

## **Effect of Non-Continuous Aeration of Activated Sludge Process**

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### **Abstract**

Most of the sewage treatment plants in India are based on activated sludge process (ASP). In the aerobic biological treatment, aeration accounts for a significant portion of total operating cost of the treatment process. The continuous supply of power to aeration unit of conventional ASP are not provided either unintentionally due to power cut-offs or intentionally to reduce the energy cost This may affect effluent quality as well as aerobic biomass in reactor Therefore, the present study aims to evaluate the impact of non- continuous aeration on reactor performance and associated changes on aerobic biomass.

## **Feasibility Analysis of Bridge across Jaigad Creek at Jambhari, Ratnagiri**

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### **Abstract**

Bridge is the Structures facilitator communication route for carrying out road traffic across in obstruction such as river. In this present study we are going analysis feasibility of bridge across Jaigad River at Jambhari village. The main objective of this study is to select optimum span for bridge and selection of most suitable bridge type & bridge design. Jaigad creek originates at Karjuve village in Sangmeshwer taluka & meets Arabian sea at Jaigad. This river divides Guhagar taluka from Ratnagiri district. People from Guhagar are used to travel along Guhagar- Chiplun- Ratnagiri which is around 145Km. The bridge across Jaigad river will reduce the distance up to 55Km approximately. We have searched number of suitable site for bridge alignment at different villages. Out of which one alignment at Jambhari is selected. As it is short, Economical and Easy to approach from existing road. At present we have collected data required for bridge design such as span of the bridge, cross sectional area of river, profile survey of approach road. At present we have collected data required for bridge design such as span of the bridge, cross sectional area of river, profile survey of approach road, rainfall data. At the end of study we are going to present most appropriate type of bridge by comparative analysis of two methods considering economy and suitability

Keywords: Bridge, Concrete, Survey, Girder Bridge, prestressed Concrete

## **Seismic Analysis and Design of Reinforced Concrete Structure**

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### **Abstract**

Civil field mainly stands on the designing of the construction project so good design using manual calculation and modern software's to give a combine result for good well planned, efficiently designed. The project aims to plan and design of an institutional campus of all the required buildings. The planning is done using AutoCAD and manual design is done by using Limit state method and heavy building designing is done by using ETABS software.

## **Design and Analysis of RCC Framed Structure by Using ETABS**

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### **Abstract**

In order to complete in the ever growing competent market it is very important for a structural engineer to save time as a sequel to this an attempt is made to analyze and design a Multistoried structure by using a software package ETABS. For analyzing a multi storied structure one has to consider all the possible loadings and see that the structure is safe against all possible loading conditions.

There are several methods for analysis of different frames like kani's method, cantilever method, portal method, and Matrix method. The present project deals with the analysis of a multi storied residential structure of G+10 consisting of 28 Flats. The dead load & live loads are applied and the design for beams, columns, footing is obtained ETABS with its new features surpassed its predecessors, and compotators with its data sharing capabilities with other major software like AutoCAD, and MS Excel. We conclude that ETABS is a very powerful tool which can save much time and is very accurate in Designs. Thus it is concluded that ETABS package is suitable for the design of a multistoried structure.

## **Design and Analysis of Energy Efficient Building**

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### **Abstract**

An energy efficient building is a residential or commercial building with greatly reduced energy needs through efficiency gains such that the balance of energy needs can be supplied with renewable technologies. Despite the excitement over the phrase "zero energy" we lack a common definition or even a common understanding, of what it means. In this project, we use information of current generation low-energy buildings to explore the concept of zero energy what it means, why a clear and measurable definition is needed, and how we have progressed toward the energy efficient goals.

The way the energy efficient goals are defined affects the choices designers make to achieve this goal and whether they can claim success. The definition can emphasize demand-side or supply strategies and fuel switching and conversion accounting are appropriate meet energy efficient goals. Four well-documented definitions net-zero site energy, net-zero source energy, net-zero energy costs, and net-zero energy emissions are studied; pluses and minuses of each are discussed. These definitions are applied to a set of low-energy buildings for which expensive energy data are available. This study shows the design Energy Efficient Building and their performance in order to make it fully autonomous.

Keywords: Zero Energy, Renewable Technology, Energy Consumption.

## **To Study the Performance of Recycled Aggregate and Recycled Plastic Aggregate in Construction**

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### **Abstract**

Recycling of concrete debris and recycling plastic can make a contribution to reduce the total environmental impact of the building sector. To increase the scope for recycling in the future aspects of recycling have to be included in the design phase. Besides, aggregate sources near Metro Manila is almost depleted, so aggregates have to be brought from far quarries. Consequently, reclaiming aggregates from concrete debris would lead to environmental and economic benefits. This experimental study aimed to use crushed concrete debris as alternative fine aggregate in a mortar mixture. A conventional mortar mixture will be compared to concrete debris mixture of the same proportions. We are examining the strength of concrete by replacing natural aggregate (NA) with recycled aggregate (RA) and recycled plastic aggregate (RPA) by increasing different percentage.

In this project we also compare the performance of RA with NA. Basic changes in all aggregate properties were determined similarly the properties of RA like Los Angeles test, specific gravity test, and water absorption test were also determined and explained here.

Keywords: Compressive strength, Recycled Aggregate, Mix design.

## Comparitive Study of Geo-Polymer Concrete by Using Fly Ash and GGBS

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### **Abstract**

The Ordinary Portland Cement (OPC) is one of the main ingredients used for the production of concrete. Unfortunately, production of cement involves emission of large amounts of carbon-dioxide gas into the atmosphere, a major contributor for green house effect and the global warming, also construction industry, use of concrete is going on increasing rapidly. Cement is major constituent material of the concrete, which produced by natural raw material like lime silica. Once situation may occurs there will be no lime on earth for production of cement. This situation leads to think all people working in construction industry to do research work on cement replacing material and use of it, hence it is inevitable either to search for another material or partially replace it by some other material. The search for any such material, which can be used as an alternative or as a supplementary for cement so we had taken a research for partial replacement of cement by mixing GGBS and FLY-ASH, in a varying percentage and checking the strength of concrete.

To determine the compressive strength of fly ash and GGBS, 06 number of cube for each are tested at the age of 7 and 28 days of size (150mm x 150mm x 150mm), grade of concrete is M40.mix proportion is 1:1.737:3.1 and water-cement ratio is 0.43 for fly ash and GGBS. Different percentages like 10%, 20%, 30% for fly ash and 50%, 60%, 70%, 80%, 90%. for GGBS is tested. Compressive strength of fly ash obtained up to 20% replacement of cement has shown significant improvement at the age of 7and 28 day and In GGBS, 50% replacements has shown significant improvement in compressive strength at the age of 7 and 28 days.

Key words: OPC, GGBS, Fly Ash, Compressive Strength.

## **Complete Planning and Designing of Institutional Campus**

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### **Abstract**

Civil field mainly stands on the designing of the construction project so good design using manual calculation and modern software's to give a combine result for good well planned, efficiently designed. The project aims to plan and design of an institutional campus of all the required buildings. The planning is done using AutoCAD and manual design is done by using Limit state method and heavy building designing is done by using ETABS software.



## **Performance of Concrete by Using Laterite as a replacement of Natural Aggregate**

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### **Abstract**

Concrete is one of the oldest manufactured construction material used in construction of various structures around the world. Due to its high demand the material used for concrete production depleting every year. Thus, around the world new construction materials are being investigated. In this study local laterite aggregate was used as replacement of coarse aggregate. The scope of study includes the investigation on the compressive strength, flexural strength and splitting tensile strength. The main objective of the research is to study the mechanical properties of laterite aggregate concrete compared with natural aggregate. The method of study to be carried out is through the appropriate test of aggregates. The types of test done were sieve analysis, specific gravity test, water absorption test, flakiness index and elongation index, and aggregate crushing value test. All the tests have been carried out and the results had been recorded and analyzed in appropriate table and graph. The experimental results show that the strength of normal laterite concrete is lower than the normal natural aggregate concrete.

Keywords: Compressive strength, Laterite Aggregate, Mix design.

## **Quality Assessment of Stabilization of Black Cotton Soil by Using cement and Lime**

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### **Abstract**

Stabilization of soils is an effective method for improvement of soil properties and the pavement system performance. Plasticity Index is one of the important properties of soil to determine the behavior of soil in presence of water. The poorest soil among all is Black Cotton Soil (BC Soil). In Rajkot area this BC Soil is spread over southern part of District. Rich proportion of montmorillonite is found in BC Soil from mineralogical analysis. High percentage of montmorillonite renders high degree of expansiveness. These property results cracks in soil without any warning. These cracks have sometimes extent severe limit like 4" to 12" deep. Use of this type of land may suffer severe damage to the construction with the change in atmospheric conditions. In this paper, BC Soil was tested using three different stabilizing agents - 1. Cement waste dust collected from the cement plant 2. Cement Dust + Lime Powder 3. Lime Powder. The cement waste dust was found best agent as a stabilizer to improve the Atterbergs' Limit and hence Plasticity Index of BC Soil as well as the compressive strength of the same. Laboratory tests were performed with different percentages of three stages, each of them ranging from 1% to 9%. The behavior of BC Soil of Rajkot region was improved with stage no. 1, the percentage of cement dust 7% of cement dust in BC Soil is looking to be the appropriate mixing. Also in second stage, improvement is shown at 896 of combination of cement dust and Lime powder. Third stage was observed a best suited result at 9% of Lime powder in BC Soil. The results, thus obtained in laboratory under standard conditions provide satisfactory reason to use the Cement dust as a stabilizing agent for the purpose to improve Plasticity Index of BC Soil compare to other two combinations. After satisfying result of Plasticity index, Cylindrical Samples of soil with all three combinations were prepared to check the compressive strength of stabilized soil. Moisture content taken was the optimum percentage of plastic limit in each combination. The cylinders of size 50 mm in diameter and 60 mm height were tested after 3, 5, 7, 14, 21, 28 days. The relations for these periods were established among the use of all three different agents Compressive strength of Cement dust stabilized BC soil found more reliable

## **Disposal of Waste Plastic in Flexible Pavement and its Suitability for Rural Road Construction**

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### **Abstract**

Road construction using bitumen is not very environment friendly process. It involves degradation of natural resources and the air quality is also reduced. Plastic is also an environmentally hazardous material but the fusion, if use properly can prove to be very beneficial. We can use plastic in road construction as previous studies have widely indicated. Thus we can kill two birds in one stone. The two methods viz. Hot mix and cold mix of bitumen can be used to analyze the effectiveness of plastic in road construction predominantly in flexible pavements as an effective binder material for aggregates; thus minimizing the amount of bitumen required in road construction.

**KEYWORDS:** Plastic, Flexible Pavement, The Hot Mix, Cold Mix, Bitumen Binder Road Construction.