- To ensure the safety and the health conditions of the construction labours involved in the project.
- To educate the labours about the importance of the project an train them to the project work.
- To improve and reach the dynamic economic growth in the industry.

1.2 IMPORTANCE OF THE STUDY

The productivity is the one of the greatest feature in the labour and the equipment in the construction industry. There are many internal and external elements in the construction industry which are different from each other and they are never a constant one. Because of this the construction industry faces the changes in the productivity of the projects and it also affects the development of the total construction industry. So it is important to learn and know that there will be no loss in the plan and the schedule while reducing the productivity in the construction project.

1.3 SCOPE OF THE STUDY

The main scope of the study are,

EXPERIMENTAL INVESTIGATION ONPARTIAL REPLACEMENT OF FLYASH INSTEAD OF CEMENT IN INTERLOCKING BRICKS

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ABSTRACT
Cement is a significant material that is used in building. The production of cement which, due to combustion, emits high concentrations of carbon emissions.The scope of this present study fly ash as a partial replacement of cement in interlocking bricks.This study is part of a research project in which the production of interlocking mortar-free bricks. The mix ratio is 1:4, and 1:5with water-cement ratio 0.45and addition of 1% of steel fibers. The cement is replaced by fly ash in different percentages such as 5%, 10%, 15%, and 20% respectively. It is a good binding material for the replacement of cement on the interlocking bricks.The major focus of this investigation to develop manually compressed interlocking bricks. The interlocking bricks are tested atthe age of 7 days and 28 days for compressive strength, water absorption, and bulk density and physical tests such as hardness test and efflorescence test.

Keywords– *Interlocking bricks, Fly ash, steel fiber, Compression strength test, Mortar free joints.*

1. INTRODUCTION
Brick masonry is an ancient material and one of the most important building materials in the world. The traditional brick-making technique has unmistakable drawbacks. A brick is a masonry building material used to create walls, pavements, and other components[1]. The most basic building material for the design of buildings is nominal brick [2].Civil engineers are searching for new building materials that are robust, cost-effective, and reliable due to the construction industry's exponential development [3]. Since the blocks are constructed dry and piled on top of one another, it necessitates the use of less-skilled staff. The blocks may be manufactured directly on the construction site or on a larger scale in a factory yard [4]. The interlocking mechanism is a modern and revolutionary way to make masonry structures [5]. Soil interlocking blocks and concrete interlocking blocks are two kinds of interlocking blocks [6, 7]. Interlocking blocks are produced in special moulds, in which compaction can be done mechanically or by hand depending on the type of block, the material used, required quality, and available resources [8]. Interlocking blocks differ from traditional blocks in that there is no mortar to be filled between the layers of the blocks during the construction process [9]. Building walls and partitions are being built at a faster rate [10].Semi interlocking masonry has reduced stiffness and allows relative sliding of brick courses in a plane of a wall and prevents out-of-the plane relative movement of bricks [11, 12]. Due to the strong demand for traditional masonry work elements such as brick, there will come a period when some practical obstacles such as inadequate raw source, high cost material, jointing and cracking, and environmental effects such as high hydration while manufacturing and its applications must be overcome [13, 14]. The variation of sizes for these innovative bricks/blocks makes them suitable for loadbearing or non-load bearing wall structures [15, 16]. Moreover, the interlocking mechanism improves the stability of the brick unit, which enhances the constructed wall alignment horizontally and vertically to withstand loads like the non-mortared wall system [17]. Thus, developing a new type of innovative bricks from different types of waste materials, such as coconut fiber-reinforced concrete, geo polymer, soil cement, fly ash, alkali-activated fly ash, and stabilized mud-fly ash, has been attempted in masonry production [18]. In addition, the interlocking arrangement enhances the stability of the brick assembly, enabling the constructed wall to be horizontally and vertically balanced to support lots equivalent to a non-skinned wall frame [19, 20]. Water absorption in interlocking blocks is lower than in standard brick [21]. Hooked end steel fiber is used to strengthen the post-crack arresting function of bricks [22, 23].The main objective of this research is toalternate materials for bricks.Find the interlocking bricks' physical and strength testsand compare the results with control specimen.

2. EXPERIMENTAL WORK
Ordinary Portland Cement (OPC) of grade 53 is used. The cement test was performed under IS 12269:1987. The physical properties of cement as obtained by the test are shown in table 2.1. M-sand is used in the production of bricks. It is made by grinding hard granite stone.The fine aggregate test as per IS 2386 (Part 1-6):1963. The physical properties of the M-sand as obtained by the test are shown in table 2.2. Class F fly ash is used in our study to prepare the test specimen as per IS 3812(Part-1):2013 code. Fly ash was obtained from Mettur's thermal power station. The physical properties of Fly ash as obtained by the test are shown in table 2.3. Steel fiber with a hooked end is used in this phase. These fibers are less expensive and easier to work with. It will stop the forming of cracks after post-curing. They are hooked at both ends and can fill air voids. The physical properties of fly ash obtained by the test are shown in table 2.1.

EXPERIMENTAL INVESTIGATION ON GEOPOLYMER MORTAR USING RHA AND GGBS

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ABSTRACT
The main objective of this project is to the compressive of strength of RHA and GGBS based Geopolymer mortar. The Geopolymer mortar is a mixture of Rice Husk Ash, Ground Granulated Blast-furnace Slag, and alkaline solution. The rice husk ash is replaced by Ground Granulated Blast-furnace Slagin different percentages such as 0% 10%, 20%, 30% and 40%. As an alkaline solution, sodium hydroxide – sodium silicate is used. Themolarity of alkaline solution is16M. Test specimens (mortar cubes) of various proportion of RHA and GGBS with alkaline solution were casted and tested for28 days compressive strength under both ambient and heat condition. For heat curing, specimens were kept at 70^{o} C for 1 day and kept at room temperature until testing. The test result indicates that the increase in molar concentration increases the compressive strength of Geopolymer mortar. Also the increase in the percentage of GGBS increases the compressive strength of Geopolymer mortar. Compressive strength of Geopolymer mortar made using Sodium activators. The maximum compressive strength of rice husk ash replacement as Ground Granulated Blast-furnace Slag is 45% than that of the normal specimen.

Keywords:*Rice Husk Ash (RHA), Ground Granulated Blast-furnace Slag (GGBS),Compressive strength, split tensile strength.*

1. INTRODUCTION

Waste materials such as industrial and agricultural wastes can be used in the production of concrete which eventually reduces the environmental impact due to its improper disposal[1].The production of Portland cement causes emission of greenhouse gas CO2 [2]. These Portland cement based conventional concretes are found to be less durable in severe environmental conditions [3]. The contribution of ordinary Portland cement production worldwide in the emission of greenhouse gas is approximately 7% to the total greenhouse gas emission to the atmosphere [4, 5]. Therefore, to preserve the global environment from the impact of cement production, it is essential to replace Portland cement with new binders.Similarly, the disposal of waste materials also poses another serious environmental problem [6]. Geopolymer is an inorganic alumino-silicate polymer, synthesized from predominantly silicon and aluminium material [7]. From a tonne of paddy, about 200 kg of rice husk can be obtained constituting about one fifth of the total rice produced. During the combustion, rice husk yields 22% of rice husk ash [8, 9]. Hence Rice Husk Ash can be referred as a cementitious material by using partial replacement of Ground Granulated Blast-furnace Slag [10, 11]. Thus, the addition of RHA as cementitious material is a promising solution to extenuate the environmental impacts due to cement manufacturing process [12]. The reaction of RHA with an aqueous solution containing alkaline activators in their mass ratio, results in a material with three-dimensional polymeric chain and ring structure bonds [13]. Water is not involved in the chemical reaction of Geopolymer mix and instead, water is expelled during curing and subsequent drying [14]. The commonly used alkaline liquids are Sodium hydroxide or Potassium hydroxide with Sodium silicate or Potassium silicate [15]. Thus, an alternative method is needed to reduce the emission of CO_2 and making the path for solid waste management system as well effect on the properties of the mortar [16]. The main objective of this study was

- Rapid development of mechanical strength.
- Shows high resistance to acid and other chemical attack.
- Excellent adherence to aggregates.
- Better ability to immobilize contaminants.
- Significantly reduced energy consumption and greenhouse gas emissions during production.
- Widespread availability of raw material inputs.

2. EXPERIMENTALWORK

Ground Granulated Blast-furnace Slagis a by-product from the blast-furnaces used to make iron.The specific gravity of the GGBS is 2.55. The chemical composition of Ground Granulated Blast-furnace Slag is shown in table 2.1. M-sand is used in this project. Tine aggregate test as per IS 2386:1963. The physical properties of the M-sand are shown in table 2.2. The rice husk ash is used as binder material by replacing the Ground Granulated Blast-furnace Slag. The properties of Rice husk ash are shown in table 2.3. The Sodium

STRENGTHENING OF REINFORCED CONCRETE BEAM WITH POLYESTER RESINBONDEDBASALTFIBERFABRIC

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ABSTRACT
The objective of this paper is to investigate and compare the compressive, flexural and split tensile strength of basalt fiber reinforced concrete with M30 grade concrete. Fiber reinforced concrete is a most widely used solution for improving tensile and flexural strength of concrete. Basalt fiber adding provides improved properties to reinforced concrete beam and the addition of basalt fiber provides the change mode of brittle to ductile nature of concrete beam. So it will choose as an alternative material for strengthening of beams. Basalt can be used in tubes, bars ,pipes fittings, internal heat and sound insulation of floors, walls, frame walls, boiler shells, tanks, chimneys, fire protection structures, etc due to its strong applications in construction materials. The properties which are considered for the selection of a material in construction sector are good hardness, high mechanical properties, corrosion resistance, extended temperature range and very good insulation properties.

Keywords:*Retrofitting,ReinforcedConcreteBeam,BasaltFiberFabric*

1. INTRODUCTION
Concrete as the most commonly used construction material that is going towards high performance, i.e., high strength, hightoughness, high durability and good workability. Shrinkage and permeability resistance of concrete are two important propertiesrelatingtodurability. Concrete can be modified to perform in a more ductility form by the addition of randomly distributed discrete fibersin the concrete matrix.[2] Specialized technique of strengthening, stiffening and repair are needed to deal with damaged produced byunusual events such as fire, earthquake, foundation movement impact and overload. In this research various tests were conductedto detect the structural behavior of beam with basalt fiber fabric. Fibers are usually used in concrete to control cracking due to plastic shrinkage and to drying shrinkage. They also reduce the permeability of concrete and thus reduce bleeding of water. Some types of fibers produce greater impact, abrasion, and shatter–resistance in concrete.[1]

Basalt is a type of igneous rock formed by a rapid cooling of lava at the surface of planet. BasaltasafiberusedinFRPsandstructuralcompositeshashighpotentialandisgettingalotofattentionduetoitshightemperature and abrasion resistance. Basalt fiber is 3 times lighter &2.5 times stronger in tensile strength than steel.[5]Addition of basalt fiber improves the engineeringproperties of concrete. It is also found to be economical due to its low cost which has resulted in its application in manufacturing a large assortment of high strength, fire-resistant structures. And also it has better properties than other fibers As mentioned below.,15-20% higher elastic power and modulus, Nature-friendly and based on naturally occurring material that starts worldwide and no biological danger, Recyclability, Production cost is very low as a comparison with the other types of fibers. [3]

2. MATERIALSANDMIXPROPORTION
A.Materials: Raw materials required for the concreting operations of present work are cement, fine aggregate and coarseaggregate

B.Cement:Cementisusedasbindingmaterialintheconcretewherethestrengthanddurabilityaresignificantimportant.

C.The ordinary Portland cement of 53 Grades conforming to IS 12269-1987 is used to manufacture the concrete. Also some tests werecontentsuchasconsistencytest,settingtime test and Specific Gravitytest.[4]

Table1:PropertiesofCement

Sno.	Properties	Observed
1	StandardConsistencyTest	31%
2	FinenessTest	6%
3	SpecificGravity	3.17
4	Initialsettingtime	32min
5	Finalsettingtime	582min

STUDY ON APPLICATION OF EVA IN TIME AND COST OPTIMIZATION IN CONSTRUCTION EQUIPMENTS AND MATERIALS

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ABSTRACT

This study examines previous literature on construction projects cost and schedule overruns, with the specific aim of identifying the causes and effects of cost schedule overruns in construction projects in India and optimize those.The primary findings factors from the study revealed that empirical studies have identified a number of important factors which causes projects cost overruns, such as fluctuation of prices of material, cash flow and financial difficulties faced by the contractor, poor site management and supervision, lack of experience and schedule delay. This study further revealed that delay in progress payments, poor communication and financial difficulties by the contractor are among the identified causes of construction projects schedule overruns by previous scholars. Literature also revealed that extension of project, additional cost, budget short fall, adversarial relationship between participants of the project, delayed payments to contractors, poor quality workmanship and dissatisfaction by project owners and consequently by end users as the major effects of cost overruns. This project explores the causes and effects of construction projects cost and schedule overruns and presents background on the theories of construction project cost and schedule overruns and it should be taken care to optimize those cost using EVA (Earned Value Analysis).

INTRODUCTION

Infrastructure projects in India are infamous for delays and cost overruns. Delays in project implementation mean that the people and the economy have to wait for infrastructure facilities longer than is necessary. This in turn limits the growth potential of the economy at large. Services provided by infrastructure projects serve as input for many other sectors of the economy. Therefore, cost overruns lead to an increase in the capital-output ratio for the entire economy. Simply put, delays and cost overruns reduce the efficiency of available resources and limit the growth potential of the entire economy. Therefore, inadequacy of research on the subject is somewhat surprising.

Earned Value analysis is a method of performance measurement. Earned Value is a program management technique that uses "work in progress" to indicate what will happen to work in the future. Earned Value is an enhancement over traditional accounting progress measures. Traditional methods focus on planned accomplishment (expenditure) and actual costs. Earned Value goes one step further and examines actual accomplishment. With clearer picture, managers can create risk mitigation plans based on actual cost, schedule and technical progress of the work. It is an "early warning" program/project management tool that enables managers to identify and control problems before they become insurmountable. It allows projects to be managed better – on time, on budget.

2. EARNED VALUE ANALYSIS –CONCEPT

Earned Value is a program management technique that uses "work in progress" to indicate what will happen to work in the future. EVA uses cost as the common measure of project cost and schedule performance. It allows the measurement of cost in currency, hours, worker-days, or any other similar quantity that can be used as a common measurement of the values associated with project work. EVA uses the following project parameters to evaluate project performance:

- Budgeted Cost of Work Scheduled (BCWS) or Planned Value (PV) – The sum of budgets for all work packages scheduled to be accomplished within a given time period.
- Budgeted Cost of Work Performed (BCWP) or Earned Value (EV) – The sum of budgets for completed work packages and completed portions of open work packages.

Actual Cost of Work Performed (ACWP) or Actual Cost (AC) – The actual cost incurred in accomplishing the work performed within a given time period

STUDY ON MANAGEMENT OF BITUMINOUS ROAD PAVEMENT CONSTRUCTION

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ABSTRACT

The aim of this study was to investigate the MANAGEMENT OF BITUMINOUS ROAD PAVEMENT CONSTRUCTION. The factors were recognized from literature and using these factors questionnaire was organized and it consists of total of 40 factors causing road work. In order to collect data from the respondents, questionnaire method was adopted. The structured questionnaire form was sent to various construction companies through email. This study had been conducted in and around Nammakal district. The study recognized causes of management of bituminous pavement construction . These were design, human, finance, machinery, operation, practice. From the identified dimensions, proposed model had been generated and hypothesis had been assumed. Using the proposed model and hypothesis, statistical analysis had been administered. The statistical analysis includes Correlation, Multiple regression, Factor analysis, Reliability statistics. By identifying the most influential factors causing delay from the statistical analysis, would help the construction industry, suitable remedial measures may be given to minimize the cause and delay in construction.

INTRODUCTION

GENERAL

SuoZhi et al (2012),Conclude that Fatigue crack has been recognized as one of the main forms for structural damage in asphalt concrete pavements. Under the action of repeated vehicular loading, deterioration of the asphalt concrete (AC) materials in pavements, caused by the accumulation and growth of micro and macro cracks, gradually takes place.

P. J. Gundaliya (2016) This paper studied the viability of utilizing lignin as an antioxidant for arresting the aging of the bituminous binder. Oxidation is the primary cause of long-term aging in asphalt pavements. As a pavement oxidizes, it stiffens and can eventually crack. The use of an antioxidant as a performance enhancer in an asphalt binder could delay aging, thus increasing the life of an asphalt pavement. Lignin is highly available and well-studied antioxidant.

K. Aravind, Animesh Das conclude that Mix design for recycled asphalt mix has been performed through Marshall, creep and fatigue tests. The parameters obtained are used in pavement design and the economy in alternative designs has evaluated considering the material cost towards constituent proportion as well as design thickness. Thus, the paper has presented an integrated mix-design-structural-design system for hot recycled asphalt mix.

Rajeev Chandra et al (2012) , They have evaluated the use of two mix design procedures for designing bituminous pavement mixes with foamed bitumen. Mix design was carried out following the South African and Caltrans guidelines. The RAP materials used for mix design were collected from the NH-5, Chennai-Tada section. Using foamed bitumen produced from Wirtgen WLB 10 foaming equipment, a mix with RAP material, virgin aggregate and active filler were produced in the pug mill mixer. Marshall Compaction effort was used for fabricating the samples. Using the indirect tensile strength test on dry and wet specimens, the optimum binder content was determined. It was seen that the two mix design procedure adopted showed different mix constituents despite using the same RAP source.

Montepara A.et al (2012), shows the first results of a research activity undertaken on a test track specifically constructed with the aim to analyze the effect on pavement performance of a sub-base layer mixture with 50% of natural aggregates and 50% of RAP. The investigation is based on LWD and FWD analysis, comparing results with those obtained on the subsequent section of the test track made by only natural aggregate

Measures for the Optimization and Management of Construction Safety Based on BIM Technology

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Abstract

BIM technology is a kind of new technology application that runs through all kinds of engineering design, construction and follow-up management, and in the course of popularizing and applying the relevant application technology in the past two decades, it has played an important supporting role in promoting the development of China's construction industry. With the continuous improvement of the development depth of related software, BIM technology has also played a great role in the construction safety management of construction. Based on the advantages of BIM technology application, combined with steel structure construction and assembly concrete construction, this paper puts forward the optimization measures of construction safety management, and makes due contribution to the improvement of quality control level in China's construction industry.

1. INTRODUCTION

BIM technology is called building information model technology, its practical application in the field of construction has a long history. With the improvement of its application technology level, BIM technology will fully replace the traditional CAD technology and is widely used in various fields of architecture. In the construction safety management, it is a very necessary work to optimize the construction safety management measures by applying the specific processes such as the preparation and optimization of safety management plan, safety activity monitoring, early warning of safety hazards and evaluation of overall safety work, combined with the actual characteristics of BIM technology. In the process of practical application, BIM technology has the function of visualization, simulation and excellent optimization, which can provide detailed technical support for construction safety management, and deepen the theoretical analysis in this field, which is the inevitable requirement of practical work.

2. THE BENEFITS OF BIM TECHNOLOGY IN SECURITY MANAGEMENT

In the construction safety management work, there are problems in the traditional management mode, such as lack of prediction, poor overall controllability. And the overall work level is more dependent on human factors. There are also shortcomings in the detail, the lack of science and the lack of systematicness in carrying out the work. All of these lead to the overall management inefficiency, safety management accidents are frequent and other phenomena. BIM technology itself has 3D visual function, can simulate the construction link, use the collision function of the software internal to check the construction design plan, the specific application of these functions, can be targeted to solve the shortcomings of the traditional management scheme, effectively avoid the hidden dangers in the construction process, comprehensively improve the level of safety management, better reflect the "people-oriented" safety management concept requirements, but also can better improve the efficiency of construction safety management, improve the economic and social benefits of construction enterprises.The application of BIM technology to various types of construction projects has become an inevitable trend in the development of China's construction industry, from January 2018, China's first detailed national standard of rules applied to the field of construction engineering "Application Standards for Construction of Building Information Models" began to be formally implemented, which also established the guiding direction for the practical application of BIM technology in all construction links of construction.

3. THE OPTIMIZATION OF THE SAFETY MANAGEMENT OF BIM TECHNOLOGY IN STEEL STRUCTURE CONSTRUCTION

3.1. Analysis of the type of steel construction accident

Steel structure is an important type of building construction, under the support of the great potential of industrial and logistics industry development, the steel structure construction market will continue to expand, the construction type is constantly complex, and the resulting construction safety hazards will be more prominent.[1].According to the technical analysis, there are usually several safety hazards in the construction of steel structure. First, the overall support system will collapse or dump, in the steel structure self-weight beyond the temporary support system design load value or support system by external forces, there will be a safety hazard in this regard. Second, the lifting accident, in the building process of steel structure construction, lifting operation is a dynamic process, for the operator's comprehensive quality requirements are higher, in the case of improper operation or processing is not in place, there will be an accident lifting accident.Third, the collision accident, which is also the more common type of accident in the construction process of steel structure construction, the seriousness of the consequences of

EXPERIMENTAL STUDY ON INVESTIGATION OF SAW DUST ASH AND GLASS POWDER AS PARTIAL REPLACEMENT OF CEMENT IN CONCRETE

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ABSTRACT:

The consumption of cement in concrete industries growing day via day. Concrete is the most extensively used development fabric in civil engineering enterprise due to the fact of its excessive structural power and stability. The most vital phase of concrete is the cement. Use of cement on my own as a binder fabric produces massive warmness of hydration given that the manufacturing of this uncooked cloth its large quantity of CO2. The CO2 emission from cement is very unsafe to the environmental changes. The concrete enterprise is searching for supplementary cementitious cloth with the goal of decreasing the CO2 emission which is damaging to environment. The nice way of lowering CO2 emissions from the cement enterprise is to use the industrial via merchandise or use of supplementary cementing cloth such as fly ash, silica fume, noticed dirt ash and met kaolin.

1. INTRODUCTION

There is need for affordable building materials in providing adequate housing for the increasing population of the world. The cost of conventional building materials continues to increase as the majority of the population continues to fall below the poverty line. Thus it is necessary to use a supplementary local material as alternative for the construction of low cost buildings in both rural and urban areas. A huge amount of concrete is consumed by the construction industry. The production of Portland cement is not only costly and energy intensive but it also produces large amount of carbon emissions, the production of cement poses environmental problems due to emissions of gaseous pollutants. The emissions of poisonous gases like CO2, NO etc. by cement production companies have developed the natural environmental pollution and global warming due to the depletion of ozone layer.

2.MATERIALS

In general, concrete is made up of four main ingredients namely coarse aggregate, fine aggregate, cement and water. All of them perform a specific role for making concrete strong and durable.

2.1 CEMENT

Ordinary Portland cement (OPC) was used have Compressive Strength 53 MPa. The cement to be used in construction must have certain given qualities in order to play its part effectively in a structure. When these properties lie within a certain range, the engineer is confident that in most of the cases the cement performance will be satisfactory.

2.2 FINE AGGREGATE

Natural sand with maximum size of 4.75 mm was used (zone II) with specific gravity 2.6 and fineness modulus 2.89.

2.3 COARSE AGGREGATE

Natural aggregates with maximum size of 40 mm were used with specific gravity of 2.7 and fine modulus 7.51. The properties of the coarse aggregate used in a concrete mixture affects the modulus for a few reasons. One property is the modulus of elasticity of the coarse aggregate. A higher aggregate modulus will result in a concrete having a higher modulus.

2.4 SAW DUST

Fine particles of wood made by sawing wood, the small particles of wood or other material that fall from an object being sawed. They are burnt and made as Saw Dust Ash.

2.5 GLASS POWDER

Glass Powder is made by crushing of waste glass materials. The replacement of glass powder decreases the unit weight as well as the porosity as indicated by the decrease in water absorption.

2.6 WATER

Water is an important ingredient of concrete as it activity participates in chemical reaction with cement to form the hydration product, calcium-silicates-hydrate gel. The strength of concrete depends mainly from the

STUDY ON BEHAVIOR OF CONCRETE WITH ARTIFICIALSUBSTANCEANDMETALLURGICALSLAGS

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Abstract

Constructionindustrydesiresgreatermaterialandelectricityresources. Amongall,concreteoccupies70%ofthesubstancesandsuggestsasizable impact. With increasing scarcity of river sand and natural aggregate throughout the country, construction quarter is underneathhigh-quality pressuretodiscoverchoicetothesebasicconstructionclothtomeetthe developingneedsofinfrastructuredemands.Mortaristheregularbinding fabric used in construction field for masonry and plastering works. The utilizationofsandalternativesubstancesisproperlyaccepted,seeingthatit leadstoseveralfeasibleimprovementsintheconcretecomposites,asproperly as the overall economy. Fayalite slag is one of the substances which isregardedasaby-productinthemanufacturingtechniqueofFayaliteSlag.The foremostgoalofthispaperistouseFayaliteslagasapartialreplacementof sandduetothefactitresemblesthecharacteristicsofsandandalsowehave found an alternative approach to dispose the waste generated in the industries.

KEYWORD:*Fayalite slag, Mortar, polypropylene fibers*

1. INTRODUCTION

InIndia,nowadayitisverychallengingtroubleforhandyof pleasantaggregate.Naturalsourcesaredepletingglobal whilst at the equal time the generated wastes from the enterprise are growing sustainability. The sustainable development for development entails the use of non-conventionalandprogressivesubstancesandrecyclingof wastesubstancesinordertocompensatethelackofherbal sources and to discover choice methods conserving the environment.Fayaliteslagisoneofthesubstancesthatis regarded as a waste cloth which could have a promising futureinthebuildingenterpriseaspartialorreplacementof either cement or aggregate. It is a derivative bought throughoutthemattesmeltingandrefiningofFayalite.To produceeachandeverytonofFayaliteabout2.2-3.0lotsof Fayaliteslagisgeneratedasaspinoffmaterial.Concreteis regarded to be a surprisingly brittle material, so it is susceptible to cracking. Many investigations have been carriedoutinordertoovercomethisproblem.Theinclusion ofsufficientfiberswillenhancetensilepowerandductility. Someoftheimportantconsequencesoffibersinconcrete are: growing the tensile strength, preventing the crack improvementandgrowingthesturdinessofconcrete.

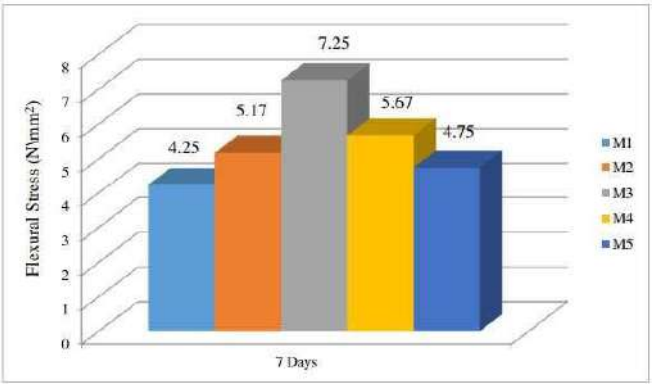
2. MATERIALPROPERTIES

Table 2.1 Fineness Modulus of Coarse Aggregate

S. No	Size of Sieve (mm)	Weight of % Retained (kg)	Cumulative % of Weight Retained	Percentage of Finer
25	0.220	11.3	88.7	
2	20	0.985	61.9	38.1
3	16	0.490	87.1	12.9
4	12.5	0.095	92	
5	10	0.075	95.9	4.1
6	4.75	0.08	100	0

Graph 2.1 Size Distribution of Coarse Aggregate

4.4 FLEXURAL STRENGTH OF CUBES



5. RESULTCOMPARISION

Thestrengthparametersobtainedforeachmixesattheend of 7, 14, 28 days were compared with conventional specimens strength and the strength differences were tabulated. Theresultsrevealedthattheuseoffayaliteslagandfibreleadstotheenergysustainableproductwithhigherstrength and thus reduces the cracks while applying the load gradually.

6. CONCLUSION

Based on the analysis of experimental results and discussions there upon the following reasons are made. For40%replacementoffineaggregatewithfayaliteslagat watercementratioof0.45,thereplacementoffineaggregate withfayaliteslagincreasesthestrengthuptoanoptimumof 40%andbeyondthispercentagethestrengthdecreases. Whileaddingthefayaliteslagthecompressivestrengthis increasetothemaximumof50%.

Normally the concrete is brittle in nature. In order to overcomethatthefibersareaddedindifferentproportions like0.5%,1%,1.5%forthevolumeofcementwith40%of fayaliteslag.

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INVESTIGATION OF STRENGTH OF PARAMETERS OF FIBER REINFORECD GEOPOLYER CONCRETE USING BOTTOM ASH

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Abstract

In the recent years, Geopolymer concrete are reporting as the greener construction technology compared to conventional concrete that made up of ordinary Portland cement. Geopolymer concrete is an innovative construction material that utilized bottom ash as one of waste material in coal combustion industry as a replacement for ordinary Portland cement in concrete. The uses of bottom ash could reduce the carbon dioxide emission to the atmosphere, redundant of bottom ash waste and costs compared to ordinary Portland cement concrete. However, the plain geopolymer concrete suffers from numerous drawbacks such as brittleness and low durability. Thus, in this study the addition of steel fiber is introduced in plain geopolymer concrete to improve its mechanical properties especially in compressive and flexural strength. Characterization of raw materials has been determined by using chemical composition analysis. Short type of steel fiber is added to the mix in weight percent of 1 wt%, 3 wt%, 5 wt% and 7 wt% with fixed molarity of sodium hydroxide of 12M and solid to liquid ratio as 2.0. The addition of steel fiber showed the excellent improvement in the mechanical properties of geopolymer concrete that are determined by various methods available in the literature and compared with each other. Keywords: Bottom Ash, NaOH, Na_2SiO_3.

INTRODUCTION

Concrete is a major resource made by human kind for a developing civilization and has become the necessity for today's world. The main component of concrete being used is cement. Cement carries an important role since it is the binding material and its hydrating formula holds the concrete to give the desired strength. Although it has advantages in most of the parameters, it carries a huge disadvantage of carbon emission. In recent years carbon emission due to cement production released around 8% of the global total where more than half was from calcinations process. Meanwhile, the growth of the coal-fired power plant industries produce greater amount of flue gases such as fly ash and bottom ash as waste products. Subsequently the use of such supplementary products along with silica fume, rice husk ash, granulated furnace slag and metakaolin etc. in Portland cement is a step towards sustainability which reduced carbon emission over the last few years. This transition is now evolved into Geopolymer it is a binder with no cement. One such natural fibre used in this research is Sisal Fibre. It is a renewable, easily available and cheap. It has also exhibited good tensile strength and can significantly improve the performance of concrete. It is easily cultivated. Sisal is a hard fibre extracted from the leaves of the sisal plant (Agave sisalana). These fibres have a good tension resistance. They have good resistance against heat. The chicken mesh is usually used same as the reinforcement of the concrete. It strengthens against the additional external force that gives a risk for shrink and movement cracks. Thus, using mesh here is to plaster around the fiber ropes which are confined around the cracked members. Mesh is being selected because of its reinforcement property and wide usage as plasters. This system of confinement and plastering over the cracked members acts as retrofitting.

2 MATERIALS AND METHODS

Experimental work is designed to study the effect of addition short steel fibers on mechanical properties on geopolymer concrete. The main material used for making bottom ash based geopolymer concrete composite specimen is ash along with other material such as coarse and fine aggregates, alkaline activator solution, steel fibers, and water.

2.1 BOTTOM ASH

Bottom ash is part of the non-combustible residue of combustion in a power plant, boiler, furnace or incinerator. In an industrial context, it has traditionally referred to coal combustion and comprises traces of combustibles embedded in forming clinkers and sticking to hot side walls of a coal-burning furnace during its operation. The portion of the ash that escapes up the chimney or stack is, however, referred to as fly ash. The clinkers fall by themselves into the bottom hopper of a coalburning furnace and are cooled. The above portion of the ash is also referred to as bottom ash.

2.2 ALKALINE SOLUTION

The laboratory grade for sodium hydroxide (NaOH) is in the flakes form and sodium silicate (Na2SiO3) solution is used as alkaline activators. With about 98% purity, NaOH flakes are dissolved in water before it mixed together with the activator solution. The concentration of sodium hydroxide is fixed at 12M also the ratio of NaOH/Na2SiO3 at 2.5.

2.3 AGGREGATE

The formulation of geopolymer concrete also need aggregates that consists of fine and coarse aggregates to occupy the largest volume about 75% to 80% by mass. Available fine aggregates from river sand are used and the coarse aggregates came from crushed stones with nominal size of 5 mm and the maximum

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ANALYSIS OF VARRIOUS PARAMETERS IN DRILLING OPERATIONS FOR NATURAL COMPOSITE MATERIALS WITH TIN COATING

Mr. R. Devendran[1], Dr.M.Mohanraj[2]

[1]PG Scholar, [2]Assistant Professor

Department of Mechanical Engineering, Government College of Engineering, Salem.

ABSTRACT

A composite material is a combination of two or more different materials, it gives superior quality than its constituents. In this paper the study on different composite materials has been studied with its physical, mechanical and chemical properties. And also the study on different types of drilling tool and its wear conditions, properties, etc., And with reference to this, one of the composite material will be selected and corresponding property on drilling operation will be carried out. The thrust force will be calculated for the selected material corresponding to different drill size. Composites are ideal for applications in corrosive environments, such as chemical processing plants, pulp and paper converting, oil and gas refineries and water treatment facilities. Common applications include fans, grating, tanks, ducts, hoods, pumps and cabinets. self lubricating Ti-N nano multilayer coating coating were fabricated on the HSS drills by a closed field unbalanced magnetron sputtering system. the cutting force and temperature of cutting edge of TiN coated drills were remarkably decreased compared to uncoated drills during the test in stainless steel which resulted in coated drills which better surface quality of drilled holes compared to uncoated HSS drills.

A CASE STUDY ON TOTAL PRODUCTIVE MAINTENANCE IN POWER LOOM

Mr. P.Saravanan, Assistant Professor

Department of Mechanical Engineering, K.S.R.College of Engineering, Tiruchengode

ABSTRACT

TPM (Total Productive Maintenance) is a holistic approach to equipment maintenance that strives to achieve perfect production. TPM emphasizes proactive and preventative maintenance to maximize the operational efficiency of equipment. The implementation of a TPM program creates a shared responsibility for equipment that encourages greater involvement by plant floor workers. In the right environment this can be very effective in improving productivity .This paper focusing on calculating the overall equipment effectiveness in power loom, and it also discuss what called the big six losses in any industry (the quality, availability and speed). A case study has been taken in the Power loom and the main objective of this is to study the manufacturing process and the problem occurs during the production process which causes stoppage. The data is taken for a week. After calculating the OEE of the equipment result achieved is 97.14% in quality factor of overall equipment effectiveness equation and 83.67% in availability where in performance it got 81.63% and the result is compared with the World class OEE. Suggestion is given to improve their maintenance Procedures and improve the productivity.

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Green Engineering and Technology: Concepts and Applications

GREEN MATERIALS AND ADVANCED MANUFACTURING TECHNOLOGY

CONCEPTS AND APPLICATIONS

Edited by
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Contents

Chapter

Mechanical Properties of the Palmyra Fibre Epoxy Composites

By S. Magibalan

Book Green Materials and Advanced Manufacturing Technology

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ABSTRACT

Industries have viewed natural fibre composites as attractive alternative materials because they are biodegradable, environmental friendly and lightweight. Palmyra fibee is a natural fibre that comes from Palmyra tree (Borassus flabellifer). Randomly oriented palmyra fibres are tested the mechanical properties and the fibre length of (1, 2 and 3 cm) and weight percentage is predicted. This paper deals with Palmyra fibre materials, there are composite plates designed for various forms of Palmyra models. Epoxy resin is also used to test the tensile, impact, and flexural strength of the of the composite matrix. The composites mechanical properties are improved in the matrix through various types of Palmyra fibre invention.

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Investigation of structural and optical characteristics of chromium doped ZnO nanostructures by microwave irradiated route for sensing applications

AIP Conference Proceedings **2270**, 110021 (2020); https://doi.org/10.1063/5.0019393

A. Kiruthiga[1], R. Kannan[2,a)], *and* T. Krishnakumar[3]

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Mitigation of attack patterns based on routing reliance approach in MANETs

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***Abstract*—The process of achieving appropriate routing is a major crisis in network modeling where Mobile ad-hoc Networks (MANETs) possess an adversarial network because of the lack in appropriate infrastructure, transmission nature, and dynamical topology. These features trends to make effectual modeling of routing to be more challenging. This work proposes Patterns for Routing Reliance (PRR) approach by adopting Support Vector Machine (SVM) that replicates cognitive process and relies over the measurement of trust-level of data to avoid diverse routing disruption attacks. Here, mobile nodes pretends to share the reliable information and examines the trustful information based on its cognitive manner. However, the nodes are dynamically evolves with the elimination of malicious factors. The most effectual characteristics of PRR are that they may not compromise with the internal attackers even though it is aware of security mechanisms. This work evaluates the performance of PRR under diverse routing based attack disruption scenario. The simulation is done with MATLAB environment and the PRR approach pretends to improve the scalability and fulfills the effectual routing mechanism during occurrence of attacks over MANET.**

Keywords—MANET; routing disruption; attack; Pattern for Reliable Routing; security mechanism;

I. INTRODUCTION

The tendency of Mobile devices tendency leads greater proliferation in MANETs. The network comprises of set of wireless nodes; which exchanges the data dynamically devoid of any reliance or centralized infra-structure or any fixed base station [1]. The self-systemizing nature facilitates MANET to be easily deployed in an extensive situation like contrasting conditions like emergency operations, rescue, and battle-field based communication [2]. Moreover, self-organizing and mobility nature of MANETs leads to the changing topological conditions in a random manner. However, every node with constrained transmission range acquires assistance from neighborhood nodes for further transmission [3]. As an outcome, MANET recital depends of reliable routing between the nodes.

For the past few days, extensive investigations have been performed with MANET routing, this leads to various effectual routing protocols [4]. Moreover, protocols consider that nodes are completely willing and trusted to work among themselves [5]. Therefore, they are susceptible to routing disturbance attacks that are launched easily in MANETs: active and passive attacks. In active attacks, attackers declare that state of shortest path to reach destination [6]; they do not possess any routing information. This type of attacks can considerably attract a set of packets and silently drops them. In passive attacks, attackers assist in forwarding routing information however discards every by-passing packet [7]. Similarly, in gray-hole attacks, indeed of dropping every by-passing attacks, that attacker selectively forwards the data packets and reduces the own interests. Subsequently, the attackers pretend to change the characteristics more reliably [8]. Nonetheless, the passive are not injected with false network information. Therefore, it belongs to passive routing attack.

Routing disturbance chose the attack patterns secretly and leads to successive packets to be lost. It is known that Packet Delivery Ratio (PDR) diminishes with the occurrence of routing disturbance attacks [9]. Moreover, the attack effects are worsen when the speed of the connected nodes are increased. When the malicious node moves faster, the extensive regions are covered by them. Owing to the open MANET characteristics, it is common that malicious nodes hide besides the network and drops packet to save energy in network operation. The attack disruption is extensively discussed in [10].

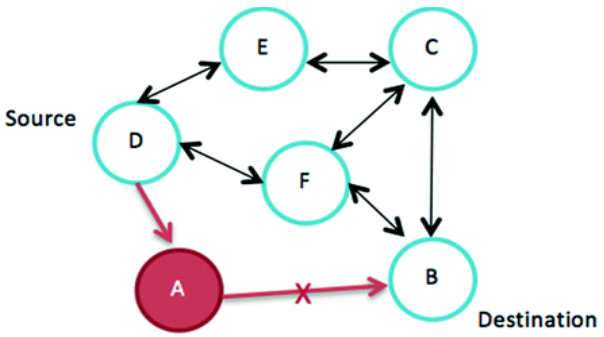

Fig. 1. Generic view of attacks in MANET (Source: Gurung et al., [10])

To reduce the severity of negative consequences that are provided by the routing disturbance attackers, this work proposes a Patterns for Routing Reliance (PRR) approach which is considered as a value-added mechanism when comparing traditional routing mechanisms. As the name

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Prevention of SQL Injection Attack using Unsupervised Machine Learning Approach

M.N.Kavitha[1], V. Vennila[2], G.Padmapriya[3] and A. Rajiv Kannan[4]
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Abstract - Now a day's online web applications or online database applications are increasingly exposed to various kinds of attacks. One such attack to steal data is called SQL injection attacks in which attackers modify the SQL query initiated by the user and adds malicious code to access and manipulate the information in the web application or database. One way to prevent such attacks is to update and test Web Application Firewall (WAF) regularly. Due to tremendous growth in technology, attackers who intend to attack the applications find numerous new ways to enter into the system. In this paper, we incorporate the concept of machine learning with WAF that maximizes the effectiveness of existing systems. The approach adopted in this paper is Unsupervised Machine Learning Technique which uses k-means clustering algorithm. The flow of the proposed system can be given as: The end user makes a query in the web application, and the values of query are extracted and sent to the SQL injection detector, which provides two layers of security. In the first layer of security, patterns are created using Context-Free Grammar (CFG) for low level attacks. The second layer of security for high level attacks is trained using Unsupervised LearningAlgorithm.

Keywords: Machine Learning, Unsupervised Learning, SQL Injection, WAF, CFG

A Healthcare System for Predicting Cardiac Disease using Machine Learning

Mr. Magesh Kumar B[1], Mrs. Rupashini P R[2]
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Abstract - Data mining is a means of processing and converting information from various points of view into usable knowledge. This technique is used to detect cardiovascular disease. The risk factor can be used to easily classify cardiac conditions. The main purpose is to evaluate multiple testing approaches for cardiac disease. The next item is the planning and preprocessing of the dataset of core numbers. Properties classified by machine learning must be identified after the extract. Artificial learning promises increased efficiency compared to current ones. Quality parameters like accuracy, precision and F-measurement have to be determined after classification. The machine learning produces better performance. Decision tree is the required diagnostics description of cardiac disease in the current dataset, as calculated in comparative measures.

Keywords: Machine Learning, Naive Bayes. Classification. Data Processing. Heart-Diagnosis.

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Paper Presentation Details
(Abstract)

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USING DATA MINING TECHNIQUES A SURVEY ON MEDICAL DIAGNOSIS

S.Pon Miruthu Vasini[a],P.Subadharshini[b]

[a]Student, school of Computer Technology & Applications, Kongu engineering College, India

[b]Student, school of Computer Technology & Applications, Kongu engineering College, India

Abstract

It is complicated for the expert to speak out about the grade of disease with affirmation in the nonexistence of medical diagnosis substantiations. Generally many tests are done based on clustering or classification of data. In obtaining the end results, However many tests could complicate the main diagnosis process particularly in the case where many tests are performed. With the aid of machine learning techniques this kind of problems could be resolved. Three different disease diagnoses are taken in to the consideration in this survey paper. The Diabetes Disease, Breast Cancer Disease and heart Disease are analyzed with existing works. Using data mining techniques the existing approaches that have processed for diagnosis these diseases.

DIAGNOSING AND ANALYZING THE HEALTH CARE SYMPTOMS USINGAPACHE HADOOP FRAMEWORK FROM MEDICAL BIG DATA

Mr. T. Thangarasan,

Assistant Professor, Department of Computer Science and Engineering,

K.S.R College of Engineering (Autonomous), Tiruchengode, Namakkal, India.

Abstract

It is necessary to maintain all the data in digital form. As our country is densely populated, maintaining the health records and symptom analysis of each were hard to detect. Our project aims collecting the huge volume of data using Medical Big Data along with apache hadoop technique. With the collected data, we can analyze and prevent the transferrable diseases and avoid the pandemic situation as Covid'19. Our proposed system includes storing the large amount of data in cluster format and to provide a deep analysis on healthcare data analytics. From the collected data, we can analyze the various health care symptoms. The healthcare frameworks that offer diversified data analytical capabilities for handling sources of data ranging from electronic health records to medical images. Here we are using the big data technique for holding the information of medical health reports of different persons of various regions and this will help the consultants and experts to know the history of persons of any regions within the country. The report maintenance and analysis will helps to look backward of the history, in case of any new thing found we can avoid the extension of the syndrome with others. Apache Hadoop is used for storing the large amount of data in a cluster format. The data are categorized depends upon the persons symptoms and treatment. The map reduce programming model can be used for processing and segregating the data in the cloud platform. This analyzation will helps in improving the medication prediction and other services.

APPLICATIONS OF INTERVAL VALUED FUZZY SOFT MATRIX THEORY IN CONSTRUCTION INDUSTRY FOR CONTRACTOR SELECTION WITH MAPLE IMPLEMENTATION.

Dr. P. Shanmugasundaram[1] & Dr. Srinivasarao Thota[2]

[1]Department of Mathematics College of Natural & Computational sciences
Mizan Tepi University, Tepi campus, Ethiopia.
[2]Department of Applied Mathematics School of Applied Natural Sciences
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Abstract

In this paper, an attempt is made to develop an algorithm using the notion of Interval Valued Fuzzy Soft Matrix (IVFSM) operations and composition relations for contractor selection and ranking to allow bid price in construction industry. Identifying suitable contractors in construction industry is not only based on bid price. Before allowing bid price we want to ensure the main factors which affect the construction industry like construction design, quality of materials, time management, labour experience, financial problems and safety at work place. These factors we cannot measure in classical mathematics qualitatively because it is imprecise, vague and uncertain in nature. The expectations of the selecting companies and the contractor's skills are recorded via IVFSM and the contractor's selection is effectively done in two stages. The proposed algorithm is validated through a case study. The implementation of proposed algorithm is discussed in Maple and sample computations are presented.

A NON-INVASIVE WAY TO DETERMINE BLOOD TYPE BASED ON ANTIGEN PROPERTY

Dr.V.Ravi[1], M.Sornalatha2, Dr.R.Sankarganesh[3], K.Yamuna[4]

1 – Professor, 2, 3 – Associate Professor, 4 – Assistant Professor

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Abstract

Rapid and accurate determination of blood types is very important during emergency situation before administering a blood transfusion. Identification of blood group plays a major role in the medical field for any treatment. The conventional method involves drawing of blood samples from human body and depending upon the antigen-antibody reaction blood group is determined. The classification of human blood supported the inherited properties of red blood cells. This method provides an easy and fast means of identification of blood groups and rhesus-factor non-invasively. The light glows from the LED, which is made to pass through the finger and the transmitted light is received by the LDR, which gives the output as resistance value. This value coded to the LCD display and the blood type is based on the resistance value.

ARDUINO BASEDOBSTACLE AVOIDING AND MONITOR USING CAMERA WITH AN BLUETOOTH CONTROL ROBOT

S. Vadivel

Assistant Professor, K.S.R College of Engineering

Abstract

Arduino Based Obstacle Avoiding and monitor using camera with an Bluetooth control Robot is an intelligent device which can automatically sense the obstacle in front of it and avoid them by turning itself in another direction.This design allows the robot to navigate in unknown environment by avoiding collisions, which is a primary requirement for any autonomous mobile robot. The application of this robot. which helps carry out many risky jobs that cannot be done by any soldiers by using camera we can monitor to know a better view.Here an Ultrasonic sensor is used to sense the obstacles in the path by calculating the distance between the robot and obstacle. It is an Arduino based robot that uses Ultrasonic range finder sensors to evade the collisions if robot finds any obstacle it changes the direction and continue moving by using Bluetooth we can control to our requirements.

ISOLATED NODES TO CONNECT IN WIRELESS SENSOR NETWORK USING FUZZY BASED LINK ASSESSMENT TECHNIQUE

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Abstract

A simultaneous geography control effort is implemented for full-reachability systems and a hereditary calculation with dynamic transformation to find the break-through in a blast-scene. The proposed conspire effectively takes care of the issue of separate hubs for transmission run. The suggested technique makes it possible to improve the display of customary hereditary calculation in order to maintain a strategic distance from the potential arrangements which fall into nearby ideal. Various trial recreations confirm the viability, the unwavering quality and the ideality of implementing the proposed approaches. Each sensor in a system can associate two sensors at any rate in the created remote sensor arrangement and convey each other through the acquired transmission range to shape an organization of full reachability. Henceforth, the suggested strategies in this paper have provided an awesome blast away from the system with complete reachability organize geography and constant path strategy. This framework will benefit people's safety and wellbeing in a blast incident.

STRENGTH ASSESSMENT AND RESTORATION OF RC STRUCTURES BY NON-DESTRUCTIVE TEST TECHNIQUES

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ABSTRACT

In effect, concrete is widely used as a construction material because of its high strength-cost ratio in many applications. Concrete constructions are generally expected to give trouble free service throughout its intended design life. However, these expectations are not realized in many constructions because of structural deficiency, material deterioration, unanticipated over loadings or physical damage and thus Civil structures like buildings, dams, bridges etc are subjected to continuous deterioration over the years. This extent of damage or deterioration greatly depends on the quality of materials and workmanship at each the construction stage. The deterioration of buildings can be a result of various factors including fire damage, frost action, chemical attack, corrosion of steel etc during the life span of the structure. The investigation of soundness is thus essential for finding the present serviceability of the structure and its scope for future developments or for the change in its utilization. Such an investigation can be carried out using the following methods: a) Visual examination b) Non-Destructive Testing. Besides, it becomes essential for buildings hit by an earthquake, a bomb blast or any other calamity. In general, Soundness estimation to be done for buildings which are crossed over 15 years of age.

INTRODUCTION

Civil engineering infrastructure is one of the most expensive national investment and asset of any country and facilitates country's economic development. Structures are assemblies of load carrying members capable of safely transferring the loads to the foundations. To serve their designated purpose, the structures must satisfy strength and serviceability criteria throughout their stipulated design life. However, the strength of these old structures reduces in the due course of time because of its usage, input of poor-quality construction materials, environmental conditions, improper practice or poor workmanship. Also, several factors like natural disasters, construction flaws, interaction with environment develops distress in the structures which may results in development of cracks, corrosion in reinforcement, leakage and seepage.

After a large-scale earthquake, evaluation of damage of highway structures such as bridge structures has great importance to assure the emergency route for rescue and transport of urgent supplies. The damage evaluation is basically conducted by means of visual inspection by experts, but generally it takes so long time to collect whole damage information in the affected area.

Therefore, it is necessary to assess the strength of RC structure periodically using NDT Techniques (Rebound Hammer, Ultrasonic pulse velocity and carbonation test), which can detect the damage level of structures more correctly and quickly. RC Structure begins to deteriorate once they are built and used. Non-Destructive techniques can also be used for Structural Health Monitoring. Structural Health Monitoring (SHM) is the process of continuously monitoring a structure for degradation or damage. This system enables inspectors and engineers to gather material data and structural elements used for analysis.

CAUSES FOR DAMAGE

- Ageing of Structure
- Natural Disaster like Earthquakes etc.
- Improper Design and Construction
- Environmental and Climatic Conditions
- Corrosion
- Fire

OBJECTIVE OF THE STUDY

- The main objective of this project work regarding strengthening and restoration of an RC structure is:
- To identify the strength of the existing building using Non-Destructive tests.
- To assess the extent of carbonation in cover concrete.
- To provide the best available restoration measures to strengthen the damage structure.

METHODS AND MATERIALS

The non-destructive testing of concrete has a great technical and useful importance. These techniques have been grown during recent years especially in the case of construction assessment. Non-Destructive evaluation methods are used to find damage. NDT methods inspect or measure without any harm to the structure, no damage of specimens is required during testing.

Several non-destructive evaluation methods have been developed based on that some physical properties of concrete can be related to the compressive strength of concrete. The rebound hammer (SRH) and the half-cell potential method measurements have proved to be an effective tool for inspection of concrete quality.

1. Rebound Hammer Test

The rebound (Schmidt) hammer is one of the oldest and best-known methods. It is usually used in comparing the concrete in various parts of a structure and indirectly assessing concrete strength. The hammer

EXPERIMENTAL AND ANALYTICAL STUDY ON STUD TYPE SHEAR CONNECTOR IN COMPOSITE SECTION

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ABSTRACT
Composite Structures have several advantages over traditional reinforced concrete which incorporate high strength to weight ratios, dimensional stability and structural integrity. Late years have seen a considerable increment in the utilization of composite structures and improved research went for creating new strategies for combining steel and concrete. Composite structures result in efficient design and economy in construction time hence used especially in construction of building floors and bridges. Wide construction practices involve connecting Concrete slab and hot rolled steel beam sections by shear connectors. Shear Connectors are used to enhance proper connection and resist horizontal shear forces. A Composite member has to be designed in such a way that before composite structural element reaches ultimate capacity, shear connectors should not fail due to lack of ductility. This work represents a concerning the prediction of the shear resistance of head stud connectors in composite beam with profiled I-steel sheeting subjected to static load. To confirm the FE simulation for the determination of the shear resistance of stud connectors many experimental push out test. The shear connector can be used at various distances. In our project, we discuss about the stud type shear connector can be placed at various distance and determine the strength and maximum deflection of beam by using shear connector at a required distance.

Key words : I Beam, Headed stud connector, Concrete slab, Beam element, Solid element, ANSYS, Push – out test.

INTRODUCTION

1.1 General

Composite steel–concrete construction, particularly for multi-storey steel frames. This is mainly due to a reduction in construction depth, to savings in steel weight and to rapid construction programmers. Composite action enhances structural efficiency by combining the structural elements to create a single composite section. Composite beam designs provide a significant economy through reduced material, more slender floor depths and faster construction. Moreover, this system is well recognized in terms of the stiffness and strength improvements that can be achieved when compared with Non-composite solutions.

1.2 Composite construction

Composite construction consists of providing a monolithic action between prefabricated steel joists and cast- in situ concrete slabs. A sufficient shear connection is provided between the two component construction units so that the two units act as one unit and resist the load by composite action where most of the compression is taken by concrete and the tension by the joist.

1.3 Shear Connector

The latest technology used in construction of buildings and bridges. They are used as a major element in the composite structure. Excellent quality, high load bearing capacity, durability, faster speed of construction, etc. are some of the reasons why it is gaining popularity in the construction industry.

"Shear connector means headed steel studs. These are welded to a structural member for achieving composite action with concrete. Shear connector is one of the major elements in the composite structure.

1.4 Role of shear connector in composite structure

A Shear connector belongs to a steel projection to be applied on the top flange of steel composite bridge girders to transmit required shear among the steel girder and composite slab to facilitate composite action.The headed stud is mostly recognized form of shear connector, or shear stud. Other forms of shear connector range from block and hoop, and channel connectors. Block and hoop, and channel connectors are mainly applied for transmission of large shear. These are good substitute to narrowly spaced shear studs.

1.5 Objectives of the study

- The present work on 'Analytical and Experimental Study on Stud Type Shear connector in Composite Structure' has the following objectives.
- To verify the influence of the dimension and height of shear connectors in composite beams.
- To find longitudinal slip in the slab-beam interface, the vertical displacement at mid-span and the bearing capacity of composite beams.
- To find load bearing capacity and resistance for failure by shearing, in composite structure.

MATERIAL USED

The details of these materials are given below.

- Hot rolled steel beam section
- Concrete slab
- Headed shear connector

2.1 Properties & Sizes of material

ANALYTICAL AND EXPERIMENTAL INVESTIGATION ON COLD FORMING STEEL BEAM WITH TRAPEZOIDALLY CORRUGATED SHEET AS WEB

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ABSTRACT
This paper describes the experimental investigation on flexural behaviour of cold formed steel (CFS) lipped trapezoidal corrugated section .Cold-formed steel is getting popular over the years in construction industry. However, due to its thin-walled behaviour, cold-formed steel is prompt to have buckling failure, previous research were done to provide stiffener in order to overcome this problem. In this research paper three different sets of corrugated sections have been taken for testing flexural behaviour namely (i)horizontal corrugated back to back lipped trapezoidal sections without gap (ii) horizontal corrugated back to back lipped trapezoidal sections with gap and (iii) vertical corrugated lipped trapezoidal sections by providing corrugation angle in horizontal and vertical direction. Corrugated section of cold-formed steel behave differently in beam and column compared to straight section. Corrugated section has an advantage of exhibit distinct enhancement in ultimate strength and reduced deflection in flexural behaviour. Both the Experimental and Analytical study were carried out for the chosen specimens respectively. It was noticed from the Analytical results that there was an increase in Ultimate Load carrying capacity for the vertically corrugated section. For the selected corrugated sections, it was observed from the Experimental values that the ultimate load carrying capacity was increased by 9.7% in the vertically corrugated section. This would have been because of the provision of stiffeners at the edge and web of the section.

Keywords: cold-formed steel, corrugation angle, flexural behavior

INTRODUCTION

1.1 GENERAL

Cold-formed steel sections are developing at a rapid rate such that they are used as a common method of constructing light-weight floors and portal frame structures. In fact it can be said that cold-formed steel (CFS) construction is now one of the highly competitive alternative to traditional structural system. Some of the widely acknowledged advantages of CFS framings are: lighter weight, reduces transport and handling costs, ease of prefabrication and mass production. The optimal design of CFS system is important in ensuring that they can produce a cost-effective solution which is somewhat lagging in other types of structural systems. In steel construction, there are two main types of structural members one is hot rolled section and the other is cold-formed section. Cold formed sections like Channel, Zee sections, I-sections, angles, T-sections, hat sections, and tubular members are commonly used flexure members for purlins & girt in roof and wall system. These sections are extensively used in various engineering applications because of their high strength to weight ratio.

1.2 COLD FORMED STEEL SECTION

Cold-formed steel (CFS) section is the term used for products which are made by rolling or pressing thin gauges of steel sheets into goods. CFS goods are created by the working of thin steel sheets using stamping, rolling or presses to deform the steel sheets into a proper product which are usable.

1) 1.3 ADVANTAGES OF COLD-FORMED STEEL MEMBERS

1. Members are light in weight.
2. Sections have High strength and stiffness.
3. The erection and installation procedure is very easy.
4. The conventional connection methods like riveting, bolting or welding can be used.
5. The construction process does not need any kind of formwork.
6. The desired shape and desired length are obtained by prefabrication process.
7. The transportation cost is lower as the lightweight sections are available.
8. The recycling of this type of material is possible easily.
9. The termite-proof and rot proof sections are prefabricated.

As compared to the hot rolled section the greater moment carrying capacity is possible due to the thinner wall sections.

1.4 Objectives of the study

The present work on 'Analytical and Experimental Investigation on cold formed Steel beam with trapezoidally corrugated sheet as web' has the following objectives.

- To find load carrying capacity as compared with plane web beam.
- To find deformation of the section.
- To find failure in shear zone.
- To find lateral torsional buckling.

MATERIAL USED

- ISMB 150 section (I – Section)

CHALLENGES FACED IN THE CONSTRUCTION INDUSTRY IN URBAN AREA

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ABSTRACT

This paper plans to recognize the different difficulties looked in the development in urban territories. The objectives of this research are mainly urban infrastructure development and its challenges and identifying various tasks involved in this project. Questionnaire survey is used to find out the difficulties involved in urban infrastructure and enhance the urban construction project. Questionnaire survey is collected from various industrial experts in their company from different regions of Tamilnadu. The questionnaire Survey were conducted at Erode, Salem and, Namakkal. The data collected from the administered questionnaire will be analysed using the cumulative percentage analysis. A total of fifty-four questionnaires were prepared and will be distributed to the companies. Based on the survey the ranking were given to the factors. Identifying most of the important criteria based on an appropriate tool to indicators rated on Likert- type scale. The overall rating were determined by placing the overall percentage score card within the numerical ranges. The research result can be useful as a guideline of engineers and contractors it increases the overall performance of projects.

1. INTRODUCTION

This paper aimed to addressing various issues of urban construction. The important thing is population, and it creates the challenge for construction projects such as transportation, skilled labours shortage, material damage during work and safety equipment not used. Performing construction site delivers in cities in an important and interesting issues due to the impact of transport on the natural environment, road traffic organization and aspects of rationality in construction site delivers planning (5). Urban planning as branch of architecture with the design and organization of urban space and activates besides determining and drawing up plans for the future physical arrangement (4). This may include a synchronized and cost effective way of using the materials and resources in an order to minimize the hazards that may arise along with monitoring and cost controlling the unfortunate event that may occur (2). The characteristics of each project keeps on changing which make it difficult to be imitated. This requires unique skills to manage and accomplish the process. The objective of the investigation is to have a view of the challenge management process from the perspective of different participants of the project (8). From the basis of analysing them, required questionnaire was prepared appropriate to the research methodology. A survey was done, which ranged from clients, experts, consultants and contractors. Among these participants a few were chosen who had experience in challenge management projects in particular.

2. SCOPE OF THE STUDY

- This study can help to optimize cost and time in the construction industry.
- It can help to find the challenge in the construction industry in urban areas.
- This study resource utilisation in the construction industry.

3. OBJECTIVE OF THE STUDY

- To identify and evaluate various challenges in the construction industry in urban areas.
- To find the factors affecting challenges in urban area and avoid top critical factors in the challenge.
- To suggest ways to improve the performance of construction project.

MECHANICAL PROPERTIES OF SELF COMPACTING CONCRETE BY UTILIZATION OF HYBRID FIBERS

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Abstract

*Self compacting concrete is a non segregate concrete that is placed by means of its own weight. It is well flow able concrete that can spread without need of tremor. In this study steel and polypropylene fiber are used as hybrid fiber to develop the workability of the concrete. The addition of CONPLAST SP 430 is used as a chemical admixture which is added to SCC by the volume of 2% of cement. These components like hybrid fiber and super plasticizer are added to the concrete to build up the better strength and durability of self compacting concrete. In this study, the various mix proportions of fibers discussed in this study are 0%, 0.25%, 0.5%, 0.75%, 1%, 1.5% resolute by preliminary test on self compacted materials. By this preferred compositions test for fresh concrete such as slump flow, L-box and V-funnel, U box, J ring are performed for SCC. It is found that compression, split tensile strength, Flexural strength has been enhanced by the addition of hybrid fibers at 1% respectively. This investigational study is carried out to improve the compressive, split tensile strength and flexural strength in SCC for obtaining the optimum value***.**

Keywords Hybrid fibers, self compacting concrete, steel fibers, polypropylene fibers.

1. INTRODUCTION

Self-compacting concrete is a flowing mixture appropriate for placing in structures with congested reinforcement without vibration. Self-compacting concrete growth must make sure a good balance between deformability and stability. For SCC, it is generally needed to use super plasticizers in order to attain high mobility. Addition of large volume of crushed material or viscosity modifying admixture can eliminate segregation. The materials such as fly ash, silica fume, limestone powder, glass filler and quartzite filler are also added.

SCC can also provide a better working atmosphere by eliminating the vibration noise. The concrete requires a high slump that can easily be achieved by super plasticizer addition to a concrete mixture. The concrete to remain cohesive during operations, special attention has to be paid to mix proportioning.

SCC is a fluid mix with the following unique practical features it flows very easily within and around the formwork, can flow through obstructions and around corners, is close to self-leveling does not need vibration or tamping after pouring, and follow the shape and surface texture of a mold very closely once set. As a result, pouring of self compacting concrete is also much less labor-intensive compared to standard concrete mixes. SCC does not make use of a high proportion of water to become fluid – in fact SCC may contain less water than standard concretes. Instead, SCC gains its fluid properties from an unusually high proportion of fine aggregate, such as sand, combined with super plasticizer and viscosity modifying agent (VMA).(3)

Self compatibility can be achieved by the following mechanism

- ✓ Limited aggregate content
- ✓ Low water –powder ratio
3. Use of super plasticizers

2. FIBER REINFORCED COMPACTING CONCRETE

- Fiber reinforced self-compacting concrete (FRSCC) contain only one type of fiber. The two fibres in a suitable combination may improve the overall properties of self-compacting concrete In this way, not only the effect of single fibre and the synergy effect of hybrid fibres, but also the size and concentration effect of fibres, which had different ratios in total fibre volume, were investigated.(1)
- The combination of two or more fibers, often called hybridization.
- The hybridization with two different fibers integrated in a common cement matrix, the hybrid composite can offer more attractive engineering properties.(2)

A PROFOUND STUDY ON FACTORS AFFECTING COST ESTIMATION IN CONSTRUCTION PROJECT

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ABSTRACT

Cost estimating is an assessment of the expected cost of any construction project. The accuracy of such estimate has a serious effect on the expected profit of the construction contractor. Hence, a certain contingency premium should be added to the base estimate to increase the level of confidence. Such premium is materially affected by many factors. Through this research, the main factors that are expected to affect the accuracy of the building construction project's cost estimate were clearly identified. Fourteen factors are identified as the most important factors. These factors were: similar construction projects, construction material cost, labor wage rates, construction site conditions, inflation factor, project schedule, quality of plans & specifications, reputation of engineer, regulatory requirements, insurance requirements, size and type of construction project, location of construction, engineering review, and contingency. While doing project estimate of any project one has to considered be said factors with full attention for better outcome.

INTRODUCTION

Many factors affect the accuracy of building construction projects' cost estimating which should be considered in the early stage of the estimating process. Some factors can incorrectly increase the estimated costs and the possibility of contractual disputes between the various parties involved. Other factors can help the estimator to decrease the unnecessary cost of an item and hence lead to successful tendering in a very competitive market.

Therefore, accurate estimating requires detailed study of the biding documents and the environmental situation. It also involves a careful analysis of all projects' data in order to arrive to the most accurate estimate of the probable cost consistent with the bidding time available and the accuracy and completeness of the information submitted.

Realistic estimation of construction cost is vital for both successful planning and completion of every construction project. Also in the face of uncertain conditions, reliable cost forecasts become an important source of information for decision making by all construction parties. Accurate cost estimation at the early stage of a construction project is key factor in a project's success. But it is difficult to quickly and accurately estimate construction costs at the planning stage, when drawings, documentation and the like are still incomplete. As such, various techniques have been applied to accurately estimate construction costs at an early stage, when project information is limited. While the various techniques have their pros and cons, there has been little effort made to determine the best technique in terms of cost estimating performance. The purpose of this paper is to explore the significant factors affecting the cost estimation of construction projects.

STRENGTH AND DURABILITY OF HFRC AS A PARTIAL REPLACEMENT OF COARSE AGGREGATE BY COCONUT SHELL

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ABSTRACT

The aim of this paper is to produce an eco-friendly concrete by replacement of agricultural waste- Coconut shell as a coarse aggregate and a replacement of Clay as Cement in HFRC. The hybrid fibers- steel fibers and coir fibers which is an additive material used in concrete. The experiment was conducted on reinforced concrete with addition of hybrid fibers with 10% of CS replaced for coarse aggregate and clay as cement and 0% to 2% of steel fibers and coir fibers to the volume of concrete. Here we use M-sand as fine aggregate. The compressive strength, split tensile strength, saturated water absorption and porosity of cured concrete is evaluated for at the age of 7and 28days. The study found that the maximum result is obtained at the replacement of steel fiber 1.5% and coir fiber 0.5% in 10%of clay and CS concrete.

INTRODUCTION

The concrete is a most important construction material, which cost is directly proportional to the cost of cement [19]Concrete is a composite material which composed of aggregates, cement and water. Concrete is used more than any other manmade material in the world. [20]. So finding the substitute of a cement, in concrete is very much field of interest now a days. [19] Among all the ingredients, aggregates form the major part. Use of natural aggregate in such a rate leads to a question about the preservation of natural aggregates sources [19].

Consumption of alternative waste material in place of natural aggregate in concrete production not only protects environment but also makes concrete a sustainable and environment friendly construction material[3]. Since waste materials can be obtained at little or no cost, while making significant contribution to the conservation of natural resources and maintenance of ecological balance[2]

The high demand for concrete in the construction using normal weight aggregates such as gravel and granite drastically reduces the natural stone deposits and this has damaged the environment thereby causing ecological imbalance, there is a need to explore and to find out suitable replacement material to substitute the natural stone.[4]Use of agricultural waste in construction industry holds a high potential of reducing global environmental pollution.[10]

There are a number of agricultural wastes are used as a full or partial replacement of coarse aggregate.[8]Some of the agro-wastes like date seed, rubber seed, coconut shell, oil palm shell, corn cob, cockle shell, and periwinkle shell. Out of that stated materials coconut shell is an light weight aggregate[13] and locally available materials and also good performance in structural members which compared to conventional[9] In developing countries, where abundant coconut shell waste is discharged, these wastes can be used as potential material or replacement material in the construction industry. This will have the double

STABILIZATION OF RED SOIL USING BLAST FURNACE SLAG

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ABSTRACT

Now a days, a large acres of land is occupied by industrial waste. It not only creates land problem but also creates environmental problems. In order to utilize the industrial waste, an attempt is made to stabilize the red soil by adding blast furnace slag.

This project work aims to evaluate the effect of addition of 0%, 5%, 10%, 15%, 20% blast furnace slag in order to stabilize the red soil and to verify its suitability to be used as a construction material for road, embankment and structural fills. The blast furnace slag is collected from Pallipalayam, Erode and the red soil is collected from the campus of K.S.R College Of Engineering for evaluating its suitability as a construction material for various geotechnical works. Its consistency properties, compaction properties, and strength parameter are tested. In this project the effects of addition of blast furnace slag is investigated and is compared with that of the virgin red soil. The overall testing program was conducted in two phases. In the first phase, the physical, and chemical engineering properties of the red soil samples were studied by conducting UCS test. In the second phase of the test program, red soil was mixed with 0%, 5%, 10%, 15%, and 20% of blast furnace slag as percentage of dry weight of red soil. The particular UCS samples were cured for 3, 7, 15 days with varying ambient temperature. Based on the analyses of experimental results the Plasticity Index is decreasing up to a value of 27.6% with addition of 20% of blast furnace slag with red soil. The UCS value is maximum with addition of 10% of blast furnace slag afterwards the UCS value decreases with further addition in blast furnace slag**.**

INTRODUCTION

Stabilization of soil in a broader sense is the modification of the properties of a soil is improving its engineering performance. Soil stabilization is broadly used in connection with road, pavement and foundation construction. It improves the engineering properties of the soil in terms of volume stability, strength, and durability. Soil stabilization occurs over a longer time period of curing. The effects of blast furnace slag stabilization are usually measured after 0days, 3days, 7days, 15days or longer. A soil that is treated with blast furnace slag is modified and its properties are changed which may lead to stabilization. When sufficient amount of blast furnace slag is added to the soil, stabilization occurs. Stabilization is different than modification as strength increases. Over a long time period, the strength increases up to the addition of 10% of blast furnace slag. Red soil is generally, is derived from weathering of ancient metamorphic rocks of the ancient Deccan plateau. It is red colour due to the abundance of iron in it. When iron content is suitably lower, the colour will be yellow or brown colour. Red soil is usually that group of soil that develops in warm temperature and is generally abundant in moist climate where deciduous or mixed forests are present. They generally have a thin organic and inorganic mineral layer overlaying a yellowish brown layer resting on the alluvial deposits. Red soil is available in many states of India. Red soil is generally found in Odisha, Tamil Nadu, Karnataka, Maharashtra, Chhattisgarh, Birnbaum (West Bengal), Mirzapur, Jhansi, Haripur (Uttar Pradesh), Udaipur, Durgapur, Batswana and Bhilwara districts (Rajasthan), Chotanagpur plateau of Jharkhand, AndhraPradesh.

Blast furnace slag is use to make iron operate on temperatures capable of 2000°C and are feed with a carefully to inhibited mixture of limestone, iron ore, and coke. The iron ore transfer to iron which sink to the base of the furnace. Blast furnace slag is a by-product material generate by thermal power plants from combustion of iron, iron ore, iron scrap, and fluxes (limestone or dolomite) are charged into a blast furnace along with coke for fuel. The coke is combusted to produce carbon monoxide, which reduces the iron ore to

EXPERIMENTAL BEHAVIOUR OF STEEL FIBER REINFORCED CONCRETE WITH PARTIAL REPLACEMENT OF FLY ASH & METAKAOLIN

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ABSTRACT

Concrete is largely used due to the abundance of raw material, low manufacturing and maintenance cost, excellence in compression, corrosion aspects, and versatility in forming various shapes and its unlimited structural applications in combination with steel reinforcement. All these factors have contributed pressures to reduce cement consumption and to intensify research in exploring the possibilities of enhancing strength, durability and corrosion reduction through the use of pozzolonas as supplementary cementing materials. Fibre reinforced concrete (FRC) is a fibre reinforcing cementitious concrete composite, and by adding discrete short fibres randomly in concrete it exhibits many substantially improved engineering properties It is manufactured from kaolin which makes the concrete more durable and ecofriendly. In the present investigation mechanical properties of concrete containing both Fly ash and Metakaolin at various combinations are studied. For the various combinations of Fly ash and Metakaolin, cubes cylindrical and prism specimens are casted with 1% of fibres and the compression strength, split tensile strength and flexural strength test results are obtained and compared with the conventional mix having 1% fibres. It is thereby suggested that utilization of these cementitious materials in concrete will reduce the requirement for cement thereby marching towards green construction.

KEYWORDS:*FRC, flyash, metakaolin, pozzolonas*

1. INTRODUCTION

Concrete is the most widely used man made construction material in the world, and is the second next to water as the most utilized substance on the planet. It is obtained by mixing cementitious materials, water, aggregates and admixtures (if needed), in required proportions. The mixture when placed in forms and allowed to cure hardens into a rock- like mass known as concrete. Aggregates is one of the important constituents which has effect in strength development in the theory that the gaps of coarse aggregate is filled by the fine aggregate and the gaps of fine aggregate is filled by the binding materials The strength, durability and other characteristics of concrete depends upon the properties of its ingredients on the proportions of mix, water cement ratio, aggregate gradation, aggregate size and shape, cement quality, mixing time, method of compaction and other controls during placing, compaction and curing.

- The objective of this paper is to investigate and compare the compressive, flexural and splitting tensile strength of Steel Fiber Reinforced Concrete with Fly ash and Metakaolin in various proportions in M30 grade concrete with 1% fibres with addition of admixture.

SIMULATION OF RAIN WATER HARVESTING SYSTEMS IN K.S.R. EDUCATIONAL INSTITUTIONS

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ABSTRACT

Monte Carlo Simulation is that generates random variables for modelling risk or uncertainty of a certain system. The random variables or inputs are modelled on the basis of probability distributions such as normal, log normal, etc. Water scarcity is serious problem throughout the world for both urban & rural community. Urbanization, industrial development & increase in agricultural field & production has resulted in overexploitation of groundwater & surface water resources and resultant deterioration in water quality. The conventional water sources namely well, river and reservoirs, etc. are inadequate to fulfil water demand due to unbalanced rainfall. While the rainwater harvesting system investigate a new water source. The aim of the present study is to use rainwater and thus taking close to the concept of nature conservation. In this study, the rain water harvesting (RWH) system is analyses as an alternative source of water at campus. K.S.R. EDUCATIONAL INSTITUTIONS, TIRUCHENGODE at the STATE OF TAMIL NADU, INDIA. The expected outcome of the study is the development of rainwater harvesting system for catchment area of campus from IT Block, IET Mech Block, B.Ed. Block, PC Block, Academic Block, CE „A" Block, CE „B" Block, CE „C" Block, CE „D" Block, CE „E" Block, CE „F" Block, Women's Block, CE Boys Hostel, Parking area. The result analysis shows that the present RWH system is having the storage 53,96,816 liters/year and is reasonably well in comparison with conventional water sources. The developed system satisfies the social requirements and can be implemented in rural areas by considering almost all the technical aspect

.

INTRODUCTION

Water is the most common or major substance on earth, covering more than 70% of the planet's surface. All living things consist mostly of water (1) For example, the human body is about two third water. Of the total volume of water, only 2 percent (over 28,000,000 Km^3) is fresh water, which can be used for consumption and for agriculture as given in table 1.2. The average runoff in the river system of India has been assessed as 1869 km^3. Of this, the utilizable portion by conventional storage and diversion is estimated at about 690 km^3. In addition, there is substantial replenishable ground water potential in the country estimated at 432 K.m. (2) The per capita availability of water at the national level has reduced from about 5,177 m^3 in the year 1951 to the present level of 1,869 m^3. For improving per capita water availability in the country, replenishment of ground water resources is a necessity which can be done very effectively through rain water harvesting. (3) The rain water's environmental advantage and purity over other water options makes it the first choice, even though the precipitation cycle may fluctuate from year to year (4) For our water requirement we entirely depend upon rivers, lakes and ground water. However, rain is the ultimate source that feeds all these sources. Rain water harvesting means to make optimum use of rain water at the place where it falls i.e. conserve it and not allow to drain away and cause floods elsewhere. (5) The rain water harvesting may be defined as the technique of collection and storage of rain water at surface or in sub-surface aquifer before it is lost as surface run off. The augmented resources can be harvested whenever needed. The harvested rain water can also be used directly for various purposes, which will improve per capita water availability substantially (6)

METHODS OF HARVESTING RAIN WATER

There are three methods of harvesting rain water as given below:

(a) Storing rain water for direct use (Fig. 1.1)

(b) Recharging ground water aquifers, from roof top run off (Fig. 1.2)

(c) Recharging ground water aquifers with runoff from ground area (Fig. 1.3)

(a)Storing rain water for direct use

EXPERIMENTAL INVESTIGATION ON HFRC WITH CONSTRUCTION DEBRIES AS A PARTIAL REPLACEMENT MATERIAL FOR FINE AGGREGATE

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ABSTRACT

The scope of the present study is to investigate the effect of mineral admixtures such as clay as a cement replacement material and fine aggregate is replaced by 20% debris towards the performance of HFRC. The fibre such as steel fiber 0.2% constant and polypropaline fibre varied from 0.1% to 0.5% with an interval of 0.1% by volume of cement with optimized 0.3% of pp fibre of clay , and 20% of debris at the age of 7and28 days. From the experimental work , it was absorbed that 10% of clay and 20 % debris in HFRC with 0.2% steel fibre and 0.3% polypropylene fibre plays a vital role in improving the compressive strength, split tensile strength,saturated water absorption test and porosity test performance of concrete at the age of 7days and 28 days.

INTRODUCTION

Concrete is the most widely used as construction materials in the world. In fact, concrete is used in virtually everything and there is still no substitutes are available for many of its application. Without concrete, the community and society today could not exist [13]. The demand for concrete increases day by day and hence the demand for the cement that results in more and more pollution. It is also true in the case of river sand as there is a heavy demand for sand and problems in sand mining[12]. Cement is used as a major construction material throughout the world [5]. In environmental point of view, the cement industry is one which most emits polluting gases to the environment, due to the calcium carbonate calcination, as well as to the burning of fossil fuels during the manufacturing process, being responsible for 7% of the worldwide CO2 emissions[15].

The resons for partially replacing cement in mortar and concrete with pozzolanic materials are diverse [14]. They include strength enhancement [6,22] and improvement in durability [19]. There are also clear environmental advantages in reducing the quantity of cement used in construction materials. Indeed, cement production is highly energyintensive process involving significant environmental damage with respect to CO2 production and raw material acquisition [21]. Among the pozzolanic materials used in the cement industry, blast furnace slag [11] and some activated clays [8] have been successfully tested.

Pozzolana itself possess little or no cementitious value, but it will react with water, it possess the cementitious character [2, 8]. When pozzolanic materials are added to cement, during the hydration of cement the free calcium oxide reacts with the silica present with these materials and forms a new hydration products and improve the durability properties of cement mortar and concrete [16,4, 2, 9].

Demolished waste obtained from a structure mainly made up of concrete has several foreign matter such as various type of finishes, cladding materials, lumber, dirt, steel, hardware's, woods, plastics etc, attached to them directly or indirectly. The process of removal of impurities and crushing of rubble into suitable and desirable aggregate particle size can be carried out in a continuous and sequential manner using appropriate mechanical devices such as jaw crushers, impact crushers, swing hammer crushers etc [18].To replace the fine aggregate by industrial waste in different ratio such as 10%, 20%, 30%, 40%, and 50% in M40 mix concrete [1]. The optimized values should be refered .The recycled aggregate concrete is used to replacing the natural fine aggregates. Replacing 20% of recycled aggregates are used in natural aggregates this study is to use the demolished concrete waste as aggregate in the production of new concrete.The concrete waste is collected from the local demolished structure[15].

The introduction of fibres in concrete has brought a solution to develop a concrete having enhanced flexural and tensile strength, which are a new form of composite material. In present study polypropylene and steel fibres have been used[7]. Polypropylene fiber is one of the commonly used fiber, due to its easily availability and cheap cost and its consistent quality. For number of reasons the concrete develops cracks. One of the main reason is weakness of the material to resist tensile forces. This crack leads to the structural damage of concrete. Hence to increase the tensile behavior of the concrete,

EXPERIMENTAL STUDY ON MECHANICAL PROPERTIES OF AMBIENT CURED HIGH CALCIUM FLYASH WITH METAKAOLIN BLEND

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Abstract:
In the present study, the Portland cement was fully replaced with high calcium fly ash to produce the geopolymer concrete. Alkaline liquids were used in different combination in the source material. The alkaline liquids used in this study for the polymerization was sodium hydroxide (NaOH)and sodium silicate (Na_2SiO_3).High calcium fly ash was partially replaced by metakaolin blend by 0%, 25%, 50%, 75% and 100%. Ambient curing was given to the high calcium flyash geopolymer mortar specimens. Based on many trials on compressive strength of high calcium flyash geopolymer mortar at 3, 7, 28 days, the optimum mix combination was chosen. Upon the optimum mix combination compressive strength was determined. Test results depict High Calcium Fly Ash Geopolymer mortar specimens attained higher compressive strength at 75% replacement of metakaolin.

Keywords: *Geopolymer, High Calcium fly ash, Metakaolin, Alkaline Liquid, Strength Properties*

1. Introduction

Manufacturing of Portland cement is an energy intensive process and releases a large amount of green house gas to the atmosphere. Recently, another form of cementations' materials using silicon and aluminum activated in a high alkali solution was developed This material is usually based on fly ash as a source material and is termed geopolymer or alkali-activated fly ash cement . Geopolymers was first developed by Davidovits, consist of SiO_4 and AlO_4 tetrahedral networks [1-3]. The prepared mixture can be subjected to curing at room temperature or at a given temperature. Alumina silicate reactive materials dissolve in strong alkaline solutions and free SiO_4 and AlO_4 tetrahedral structure forms. However, the reaction of the fly ash in the production of geopolymers is low at ambient temperatures [4]. It is also well known that geopolymers possess excellent mechanical properties [5]. Class C fly ash had higher compressive strength than that with Class F fly ash. The mixture of fly ash with 10 molarity(M) of NaOH is suitable for the geopolymer synthesis [6-8]. The strength of the fly ash-based geopolymer increased after exposure to elevated temperatures (800 °C). However, the strength of the corresponding metakaolin-based geopolymer decreased after similar exposure [9]. geopolymer suffers strength loss after sulphate attack exposure but gains strength with increasing replacement level of fly ash by metakaolin from 5% to 20% and obvious increasing in compressive strength could be observed when the replacement percentage exceeds 15% [10]. The annual output of lignite fly ash from Neyveli Lignite Corporation station 28.5 million tons per annum at Neyveli and one open cast lignite mine of capacity 2.1 million tonnes per annum. This fly ash contains a high percentage of calcium and is being used quite extensively for construction in Tamilnadu. The knowledge of the use of high calcium lignite fly ash in producing geopolymer would be beneficial to the understanding and to the future applications of this material. Therefore, this study focuses on the use of a geopolymer binder for making high calcium concrete which comprises lignite fly ash, sodium silicate and sodium hydroxide solution, and coarse aggregate with partial replacement of metakaolin blend.

EXPERIMENTAL STUDY ON CERAMICTILES WASTE INCONCRETE REPLACING OFCOARSE AGGREGATE

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ABSTRACT

*In this project we utilise the waste ceramic tiles to replace with coarse aggregate in concrete. Waste Ceramic is one of the most active research areas that encompass a number of disciplines including civil engineering and construction materials. The waste ceramic crushed tiles were partially replaced in place of coarse aggregates by 10%, 20%, 30%,and 40% .M30 grade of concrete was designed and tested.. Experimental investigations like workability, Compressive strength test, Split tensile strength test, Flexural strength test for different concrete mixes with different percentages of waste crushed ceramic tiles after 14 and 28 days curing period has to be done. By the usage of optimum dosage of waste ceramic tiles, structural behaviour and ductility properties will be evaluated***.**

1.INTRODUCTION

1.1 CONSTRUCTION WASTE IN INDIA

In the present construction world, the solid waste is increasing day by day from the demolitions of constructions. There is a huge usage of ceramic tiles in the present construction is going on and it is increasing in day by day construction field. Ceramic products are part of the essential construction materials used in most buildings. Some common manufactured ceramics include wall tiles, floor tiles, sanitary ware, household ceramics and technical ceramics. They are mostly produced using natural materials that contain high content of clay minerals. However, despite the ornamental benefits of ceramics, its wastes among others cause a lot of nuisance to the environment. And also in other side waste tile is also producing from demolished wastes from construction. Indian tiles production is 100 million ton per year in the ceramic industry, about15%-30% waste material generated from the total production. This waste is not recycled in any format present, however the ceramic waste is durable, hard and highly resistant to biological, chemical and physical degradation forces so, we selected these waste tiles as a replacement material to the basic natural aggregate to reuse them and to decrease the solid waste produced from demolitions of construction. Waste tiles and granite Powder were collected from the surroundings. There are some researchers are also going on solid waste from construction to reuse them again in the construction to reduce the solid waste and to preserve the natural basic aggregates. These researches promotes to use the recycled aggregates in the concrete mix and they got good result when adding some extent percentages of recycled aggregates in place of natural coarse aggregate.

EXPERIMENTAL STUDIES ON EFFECT OF COPPER SLAG AND FLY ASH IN HIGH PERFORMANCE CONCRETE

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ABSTRACT

The conventional concrete has lost its usage nowadays as it does not set out the present need. The term 'High Performance' is because of the essential usage, materials and proportions of this concrete are specifically chosen for properties such as high workability, high density and low permeability. The main objective of this study is to deal with the effects of cementitious materials in High Performance Concrete (HPC) for mix design of M40grade concrete. Hence, copper slag which is the industrial by-product is used as a partial replacement of fine aggregate by (0%, 15%, 30%, 45%, 60% and 75%) with 20% of fly ash by the volume of cement with water cement ratio 0.36. Super plasticizer conplast Sp430 is used as chemical admixture at the rate of 1.2% of cement which improves the workability. From this experimental study, so far the utilization of copper slag and fly ash observed with gradual improvement in mechanical properties such as compressive, split tensile and flexural strength in HPC. Through this study it is found that, there is improvement in strength of HPC compared to conventional concrete due to presence of copper slag, fly ash and which is higher as compared to the conventional mix M1 while comparing the results with conventional concrete the optimum percentage obtained in 45% copper slag and 20% fly ash with Super plasticizer dosage of 5.72 kg/m^3.

Keywords: Copper slag, Fly ash, HPC, Workability, Super Plasticizer

INTRODUCTION

A. GENERAL

Concrete is a composite material composed of coarse aggregate bonded together with the fluid cement that hardens cement binder. Nowadays, many studies are going on for increasing the properties of conventional concrete. High performance concrete (HPC) is a concrete mixture, usually enhance the strength, durability and workability qualities to a very high extent when compared to conventional concrete. It is made with carefully selected high-quality ingredients and optimized mixture designs. It is generally essential to use chemical and mineral admixtures in addition to the same ingredients of normal concrete. The supplementary cementing materials are usually added at dosage rates of 5% to 20% or higher by mass of cement. It will have a low water-cementing materials ratio of 0.20 to 0.45. Super plasticizer is an important ingredient in HPC in order to provide good workability and consistency for the concrete matrix. It is always has a higher strength than normal concrete. However, strength is not the primary required property because a normal concrete with high durability and low permeability is considered as high performance properties.

B. HIGH PERFORMANCE CONCRETE

High Performance Concrete usually to enhance the strength, durability and workability qualities to a very high extent. It is enhancement of placement and compaction without segregation and long term mechanical properties, early age strength, toughness, volume stability and service life [3]. It can be used in severe exposure conditions where there is a danger to concrete by chlorides or sulphates or other aggressive agents as they ensure very low permeability. This results in carbonation of concrete which destroys the reinforcement and leads to corrosion. It is made with carefully selected high-quality ingredients and optimized mixture designs these are batched, mixed, placed, compacted and cured to the highest industry standards. Plasticizers are usually used to make these concretes fluid and workable. It works out to be economical, even though its initial cost is higher than that of conventional concrete because of the use of HPC in construction enhances the service life of the structure and the structure suffers less damage which could reduce overall costs.

A Case study on Current pollution status in Thirumanimutharu basin, Salem district of Tamilnadu

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Abstract

The aim of this research was to know the current pollution status in the Tirumanimuttar basin. Since the pollution and abstraction of river in water resources for various purposes are inevitable, an effective decision-making and policy implementation are needed to strike a balance between the development and sustainability. These days, Tirumanimuttar river was heavily contaminated due to the presence of organic and metallic pollutants released from several anthropogenic sources, such as industrial effluents, domestic sewage, and agricultural runoff. It is astonishing to note that even in many developing countries; most of these contaminants are carried through open drains, which enter river premises without proper treatment. This present case study may be helpful for further studies concerning water quality issues in this area, where groundwater is a vital for drinking and other activities.

Keywords-.Tirumanimuttar basin, Salem districts, Sewage treatment plants, Municipal Corporation.

Introduction

Salem is located at 110 14' N - 120 53' N to 770 44' E - 780 50' E, at an average elevation of 278 m (912 ft). The city is surrounded by hills: Nagaramalai on the North, Jarugumalai on the south, Kanjamalai on the West, Godumalai on the East and the Shevaroy hills on the North East. Kariyaperumal hill is in South-western Salem. The Thirumanimutharu river flows through the city, dividing it in two. The fort area is the oldest part of Salem. (District Survey Report 2019).Salem has a tropical savanna climate (Köppen climate classification Aw). January and February are generally pleasant; the hot summer begins in March, with the year's highest temperatures during April. Pre-Monsoon thunderstorms occur during April and May. The South West Monsoon season lasts from June to September. The North East Monsoon occurs from October to December. (District Survey Report 2019)

BEHAVIOUR OF RCC BEAMS SUBJECTED TO DIFFERENT LOADING CONDITION

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ABSTRACT

The global demand of concrete is increasing with the increasing need for construction. Concrete is the world's most versatile, durable and reliable construction material. Next to water, concrete is the most used material which requires large quantity of Portland cement. For every ton of OPC produced, nearly one ton of CO_2 is generated and emits large amount of greenhouse gases (essentially CO_2 and NOx). To overcome the needs of cement this paper deals with the investigation on cement concrete of grade M20 proportioned with eggshell powder as a substitute mantle for cement. Although, it aims to understand the approaches covered by main research streams in area so as to highlight the advantages and uses of calcium rich material. Developed, developing countries nowadays exploits the potentiality of chicken eggshell powder and in a way they were fruitfully cast it on as an ingredient of animal and poultry feed, land fertilizer and even an excellent substitute option in construction industries. These marginal usages fed in to the minimization of open land disposal scenarios which associates landfill problems, human and environmental health issues. This paper briefly reveals the investigations endured on strength characteristics of conventional cement concrete that are evenly proportioned with calcium rich eggshell powder (ESP and IESP cement replacement of 10, 20, 30, 40 and 50 percentages) and their potential feasibilities were exemplified.

Key word: Chicken egg shell (Raw egg shell powder and incinerated egg shell powder), Strength test, Behaviour.

INTRODUCTION

Eggs are been predominantly used by humanity in large scale and also small scale industries all over the world and the egg shell waste is commonly disposed without any pretreatment in landfills because it is traditionally futile. Meanwhile egg shell is treated as natural solid waste which is non hazardous, that tang may attract worms and rats, that pretense health crisis to the public. There are many types of disposal such as land fill, open burning, drains clogged up with rubbish and river fill. The outlay for waste disposal is expensive due to the scarcity of land and through large amount waste disposal there pose a contamination in ground water. Therefore, the ways should be found to utilize the waste efficiently by recycling.

Nowadays the waste products from food manufacturing industries are recycled and are used in construction industry to maximize the profit while reducing the amount of construction budget. Egg shells are known to have good strength characteristics when mixed with concrete. Thus eggshells are applicable for the development in construction industry.

Objectives

EXPERIMENTAL INVESTIGATION ON TORSIONAL BEHAVIOROF BEAM-COLUMN JOINT WRAPPED WITH ARAMID FIBER

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ABSTRACT

Concrete is a composite construction material plays a vital role in the construction of the nation's infrastructure. In these days, the role of concrete in all type of buildings like sky scrapers and low-rise buildings are enormous. The failure of the Structures are mainly due to the failure of the concrete in Beam-Column Joint. So the Extra care should be given while fabricating the steel in the beam-column joint and also while casting of concrete in the beam column joint. In Recent days more technical researches are going on to avoid the beam-column joint failure. The many repairing methods are mainly based on the fiber as extra admixture. In this Experiment we add the Aramid Fibre in additional with Bacillus sphaericus Bacteria to check the Torsional Behaviour of Beam-Column Joint. Beams-column joint externally wrapped with Aramid fiber was test to failure using an arrangement which transfer Torsional moment to the joint of the Beam-Column through two opposite cantilever moment arms. Aramid Fibre is a class of synthetic fibres and heat resistant. They are fibers in which the strength of the chemical bond can be exploited due to the reason the chain molecules are highly oriented along the fiber axis. Bacteria Introduction may helps in arresting the crack on its own with high volume percentage. The bacteria is the material in which the researches are going to find the usefulness obtained from the bacteria for concrete. The growth of bacteria can be done and the grown bacteria can be used in concrete to check its usage in arresting the cracks and delaying the failure of structure. The experimental work consist of casting RC Beam- Column Joint in controlled Beam-Column Joint, Design for torsion Beam-Column Joint, and fully wrapped with Aramid fiber Beam- Column Joint each 3 specimen and curing this specimen for 28 days and testing this test specimen under "Universal testing machine

1. INTRODUCTION

Concrete is the construction material which is used by all the peoples in the world most widely. It have several limitations like limited ductility, it is weak in tension and little resistance to cracking. Cracks and fissures are a common problem in building structures, pavements, historic monuments and other structural members which are subjected to stress in different service conditions.

Methods currently used for crack remediation often use synthetic polymers that need to be applied repeatedly, which requires continuous monitoring and recurring expenses. Because of these disadvantages of conventional surface treatments, attention has been drawn to alternative techniques for the improvement of the concrete durability and also environmentally friendly. More Researches are going on for concrete to overcome the issues and deterioration.

The need for the improvement in construction practices are in need, since the buildings built with concrete as the time passes deterioration and need for the repair work to be done is compulsory. But the repairing of those type of buildings are Uneconomic and Time consuming. The Introduction of Fiber Reinforced polymers have been used many times in auto motives and aerospace industries. These designs are done with old code of practice. But the New code of practice classify those types of building as unsafe due to its cost consuming in-case of repair works to be done. Introduction of bacteria can help in arresting the crack in concrete. In recent it is found that microbial mineral precipitation in concrete improved the overall

ANALYSIS OF GROUNDWATER LEVEL FLUCTUATION USING GIS AND REMOTE SENSING IN ERODE DISRTICT

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ABSTRACT

Ground water is one of the major sources that contribute to the total annual supply. The unstable growth and irregular distribution of population, reduced irrigation practices, rapid urbanization/ industrialization, large scale deforestation and improper land use practices creates depletion of ground water. This paper is to review the techniques and methodology applied for identifying Groundwater potential zones using GIS and remote sensing. In order to evaluate the ground water potential zones, thematic maps such as geology, slope, soil, drainage, density maps, Land use and land cover and surface water bodies were prepared, using remotely-sensed date as well as topographical sheets and secondary data are collected from concern department. Thematic layers used for mapping and identification of groundwater zones and analysis the potential. Groundwater potential zones will be useful for effective identification of appropriate locations for extraction of water.

INTRODUCTION

Groundwater levels change for many reasons. Some changes are due to natural and manmade activities. Some are relatively shallow unconfined aquifers that are affected by surface activities others are deeper confined aquifers. Some aquifers are heavily used for water supply.

Fluctuations are mainly due to three major factors:

- ✓ Change in the volume of water stored in aquifers.
- ✓ Changes in atmospheric pressure.
- ✓ Aquifer deformation.
- ✓ Water level can be easily recognized by the shape of the ground level hydrograph.

Water is essential for survival of mankind. Rainfall is the main source of water which is unevenly distributed. Rapidly increase in population, urbanization, agriculture and industrialization. Water demand becomes more critical in places where rainfall is very low and erratic. India is blessed with higher average annual rainfall of 1170mm as compared to the global average of 800mm, it face more problems of scarcity. Changes in land use and land cover, climatic conditions, population explosion, urbanization. A serious problem is recognized is that sufficient water is not available during the dry season. Water is very sensitive and strongly influenced by the climatic condition and land use/ land cover.

Land use/ land cover

Land cover is referred to the physical characteristics of earth surface, captured in the distribution of vegetation, water, soil and other physical features of land which is created by human activities. Land use is essential for implementing numerous developments, planning. Land use schemes to fulfil up the demands of human needs. And analyse the urban growth, monitoring the land use/ land cover.

Objectives

- ✦ To delineate the groundwater potential zones using relevant data are:
  - ✓ Rainfall
  - ✓ Topography
  - ✓ Geology
  - ✓ Soils
- ✦ To develop a GIS model that can identify potential zones based on the thematic maps.
- ✦ To confirm the results of this data.
- ✦ **MATERIALS AND METHODS**

TIME AND COST OPTIMIZATION OF CONSTRUCTION PROJECT USING MIVAN TECHNOLOGY

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ABSTRACT

Mivan is an upcoming technology which has empowered and motivated the mass construction projects throughout the world in this project we have discussed about the pioneering and yet pragmatic approach of this technology with provisions of speed quality financial incentives and construction aspects which is required for a successful completion of mass housing project. The project also includes comparison of aluminium formwork technology and conventional system. This comparison reveals the reduced total cost. Other aspects include its box type construction which proves much advantageous as far as earthquake resistant structure is considered for undertaking mass housing works, it is necessary to have innovative technologies which are capable of fast rate construction and are able to deliver good quality and durable structure in cost effective manner.

INTRODUCTION

Formwork is defined as temporary structure whose purpose is to provide support and containment for fresh concrete until it can support itself. It moulds the concrete to the desired shape and size and controls its position and alignment. The development of formworks is parallel with the growth of concrete construction throughout the 20th century. The advancement of technology, increase of population and the space limitation lead the way to construct

high-rise buildings. But the task was not very easy at the beginning but now the man made the task easy by inventing new machinery and new techniques. The most important factor in terms of cost, quality and speed in a high-rise building construction project is the type of the formwork used in the project.

The mivan Technology System was developed by Malaysian company as an efficient system for constructing the mass housing projects in the developing countries. To be erected by the structural elements many times that to of a repetitive design, the system ensures a fast and economical method of construction. The strong concrete surface finish produced with the aluminium forms allows achievement of an excellent quality wall finish without the need for external as well as internal plastering. This particular system is identified to be very much suitable for Indian conditions for mass structural construction, where quality and speed can be achieved at excellent level that too at economical cost. The speed of construction by this particular system will surpass the speed of most of the other recent construction methods and technologies used Mivan is one of the sophisticated engineered formworks fabricated in aluminium monolithic pouring. Walls, columns, slabs & beam are poured together in particular system. The utilization of mivan formwork in the construction industry of India is comparatively very less as to the other developing or developed countries around the globe. The utilization of mivan formwork technology in construction industry has the greater potential.

. This technology is one of the recent construction technologies upcoming at the greater speed for the successful completion various construction project across Indian construction industry, especially mass housing project. This particular study is very essential because it can provide the necessary important information of the building total cost and complete duration comparison between the conventional available systems and Mivan building system in Indian construction industry, where economy and time both play very important role.

Mivan shuttering is a fast-paced construction technique which offers strength and durability to a building by use of aluminium formworks .With a growing focus on affordable homes and "Housing for All",

EXPERIMENTAL STUDY ON DURABILITY OF CONCRETE INFUSED WITH CHICKEN EGG SHELL POWDER

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ABSTRACT

This experimental study aims to access the performance of concrete with respect to the durability investigations on which cement ie. the binder was partially substituted with eggshell powder which are a known considered residue from egg products production industries. The chemical composition of Egg Shell powder and Incinerated Egg Shell powder is evaluated. In the concrete mix, the cement is partially replaced with egg shell powder (ESP) and Incinerated Egg Shell powder (IESP) as about 10%, 20%, 30% by weight of cement. After 28 days of curing, the compressive strength of concrete is determined. Then the durability aspects where analysed in terms of Sorptivity tests and Rapid Chloride Permeability Test (RCPT). A new principle for Solid waste management was formulated in turns can be able to create a conductive environment.

Keywords: *Egg Shell powder (ESP), Incinerated Egg Shell powder (IESP), Sorptivity, Rapid Chloride Permeability Test (RCPT).*

1. INTRODUCTION

Now - a - days, Concrete plays an important role in the construction industry. Due to the presence of engineering characteristics and properties, concrete is most widely used as a construction material. The major element of concrete is cement, which is the primary producer of carbon di-oxide and green house gas. During the production of 1000 Kg of cement, approximately about 900 Kg of CO_2 is emitted in the atmosphere. The CO_2 produced in the cement industries is the silent killer of the environment and may cause environmental pollution and global warming. In order to reduce this impact on production of cement, the waste by- products can be utilized as the partial replacement of cement. Hence, the Egg Shell Powder is used as a cementing material, which is impregnated to a concrete. Egg shell is a common waste product, which is generated from poultry farms, restaurants and hotels. Egg Shell which is comprised of a network of protein fibers and also associated with the crystals of Calcium Carbonate($CaCO_3$), Magnesium Carbonate($MgCO_3$), Calcium Phosphate($Ca_3(PO_4)_2$) and also of organic substances. The main component of Egg Shell contains $CaCO_3$ and the chemical composition of Egg Shell waste is nearly same as that of Limestone. Incineration is a process of waste treatment that involves the combustion of organic substances contained in the waste materials. Therefore, Egg shell Powder and Incinerated Egg Shell powder is used as replacing material for cement on concrete.

A STUDY ON INSURANCE IN CONSTRUCTION INDUSTRY

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ABSTRACT

This paper presents on the insurance in the construction industry.the construction industry plays a vital role in the economy. The construction industry is complex in its nature because it comprises large numbers of parties owners (clients), contractors, consultants, stakeholders, and regulators. Despite this complexity, the industry plays a major role in the development and achievement of society's goals. The need of insurance for the client and contractor in the building construction is very important. Construction is a dangerous and usually unpredictable industry to work in. There are only so many elements of a construction site that you can control and the rest relies on the weather and operational machinery. Construction insurance is required if you work on any construction project or are a construction company. You need to make sure you have the necessary insurance policies covering your business in the unfortunate event something happens to someone onsite, to the building or structure you build, or to any of your construction equipment. It's an expensive business, so it's worth the time and money to insure every aspect of it.

KEYWORDS: Construction, Insurance, Policy, Risk.

INTRODUCTION

For a variety of reasons, construction contractors face many uncertainties as they start projects. Construction operations do not always take place according to plans-mistakes occur, workers suffer injuries, property is damaged, and acts of God or other mishaps can impede or halt progress on a construction project. Most of these incidents require money to rectify. The prudent contractor realizes the importance of having adequate insurance and will purchase the types that will offer the best protective coverage for each project undertaken. Insurance is a means of protection from financial loss. It is a form of risk management primarily used to hedge against the risk of a contingent, uncertain loss. An entity which provides insurance is known as an insurer, insurance company, or insurance carrier. A person or entity who buys insurance is known as an insured or policyholder.

The insurance transaction involves the insured assuming a guaranteed and known relatively small loss in the form of payment to the insurer in exchange for the insurer's promise to compensate the insured in the event of a covered loss. The loss may or may not be financial, but it must be reducible to financial terms, and must involve something in which the insured has an insurable interest established by ownership, possession, or preexisting relationship.

STUDY AREA

There are more insurance companies available for the construction of industries on the needs of contractors and clients. The insurance are made for the companies on the risk basis for the employees and for labors. Based on the requirements, number of insurance companies have been approached and development of the data on the insurance available and more reliable policy adoptable for the clients and contractors, which are analysed on basis of the needs achieved and those policies are listed on the Insurance Regulatory and Development Authority of India.

MATERIALS AND METHODOLOGY

The study is carried out using a two phase approach in order to achieve the aims and objectives. The methodology is set in order to gather the data in order to achieve the outlined of objectives

1) The first was to undertake a literature search on previous publications on insurance as a major risk transfer tool in the construction industry. The Literature review was carried out throughout the whole project, this was to compile and discuss information on insurance as a major risk transfer tool in construction in order to have an in-depth study, and to establish current theory on the use of insurance in construction.

STUDY ON DEVELOPMENT OF SUSTAINABLE CONSTRUCTION IN OUR COUNTRY

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ABSTRUCT

Construction has been accused of causing environmental problems ranging from excessive construction of global resources both in terms of construction and building operation to the pollution of the surrounding environment, and research on sustainable building design and using building materials to minimize environmental impact is already underway. Building performance is now a major concern of professionals in the building industry and environmental building performance assessment has emerged as one of the major issues in sustainable construction. However, relying on the design of project to achieve the goal of sustainable development, or to minimize impacts through appropriate management on site, is not sufficient to handle the current problem. The aim of sustainability study goes even further than at the design stage of project to consider its importance at an early stage, before any detailed design or even before a commitment is made to go ahead with a development. The main objectives of this paper are to examine the development, role and limitations of current environmental building assessment methods ascertaining building sustainability used in different countries which leads to discuss the concept of developing a sustainability model for project based on a multi-dimensional approach, and this study also aims to reflect on the weight of the engineers decisions to get a sustainable building, both in choice of materials and in terms of construction and space system adopted, that will allow alternatives to be ranked is discussed in detail in the paper.

Keywords – *Sustainability, Sustainable Construction, Sustainable development, Questionnaire,*

1. INTRODUCTION

Sustainability

The term Sustainability refers to keeping on effort going continuously or the ability to last out and keep from falling. It denotes the characteristics of a process or state that can be maintained at a certain level for as long as is wanted. Sustainability is defined as the desire to perform activities without any depletion of resources or bringing any harmful effect on the environment. Practicing sustainable construction methods will help avoiding harmful effects from constructions activities.

Sustainable Development

Sustainable development defined as the development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. It also says that ability of a society or ecosystem to continue functioning into the indefinite future without being forced into decline through complete loss of its strength or over loading of key resources on which the system depends.

Sustainable Construction

Sustainable construction is defined as the practice of creating structures and using process that are environmentally responsible and resource-efficient throughout a building's life-cycle from sitting to design, construction, operation, maintenance, renovation and deconstruction. It can also be said as a way of building which aims at reducing (negative) health and environmental impacts cost by the construction process or by buildings or the built-up environment. It is also a living concept and varies in different scenarios based on people's needs. Taken as the starting point, the definition above has been reinterpreted and expanded based on different approaches and priorities from country to country.

Why Encourage Sustainable Construction

According to United Environment Programme(UNEP), the increased construction activities and urbanization will increase waste which will eventually destroy natural resources and wild life habitats over 70% of land surface from now up to 2032. Moreover, construction uses around half of natural resources that human consume. Protection and transport of building materials consumes 25-50 percent of all energy used. Taking UK as a sample, the construction industry counts for 47% of CO_2 emission, of which manufacturing of construction products and materials accounts for the largest amount within the process of construction.

Potential Lower Cost

EXPERIMENTAL INVESTIGATION OF COPPER SLAG ON MECHANICAL PROPERTIES OF HYBRID FIBER REINFORCED CONCRETE

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ABSTRACT

Concrete is one of the safe, strong and simple building material used in all types of construction works.Themaininconvenienceinconcreteisthatthetensilestrengthisrelativelylow.Theintroductionofsteelfibersinconcrete converts its nature from brittle to ductile. Cracks plays an important role in construction as they change concrete structureintopermeableelementsandwithahighriskofcorrosion.Itisimportanttoreducethecrackwidthandthis can be achieved by adding polypropylene fibers to concrete. In this experimental investigation, the mechanical properties of HFRC containing Copper slag with various percentages of fibers like Steel fiber and Polypropylene fiber is evaluated. The mixes were designed for five different percentages such as 10%, 20%, 30%, 40% and 50% of Copper slag as replacement of fine aggregate with the small percentage of fibers as constant. The mechanical properties of these mixes were found and then comparing those results with the conventional concrete. The optimum dosage of Copper slag has to be found from these results. By the usage of optimum dosage, structural behaviour and durability characteristics will be evaluated.

Keywords: *Copper slag, Steel fiber, Polypropylene fiber.*

INTRODUCTION

Concrete is the most widely used man-made material on earth. It is an essential construction material used extensively in buildings, bridges, roads and dams. It is a mixture composed of cement, fine aggregate, coarse aggregate and water which hardens with time. The amount of concrete used worldwide is twice that of steel, plastics and aluminum combined.Concrete made from Portland cement is relatively strong in compression but weak in tension and tends to be brittle. Theweakness in tension can be overcome by the use of conventional steel bars reinforcementand to some extent by the mixing of a sufficientvolumeofcertainfibers.Theuseof fibers also recalibrates the behaviour of the fiber-matrix composite after it has cracked through improving itstoughness.A fiber is a small discrete reinforcingmaterialproducedfromvariousmaterialslike steel, plastic, glass, carbon and natural materials in various shapes and sizes. Fibers are usually used in concrete to control cracking due to plastic shrinkage and drying shrinkage. They also reduce the permeability of concrete and thus reduce bleeding of water.Sometypesoffibersproducegreaterimpact, abrasion and shatter resistance in concrete.Fiber reinforced concrete (FRC) is a concrete containing fibrous material which increases its structural integrity. It contains short discrete fibers that are uniformly distributed and randomly oriented. In addition, the character of FRC changes with varying concretes, fiber materials, geometries, distribution, orientation and densities.FRC is a new structural material which is gaining increasing importance. Addition of fibers in discrete form improves many engineering properties of concrete. Continuous meshes, woven fabrics and long wire or rods are not considered to be discrete fibers. A composite can be stated as a hybrid when two or more type of fibers is used in a combined matrix that will reflect the benefit of each of the individual fiber used. Thiswill finally provide a synergetic response to the whole structure. Such a composite of concrete is termed as Hybrid fiber reinforced concrete.The mechanical properties of concrete are enhanced appreciably using short lengthened fibers. This increases the modulus of elasticity of the concrete. This will reduces the chances of brittleness and hence small crack, as small cracks are the main factors behind propagation and larger cracks formation. It is observed that the useof a combination of both metallic

COST MANAGEMNT IN CONSTRUCTION ADMINISTRATION

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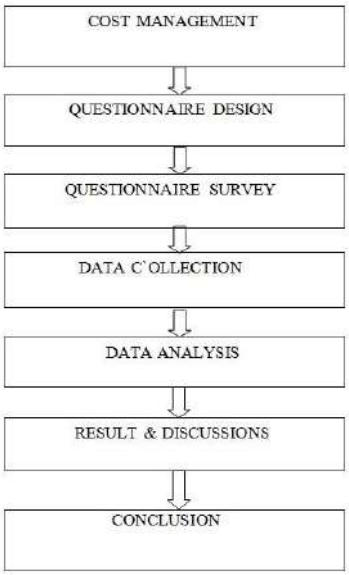
ABSTRACT

Construction cost management is the most important function for project success, and the construction project performance is generally expressed in terms of cost and its variance from the budget. However, it has not been effectively used due to the presence of a large quantity of data with many complex interrelationships. Construction firms, being project based organizations, have to develop their project management capacity in order to accomplish firm and project objectives successfully. Hence contractors need to focus on project cost management process. The study presents the limitations, drawbacks and short comings of each project cost management functions related to current practices of domestic contractors, which need to be improved for achieving the predefined project objectives and the profitability of contractors along with the proposed improvement recommendations, through critical literature review.

1. INTRODUCTION

Whether you are developing a new product, designing a facility, or changing a key process, it's challenging to forecast and manage project costs effectively.n fact, the job is so challenging that half of all large IT projects massively blow their budgets, running on average 45 percent over budget and seven percent over time, according to consultants McKinsey & Co. and the University of Oxford. For projects in other sectors, the news is no better. The Project Management Institute (PMI) reported in 2016 that companies were completing only 53 percent of projects within their original budget. However, strong cost management helps you avoid that fate. So what exactly is cost management?Cost management refers to the activities concerning planning and controlling a project's budget. Effective cost management ensures that a project is completed on budget and according to its planned scope. Since you assess the success of a project at least in part by its cost performance, cost management is a prime determinant of project outcome.Cost management activities are conducted throughout the project life cycle, from planning and budget allocation to controlling costs during project execution and assessing a project's cost performance upon completion.Although cost management includes a whole ensemble of activities, it is sometimes referred to in terms of more specific functions, such as spend management, cost accounting, and cost transparency. Cost managers sometimes use these terms as loose synonyms for the broad cost management function.

2. METHODOLOGY



STRATEGIC PLANS FOR DEVELOPMENT OF SMART CITY

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ABSTRACT
Smart city is the city for increasing the specialist of traffic signaling, sewage system, parking, etc...Our project is entitled as strategic plans for development of smart city. Smart cities are expected to be the key to combining a sustainable future with continued economic growth and job creation. The main scope of our project is to achieve the goal, coordinating public and private efforts and improving the living conditions of the citizens. The applications of our strategic planning to urban contexts, Regions and other metropolitan areas is a relatively recent development whose beginning were eminently practical and artistically a mixture of thought, technique and art.

KEYWORDS
Developmentofurban mobility,Assured electricity supply,Sanitation, Including solid waste management,Public transport,Health and education, Recreation centers,Safety and security of citizen.

INTRODUCTION

A Smart integrates state of the art green technologies to create a city both sustainable and deliver high leveling standards. A smart city lads the way towards CO_2 neutrality and deliver solution (Infrastructure etc..)For it inhabitants that are cause effective and efficient at the same time it is a healthy, energy efficient city that uses renewable energy source as much as possible, including biomass and waste, and is a pioneer in the development of advanced smart technologies.

A Smart city is also an inclusive technologies and innovative solution to increase social inclusion and compact poverty and deprivation. Over all the smart must be a good place to live, offering the best possible quality of life with the lowest possible uses of resources. '**Smart cities'** is the latest concept when it comes to building the cities of the future. Smart cities are expected to be the key to combining a sustainability future with continued economic growth and job creations. There are many definitions of a smart city including sustainable, live able, intelligent and green. However, the common denominator seems to be access to data and intelligent tools to connect knowledge and peoples to drive change. What set 'smart cities aside compared to 'eco cites' and 'Sustainable cities' is which strategic use of new and high Tec ICT- Based solution to connect the citizens and technologies of the city on a common platform.

SLUM CLEARENCE AND REHOUSING

1. SLUM:

There is no general agreement on the definition of term slum because there are varieties of slums. However, the prime characters of a slum is substandard housing. But a slum is always an area a single neglected building, even in the worst stage of deterioration, does not make a slum. Thus, the area characterized by substandard housing conditions between the city are known as the slum. The term substandard housing condition should be taken in a relative social sense referring to actual living condition reference to a given time in a specific country

2. REHOUSING:

The complete removal of slum has been recognized as the ultimate objective and slum improvement has been considered as an immediate alternative to given relief to the slum dwellers. The available limited resources should be exploited to the maximum possible extent for providing rehabilitation To the urban poor peoples in healthy and planned colonies. It may "Constraint of resource, Low rent paying capacity of the slum dwellers and it make move from the area selected for clearance. The process of improving the existing conditions of slum is known as the slum clearance. There are two major methods of slum clearance programs can be affected.

- Complete removal method,

GREEN BUILDING CONJECTURES AND AWARENESS FOR BETTER AMBIENCE

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ABSTRACT

Green buildings are marked as economical, resource efficient and environmentally friendly compared to the conventional building. A green building depletes the natural resources to the minimum during its construction and operation. A construction activity generally confers to deterioration of the environment; this is due to the solid waste generated during construction. Production of carbon dioxide by occupants is also considered as a key factor. Due to this problem there is a considerable downturn in adoption of green building technology in construction industry. The main aim of this study is to set forth the factors influencing the adoption of green building. This study investigates the extent of adoption of green building concepts in commercial buildings and the key challenges arising from their adoption with the aim of determining appropriate strategies for implementing them. The study was conducted through survey method and used questionnaires, interviews, observations for data collection. In this paper a study is conducted which determines the concepts and strategies which can help to create awareness among people regarding the worth of green building and to promote green building practice for betterenvironment.

INTRODUCTION

General

Green building practices are commonly defined by the areas of the environment they affect energy, water, site, air quality, and materials. Definitions of green building may range from a building that is "not as bad" as the average building in terms of its impact on the environment or one that is "notably better" than the average building, to one that may even represent a regenerative process where there is actually an improvement and restoration of the site and its surrounding environment. Also green building is defined as one whose construction and lifetime of operation assure the healthiest possible environment while representing the most efficient and least disruptive use of land, water, energy and resources.

The Environmental Protection Agency (EPA) defines green building as the practice of creating structures and using processes that are environmentally responsible and resource efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. It defines green building as the practice of increasing the efficiency with which buildings and their sites use energy, water, and materials, and reducing building impacts on human health and the environment, through better siting, design, construction, operation, maintenance, and removal the complete building lifecycle.

METHODOLOGY

Although green building is not a new term or new concept to the general public, it is not so easy for people to realize the performance and understand the actual benefit if they has no experience of living in green buildings. Even for people who have experience of living in green buildings, it is uncertain whether the green buildings are able to satisfy their needs.

Methodology Flow Chart

DATA ANALYSIS AND RESULTS

Case study on traffic congestion at Tiruchengode town

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Abstract

Traffic congestion is one of the major problem in the town due to the growth of vehicles , demand in the transportation modes and growth of population over the nation. But the governments spends a huge budget to solve these type of problems. This traffic congestion problem is studied for the road connecting junction in the tiruchengode town. Due to the congestion ,there is risk of accients because of traffic management and administration is poor. This congestion leads to increase in emissions , increase in time consumptions of peoples, spoils the healeth of the peoples etc. in this project we documented the studies on how to measure the congestion and recommended for better solution. The study is to reduce the traffic congestion at the tiruchengode junction.

Key words: *traffic intensity and connectivity, traffic volume study, traffic management, intersection points.*

I .Introduction

One of the most challenging and complicated problem in the town life is that traffic congestion. In the recent years the traffic congestion is made by rapid growth of vehicles populations, structures near the roads. Traffic congestion wastes time and energy, causes pollution and stress, results in traffic accidents, and increase in journey time over the traffic flow. The congestion problem is the common problem among the developed and under developed countries, so it is a global problem over the city also.The study will concentrate on the cause of the traffic congestion on a specific five roads in the Tiruchengode junctions. The essence of traffic congestion is the unbalance transportation of supply and demand .Measures aimed at reducing congestion can be either demand or supply over the town. The purpose of this study is to analysis the traffic pattern and trends for the planning of traffic congestion in the junctions. Primary survey on the basis of traffic congestion over the people in the Tiruchengode town. The traffic congestion during their busy working hours and it means delay to reach their working destination in the proper time over passing the junctions over the town. The congestion problem is common problem among the junctions in the town. The objective of the study is to find the real causes over the traffic congestion on the junctions of connecting the other districts over the towns and to conclude the possible solutions for the problems.

Traffic congestion is when vehicles travel slower because there is too much of traffic on roads. This makes a trip times longer, and increase queueing. This is also known as a traffic congestion. Congestion may results from a decrease in capacity, for example accidents on the road or roads being closed. Bad roads layout also restrict the capicty. Where congestion is common ,for example because of commuting in big cities, several methods are used to relieve it.the people may use public transport to travel to other part of the city , such as rapid transit, which travel independently of car traffic and are not affected by traffic congestgion.

There are two types of traffic congestion, according to the transportation department are given below,

- Recurring
- Non recurring

Experimental Study on Plastic Waste as a Coarse Aggregate for Structural Concrete

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ABSTRACT

Due to rapid industrialization and urbanization in the country lot of infrastructure developments are taking place. This process has in turn led questions to mankind to solve the problems generated by this growth. The problems defined are acute shortage of constructional materials, increased productivity of waste and other products. In this project M30 grade concrete is taken and waste plastic is used as modifier. Tests were conducted on coarse aggregates, fine aggregates, cement and modifiers (plastic waste) to determine their physical properties. Trail mixes are prepared with 5%, 10% and 15% of plastic aggregates as the replacement for sand in M30 grade of concrete. Based on the mechanical strength of concrete, it is observed that 5% replacement of sand with plastic aggregates is the optimum content.

KEYWORDS: PLASTIC WASTE, MODIFIER, COARSE & FINE AGGREGATE

INTRODUCTION

As the world population grows, so do the amount and type of wastes being generated. Plastic is everywhere in today's lifestyle. It is used for packaging, protecting, serving and even disposing of all kinds of consumer goods. With the industrial revolution, mass production of goods started and plastic seems to be a cheaper and effective raw material. Today, every vital sector of the economy starting from agriculture to packaging, automobile, building construction, communication or info tech has been virtually revolutionised by the application of plastics.

Use of this non-biodegradable (according to studies, plastics can remain unchanged for as long as 4500 years on earth) product is growing rapidly and the problem is what to do with plastic-waste. Studies have linked the improper disposal of plastic to problems as distant as breast cancer, reproductive problems in human and animals, genital abnormalities and even a decline in human sperm count and quality. If a ban is put on the use of plastic on emotional grounds, the real cost would be much higher, the inconvenience much more, the changes of damage or contamination much greater. The risk to family health and safety would increase and above all the environmental burden would be manifold. Hence the question is not `plastic vs no plastic' but is more concerned with the judicious use and reuse of plastic waste.

The creation of non-decaying waste materials, combined with a growing consumer population, has resulted in a waste disposal crisis. One solution to this crisis lies in recycling waste into useful products.

Research into new and innovative use of waste materials being undertaken world wide and innovative ideas that are expressed are worthy of this important subject. Many highway agencies, private organizations and individuals have completed or in the process of completing a wide variety of studies and research projects concerning the feasibility, environmental suitability and performance of waste plastic in highway construction. These studies try to match societal need for safe and economical disposal of waste materials with the help of environmentally friendly industries, which need better and cost-effective construction materials.

COLLECTION OF MATERIALS

Plastic waste are mostly collected are plastic toys, buckets, mug, mixie body parts, grinder body parts which is reusable. Crushing the plastic waste to make powder form. Heat the plastic waste to attain melting point. Compress the material into hardened form using machine. Making smaller size using machine into size suitable for fine aggregate.

PRELIMINARY TEST

The specific gravity and sieve analysis test is conducted for both conventional and modifier materials. Specific gravity test for cement is also conducted in this study.

ASSESSMENT OF WATER QUALITY IN KAVERI RIVER (Kaveripatti – Uratchikottai Barrage)

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ABSTRACT

Water quality of the KaveriRiver was assessed to understand the contamination of water due to the presence of various contaminate sources and the suitability of surface water drinking, agricultural, domestic and other purpose. Surface water samples were collected at different locations of Sankari block of Salem District of Tamilnadu state of India. Their physical-chemical parameters like colour, odour, turbidity, TDS,EC,Ph,TA,TH,Ca^{2+} ,$Mg2^{+}$,Fe^{2+},Na^{+},K^{+},Mn^{2+},NH_3^{+},NO_3^{-},Cl^{-}, F,$SO4^{2-}$, and PO_4^{2-} were assessed . The results were compared with the drinking water guidelines of Indian Standard (IS) In order to understand suitability for drinking, purpose. Water quality index rating was calculated to quantity index rating was calculated to quality the overall water quality for human consumption. The majority of the samples were suitable for drinking, irrigation and domestic purpose in the study area.

Key words: *Surface water, physical-chemical Parameters, IS, WQI*

1.INTRODUCTION

1.1 MATERIALS COLLECTION

The current study was designed to investigate the conditions of water quality by randomly collected 10 water samples from Kaveri River from Kaveripatti to Uratchikottai Barrage. Water samples from the selected sites were collected and taken in the pre-cleaned plastic polythene bottles. Prior to sampling, all the sampling containers were washed and rinsed thoroughly with the water. The various sampling location of water samples of Sankari Block as shown in table 1.1

Table 1.1 – Latitude and Longitude of water samples

Cases	Locations	Latitude & longitude
S1	Kaveripatti	11.53°N 77.72°E
S2	Vellalapalayam	11.52°N 77.728°E
S3	AyyanarkovilVellalapalayam	11.521°N 77.73°E
S4	Annamaarkovil	11.51°N 77.734°E
S5	Pullagoundampatti	11.50°N 77.726°E
S6	Veilayee Amman Temple	11.49°N 77.721°E
S7	Vadakkukadu	11.496°N 77.71°E
S8	Adi Amman Temple	11.49°N 77.711°E
S9	Sri Sivamurugan Spinning Mill	11.489°N 77.70°E
S10	Uratchikottai Barrage	11.48°N 77.703°E

GROUND WATER QUALITY ASSESSMENT IN AND AROUND SALEM DISTRICT OF TAMILNADU, INDIA

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Abstract

The present study was carried out with the aim to assess of water quality using physic-chemical parameters in and around Salem district. People on earth are under tremendous threat due to undesired changes in the physical, chemical and biological characteristics of air, water and soil. Due to increase of human population, advanced agricultural practices, industrialization, man-made activity, use of fertilizers, water is being highly polluted with different contaminants. Water is an important resource for human survival. Natural water contaminates due to weathering of rocks and leaching of soils etc. It is necessary that the quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water, human population suffers from varied of waterborne diseases. The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. This paper is aimed at reviewing the environmental and health impacts of untreated or inadequately treated wastewater effluents. The quality of wastewater effluents is responsible for the degradation of the receiving water bodies. Parameters that may be tested include temperature, pH, turbidity, salinity, nitrates; TDS, sulphate, chloride, alkalinity, phosphates, etc. are of special concern because they produce water or chronic poisoning in aquatic animals. Some water analysis reports with physic-chemical parameters have been given for the exploring parameter study. Guidelines of different physic-chemical parameters also have been given for comparing the value of real water sample. To achieve unpolluted wastewater discharge into receiving water bodies, careful planning, adequate and suitable treatment, regular monitoring and appropriate legislations are necessary.

Keywords: Ground water, drinking water, Municipal wastewater, Water quality parameters

1. INTRODUCTION

Water is an essential compound for survival of life on earth. Which contains minerals, important for human as well as for world and aquatic life? Ground water and surface water reservoirs are the planet's most important freshwater resources and provide in numerable benefits. They are used for domestic and irrigation purposes and provide ecosystems for aquatic life especially fish, thereby functioning as a source of essential protein and for significant elements of the world's biological diversity.

Ground water, surface water (rivers, streams and ponds), atmospheric water (rain-water, snow and hail) and springs are the main source of water available to the people in general. The qualities of these water bodies vary widely depending on the location and environmental factors. The major source of ground water is precipitation that infiltrates the ground and moves through the soil and pore spaces of rocks. Other sources include water infiltrating from lakes and streams, recharge ponds and waste-water treatment system. As ground water moves through soil, sediment and rocks, many impurities such as disease-causing micro-organisms are filtered out. Many water resources in developing countries are unhealthy because they contain harmful physical, chemical and biological agents. To maintain a good health however, water should be safe to drink and meet the local standards and international standards to taste, odor and appearance. To monitor the water resource and ensure sustainability, national and international criteria and guidelines established for water quality standards are being used.

Since the chemistry of water directly hints the quality of water for various purposes, its monitoring and assessment gained substantial importance in the present century. A tremendous increase in the population increased the stress on both surface and the groundwater. It is believed at the beginning of the human civilization itself, groundwater was the most trusted form of drinking water because of the filtering effect of the aquifer. However, in the present world drinking the water directly from the source without proper treatment is a tough task. The groundwater analysis for physical and chemical properties is very important for Public health studies. These studies are also main part of pollution studies in the environment. The groundwater contains dissolved solids possesses physical characteristics such as odor,

EXPERIMENTAL INVESTIGATION ON SEISMIC STRENGTHENING OF MASONRY WALLUSING ECO-FRIENDLY DUCTILE CEMEMTITIOUS COMPOSITE

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Abstract

During earthquake, masonry buildings experience seismic loading both in-plane and out-of-plane. The recent earthquakes have created a necessity to review the capability of existing structures during earthquake and to find a suitable strengthening technique to strengthen a newly constructed masonry structure or to retrofit an existing old structure. The results presented are part of a comprehensive experimental study, aimed at investigating the effects of bonding Eco-friendly Ductile Cementitious Composite (EDCC) repair material in improving structural behaviour of hollow concrete masonry walls in seismic-prone areas of British Columbia. Three different specimens are applied in (1:4 cement mortar, EDCC, EDCC with mesh) are tested and results are compared and discussed.

***Keywords**: Eco-friendly ductile cementitious composites (EDCC), seismic strengthening, masonry wall, PP fibre, Pet fibre, GGBS.*

1 Introduction

In seismic zones, masonry buildings, especially one constructed of plain masonry, are prone to extensive damage during a seismic event because of predominantly non-ductile behavior. In masonry structures, walls are usually supposed to maintain structural integrity and to dissipate the earthquake input energy. Therefore, the strength, ductility and post-peak behavior (stiffness and strength of degradation) of masonry walls are the most important parameters that should be taken into account to improve the seismic performance of masonry structures. The mechanism of stiffness degradation depends on the loading history and the characteristics of walls such as material properties, ductility and geometry. Shear and flexural stresses develop in walls when masonry walls are subjected to lateral loads induced by earthquake. The seismic loads cause both in-plane and out-of-plane actions.

2 Review of Literature

Kaheh, Pedram and Shrive, Nigel carried out the research on effect of bonding Eco-friendly Ductile Cementitious Composite (EDCC) repair material in hollow concrete masonry walls in three different thickness. The structural behaviour was evaluated using in-plane free vibration and in-plane quasi-static cyclic loading. The results show the specimen with higher thickness of the three various thickness did not perform better than others.

Gehan Hamdy, Osama Kamal, Osama Al-Hariri, Tarik El-Salakawy carried out the numerical work using ANSYS and experimental work of unreinforced brick masonry walls and vaults strengthened by several techniques to validate the adopted approach. The research aimed to provide a simple and reliable calculation method to enable the design and structural evaluation of strengthening measures for masonry plane.

Angelo Garofano, Francesca Ceroni, Marisa Pecce had done the research on masonry walls strengthened by employing polymeric grids embedded in cementitious motor layers applied on wall surface. The strength and displacement capacity were quantified by both numerical and experimental work. A parametric analysis was done by varying the masonry strength, wall shape and axial stiffness of the grid and strength of the mortar.

Yang Du investigated the durability performance of Eco-friendly ductile cementitious composite for seismic retrofitting. Six different EDCC fibre mixes were involved to discover the best mix in terms of performance and economical aspects. The mixes with 2% PVA and 1% PVA and 1% PET yields the best durability performance. It was stated that EDCC depends greatly on good material mixing for different good quality control.

Reboul nadege, Mesticou Zyed, Si Larbi Amir, Ferrier Emmanuel carried out the research work on in-plane cyclic behaviour of masonry walls strengthened by composite materials. One reference wall and four reinforced with externally bonded composites were built for the study. These walls exhibited improved behaviour in terms of lateral load and ductility. The strengthening materials contribute more effectively to increase in ductility than FRP composites and proved to be effective in delaying onset of damages.

EXPERIMENTAL STUDY ON STRENGTH PROPERTIES OF FIBRE REINFORCED CONCRETE (POLYPROPYLENE)

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Abstract
Polypropylene is a thermoplastic polymer utilized as a part of wide assortment of uses including bundling, materials (e.g., ropes, warm clothing and covers). Polymer cement is a piece of gathering of cements that utilizes polymers to supplement bond as a cover. The sorts incorporate polymer-impregnated solid, polymer cement, and Polymer-Portland-bond concrete. The aim of the study was to achieve maximum strength of concrete by using the
optimum weight of polypropylene fibers. Fiber reinforced concrete is used in a variety of engineering applications because of its satisfactory and outstanding performance in the industry and construction field. Polypropylene fiber in concrete mix design is used for multiple purposes that includes rigid pavement, self-compacting concrete and other applications. 40 cylinders of polypropylene concrete were casted and tested for 7 and 28 days' strength for both compressive and split tensile strength. It was concluded that the significant improvement was observed in ultimate compressive strength after 7 and 28 days. The optimum percentage of Polypropylene fiber was obtained to be 1.5 percent of cement by volume. The addition of small amount of polypropylene improved the mechanical properties of concrete.

Key words:- Polypropylene, Concrete, fibers, compressive strength, split tensile strength

1.INTRODUCTION

Fibre Reinforced Concrete (FRC) may be defined as composite materials made with Portland cement, aggregate, and incorporating discrete discontinuous fibres.The use of polypropylene fibers has increased tremendously in construction of structures because addition of fibers in concrete improves the toughness, flexural strength, tensile strength and impact strength as well as failure mode of concrete.Polypropylene twine is cheap, easily available, and like all manmade fibers of a consistent quality.The Concrete added fiber by weight of cement (0%,0.5%,1.5%). Size of Cubes (150 mmx 150 mmx 150mm) and size of cylinder (150 mm dia& 300 mm length) were casted.The compressive strength and split tensile strength of concrete of all mixes was determined at the ages of 7 and 28 days of curing for addition of polypropylene fiber (0% ,0.5%,1.0%,1.5%).The fibers were supplied by Reliance Industry by name RECRON 3s .It is available in 3 different sizes. i.e 6mm,12mm and 24 mm.In the present investigation 12mm fiber length is used .

2.LITERATURE REVIEW

Milind V. Mohod (Jan- Feb. 2015) The paper deals with the effects of addition of various proportions of polypropylene fibres on the properties of High strength concrete (m30and M40 mixes)
The main aim of the investigation program is to study the effect of Polypropylene fibre mix by varying content such as 0%, 0.5%, 1%, 1.5% & 2% and finding the optimum Polypropylene fibre content.
The concrete specimens were tested at different age level for mechanical properties of concrete, namely, cube compressive strength, split tensile strength, flexural strength.
Initially the conrete specimen's shows appreciable strength for irregular curing but as the days advances the curing specimens gave satisfactory strength. A notable increase in the compressive, tensile and flexural strength was observed.

Hussam A. A. Rehman (2012). This work focus on studying the mechanical characteristics of polypropylene and carbon fiber reinforced no fine aggregate concrete, containing different percentages of fiber.
This work was carried out using several tests. These tests were workability fresh and hardened density, Compressive strength, splitting tensile strength and modulus of rupture.
Tests were performed for Specimens at ages of (7, 28) days.
The percentage increase in tensile strength For polypropylene mixes containing fiber by volume fraction of (1%, 3%, 5%) were (93%, 101% & 129%) respectively and the percentage increase in tensile strength for carbon mixes containing Fiber by volume fraction of (1%, 3%, 5%) were (170%, 177% and 220%) respectively.

Mahesh Khawashi, Nikita Hatwar, Sandip Kashiwar(2018) . This paper present the effect of polypropylene (PP) fibre on various properties of concrete such as compressive strength, tensile strength, workability and fractured properties with various content of fibre range of (0%, 0.5%, 1%, 1.5%)

ANALYSIS OF MANPOWER RESOURCE IN CONSTRUCTION TO IMPROVE EFFICIENCY

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ABSTRACT

The most challenging issue in Construction industry in the last decade is how to improve the production efficiency. Many researchers have been done in the last decade however a deeper understanding is still needed to improve the productivity by studying the workers behavior in construction industry. The performance of labor is affected by many factors and is usually linked to the performance of time, cost, work pressure, safety measures and quality. The aim of this study is to get the latest information and to identify the key factors that affect production efficiency in Tamilnadu by study of workers behavior in construction industry. Data's are collected through questionnaires and distributed to respondents who work at various projects in wide area in Tamilnadu. Respondents were required to rate and analyse using their experience and the factors were identified from past researches, which affects the project performance and then the level is measured based on their affect. The data collected are analyzed using Microsoft Excel or SPSS software which is analytical software.

INTRODUCTION

Human resource is an important factor in the development of the construction industry and therefore understanding the labour behavior is very much important to improve the efficiency of production. Variations in the construction labour productivity can naturally make a great impact on national economy and productivity. Lack of safety, lack of skills, lack of quality of materials, lack of wages, communication barriers like that are mainly create psychological stress to the labours. It totally affects the labour production efficiency.

Construction labor productivity has become such a word and one of the most frequently researched topics. In most countries, labor cost comprises 30 to 50% of the overall projects cost, and thus is regarded as a true reflection of the economic success of the operation. Horner *et al.* indicated that a 10% increase in construction labor productivity would yield annual savings of about £1 Billion to the British economy; a similar conclusion was echoed by Stoekel and Quirke (1992). Since construction is a labor intensive industry, the significance of this effect not only justifies the concern over its labor productivity, but it can also be argued that labor-power is the only productive resource, hence construction productivity is mainly depend upon human effort and performance.

The objective of this research is to identify and rank the relative importance of factors perceived by Contractors to affect construction labor productivity in Tamilnadu, so that the outcomes can be used by not only local, but also by international industry practitioners, who may be further interested in venturing into potential mega scale projects, but possess no prior practical knowledge of the construction industry in the State, to develop a wider and deeper perspective of the factors influencing the productivity, and provide guidance to projects and construction managers for efficient utilization of the