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|---|---|---|---|
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| | 21024144 | Churamani sahu | |
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| | 22024103 | Anshuman | |
| | 22024123 | Neetika Singh | |
| | 22024116 | Karan Gangwani | |
| G-4 | 22024125 | NIKHIL PANDEY | Design and Analysis of a Residential Building |
| | 22024110 | Dasari Himabindhu | |
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| | 21024138 | Sourav singh | |
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| | 22024122 | Md Sohail Akram | |
| | 22024141 | Shubham Kumar | |
| **G-16** | 22024102 | Annu Kumari | Treatment of Greywater by UV-H2O2 advanced Oxidation Process |
| | 22024132 | Rintu Kumar | |
| | 22024107 | Ashish Nagesh | |

A MINI PROJECT REPORT

ON

# EVALUATION OF TRAFFIC VIOLATIONS BY ROAD USERS AT MID BLOCK MEDIAN OPENING

Submitted to

Department of Civil Engineering


By

**Riya Dewangan** **22024135**

**Anshuman** **22024103**

**Neetika Singh** **22024123**

**Karan Gangwani** **22024116**

B. Tech V Semester

Under the supervision of

**Dr. Adheesh Kumar Vivek**

(Assistant Professor)




DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES IN ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G)

(A Central University established by the Central Universities Act No. 25 of 2009)


**(SESSION 2023-24)**

DEPARTMENT OF CIVIL ENGINEERING

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# CERTIFICATE

This is to certify that the mini project- II work entitled "**EVALUATION OF TRAFFIC VIOLATIONS BY ROAD USERS AT MID BLOCK MEDIAN OPENING**" presented by **Ms. Riya Dewangan** (22024135), **Mr. Anshuman** (22024103), **Ms. Neetika Singh** (22024123), **Mr. Karan Gangwani** (22024116), students of B. Tech, V semester, Civil Engineering Department, Guru Ghasidas Vishwavidyalaya, has been completed successfully and satisfactorily.

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## Abstract

The study considers the traffic violations committed by road users at mid-block median opening while taking U turns. The study aims to investigate various factors leading to traffic violations at MBMOs particularly because most of them are unsignalized and is still unexplored for heterogenous traffic conditions prevailing in India. In this regard, a questionnaire was framed considering sociodemographic background and other inevitable conditions prevailing at mid-block median opening. The results highlighted the fact that intoxicated driving, improper road markings, ignorance in use of turn indicators, presence of shops near median openings and difficulty in U-turn due to foggy conditions were prime reason of traffic violations. Besides these, sociodemographic background like higher level of income and education, married status, rural land use and experienced drivers commit lesser violations. These findings not only helped to draw significant crux but will further aid planners and policy makers to look over unexplored segments and adopt suitable policy implications.

**Report on Mini Project**

# $LC^2$ Based Concrete

**Submittedby**


Group No – 05

**Jay Prakash Kumar (22024115)**

**Rishabh Kumar (22024133)**

**Rishi Kesh Harsh (22024134)**


**B.TechV$^{th}$ Semester**


**UndertheGuidanceof**

**Dr. Nikhil Kumar Verma**


DEPARTMENTOFCIVILENGINEERING

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## CERTIFICATE

It is certified that the mini project entitled "$LC^2$ BASED CONCRETE" submitted by Jay Prakash Kumar, Rishabh Kumar, and Rishi kesh harsh in partial fulfillment of the requirements of the award of the degree of Bachelor of Technology in Civil Engineering, School of studies of Engineering and Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur, is carried out by them in the Department of Civil Engineering during session 2024-25 under supervision and guidance of Dr. Nikhil Kumar Verma, Assistant Professor, Department of Civil Engineering, School of Studies of Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur CG.

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Assistant
ProfessorGuide

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# ABSTRACT

$LC^2$ (Limestone-Calcined Clay) concrete is emerging as a sustainable alternative to traditional Portland cement-based concrete, addressing environmental concerns related to cement production. The cement industry contributes approximately 7% of global $CO_2$ emissions, mainly from Portland cement production. $LC^2$ concrete offers a solution by partially replacing Ordinary Portland Cement (OPC) with a blend of calcined clay and limestone, reducing $CO_2$ emissions while maintaining concrete's strength and durability. Studies indicate that up to 50% of OPC can be replaced without compromising the material's mechanical properties. Moreover, the abundance of calcined clay and limestone, especially in developing countries, lowers production costs, making it a cost-effective alternative. Research demonstrates that $LC^2$ concrete, when modified with pozzolanic additives like fly ash, performs comparably to conventional cement in strength and durability. In our study, mix designs with w/c ratios of 0.45, 0.40, and 0.40 with 15% fly ash substitution were tested. The results showed that a w/c ratio of 0.40 achieved high compressive strength of 37.7 $N/mm^2$, exceeding the target strength which is 31.6 $N/mm^2$, representing 119.6% of the target strength. Based on these results, we propose the use 0.40 w/c ratio mix for $LC^3$concrete, demonstrating both environmental benefits and improved performance in sustainable construction.



**KEYWORDS**$LC^2$ (Limestone-Calcined Clay) Concrete, Sustainable Construction, $CO_2$ Emissions Reduction, Portland Cement Substitution, Green Building Material


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**Report on Mini Project II**

# Proposed Conceptual Plan for Interlinking of Arpa and Shivnath Rivers in Chhattisgarh


**Submitted by**

**Group No - 06**

**MD Sahil Haque (22024121)**

**Arkeet Roy (22024106)**

**Bandaru Sravanthi (22024109)**

**B. Tech *V* Semester**



*Under the Guidance*

**Dr. Ashish Kumar Parashar**

**Associate Professor**


**DEPARTMENT OF CIVIL ENGINEERING**

**SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY**

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***Session 2024-2025***

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# CERTIFICATE

This is to certify that the mini project work entitled Proposed Conceptual Plan for Interlinking of Arpa and Shivnath Rivers in Chhattisgarh, presented by Mr. MD. Sahil Haque (Roll NO: 22024121) and Mr. Arkeet Roy (Roll No: 22024106) and Ms. Bandaru Sravanthi (Roll No: 22024109) students of B.Tech. $V^{th}$ Semester, Civil Engineering Department, Guru Ghasidas Vishwavidyalaya, has been completed successfully and satisfactorily.

This project report is submitted in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Civil Engineering, SOS, Engineering & Technology, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G).

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**Dr. M. C. Rao**
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# ABSTRACT

The interlinking of rivers has emerged as a vital strategy for addressing water scarcity, promoting agricultural development, and ensuring food security in regions with limited water resources. This study undertakes a comprehensive possibility assessment of interlinking the Shivnath and Arpa Rivers via a proposed canal system. The Arpa River, a tributary of the Shivnath, primarily flows through the Bilaspur district, while the Shivnath River, a major tributary of the Mahanadi River, flows across the central part of Chhattisgarh. It will facilitate the transfer of surplus water from areas with excess availability to water-deficient zones, ensuring balanced distribution across agricultural lands and urban areas.

The primary objective is to evaluate the theoretical possibility and potential impacts of this interlinking project on water availability, agricultural productivity, and the regional ecosystem. The study employs a multidisciplinary approach, integrating hydrological, environmental, economic, and social analyses. The methodology involves economic analysis to evaluate the costs and benefits of the interlinking project, including its impact on agricultural productivity and regional development.

# PLANNING AND COST ESTIMATION OF A SENIOR SECONDARY SCHOOL BUILDING

**A Mini Project report submitted to Civil Engineering Department for the partial fulfilment of the requirement for award degree of Bachelor of Technology in Civil Engineering**


**Submitted by**

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**Sundaram (Roll No: 22024145)**

**Rajesh Kumar (Roll No: 22024131)**

**Aditya Yadav (Roll No: 21024101)**

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**Under the Guidance**

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**Session 2024- 25**

DEPARTMENT OF CIVIL ENGINEERING
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This is to certify that the Mini Project work entitled "**PLANNING AND COST ESTIMATION OF A SENIOR SECONDARY SCHOOL BUILDING" presented** by **Ms. Anukriti Bala** (Roll No.: 22024105), **Mr. Sundaram** (Roll No.: 22024118), **Mr. Rajesh Kumar** (Roll No.: 22024130) and **Mr. Aditya Yadav** (Roll No.: 210124101) students of B. Tech V$^{th}$ Semester, Civil Engineering Department Guru Ghasidas Vishwavidyalaya, has been completed successfully and satisfactorily.

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# ABSTRACT

As cities continue to grow the way we construct the building differ and the Complexities keep tremendously increasing in the project. Planning and Scheduling have become a major concept to be considered for a smooth execution of construction works where cost is a major factor in most decisions regarding construction and cost estimates are prepared throughout the planning design and construction phases of a construction project. Different types of cost estimated from preliminary to detailed are conducted for different purposes. All of these estimates are important because they invariably influence the expenditure of major sums. However, estimate made in the early phases of a project are particularly important because they affect the basic decision about a project, in most cases the final cost has been significantly higher than the cost estimate prepared and released during initial planning, preliminary engineering, final design or even at the start of construction.

Estimation costing is important in construction because it…

- Help with planning and decision making.
- Estimate helps you budget for expenses like gas food and lodging.
- Accurate estimates help project managers allocate resources efficiently.
- estimate help project manager manage risk effectively.
- cost estimates are crucial when it comes to winning new businesses.
- property owners use cost estimate to access the feasibility of their projects before construction.
- estimating is a way of making a calculation more manageable.

Estimation in construction is the process of calculating the expected costs and quantities of material, labour and other resources needed for a project, it is done before the project starts and is based on available information historical data and expert judgment.

Quantity estimation: Quantity estimation is defined as the process of determining the quantity and costs of material and resources required for a construction project. It is usually done before the project begins so that materials can be procured and funds can be gathered as the project progresses.

There are two main methods for taking out quantities when estimating construction work

a) long wall short wall method
b) Centre line method

From these studies as result emerged in the form of calculated quantity estimation of specified part of constructions thus keeping in accordance with National building code, schedule of rates, safety, economic viability, the total cost of building has been calculated in the form of abstract table as specified.

Report on Mini Project

# Water Quality Assessment and Prediction Using Machine Learning and Software Solutions

Submitted By-


Group No – 08

Sumit Kumar
Pinki Kumari
Sidharth Kumar
Vishal Kumar


B. Tech V$^{TH}$ Semester

-

Under the Supervision

Dr. Prakhar Modi


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## CERTIFICATE

Certified that the Mini project report entitled "Water Quality Assessment and Prediction Using Machine Learning and Software Solutions" submitted by Sumit Kumar, Pinki Kumari, Sidharth Kumar and Vishal Kumar of B. Tech 4th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies in Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2023-24 under my supervision and guidance.

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# ABSTRACT

This report investigates the transformative impact of integrating machine learning (ML) and software development in the realm of water quality management. Water quality is essential for public health, environmental sustainability, and adherence to regulatory standards. This project explores how machine learning algorithms can enhance water quality management by offering predictive analytics and automated decision-making capabilities.

Our project developed a Python-based software application that leverages ML principles to assess and predict water quality parameters, providing real-time evaluations and comprehensive insights into water suitability for various uses. The application was tested with real-world water quality data, achieving an accuracy of [insert accuracy percentage] in predicting parameters like pH, TDS, turbidity, and alkalinity. This high level of accuracy demonstrates the model's reliability for real-time assessments.

The software is dynamic, utilizing a database-driven approach that allows continuous updates and adjustments based on changing water quality data. It provides users with real-time evaluations, automatically updating the water quality status and suggesting appropriate treatment actions when parameters exceed regulatory thresholds. This dynamic feature ensures that the software remains relevant and effective as water quality conditions evolve.

By combining software development with ML, the project addresses existing challenges in water quality monitoring and offers a scalable solution that enhances the efficiency and effectiveness of water management practices.

Report On Mini Project-II

# CASE STUDY ON ROAD ACCIDENTS AND ITS REMEDIAL MEASURES.


Submitted by

Group no-09

Samyak Tamgadge (21024130)

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Certified that the mini project report entitled "Case Study On Road Accidents And Its Remedial Measures" submitted by Samyak Tamgadge, Satyajeet Aadil, Robin Kumar and Sourav Singh of B. Tech 5th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2024-25.

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# ABSTRACT

Road traffic accidents (RTAs) represent a significant cause of unnatural deaths worldwide, particularly in developing countries where vehicle ownership is rising rapidly. While developed nations have seen a decline in RTA rates, developing regions continue to struggle with high accident rates due to factors such as an, unskilled, untrained and illiterate drivers, and poorly maintained roads. There is a demand to address these issues has captured the attention of researchers, policymakers, and traffic safety experts. India, with its extensive road network spanning 3.3 million kilometers, is no exception. National Highways, making up only 2% of the total road length, carry a disproportionate amount of traffic—over 40% of passenger traffic and 85% of goods traffic. These highways, unfortunately, also account for a significant portion of road accidents, with certain areas like Hisar experiencing particularly high accident rates. The roads of Hisar, such as the Hisar-Sirsa road and Hisar-Delhi Bypass road, have been identified as hotspots for vehicle crashes, highlighting the urgent need for improved traffic guidance and control systems. To tackle this problem, a comprehensive understanding of the factors contributing to road accidents is essential. Various studies focusing on Hisar revealed that higher vehicle ownership correlates with lower fatality rates, suggesting that increased awareness and experience among drivers may play a role in reducing accidents. However, the rapidly growing urban landscape and rising motor vehicle population in developing cities like Hisar demand more robust interventions. One promising approach to predict and analyze accident rates is the use of Artificial Neural Networks (ANN). By employing data from 1998 to 2010, a model is designed to incorporate parameters such as the number of vehicles, accidents, and population. Utilizing sigmoid and linear functions within a feed forward-back propagation algorithm, the ANN model demonstrated superior performance compared to traditional statistical methods. This innovative approach not only provides insights into current accident trends but also enables the development of targeted interventions to enhance road safety. In conclusion, the integration of advanced technologies like ANN with a comprehensive understanding of local traffic conditions presents a viable solution to the RTA crisis in developing countries. Through improved road design, better traffic management, and predictive analytics, we can work towards a future where road safety is significantly enhanced, reducing the tragic loss of lives due to road traffic accidents.

A

MINI PROJECT REPORT ON

# Design of a UAV-Based System Capable of Quantifying Damage for Accurate Distress Measurement of Pavement

Submitted by

**Group no-10**

**Tarun Kumar** (22024147)

**Piyush Keshri** (22024127)

**Manish Kumar Ratre** (22024120)

B.Tech V$^{th}$ Semester

Under the Guidance

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Session 2024-25

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## CERTIFICATE

It is certified that the Mini project report entitled "**Design of a UAV-Based System Capable of Quantifying Damage for Accurate Distress Measurement of Pavement**" submitted by Tarun Kumar, Piyush Keshri and Manish Kumar Ratre of B. Tech 5th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2024-25 under my supervision and guidance.

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# ABSTRACT

Accurate and timely assessment of road damage is critical for maintaining infrastructure quality and ensuring safety. Traditional manual inspection methods are labor-intensive, time-consuming, and prone to human error. This project aims to develop an advanced UAV-based system equipped with artificial intelligence (AI) and machine learning (ML) capabilities to quantify road distress and damage effectively. The proposed system integrates high-resolution imaging technology with AI/ML algorithms to identify and classify various types of pavement distresses, such as cracks, potholes, and rutting. By leveraging UAVs, the system offers significant advantages, including rapid data collection, accessibility to hard-to-reach areas, and enhanced efficiency. Through a detailed methodology involving data acquisition, image processing, and predictive modeling, the system aspires to provide highly accurate distress measurements. The outcomes of this project are expected to aid transportation authorities in making data-driven decisions for road maintenance, thereby improving the longevity and performance of road infrastructure.

Report On Mini Project

# GRANULAR DEBRIS FLOW IN THE HIMALAYAN REGION


*Submitted by*

Group no-11

Agidi Koushik (22024101)

Kongalla Anitha (22024117)

Purushotham das mahant (22024129)

Supriya kumari (22024146)


B. Tech V$^{th}$ Semester

*Under the Guidance*

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Session 2024-2025

# CERTIFICATE

Certified that the Mini project report entitled "Granular debris flows in the Himalayan region" submitted by Agidi Koushik, Kongalla Anitha, Purushottam Das Mahant, and Supriya Kumari of B. Tech 5th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies in Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's work, carried out by them in the Department of Civil Engineering during session 2024-25 under my supervision and guidance.

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# CHAPTER 1

# INTRODUCTION

## 1.1 General

Landslides, defined as the downward movement of rock, soil, and debris, are influenced by gravity, water infiltration, geological conditions, and human activities. They can occur in diverse forms such as falls, slides, and flows, and are particularly prevalent in steep, mountainous regions. Heavy rainfall, earthquakes, and anthropogenic actions significantly trigger these natural hazards. The consequences of landslides are severe, leading to fatalities and substantial economic losses, necessitating effective hazard mapping and risk assessment for disaster management. Understanding the geological and environmental conditions that contribute to landslide susceptibility is crucial for planning and mitigation efforts. Additionally, landslides play a role in shaping landscapes and can create sedimentary archives that inform geological studies (Pandey, 2020; Pánek, 2020; Shano et al., 2020; Singh et al., 2014). Additionally, areas with significant human development, such as road construction, deforestation, and urban expansion, can destabilize slopes and increase the risk of landslides. The Himalayan region of India is an example of a landscape highly vulnerable to landslides. This region is characterized by its complex geology, steep slopes, and heavy monsoon rains, making it one of the most landslide-prone regions in the world. The combination of natural and anthropogenic factors makes understanding and mitigating landslide risks in the Himalayan region particularly challenging (Singh et al., 2014; Dikshit et al., 2020; Mir et al., 2023).

# Concrete Mix Design Based on IS Method, ACI Method and BS Method using MS Excel

Report on Mini Project

Submitted

by

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Under the Guidance

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# CERTIFICATE

This is to certify that the Mini project report entitled "Concrete Mix Design Based on IS 10262:2019, American Concrete Institute (ACI) Method and British Standard(BS) Method using MS Excel" submitted by Ayushi Sharaff, Prakash Tiwari and Chirag Shinde of B. Tech 5th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2024-25 under my supervision and guidance.

Signature ……24/12/24
Name – Prof.M.Chakradhara Rao
Professor
Guide

Signature……24/12/24.
(External examiner – 1)

Signature……..
(External examiner – 2)

Signature……24/12/24
(External examiner – 3)

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# ABSTRACT

Concrete mix design may be defined as the art of selecting suitable ingredients of concrete and determining their relative proportions with the object of producing concrete of certain minimum strength & durability as economically as possible. Considering the objectives of mix design, such as desired workability in the plastic stage, desired minimum strength in the hardened state, desired durability in the given environment conditions & basic considerations like cost, specification, workability must be studied while designing mix design. Grade of concrete and its characteristics compressive strength of 150 mm cube at 28 days, $N/mm^2$ is very important criteria to be considered. Factors affecting the choice of mix design is being studied for better mix design.

The integration of IS 10262:2019, ACI method and BS method principles into an Excel spreadsheet offers a systematic approach to concrete mix design. Excel allows for the creation of a dynamic model where input parameters—such as the target strength, cement type, aggregate properties, and workability requirements—are entered into designated cells. The spreadsheet then applies the equations and procedures specified in the respective codes to compute the appropriate proportions of cement, fine aggregates, coarse aggregates, and water.

The use of Excel in this context not only facilitates quick and accurate calculations but also enables easy modifications and updates to the mix design as needed. By leveraging Excel's computational and data management capabilities, users can efficiently handle various design scenarios and optimize the mix for specific project requirements. This approach enhances precision, reduces manual errors, and supports better decision-making in the concrete mix design process.

From this study of comparison between IS.ACI and BS methods, the project concludes that ACI is more efficient while working than the other two methods .It uses less amount of cement.ACI mixtures are more cohesive and therefore more workable.

**Mini Project 2 Report**

on

# PERFORMANCE STUDY OF FLYASH-CEMENT BRICK BY PARTIAL REPLACEMENT OF CEMENT WITH LIME

Submitted to

DEPARTMENT OF CIVIL ENGINEERING


Submitted by

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DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

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Session 2024-25

DEPARTMENT OF CIVIL ENGINEERING
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A CENTRAL UNIVERSITY)

# CERTIFICATE

This is to certify that, the Mini Project work entitled **"PERFORMANCE STUDY OF FLYASH-CEMENT BRICK BY PARTIAL REPLACEMENT OF CEMENT WITH LIME"** presented by **Mr. Sumit Ratre** (Roll No.- 22024144), **Mr. Manish Kumar** (Roll No.-22024119) and **Mr. Rahul Kumar Singh** (Roll No.-22024130), students of B. Tech, 3RD Year, Vth Semester, Civil Engineering, Guru Ghasidas Vishwavidyalaya, SoS Engineering & Technology, Bilaspur (C.G.) is satisfactory and accepted by the Department of Civil Engineering.

Signature……04/12/24……

**Prof. R.K Choubey**
Guide

Signature……13/12/2024……

**EXTERNAL EXAMINER – 1**

Signature……

**EXTERNAL EXAMINER - 2**

Signature……

**EXTERNAL EXAMINER – 3**

Signature……13/12/24……

**EXTERNAL EXAMINER – 4**

Signature……13/12/24……

**Prof. M. C. RAO**
Head of department
Department of Civil Engineering
SoS (E & T), Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur

# ABSTRACT

This mini-project investigates performance study of Fly ash-cement brick by partial replacement of cement with lime, as a binding agent. Fly ash, a byproduct of coal combustion, is made use of in brick production to promote sustainability and resource efficiency in the construction industry. The study focuses on evaluating the compressive strength, water absorption, etc. of the fly ash-lime bricks compared to fly ash cement bricks.

The mix proportion used 1:3 (binding material: fly ash) with a water- cement ration of 0.45. In this study, the specimen is tested with and without lime. Gypsum is constantly used in the entire specimens while different percentage of lime is used 10%, 20%, 30%, and 40% of total weight of cement.

Standard tests were conducted to assess compressive strength evaluations of the specimen at 7, 14, and 28 days of curing. And water absorption test after 24 hours.

Results indicate that the inclusion of lime can enhance overall strength, with optimal performance observed at a 30% replacement level. This research contributes to sustainable construction practices by highlighting the potential use of lime as an alternative material for replacing cement thereby promoting reduction in cement use for reducing the carbon footprint with improvement in strength property.

# ANALYSIS AND DESIGN OF CONTINUOUS BEAM USING EXCEL AND PYTHON

Report on Mini Project

**Submitted by**

Himanshu Mishra (22024113)

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**Under the Guidance**

**Ms. Preeti Singh**

ASSISTANT PROFESSOOR

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## CERTIFICATE

Certified that the Mini project report entitled "**ANALYSIS AND DESIGN OF CONTINUOUS BEAM USING EXCEL AND PYTHON**" submitted by Himanshu Mishra, MD. Sohail Akram and Shubham Kumar of B. Tech 5th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies in Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2023-24 under supervision and guidance.

Signature .....
Ms. Preeti Singh
Assistant Professor
Guide

Signature.....
External examiner 1

Signature.....
External examiner 2

13/12/24

Signature .....
**Dr. M. C. RAO** (Professor)
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# ABSTRACT

This project delves into the analysis and design of continuous beams, a fundamental structural element widely used in civil engineering. The first objective is to provide a comprehensive understanding of the principle involved in analyzing and designing such beams, considering various loading conditions and support configurations. the second objective is to design comparison of continuous beam in excel spreadsheet and python program.

A detailed analysis of continuous beams subjected to different types of loads, such as, dead load, live load and self-weight, concentrated loads, uniformly distributed loads is presented. The design face focuses om the cross-sectional dimensions, area of steel, number of main bars and shear reinforcement provided and at last deflection and shear check using IS 456:2000, Plain and reinforced concrete-code of practice (Fourth Revision), Bureau of Indian Standards. we created excel spreadsheet and python programming. Python programming is more easy to use as compared to excel spreadsheet.

**Report On Mini Project-II**

# Treatment of Greywater by UV- $H_2O_2$ Advanced Oxidation Process


Submitted by

Group no-16

Annu Kumari (22024102)

Ashish Nagesh (22024107)

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Under the Guidance

**Dr. Bijoli Mondal**


DEPARTMENT OF CIVIL ENGINEERING, SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY, GURU GHASIDAS VISHWAVIDYALAYA (A Central University), BILASPUR (C.G)


Session 2024-2025

# CERTIFICATE

Certified that the Mini project report entitled "Treatment of Greywater by UV - $H_2O_2$ Advanced Oxidation Process" submitted by Annu kumari , Ashish Nagesh and Rintu kumar of B. Tech 5th Semester, in partial fulfillment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies in Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's work, carried out by them in the Department of Civil Engineering during session 2024-25 under my supervision and guidance.

Signature 31/12/2024
Name Dr. Bijoli Mondal
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Guide

| | |
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