



ABSTRACT

In the present era the technology in communications has developed to a very large extent. In wireless communication network these towers play a significant role hence failure of such structure in a disaster is a major concern. Therefore utmost importance should be given in considering all possible extreme conditions for designing these towers. In most of the studies, the researchers have considered the effect of wind only on the four legged self-supporting towers. In this dissertation, a four legged self-supporting tower of is analyzed and designed along with foundation details. The analysis has been done by considering loading format including reliability, security and safety pattern are to be evaluated. Wind loading is to be calculate on the longitudinal face of the towers. Now all the towers are modeling and analyze as a three dimensional structure using STADD.Pro excel autocad softwares. Finally tower members are to be designed as an angle sections. The design of nut and bolts and based on the soil, design of foundation are done.



CONCRETE WITH BAGASSE ASH AND CRUSHED COCONUT SHELL

A DESIGN PROJECT REPORT

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ABSTRACT

Researches were focusing on utilizing either industrial or agricultural waste as a source of raw material for construction which helps to have a sustainable and pollution free environment.

This project discuss the utilization of Bagasse ash as a cement replacement and replacement of coarse aggregate by coconut shell.

Since India is one of the largest poducers of sugarcane it is highly economical to use bagasse ash in concrete mix. The usage of coconut shell which is having good durability characteristics, toughness and abrasion resist characteristics, adds up the quality of prepared concrete and is good in long standing use.

The usage of bagasse ash and coconut shell are highly economical and is the best alternative for environtmental safety.

It is concluded from various studies that replacement of 10% of bagasse ash with cement and 40% of coconut shell with coarse aggregate can bring up the maximum strength.



ABSTRACT

Now-a-days, electronic products have become an integral part of daily life which provides more comfort, security, and ease of exchange of information. These electronic waste (E-Waste) materials have serious human health concerns and require extreme care in its disposal to avoid any adverse impacts. Disposal or dumping of these E-Wastes also causes major issues because it is highly complex to handle and often contains highly toxic chemicals. Hence, E-Waste can be incorporated in concrete to make a sustainable environment. This paper deals with the recycling and reusing of E-Waste in the concrete industry and it is considered as the most feasible application. Rapid growth of world population and widespread urbanization has remarkably increased the development of the construction industry which caused a huge demand for sand and gravels. Environmental problems occur when the rate of extraction of sand, gravels, and other materials exceeds the rate of generation of natural resources. Therefore, an alternative source is essential to replace the materials used in concrete. In this study an experimental work have been done to determine the compressive strength and tensile strength of concrete by using E-Waste as a partial replacement material for coarse aggregate. Different types of conventional cubes with partial replacement of coarse aggregate by E-waste on a percentage of 0%, 5%, 10%, 15%, 20%, and 25 to with water cement ratio 0.4 is made. Compressive strength and tensile strength of concrete with or without electronic waste as aggregate had observed which exhibits a good strength gain. The optimum test result was attained at 20% replacement of E-waste and beyond this compressive strength decreases gradually. Thus concluded that E-waste and demolished waste can be utilized in concrete making and can solve the potential disposal problem and it saves the natural aggregate.



ABSTRACT

In this fast growing world the space available for expansion is less, so intelligent planning is required to make maximum utilization out of maximum resource. The planning must not only economically efficient one but also gives importance to aesthetic appearance, comfort etc. So space utilization should be in well planned manner. Our project is “**PLANNING, ANALYSIS AND DESIGN OF A MULTI- STOREY APARTMENT**” which deals with planning and design of apartment. The dead load and live load of various frames of the building have been analysed by substitute frame method. Structural members such as slabs, beams, columns, stairs and foundation are designed using limit state method according to the provision of IS456:2000. Practical knowledge is an essential skill required by an Engineer for obtaining this skill designing structures. Apartment is analysed and designed, located at Perumbilavu, Thrissur district planning is done using AUTOCAD and analysis and design both manually and by using STAAD.



ABSTRACT

Red mud is a waste material generated by the Bayer Process widely used to produce alumina from bauxite throughout the world. The aim of the present research work was to investigate the possibility of replacing the Portland cement by red mud. Because of storing issues, the waste negatively affects the environment. To solve this problem, Portland cement was replaced up to 40 % RM by wt. of cement and evaluating its compressive and splitting tensile strength of red mud concrete. This study examines the effects of red mud on the properties of hardened concrete. The test results show that how its compressive strength & splitting tensile strength decreases with increase red mud content, it is concluded that Optimum percentage of the replacement of cement by weight is found to be 25%. By this percentage replacement we can have strength is equal to the strength of controlled concrete.



ABSTRACT

In modern days, engineers have to face different kinds of problems like construct bigger buildings and solutions for high traffic volume. But some places on earth, soil have poor engineering properties like bad workability, low bearing capacity and strong compressibility. So in order to improve the strength of soil, some stabilizers are to be added. Thus, this study is to improve the engineering properties of clayey soil using steel slag. Experiments are conducted to evaluate the influence of steel slag on improving the engineering properties of expansive clay. Specimens are prepared to know the properties of soil with percentage of 5%, 10%, 15%, 20% and 25% steel slag mixture passed through sieve. Liquid limit and plastic limit tests, standard proctor test, modified proctor test, unconfined compressive strength tests, California Bearing Ratio tests are performed to analyse compressive strength, Maximum dry density (MDD) and optimum moisture content (OMC) of soil mixture.



ABSTRACT

Road construction built over subgrade clayey soil may experience lower shear strength of bearing capacity which may result in the failure of the structure. In order to meet the shear strength requirement, improvement of weaker subgrade is essential. Soil stabilization is a common method used by engineers and designers to enhance the properties of soil with different stabilizers. From ancient times, usage of natural fiber in soil as reinforcement is an effective technology adopted. This study intends to investigate the effect of including randomly spaced Areca nut husk fibre to the soil mix. The engineering properties and bearing capacity of a soil get enhanced by stabilizing it with Areca nut husk fibre and a binding material (cement). The information available on experiments and research on the behavior of soil cement mixtures were collected and a few studies conducted on fiber reinforcement were referred. The current study mainly focuses on physical evaluation of soil cement mixtures reinforced with Areca nut husk fibre. Fiber content is varied from 0%, 0.2%, 0.4%, 0.6%, 0.8% and 1%. For further improvement, a uniform dosage of 5% cement is being added to the soil. Laboratory test including California Bearing Ratio (CBR) test carried out for sample and a CBR value of 15% is obtained for the stabilized subgrade, with the analysis of obtaining result a flexible pavement is designed.



ABSTRACT

Expansive soils are the main cause of damage to many Civil engineering structures such as Spread footings, high ways, airport runways and earth dams constructed with expansive soil. In developing countries like India, the construction work is gaining huge demand. This forces the engineers to carry out the construction in unstable soils like the black cotton soil or the expansive soil

The worldwide problem of expansive soil is a threat to civil engineers. They are considered a potential natural hazard, which can cause extensive damage to structures if not adequately treated. Soil stabilization has been implemented for improving the properties of these soils. Cost effective and locally available stabilizers such as coconut husk ash and waste polypropylene fiber materials are used for the stabilization in this project. The aim of this research is to utilize coconut husk ash and fibers improve the engineering properties of expansive soil and to increase the compressive strength of the compacted expansive soil. In this experimental investigation, and also the aim was to study the effect of polypropylene fiber and coconut husk ash on the improvement of physical and mechanical properties of black cotton soil in Palakkad, Kerala. The index properties that has performed in black cotton soil are water content determination, specific gravity, Atterberg's limits, free swell index and wet sieve analysis. Various engineering tests like unconfined compressive strength (UCS) and IS light compaction test to found out maximum dry density and optimum moisture content at varying percentage of CHA (2,4,6,8 %) and varying percentage of polypropylene fiber (0.5, 1,1.5 %). 4% CHA is the optimum CHA and 13.13% and 1.99 g/cc are the maximum dry density and optimum moisture content of the sample soil. And compressive strength can be achieved in 4% CHA and 1.5 % PP fiber .And also swelling pressure can be reduces by the addition of optimum additives.



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ABSTRACT

Today, water availability is a problem all over the world in terms of both quantity and quality. This problem is getting worsened as the world population and industrialization is increasing and climate change is affecting water resources, mainly in water stressed developing countries. Wastewater discharges are causing eutrophication and water borne diseases. The situation is getting worse with rapid urbanization where adequate sanitation and wastewater treatment facilities are lacking. Thus there arises the need for waste water treatment. The treatment of wastewater using Constructed Wetland (CW) is one of the suitable treatment systems, used in many parts of the world. This system seems to have the potential to be one of the sustainable solutions in treating and then discharging the huge quantity of wastewater and getting access to safer drinking water. In the present study, phytoremediation is the method used to treat and *Colocasia esculenta* vetiver was used for the treatment of domestic wastewater. The test was carried out to investigate the removal efficiency of *Colocasia esculenta*, a common semi-aquatic macrophyte and the vetiver plant. Apart from the removal of nutrients, the stabilisation of the organic matter present in the wastewater was also assessed in terms of COD and BOD and the results of the study revealed that the system planted with *C. Esculenta* and vetiver could decrease the sulphate and chloride content of the wastewater, besides organic matter.



ABSTRACT

Leachate generation is a major problem for municipal solid waste (MSW) landfills and causes significant threat to surface water and groundwater. Leachate contains a high concentration of pollutants which can cause serious problems to environment. In this study, characteristics of leachate generated from a landfill site situated in Laloore, Thrissur were monitored and analyzed according to the standard methods for the examination of water and waste water. Parameters were monitored including chemical oxygen demand (COD), biological oxygen demand (BOD), dissolved oxygen (DO), presence of chlorides, alkalinity, MPN, hardness and pH. After this study results are mapped by QGIS.