



**EAST
POINT**

**COLLEGE OF ENGINEERING &
TECHNOLOGY**



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**Department of Civil Engineering &
Department of Mechanical Engineering**

RAME 2023

National Conference

On

**Recent Advance In
Material Science In Engineering**

26-27th JULY 2023

**CONFERENCE
PROCEEDINGS**

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on

RECENT ADVANCES IN MATERIAL SCIENCE IN ENGINEERING

RAME 2023

26 -27th JULY 2023

Organized by

**Department of Civil Engineering
&**

Department of Mechanical Engineering

East Point College of Engineering and Technology, Bengaluru, Karnataka,
India

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ABOUT THE COLLEGE



East Point College of Engineering and Technology (EPCET) was established in the year 1999 by M. G. Charitable Trust, Bangalore. The College is located in the eastern part of Bangalore at Bidarahalli, Virgonagar Post, off old Madras Road. It is at a 5 km distance from K R Puram, Bangalore. The College is affiliated to Visvesvaraya Technological University (VTU), Belgaum. All the undergraduate and postgraduate programs offered at EPCET have the approval of AICTE. The College at present offers programs in Artificial Intelligence and Data Science, Computer Science and Engineering, Information Science and Engineering, Electronics and Communication Engineering, Mechanical Engineering, and Civil Engineering leading to BE degree of VTU. The college is also offering three M. Tech programs- one each in Electronics and Communication, Mechanical Engineering, and Civil Engineering.

ABOUT THE DEPARTMENTS

DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering was established in the year 2009 offering a four-year undergraduate course leading to Bachelor's Degree in Civil Engineering affiliated to Visveswaraya Technological University, Belagavi with an intake of 60 students. The department also offers Master's program in Construction Technology since 2013, affiliated to VTU. The Department has been recognized as a VTU-Research centre , since 2014. The Department is well equipped with full-fledged laboratories & state of art infrastructure facilities supported by a team of extremely dedicated, well qualified and experienced faculty members. The faculty members are involved in sponsored research and consultancy works

DEPARTMENT OF MECHANICAL ENGINEERING

Department of Mechanical Engineering was established in 1999. The Department offers BE program in Mechanical Engineering with an intake of 60 students. It also offers M. Tech. Program in Product Design and Manufacturing with an intake of 18 students. The Department has established a Research Centre recognized by VTU. The Department conducts competency and skill development, Life skill development, and Innovation and entrepreneurship development courses for the staff and students on a regular basis.

ABOUT THE CONFERENCE

National Conference on **Recent Advances in Material science in Engineering (RAME-2023)** aims to bring together academicians, scientists, researchers, industry experts and UG/PG students, research scholars to exchange and share their research findings and solutions on all aspects of Civil Engineering and Applied Sciences. To provide an inter disciplinary platform for researcher and educators to discuss about the recent innovations and envision the future sustainable development in the field of Civil& Mechanical Engineering and Applied Sciences in a global way.

THEME OF CONFERENCE

Theme-1

- Structural Engineering
- Construction Materials & Technology
- Construction Planning & Management
- Geotechnical & Transportation Engineering
- Water Resource & Environmental Engineering
- Remote Sensing & GIS Applications
- Green Energy & Smart Materials

Theme-2

- Material Science and Engineering
- Design Engineering
- Production and Industrial Engineering
- Robotics and Automation
- Finite Element Methods, CFD
- CAD/CAM/CIM
- AI&ML/Automobile Engineering.
- Fluid Mechanics/ Thermal Engineering
- Nano & Composite Materials



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A REVIEW ON PEDESTRIAN CRASH PREDICTION MODELS

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ABSTRACT

Road crashes are a major public health and safety concern world-wide. According to the World Health Organization (WHO), approximately 1.35 million people die each year due to road traffic crashes. Globally, 54% of road crash-related deaths are from pedestrians, cyclists, and motorcyclists. As years changed there is no reduction in pedestrian crashes. Study on pedestrian safety started by focusing child pedestrian and reaches to extent of modern techniques employing safety concerns for pedestrians. Pedestrian crash prediction models have emerged as powerful tools in improving pedestrian safety by enabling pro-active measures and interventions. As the technology and data availability improved, more sophisticated models emerged from basic statistical models. The main objective of this paper is to generate sequence of pedestrian crash prediction models and to assess the impact of input variables.

Keywords: Pedestrian safety, Crash prediction models, Vulnerable Road users.



HYDRAULIC PERFORMANCE OF MULTISLOTTED ORIFICE PLATE USING CFD TECHNIQUE AND EXPERIMENTS AS FLOW CONTROL DEVICES

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ABSTRACT

The applications of single-hole orifice as flow measuring devices are well known. The orifice plate in a pipe produces a pressure drop (Δp) across the device and the pressure drop (Δp) is related to the flow rate (Q) accurately. The industries also need some devices, which can control the flow rate with minimum pressure drop. A single restriction orifice plates are easy to design and install but situations arise for high flow rate when they do not meet the flow control requirement due to cavitations, and choking conditions. The multiple slotted orifices, which are also known as ‘conditional orifice plates’ can be tried to control the flow rates. Even though the flow characteristics and design of multiple slotted orifice plate are not well understood, this paper attempts to describe the flow characteristics of multiple slotted orifice plate, for various flow conditions to achieve higher accuracy in flow measurements. A total number of three series of experiments are carried out for various beta ratios (0.25, 0.375, and 0.575) and flow rates: Series-A (Normal orifice plates), Series-B (two-hole orifice plates), Series-C (three holes orifice plates). It is found that Series-C yielded higher flow rates as compared to Series-A, B and the discharge coefficient ‘K’ is independent of Reynolds number. For series-C (plate with Three Holes) the ‘ $\beta = 0.26$ ’ value has shown the best results for orifice coefficient. The CFD simulations are carried for selective cases to augment the experimental results.

Keywords: Orifice, flow, CFD, pressure, multi-slotted, coefficient



**PERFORMANCE OF POLYMER MODIFIED BITUMINOUS CONCRETE
MIX WITH STONE DUST AND POND ASH AS MINERAL FILLERS**

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ABSTRACT

A bituminous paving mix is a blend of aggregates and binders used to develop a strong and long-lasting mix, to resist traffic load. A bituminous mix has complex temperature-sensitive behaviour (Its response to a given loading is very much dependent on temperature and loading). At high temperatures, bituminous binders have a purely ductile behaviour, whereas, at very low temperatures they exhibit brittle behaviour. So, making bitumen less susceptible to temperature is one of the possible solutions. The use of bitumen blended with modifiers and fillers affects the Marshall Properties and strength and also increases the fatigue life. From the literature review, it is observed that a modified binder stiffens the mixes to reduce thermal cracking and rutting. Mineral fillers act as anti-stripping agents to mix, fill the voids and help in bonding the aggregates and binders. In the current investigation, an attempt is made to design and compare the Polymer Modified Bituminous Concrete mix blended with Stone Dust and with Pond Ash as mineral fillers(individually) using the Marshall method of mix design, determining Indirect Tensile Strength and Tensile strength Ratio of Polymer Modified Bituminous Concrete mix prepared at Optimum Bitumen Content. Polymer Modified Bituminous Concrete mix blended with Stone Dust as mineral filler is performing better than Polymer Modified Bituminous Concrete+ Pond Ash as mineral filler to 1) Marshall properties, 2) Indirect Tensile characteristics & 3) Moisture susceptibility.

Keywords: Polymer Modified Bituminous Concrete, Stone Dust, Pond Ash



ENHANCING CONCRETE PERFORMANCE: EVALUATION OF TITANIUM DIOXIDE NANOMATERIAL INCORPORATION

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ABSTRACT

In this research work concrete cube has been prepared by doing a partial replacement for Ordinary Portland Cement (OPC) using Nano Materials Titanium dioxide (TiO₂) at different percentages. TiO₂ has been replaced by OPC by 5%, 10%, 15%, and 20%. A basic test has been done for materials and fresh concrete followed by a Compressive strength test for Concrete Cubes has been conducted. Using of Nano Materials cube gives more compressive strength compared to Normal Concrete Cube. Compressive strength increases as TiO₂ content increases. But, after 15% TiO₂ content we increased it to 20% TiO₂ content then we saw that strength starts decreasing. As compared to conventional concrete there is an increase in compressive strength by 10% in TiO₂ concrete cube. To check the durability water absorption test was done which shows TiO₂ concrete cube absorbs 28.4% less water as compared to the conventional concrete.

Keywords: Titanium dioxide, OPC, cement, concrete, nanomaterials, sustainability, eco-friendly, compressive strength



SUSTAINABLE DEVELOPMENT OF CARBON NEGATIVE CONCRETE USING FERROCK

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ABSTRACT

In this fast-growing world, infrastructure development is given more importance leading to a linear increase in constructions of multi-stories or high-rise buildings, roads, bridges, towers, etc. The most important material used in this construction is the cement. Cement, the second most used entity after water in the world today, is the fourth largest source of anthropogenic carbon emissions it's been called the foundation of modern civilization. The world's infatuation with this high carbon intensive material has grown to be real pandemic as the accumulation of these emissions contributes to the growing threat of Global climatic catastrophe. For each one ton of cement created more or less eight ton of CO₂ is released. Cement in concrete is a minor proportion compared to aggregates but has a major carbon footprint in it. This project aims to check how far ferrock can be used as a substitute to cement. Ferrock is made up of raw materials like the iron powder, metakaolin, glass, limestone and citric acid. This product consumes carbon dioxide gas for its strength gaining mechanism unlike the cement using the water.

Keywords: Ferrock, Citric acid, Carbonation, Carbon di oxide.



EXPERIMENTAL STUDY ON EFFECT OF PIPELINE SIZE ON THE HYDRAULIC PERFORMANCE OF GATE VALVES

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ABSTRACT

The types of valves are classified based on operation of the movable valve element. In the conventional gate valve, the valve element descends perpendicularly across the flow stream as the valve is closed. The resistance of valves depends upon the valve geometry, surface resistance of valve material, position of valve element, direction of flow and Reynolds number. The research paper aims to find the suitability of a particular size of valve with reference to its hydraulic performance when used for various pipeline sizes in the hydraulics laboratory. The line pressure is measured for a given size of the valve with 3-pipeline sizes and the study is repeated for three sizes of gate valves. Experiments are conducted at different flow rates for three sizes of valves 12.70mm, 19.05mm and 25.40mm and three sizes of pipelines (12.70mm, 19.05mm and 25.40mm) in combination. The results show the 'pipeline pressure' values are relatively better when the bigger size of the gate valve is fitted with lower sizes of the pipeline and the corresponding pressure drop values is also less.

Keywords: Gate Valve, pipeline, size, Reynolds number, pressure drop, flow rate



AN ASSESSMENT OF WILLINGNESS TO PAY FOR PASSENGER BOATS

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ABSTRACT

The Kerala State Water Transport Department manages a network of 1895 kilometers of waterways and is planning to revise the ferry service fare. A study was conducted in Kollam-Sambranikodi-Kavanad-Pezhamthuruth SWTD route. A survey was carried out among SWTD boat users and a total of 118 responses were collected. The analysis indicates most tickets were priced at Rs 6/-, with tourists paying around Rs 20/-. Passengers would still use the service if the fare increased by 1.3 times but might opt for alternatives if the fare doubled. Trips scheduled every 15 minutes resulted in a preference for ferry service, reducing the shift to alternative modes of transportation. The study also explored socio-demographic factors' impact on passengers' willingness to revise fare and frequency using ordinal logistic regression. An expenditure of over Rs 12,000 per day is required for proper functioning of ferry service and the study suggests increasing the minimum fare to reduce losses.

Keywords: Kerala State Water Transport Department, Fare Revision, Ordinal logistic regression



**AN EXPERIMENTAL ANALYSIS AND BEHAVIOUR OF FLYASH CALCINED
CLAY CEMENT**

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ABSTRACT

The CO₂ emission is reduced to 30%. The usage of clinker is reduced to 50% and low-grade calcined kaolin clay, is introduced. Due to reduction of clinker the production rate is also increased twice. The main components of this cement are calcined clay, limestone, fly ash and gypsum. Fly ash Calcined Clay Cement is a low-carbon alternative to the standard Portland cement. This cement can reduce CO₂ emissions related to cement manufacturing of cement by reducing the amount of clinker, replacing it with limestone and calcined clays. These blends are less in bulk density therefore the weight is reduced and workability is increased.

Keywords: Fly ash, Calcined Clay Cement, FC3 blends, global warming



LIFE CYCLE ASSEMENT OF STRUCTURE USING REVIT, TALLY PLUGIN SOFTWARE

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ABSTRACT

The modern Digital tools based on building information modelling [BIM] provide the potential to facilitate environment performance assessments of buildings. Various tools that use a BIM model for automatic quantity take off as basis life cycle assessment [LCA] have been developed recently. This research simplifies the calculation of the initial embodied energy for commercial office buildings. The result is improved integration of life cycle assessment of building materials into the early stages of the building design process. This thesis research proposes that building information model will make calculating building material quantities easier, to simplify LCA calculations, all to improve their integration into existing sketch design phase practices, and building design decisions. A 3D model is developed in Revit architecture software, the study is carried out to know the impact of materials on the environment by means of mass, acidification potential, eutrophication potential, global warming potential, ozone depletion potential, smog formation potential, primary energy demand, non-renewable energy demand, renewable demand to understand impact materials on environment, the function of building information model and corresponding data control stages of Life cycle assessment.

Keywords: REVIT software, environmental impact, life cycle assessment [LCA], environment.



STRENGTH ANALYSIS OF STABILIZED MUD BLOCKS

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ABSTRACT

Finding an alternative building material in place of burnt clay bricks has become utterly essential so as to bring down the level of carbon di oxide emission to the atmosphere and limit the consumption of fuel. Attempts have been made to make use of mud which is the cheapest building material. But it suffers from serious drawbacks due to lack of strength and stability. The project deals with the study on the stabilized mud blocks as an alternative building material with different stabilizers. The soil and M-sand were used as a raw material in the ratio 1:1. Cement and lime were considered as stabilizers to check the variation of strength with different proportion of stabilizers. Initially, the characteristics of these materials were identified, following that the stabilizers were taken in different proportions and blocks were casted using manual Mardini machine. The four kinds of blocks were casted namely blocks with no stabilizer, blocks with 5% cement as a stabilizer, blocks with 10% cement as a stabilizer and blocks with 10% cement + 2% lime as a stabilizer. After the ejection of the blocks from the machine, blocks were cured for 28 days on shaded area by sprinkling of water and tested for compressive strength using compressive testing machine. Comparative study made among the blocks with different stabilizers and found that, the compressive strength increased with increase in Cement and lime percentage and achieved highest strength with the mud blocks with 10% cement + 2% lime content as a stabilizer.

Keywords: Mud blocks, Stabilizer, Compressive strength.



ENERGY ANALYSIS OF BUILDING USING REVIT

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ABSTRACT

The construction industry which is growing to bounds is mainly focused on the techniques which high energy demanding during life cycle of building. The more energy consumption of energy leads to the global warming and other environmental pollution to avoid these, one has to plan the energy consumption during their planning stage. Previously there are use for the BIM software application for optimization of the energy usage in construction of the buildings. In this paper, Revit software used for the energy optimization in the construction of the buildings. From this paper Energy analysis report generated in Autodesk Revit with Insight plug-in consists of detailed graphical representation of data and diagrams of various energy influencing parameters, which gives a idea for designers to analyze optimized energy requirements. Moreover, the environmental advantages of using less energy can help to have a green sustainable building with less harm to the nature. Sustainable and practical ways such as modifying materials, internal design elements of building can results comfort and energy saving by reducing the heat gain.

Keywords: Autodesk, Revit, 3D Model, Energy Model, Simulation, (EUI) Energy Use Intensity, Orientation, Optimization.



A REVIEW OF LITERATURE ON BAGASSE ASH AS A REPLACEMENT FOR CEMENT IN CONCRETE BLOCKS

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ABSTRACT

The major focus of study at the moment is on reducing industrial and agricultural waste in order to create a more ecologically conscious environment. SCBA, or sugar-cane bagasse ash, is a fibrous residue generated by the sugarcane industry. After the sugarcane is processed to make juice, the leftover material, known as bagasse, undergoes combustion at a high temperature under uncontrolled conditions in order to generate ash. The ash which comes out of this combustion process is rich in pozzolanic properties. At this point, this waste product is extremely detrimental causing serious issues to the environment. As a result, in order to lessen the impact of waste produced, this research investigation analyses the effect of bagasse ash on concrete strength with partial cement substitution. The addition of bagasse ash not only helps to reduce pollution but also encourages the sustainable development of the country. According to the literature, bagasse ash greatly boosts the strength of concrete and can be used as a substitute for cement.

Keywords: Sugarcane Bagasse Ash, Partial Replacement, Pozzolanic Properties,



STUDY ON FACTORS AFFECTING LABOUR PRODUCTIVITY

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ABSTRACT

Construction industry facing many challenges with respect to difficulties associated with time and productivity. Productivity is mainly dependent on the labour effort and performance. The main objective of this study was to measure productivity and identifying the factors affecting labour productivity. The present study was carried out in the precast construction project. First phase of the study comprises of the labour productivity measurements; productivity measurements was performed by practical observation of the finishing trades. Second phase of the study comprise of the questionnaire survey to identify the factors affecting labour productivity in building construction; Total 30 questionnaires were distributed to the project personals involves clients, contractors and consultants of different construction companies. The relative importance index (RII) technique was used to rank the questionnaire response. The results of this study recommended that construction companies have to conduct labour productivity measurements in their projects to improve labour productivity.

Keywords: Productivity, Questionnaires, Relative importance index (RII)



**IMPACT OF MANUFACTURED SAND (M-SAND) AS PARTIALLY AND FULLY
REPLACEMENT OF FINE AGGREGATE IN CONCRETE**

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ABSTRACT

The work was to study the potential of M-sand as compared to river sand in concrete, here M-sand is replaced by river sand for 50% and 100% in the concrete mix. Mix is designed as per IS Standards. In this research a mix 1:2.32:2.82 (M-sand) was considered. The test specimen was casted for 7-days. The performance of M-sand and River sand and then partial replacement of 50% M-sand and River sand by compressive strength test. The results attained from each test states that M-sand increases. Compressive strength test for 7 days, is greater at 100% and 50% replacement of M-sand by river sand.

Keywords: M-sand, River sand, Compressive strength test



A REVIEW OF LITERATURE ON RICE HUSK ASH AS A REPLACEMENT FOR CEMENT IN CONCRETE BLOCKS

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ABSTRACT

Availability of conventional concreting materials is cause for concern in many countries worldwide. In recent years, there have emerged significant global initiatives to use both local and waste materials in concrete. One of these materials is rice husk, which, when incinerated under regulated conditions and, if finely pulverized, may be utilized as a substitution for cement in concrete. In order to understand the impacts of RHA's particle characteristics on the mechanical and durability characteristics of concrete when used as a partial cement replacement, a thorough assessment of the relevant literature on Rice Husk Ash (RHA) is done. Due to its significant pozzolanic qualities, RHA has the ability to replace cement by up to 10% to 25% without affecting the structural integrity of the concrete. Thus, the use of RHA as a partial alternative to cement in concrete can offer additional environmental benefits, such resource saving and the management of agricultural waste, while simultaneously encouraging a circular economy in the construction sector.

Keywords: Rice Husk Ash, Pozzolanic Properties, Environmental Benefits.



EXPERIMENTAL ANALYSIS OF M40 GRADE CONCRETE WITH PARTIAL REPLACEMENT OF M-SAND BY COPPER SLAG (CS)

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ABSTRACT

The blast in development industry, regular sand and M sand are draining at a disturbing rate cause a few natural issues. At this stage copper slag, a modern side-effect produced during purifying and refining of copper can be a halfway option for fines where its reality yearly is around 33 million tons. The task glance through the utilization of copper slag as halfway substitution to M sand and regular sand for the planned M 40 grade blend concrete compressive strength, split tensile strength and flexural strength reactions of above are performed, and noticed greatest worth at 45% copper slag substitution which up to 30% augmentation. The volume of waste generated in the world as increased over years due to increase in population, Socioeconomic activities and social developments. One of the most attractive option of managing waste is to look into the possibility of waste minimization and reuse. One of the significant contributions is to the construction field where the waste copper slag can be reused for concrete production. The properties of concrete copper slag were investigated in this study. Copper slag is used as partial replacement of M-Sand by 15%, 30%, 45%, 60% and 75% of concrete and the result obtained were compared with nominal conventional cube cylinder and Reinforced Concrete Beam. The need to find alternative material that can be used solely or in partial replacement of M-Sand. Industrial waste material, in this case, copper slag, which is an environmental pollutant are collected and obtained. Which in turn was used in partial replacement of M-sand in cubes, cylinder, beams were produced and cured by immersing them in water. The aim of this project is to address the issue related to shortage of conventional material (M-Sand), problem of disposal of waste material and review the work done on the use of waste copper slag for production of concrete, and to spread awareness about the utilization of copper slag as a construction material in civil engineering

Keywords: M-40, cement, coarse aggregate, fine aggregate, copper slag (CS), strength.



AN EXPERIMENTAL INVESTIGATION ON SIFCON USING MONO FIBERS

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ABSTRACT

Today, a wide variety of FRC composites are being sold commercially all over the world. But for numerous centuries, the technological side of the FRC system was basically underdeveloped. Slurry infiltrated fibrous concrete (SIFCON) was created for the first time in the USA in 1979 by using a lot of steel fibre to create a highly thick network of fibres in concrete. Then a fine liquid cement based slurry infiltrates the network. SIFCON is used to contain fibre amounts as high as 12% because more than 2% of fibre cannot be used in FRC (fibre reinforced concrete) due to workability and mixing difficulties. The investigation was conducted on fibres with an aspect ratio of 50, and the ratio of cement to sand utilized in the slurry was 1:1 with a cement to water ratio of 0.45. In the experiment, 1%_SF, 1%_HDPEF, and 1%_WPF of the volume of concrete were made up of fibres (by volume fraction). According to this study, 1% more steel fibre volume results in increased strength in tests of compressive and flexural strength. In the shear and tensile strength tests, using 1% WPF and HDPEF yields the best results, respectively. According to the results, various fibres respond differently to compressional, flexural, tensile, and shear loads. Because various fibres will have varying degrees of adhesion between the fibre matrix and concrete layer. The SIFCON with the largest fibre volume fractions, however, exhibits the best outcomes

Keywords: SIFCON, fibre reinforced concrete Compressive strength test



PERFORMANCE STUDY OF SLOPES USING GEO-STUDIO

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ABSTRACT

Slope stability analysis is very important to ascertain the stability of the structure or a slope itself. The stability of slope depends on its geometry, its components, materials, properties of each component and the forces to which it is subjected. The design of slopes involves many considerations that must be examined before initiating detailed stability analyses, such as geological and subsurface explorations, the earth and/or rock-fill materials available for construction. The methodology and assumptions implicated by various analyzing techniques regarding the slope sustainability investigation on soil embankment are considered and their characteristics are listed. The principles involved and equations to compute the stability or FOS of slope is proposed by various methods. This study aims at the performance study of slopes and comparison of methods used for obtaining factor of safety and the selection of most suitable and most accurate method. The parametric study presents stability analysis carried out by varying different parameters to study the ideal conditions for the stable slope. The slope stability was carried out using GEOSTUDIO Slope/w software.

Keywords: Slope stability, GEO-STUDIO, Factor of Safety



**FEASIBILITY CHECK ON PROVIDING FACILITIES FOR PEDESTRIANS AT
HEBBAL JUNCTION**

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ABSTRACT

This research work aims at identifying the absence of Pedestrian Facilities at the Hebbal Junction. Since it is a major junction connecting three high density traffic flow roads there is higher volume of Vehicles flowing through the junction. The preliminary survey conveys absence of any Pedestrian facility such as an Underpass (subway) or Overpass. In this work the Pedestrian count and Vehicular volume will be collected during Peak and Off-Peak hours. The analysis will be followed by a Questionnaire survey to understand mind set of Pedestrians.at the Junction. The possible outcome will lead to providing the Underpass or a better pedestrian signal Timings at the junction based on volume of Pedestrians. The overpass (foot bridge) cannot be provided due to the fact that there is existing Hebbal Flyover going above the junction.

Keywords: Productivity, Questionnaires, Relative importance index (RII)



DESIGN AND ANALYSIS OF MULTI-STORYED CAR PARKING (G+4) USING ETABS

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ABSTRACT

The main aim of this paper is to prepare the structural system, Seismic Analysis and design for Multi-level car parking using ETABS software. The Multi-level car parking consists of Ground + 4 floors. Type of foundation has been decided as pile foundation with pile cap. Multilevel car parking was designed for dead loads, live loads, wind and seismic loads. RC structure is analyzed by using the ETABS 2020 Integrated building design software. The superstructure is modeled by frame elements elements as appropriate. Beams and columns are modeled as frame elements, conventional slab is considered as membrane element. The floor slab has been modelled as a diaphragm at each floor levels to resist the lateral forces. Seismic zones are considered in the analysis, and behaviour is evaluated using moment resisting frame with a response reduction factor of 1.15. Loads and its combinations are considered for design as per codal provisions IS 456:2000 and IS 800 2007. The dimensions of the beams and columns are safe in the software. Crack width and deflection of beams are within permitted limits

Keywords: ETABS, loads, Crack width, Deflection



EFFECT OF LOCATION OF INFILL WALLS ON THE DYNAMIC PERFORMANCE OF THE RC FRAMED BUILDING

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ABSTRACT

Infill frame structures are used to provide lateral resistance in regions of high seismicity, especially in those places where masonry is still a convenient material, due to economical and tradition reasons and also they reduce the bending moments in the frame thereby decreasing the probability of collapse. Seismic analysis has been performed using “Equivalent static analysis method” for different reinforced concrete frame building models that includes bare frame without infill, infilled frame @ interior only, Infill Frame @ exterior only, Infill Frame @ interior and exterior and Infill Frame between interior and exterior. ETABS software is used for the modelling and analysis of all the frame models. Infilled frames should be preferred in seismic regions than the open storey frame, presence of infill wall can affect the seismic behaviour of frame structure to large extent, and the infill wall increases the strength and stiffness of the structure. In case of open storey frame structure, the storey drift is very large than the upper storeys which may cause the collapse of structure during strong earthquake.

Keywords: ETABS, loads, Crack width, Deflection

PLAN FOR INTER-BASIN TRANSFER OF WATER (BHADRA TO VEDAVATHI) BY USING REMOTE SENSING AND GIS TECHNIQUES



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ABSTRACT

River interlinking is a very common term used these days. The basic idea behind river interlinking is to provide water in the region which faces worst water scarcity is most part of the year. The concept through which this river interlinking project is undertaken is to divert some water from heavy discharged rivers into dry rivers. The catchment area requires a host of inter-related information to be generated and studied in relation to each other. GIS (geographical information system) is used in this study by using ARC Map 10.3 has been applied to analyses terrain characters and potential of water storage capacity with water shading, to get 30m strum elevation data for determining the elevations and computing the geographical references data, which add new dimensions to environmental management for a part of Bhadra catchment area is about 1968km² and is located between longitude 13°42'0''North and latitude 75°38'24'' East The Major rivers flowing in our study area is Bhadra being the largest river serves the whole region The study area under covers region is 9658.36km². The information of water accumulation and water shed of different region will help us to analysis how to transport water in different region and where the reservoir can be constructed. GIS helps to analysis the geo-hydrological process, terrain characters leading to the catchment area obstacles for ground water recharge.

Keywords: GIS (geographical information system), River interlinking, ARC Map

OPTIMIZATION OF POWERTRAIN MOUNTING SYSTEM FOR A V8 REAR WHEEL
DRIVE VEHICLE