S.No.	Name	Title	Supervisor
1	1. Anujeet Bharti(23024111) 2. Tausif Ahmad(24024181) 3. Aditya Sahu(23024105)	Topographical Survey of an Open Stage Using Total Station	Dr. V.V.S. Surya Kumar Dadi
2	1. SATYA DEEPA RANI (23024133) 2. KHUSHBOO SINHA (23024120) 3. ANCHAL VERMA (23024109)	EVALUATION OF STRENGTH CHARACTERISTIC OF BITUMINOUS MIX UTILIZING MODIFIERS AND RECLAIMED ASPHALT PAVEMENT	Dr. ADHEESH KUMAR VIVEK
3	1. Nishant Kumar(23024126) 2. Aditya Raj(23024104) 3. Priye Darshi Vishwakarma(23024130)	Application of Machine Learning in Watershed Morphometric Analysis	Dr. Prakhar Modi
4	1. PALLAVI KUMARI (23024127) 2. THUPTEN NAKSANG (23024146) 3. PARTH SHARMA (23024128)	THE RESPONSE OF SOFT CLAY TO ELECTROKINETIC CONSOLIDATION	Dr. BALBIR KUMAR PANDEY
5	1. Abhimanyu Kumar Mishra(23024101) 2. Anshika Singh(23024110) 3. Chandrashen Yadav(23024115)	Study of Water Quality Degradation in the Arpa River : Causes and Impacts	Dr. Umank Mishra
6	1. Suman Saurav (23024142) 2. Sunil Kumar Pal (22024128) 3. Abhishek Kashyap (23024102)	Planning and Architectural Drawings of Civil Engineering Department Building Using "Auto CAD"	Prof. M.Chakradhara Rao
7	1. Ambikesh Yadav (23024108) 2. Gaurav Yadav (23024117) 3. Sevendra Kumar (23024134)	Review on Auto Repair Concrete Solution	Dr. Sonal Banchhor
8	1. KHUSHI ANAND (23024121) 2. GOPESH SAHU (23024118)	GRIHA RATING SYSTEM ON EXISTING BUILDING	Dr. R.K. CHOUBEY

	3. MONIKA NARETI (23024125)		
9	1. Amar Kumar (2304107) 2. Kunal Sahu (23024123) 3. Jnan D. Kaushik (23024119)	Impact of Electric Vehicles on Traffic Congestion	Dr. Kundan Meshram
10	1. Rahul Mishra(23024132) 2. Shreyash Kumar Banjare(23024137) 3. Pranjal Dubey(23024129)	SEISMIC ACTIVITY PREDICTION: A MACHINE LEARNING APPROACH	MISS. AYUSHI NAYAK
11	1. SUMAN KUMARI (23024141) 2. DEEPAK (23024116) 3. BHEDANSH SHAH MANDAVI (23024112)	Landslide Susceptibility Zonation	Mr. Rochak Pandey
12	1. SOURADIP DUTTA (23024140) 2. SWATI SHARMA (23024144) 3. ALFRED MANHAR (23024106)	PLANNING OF RESIDENTIAL BUILDING AS PER NBC USING AUTOCAD	Ms. PREETI SINGH
13	1. RAHUL DEV (23024131) 2. SHREYANSH SINGH (23024136)	SMART SOLUTIONS FOR MEASURING DISTANCE	DR. ASHISH KUMAR PARASHAR
14	1. Vishwajeet Bhagat (23024148) 2. Sougata Karmakar (23024139) 3. Aishwary Raj Dua (23024150)	APPLICATION OF VASTU SHASTRA IN RESIDENTIAL SPACE USING AUTOCAD AND REVIT	Mr. Vinod Kumar
15	1. SNEHA SAHU (23024138) 2. UMESH KUMAR NIM (23024147) 3. CHANDAN CHANDRA (23024114) 4. LIKHA TAI (22024118)	CHARACTERISATION OF LEACHATE AND IT'S IMPACT ON SURFACE & GROUND WATER QUALITY OF A CLOSED DUMPSITE-BILASPUR, (C.G.).	Dr. BIJOLI MONDAL
16	1. Tarun Janardan Jangde (23024145) 2. Aman Rajgir (24024180) 3. Bhupendra (23024113)	COOL ROOF TECHNOLOGY USING PLASTIC STRUCTURE INSTEAD OF EASTHEN POTS	Dr. Nikhil Kumar Verma

Report on Mini Project

Topographical Survey of an Open Stage Using Total Station

Submitted by

Anujeet Bharti (23024111)

Tausif Ahmad (24024181)

Aditya Sahu (23024105)

B. Tech IVth Semester

Under the Guidance of

Dr. V.V.S. Surya Kumar Dadi

Associate Professor

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G)

Session 2024-2025

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)

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

CERTIFICATE

This is to certify that the mini project work entitled **"Topographical Survey of an Open Stage Using Total Station"**, presented by Mr. Anujeet Bharti (Roll No. 23024111) and Mr. Tausif Ahmad (Roll No. 24024181) and Mr. Aditya Sahu (Roll No. 23024105) students of B.Tech. IVth Semester, Civil Engineering Department, Guru Ghasidas Vishwavidyalaya, has been completed successful 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).

Signature 05/05/25

Dr. V.V.S. Surya Kumar Dadi
Associate Professor
Guide

Sign.....

Sign.....

EXAMINER(S)

05/05/25

Signature

Prof. M. Chakradhara Rao
Head of the department
Civil Engineering
Guru Ghasidas Vishwavidyalaya (a central university), Bilaspur.

ABSTRACT

This project report presents a topographical survey conducted using a Total Station to map and analyse the physical characteristics of campus sites like 1) an open-stage 2) Civil and Mechanical Engineering buildings. The survey aimed to collect accurate data on ground elevations, coordinates, and site dimensions to support planning and construction activities. Utilizing the Nikon XS Series Total Station, fieldwork was performed involving instrument setup, temporary adjustments, and systematic data collection. The collected data was processed and visualized through AutoCAD to produce top and satellite views of the surveyed areas.

The Key outcomes include the temple's area (235.75 m^2) and volume (304.11 m^3), confirming the alignment of engineering buildings, and reinforcing the significance of modern surveying tools in engineering practices. The project not only demonstrated the precision and efficiency of Total Station in generating detailed site maps but also provided hands-on experience in modern survey techniques essential for civil infrastructure development.

A Mini Project Report

on

"EVALUATION OF STRENGTH CHARACTERISTIC OF BITUMINOUS MIX UTILIZING MODIFIERS AND RECLAIMED ASPHALT PAVEMENT"

Submitted in partial fulfilment of the Requirements for Award of Degree of Bachelor of Technology in Civil Engineering

Submitted by :-

SATYA DEEPA RANI
(Roll no. : 23024133)
(Enroll no. : GGV/23/01033)

KHUSHBOO SINHA
(Roll no. : 23024120)
(Enroll no. : GGV/23/01020)

ANCHAL VERMA
(Roll no. : 23024109)
(Enroll no. : GGV/23/01009)

Under The Guidance of

Dr. ADHEESH KUKMAR VIVEK
(Assistant Professor)

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Act 2009 No. 25 of 2009)

2024 - 2025

DEPARTMENT OF CIVILENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)

(ACentralUniversityEstablishedbytheCentralUniversityAct2009No.25of2009)

CERTIFICATE

Certified that the mini project report entitled **"EVALUATION OF STRENGTH CHARACTERISTIC OF BITUMINOUS MIX UTILIZING MODIFIERS AND RECLAIMED ASPHALT PAVEMENT"** submitted by **Satya Deepa Rani**, **Khushboo Sinha** and **Anchal Verma** in partial fulfillment of the requirements of the award of degree of Bachelor of Technology, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur (CG) is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign 01/05/25

Dr. ADHEESH KUMAR VIVEK

(Assistant Professor)

Sign 01/05/25

(EXTERNAL EXAMINER-2)

Sign 01/05/2025

(EXTERNAL EXAMINERS-1)

Sign .....

(EXTERNAL EXAMINERS-3)

01/05/25

Prof. M. C. RAO

Head of Department

Department of Civil Engineering

School of Studies in Engineering and Technology

Guru Ghasidas Vishwavidyalaya

(A Central University), Bilaspur

ABSTRACT

The current study aims to study the potential of sustainable and cost-effective materials in improving the performance of bituminous pavement by partially replacing Reclaimed Asphalt Pavement (RAP) with additives like eggshell powder and waste engine oil. A detailed literature review was conducted to evaluate the effects of RAP as substitute, eggshell, used as modifier and waste engine oil, used as a rejuvenator, on the properties of bituminous mixes. Eggshell, being rich in calcium carbonate enhances stiffness, stability, decrease penetration and increase the softening point, while waste engine oil helps restore the flexibility and workability of aged binder and provide better moisture resistant capacity. The use of these waste materials on virgin bituminous mix not only improves the mechanical properties such as Marshall stability, durability, flow value and improves resistant against cracking, but also contributes to environmental sustainability by reducing industrial and construction waste. The findings of various studies reviewed in this report shows approach to enhance the performance of bitumen mix in a sustainable and economical way by combined use of RAP, ESP, and WEO.

Application of Machine Learning in Watershed Morphometric analysis

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By

Nishant Kumar
(GGV/23/01026)
Aditya Raj
(GGV/23/01004)
Priye Darshi Vishwkarma
(GGV/23/01030)

Under The Guidance of
Dr. Prakhar Modi

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Act 2009 No. 25 of 2009)

2024 - 2025

DEPARTMENTOFCIVILENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(ACentralUniversityEstablishedbytheCentralUniversityAct2009No.25of2009)

CERTIFICATE

Certified that the project report entitled **"Application of Machine Learning in Watershed Morphometric analysis"** submitted by Nishant Kumar, Aditya Raj, and Priye Darshi Vishwkarma of B.tech 4th semester, in partial fulfillment 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 him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....05/05/25.....

Dr. Prakhar Modi
(Supervisor)

Sign.....

Examiner(s)

08/05/25

Prof. M. Chakradhara Rao
Head of Department
Civil Engineering Department,
Guru Ghasidas Vishwavidyalaya
School of Studies in Engineering and Technology

ABSTRACT

This report explores the significant impact of machine learning (ML) in the watershed morphometry. Understanding watershed morphometry is crucial for effective water resource management, flood prediction, and environmental conservation. This project investigates how machine learning algorithms can enhance the assessment of watershed characteristics such as area, slope, relief, and drainage pattern by providing predictive analytics and automated decision-making capabilities.

Our project developed a Python-based software application that leverages ML principles to assess and predict watershed morphometric parameters, providing real-time evaluations and comprehensive insights into watershed health and management. This application not only aids in data processing and pattern recognition but also offers functionalities for hydrological modelling simulation. By combining software with advanced analytic techniques, this project aims to improve the accuracy and efficiency of watershed management practices, supporting sustainable development and environmental conservation.

A Mini Project Report On

THE RESPONSE OF SOFT CLAY TO ELECTROKINETIC CONSOLIDATION

Submitted in partial fulfilment of the requirements for Award Of Degree of Bachelor of Technology in Civil Engineering.

Submitted by:-

PALLAVI KUMARI
(23024127)

THUPTEN NAKSANG
(23024146)

PARTH SHARMA
(23024128)

Under The Guidance of

Dr. BALBIR KUMAR PANDEY

(Assistant Professor)

Department of Civil Engineering

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(ACentralUniversityEstablishedbytheCentralUniversityAct2009No.25of2009)

2024 – 2025

DEPARTMENT OF CIVIL ENGINEER

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)

(ACentralUniversityEstablishedbytheCentralUniversityAct2009No.25of2009)

CERTIFICATE

Certified that the project report entitled "**THE RESPONSE OF SOFT CLAY TO ELECTROKINETIC CONSOLIDATION**" submitted by **Pallavi Kumari, Thupten Nakshang, Parth Sharma** in partial fulfilment of the requirements of the award of degree of Master of Technology in Civil Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign..... 05/05/2025

Dr. BALBIR KUMAR PANDEY
(Assistant Professor)

Sign..... 05/05/2025

(EXAMINER-1)

Sign..... 05/05/2025

(EXAMINER-2)

05/05/25

Prof. M . C . Rao
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

In this study, the response of soft clay to electrokoinetic treatment was investigated. About 60% of the world's population resides in Asia, which has only 30% of the total land area. As the population increases, the demand for land for accommodation also rises, necessitating work on problematic land . Electrokinetic treatment is a modern technique used for land reclamation, addressing issues such as excessive pore water pressure, low strength, high water content. and delayed dissipation of excess pore water pressure.

In this study, COMSOL Multiphysics software was used to couple an electrokinetic model with a soil mechanics model to understand the effect of electrokinetic treatment on soft clay. The study was conducted at voltage gradients of 0 V/cm, 0.5V/cm,1V/cm, and 2V/cm to analyse the movement of the electroosmotic term, velocity term, and TDS (Total Dissolved Solids) concentration in the model. The results show the movement of the electroosmotic term, velocity term, and the TDS concentration at different times, helping us understand the soil behaviour.
This comprehensive analysis provides valuable insights into how electrokinetic treatment can improve the properties of soft clay, making it more suitable for construction and land reclamation projects.

A Mini Project Report on

Study of Water Quality Degradation in the Arpa River: Causes and Impacts

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By-

ABHIMANYU KUMAR MISHRA
(23034101)
ANSHIKA SINGH
(23034110)
CHANDRASHEN YADAV
(23034115)

Under The Guidance of

Dr.UMANK MISHRA

Associate Professor

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Act 2009 No. 25 of 2009)

2024 - 2025

ABSTRACT

This study investigates the declining water quality of the Arpa River, which is severely impacted by human activities such as industrial effluents, domestic sewage, and agricultural runoff. The main goal is to evaluate key water quality parameters—like pH, BOD, COD, and total alkalinity—to determine the level of contamination and its effects on the river's ecosystem. Through the use of both primary and secondary data, along with laboratory analysis, the study identifies major pollution sources contributing to environmental degradation. The results show a high degree of organic and chemical pollution, as indicated by elevated BOD and COD levels, along with significant total alkalinity, which reflects the water's buffering capacity. These findings point to serious ecological and public health risks, underscoring the urgent need for sustainable water resource management and pollution control to restore the Arpa River's health.

DEPARTMENT OF CIVILENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)
(ACentralUniversityEstablishedbytheCentralUniversityAct2009No.25of2009)

CERTIFICATE

Certified that the project report entitled **"Study of Water Quality Degradation in the Arpa River: Causes and Impacts"** submitted by ABHIMANYU KUMAR MISHRA , ANSHIKA SINGH , CHANDRASHEN YADAV in partial fulfillment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....

DR. UMANK MISHRA

Sign.....

EXTERNAL EXAMINER

Sign.....
07/05/25

EXTERNAL EXAMINER

Sign.....

EXTERNAL EXAMINER

8/5/25

Dr. M . C . Rao
Head of Department
CivilEngineeringDepartment,
School of Studies in Engineering andTechnology
Guru GhasidasVishwavidyalaya

Planning and Architectural Drawings of Civil Engineering Department Building

Using "Auto CAD"

Report on Mini Project

Submitted

by

Suman Saurav (23024142)

Sunil Kumar Pal (22024128)

Abhishek Kashyap (23024102)

B. Tech IVth Semester

Under the Guidance of

Prof. M.Chakradhara Rao

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G)

(A Central University established by the central universities act no. 25 of 2009)

(NAAC A++)

Session:2024-2025

CERTIFICATE

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G)

(NAAC A++)

Session:2024-2025

Certified that the project report entitled "PLANNING, DRAWING, SECTION AND ELEVATION OF CIVIL ENGINEERING BUILDING" submitted by Suman Saurav, Sunil Kumar Pal and Abhishek Kashyap in partial fulfillment of the requirements of the award of degree of Bachelor of Technology(BTECH),Department of 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 2024-2025 under my supervision and guidance.

Sign.....

Prof.M.Chakradhara Rao

(Guide)

Examiners Signature

1).....

2).....

3).....

4).....

5).....

Sign.....

Prof. M. Chakradhara Rao
Head of department
Civil Engineering
SOS (E&T) Guru Ghasidas Vishwavidyalaya

ABSTRACT

AutoCAD is an essential tool in the engineering, design, and architecture industries, as it allows us to create precise and accurate designs quickly and efficiently. It includes various tools and features, such as drafting tools, annotation tools, and collaboration tools, that enable users to create complex designs and collaborate seamlessly.

This mini project focuses on the comprehensive planning and detailed architectural representation of a civil engineering building, encompassing the preparation of layout plans, sectional views, and elevations. The objective is to apply fundamental principles of building design, ensuring functionality, safety, and aesthetic appeal in accordance with standard building codes and regulations. The project includes the development of a floor plan based on site requirements, the creation of elevation views for visual representation, and cross-sectional drawings to illustrate the internal structure and construction features.

The purpose of mini project is to develop a good learning in AutoCAD for designing any structural building's plan, elevation, and section. As a civil Engineer we are able to draw a complete a building plan of any residential building along with Vastu.

After the completion of this whole project, we will able to draw a complete plan, section and elevation detailing, of any structural building which will gives a major impact in our civil engineering career.

A Mini Project Report

On

Review on Auto Repair Concrete Solution

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By

Ambikesh Yadav (23024108)

Gaurav Yadav (23024117)

Sevendra Kumar (23024134)

Under The Guidance of

Dr. Sonal Banchhor

Assistant Professor GGV, Bilaspur

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

2024 - 2025

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)

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

CERTIFICATE

Certified that the project report entitled **"REVIEW ON AUTO REPAIR CONCRETE SOLUTION"** submitted by NAME OF THE STUDENT in partial fulfillment of the requirements of the award of degree of Master of Technology in Structural Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....

Dr. Sonal Banchhor
Assistant Professor
Project Supervisor

Sign.....

EXTERNAL EXAMINER(S)

Sign.....

M. Chakradhara Rao
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

The degradation of concrete structures due to cracks, shrinkage, and environmental exposure is a significant concern in civil engineering. Traditional repair techniques are often labor-intensive and expensive, with limited long-term effectiveness. This mini project explores the development and application of auto-repair concrete—a self-healing material capable of autonomously repairing cracks without external intervention. The project focuses on two major self-healing mechanisms: biological (using bacteria like Bacillus subtilis that precipitate calcium carbonate) and chemical (embedding microcapsules or crystalline admixtures that activate upon crack formation). A comprehensive literature review was conducted to understand the effectiveness, practicality, and challenges of implementing auto-repair concrete. The review highlights various case studies and experimental findings that demonstrate improved crack-sealing efficiency, enhanced durability, and long-term structural performance. This innovative material shows promising potential for widespread use in infrastructure applications, especially in hard-to-access or critical structural elements.

A Mini Project Report

on

"GRIHA RATING SYSTEM ON EXISTING BUILDING"

Submitted in partial fulfilment of the Requirements for Award of Degree of Bachelor of Technology in Civil Engineering.

Submitted By-

KHUSHI ANAND
(Roll no.-23024121)
(Enroll no.-GGV/23/01021)

GOPESH SAHU
(Roll no.-23024118)
(Enroll no.-GGV/23/01018)

MONIKA NARETI
(Roll no.- 23024125)
(Enroll no.- GGV/23/01025)

Under the guidance of

Dr. R.K. CHOUBEY

(Professor)

-

Department of Civil Engineering

Session : 2024-25

DEPARTMENT OF CIVIL ENGINEERING
INSTITUTE OF ENGINEERING AND TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University established by the Central Universities Act No. 25)

DEPARTMENT OF CIVIL ENGINEERING

GURU GHASIDAS VISHWAVIDYALAYA
BILASPUR (C.G)

CERTIFICATE

Certified that the Mini project report entitled " GRIHA Rating system on existing buildings" submitted by Khushi Anand , Gopesh Sahu , and Monika Nareti 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 2024-25 under my supervision and guidance.

Signature 01/05/25
Name – Dr. R.K Choubey
(Professor) Guide

Signature 05/05/2025
(EXTERNAL EXAMINER-1)

Signature 05/05/2025
(EXTERNAL EXAMINER-2)

Signature 01/05/25
Dr. M. C. RAO
Head of department
Department of Civil Engineering
SOS(E & T), Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur

ABSTRACT

The establishment of a green grading system to evaluate buildings is becoming increasingly critical due to an increased focus on sustainable growth in the construction sector. The rating method established criteria for green measures in the construction and use of structure in order to create them more environmentally friendly and sustainable.Buildings that have previously been built should also be rated according to the existing Green Building Rating Standards. As a result, a new grading system should be devised for older structures also.

GRIHA for Existing Buildings provides a holistic framework for building owners and operators to assess their environmental impact and implement strategies for improvement. By focusing on measurable parameters like energy and water consumption, waste management, and indoor environmental quality, the system encourages resource efficiency and occupant well-being. The Green Rating for Integrated Habitat Assessment (GRIHA) for Existing Buildings is a performance-oriented system designed to evaluate and enhance the environmental sustainability of operational buildings in India. This 100-point system encompasses twelve criteria across seven key sections: Site Parameters, Maintenance & Housekeeping, Energy, Water, Human Health & Comfort, Social Aspects, and Bonus Points. Six of these criteria are mandatory, establishing a baseline for environmental performance, while the remaining criteria offer flexibility through a points-based system. Buildings achieving a minimum of 25 points are eligible for certification, with higher scores leading to one to five-star ratings, signifying increasing levels of sustainability.

Impact of Electric Vehicle on Traffic Congestion

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted by

AMAR KUMAR (GGV/23/01007)

KUNAL SAHU (GGV/23/01023)

JNAN D. KAUSHIK (GGV/23/01019)

Under The Guidance of

Dr. Kundan Meshram

Assistant Professor

Department of Civil Engineering

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

2024 - 2025

DEPARTMENT OF CIVIL ENGINEERING

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,

GURU GHASIDAS VISWAVIDYALAYA,

BILASPUR(G.G.)

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

CERTIFICATE

Certified that the project report entitled **"Impact of Electric Vehicle on Traffic Congestion"** submitted by AMAR KUMAR, KUNAL SAHU, JNAN D. KAUSHIK in partial fulfillment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign. K Meshram

NAME OF THE SUPERVISOR

Sign.

EXAMINER(S)

Prof. M. CHAKADHARA RAO
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

Governments around the world are encouraging the use of electric vehicles (EVs) because they are more ecofriendly and efficient than traditional gasoline vehicles (GVs). However, recent studies have found that EVs might actually increase traffic congestion, especially during morning rush hours. To better understand this, researchers used a traffic model that considers how much energy each vehicle uses. They studied how energy use affects traffic waiting time when drivers pick the best route for themselves (called user equilibrium). They also compared traffic delays when both EVs and GVs are on the road. The study found two main things: (1) EVs can sometimes cause more traffic, and (2) this can be reduced with smart traffic management strategies. So, it's important to plan properly as more EVs hit the roads to avoid traffic issues and support good government policies.

The research also explores how Artificial Intelligence (AI) can help solve traffic problems. By using AI methods like machine learning, neural networks, and computer vision, predictive traffic models were created. These models were trained using large amounts of traffic data and tested in simulations. Real-life examples from cities that already use AI in their traffic systems were also studied. The results show that AI helps traffic move more smoothly, reduces congestion, and can be a great solution for modern city planning.

A mini project report on

SESMIC ACTIVITY PREDICTION: A MACHINE LEARNING APPROACH

Project Report Submitted in Partial Fulfilment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

Submitted By

RAHUL MISHRA (23024132)
SHREYASH KUMAR BANJARE (23024137)
PRANJAL DUBEY (23024129)

Under the guidance of

MISS. AYUSHI NAYAK
ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central UniversityAct2009No.25of2009)

2024 - 2025

DEPARTMENT OF CIVIL ENGINEERING
SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY,
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Act 2009 No.25 of 2009)

CERTIFICATE

Certified that the project report entitled "SEISMIC ACTIVITY PREDICTION: A MACHINE LEARNING APPROACH" submitted by in partial fulfilment of the RAHUL MISHRA, SHREYASH KU. BANJARE and PRANJAL DUBEY requirements of the award of degree of Bachelor of Technology in Civil Engineering, Department of 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 2024-2025 under my supervision and guidance.

Sign.....

Ms. Ayushi Nayak
(Supervisor)

Sign.....

External Examiner

Sign.....

External Examiner

Prof. M. Chakradhar Rao
Head of Department
Department of Civil Engineering
School of studies of Engineering and Technology

ABSTRACT

Natural disasters are major causes of sudden, unpredictable deaths, and among them, earthquakes are the most devastating. Accounting for nearly 50% of all disaster-related fatalities, earthquakes strike without warning and cause widespread destruction, economic loss, and human suffering. The urgent need to predict such catastrophic events has led researchers to explore modern technological solutions, particularly the application of machine learning (ML) techniques.

This paper focuses on the potential of ML algorithms to predict earthquakes, offering a detailed review of existing research in this area. Various algorithms such as Artificial Neural Networks (ANN), Probabilistic Recurrent Neural Networks (PRNN), Support Vector Machines (SVM), and decision trees have been studied for their effectiveness in analyzing seismic data and identifying patterns that may indicate an impending earthquake. A key insight from past research is that no single algorithm performs consistently well in all scenarios. Instead, hybrid and ensemble models that combine the strengths of multiple algorithms show greater promise in improving predictive accuracy.

Beyond the technical scope, the paper also considers the broader consequences of earthquakes, particularly their long-lasting economic and social impact. Developing countries are especially vulnerable due to weak infrastructure and limited disaster management resources. Therefore, advances in earthquake prediction not only have scientific significance but also substantial humanitarian and economic implications.

Overall, this study aims to highlight the role of machine learning in addressing one of the most unpredictable natural disasters and emphasizes the need for continued interdisciplinary research to develop more reliable and accurate earthquake forecasting systems.

Landslide Susceptibility Zonation

Mini Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By:
SUMAN KUMARI (23024141)
DEEPAK (23024116)
BHEDANSH SHAH MANDAVI (23024112)
Semester - 4

Under The Guidance of
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(Assistant Professor)

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Certified that the project report entitled **"Landslide Susceptibility Zonation"** submitted by Suman Kumari, Deepak and Bhedansh Shah Mandavi of B.Tech 4th semester, in partial fulfillment 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 him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....05/5/2025.....

NAME OF THE SUPERVISOR

Mr. Rochak Pandey (Asst. Prof)

Sign.....5/5/25.....

EXTERNAL EXAMINER(S)

Dr. M.C.RAO
Head of Department
Department of Civil Engineering,
Guru GhasidasVishwavidyalaya
School of Studies in Engineering and Technology

ABSTRACT

Landslide Susceptibility Zonation (LSZ) is a critical process in disaster risk management, particularly in mountainous and geologically sensitive regions. This study conducts a comparative analysis of various LSZ techniques to evaluate their effectiveness in accurately predicting landslide-prone areas. Among the methods assessed including statistical and heuristic approaches, the Analytic Hierarchy Process (AHP) emerged as the most reliable and practical technique. AHP allows for the systematic integration of multiple geo-environmental factors based on expert judgment and pairwise comparisons, making it especially suitable for regions with limited data. Furthermore, the implementation of AHP within ArcGIS enhances its usability through spatial data visualization and zonation mapping. The results show that using AHP with GIS is a useful and clear way to find out which areas are more likely to have landslides. This method is easy to repeat and can help make better decisions for planning land use, creating safety rules, and reducing the risks from landslides.

MINI PROJECT REPORT ON

PLANNING OF RESIDENTIAL BUILDING AS PER NBC USING AUTOCAD

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

Submitted By

SOURADIP DUTTA (23024140)
SWATI SHARMA (23024144)
ALFRED MANHAR (23024106)

B. tech IVth Semester

Under The Guidance of

Ms. PREETI SINGH
(Assistant professor)

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GURU GHASIDAS VISWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Act 2009 No. 25 of 2009)

CERTIFICATE

Certified that the project report entitled **"PLANNING OF A RESIDENTIAL BUILDING AS PER N.B.C. USING AUTOCAD"** submitted by SOURADIP DUTTA, SWATI SHARMA, ALFRED MANHAR in partial fulfillment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him/her in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....

Ms. PREETI SINGH
(SUPERVISOR)

Sign.....

EXAMINER(s)

Sign.....
Prof. M. Chakradhara Rao
Head of Department
CivilEngineeringDepartment,
School of Studies in Engineering andTechnology
SSSGuru GhasidasVishwavidyalaya

ABSTRACT

The planning of residential buildings requires adherence to national standards to ensure safety, functionality, and legal compliance. The **National Building Code (NBC) of India** provides comprehensive guidelines for the design and construction of residential structures. With advancements in technology, **AutoCAD software** has become an essential tool for architects and civil engineers to create precise and efficient building plans. This project aims to plan a residential building according to NBC norms using AutoCAD.

The process began with a thorough review of the NBC provisions related to residential buildings, focusing on aspects such as minimum plot size, floor area ratio (FAR), setbacks, ventilation, lighting, and fire safety. Based on these guidelines and client requirements, a suitable plot was chosen. Initial conceptual sketches were developed and then drafted into detailed 2D drawings using AutoCAD. These drawings included the site plan, floor plans, elevations, and sectional views. AutoCAD features like dimensioning, layering, and annotation were utilized to ensure technical accuracy and visual clarity.

This project highlights the effective integration of NBC standards with AutoCAD in residential building design. It showcases how modern drafting tools can improve design accuracy, speed up planning processes, and ensure compliance with national regulations.

SMART SOLUTIONS FOR MEASURING DISTANCES

Project Report Submitted in Partial Fulfillment of Academic Requirementfor the AwardofDegree of

BACHLOR OF TECHNOLOGY

In

CIVILENGINEERING

SubmittedBy
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Under The Guidance of

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ASSOCIATE PROFESSOR

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Certifiedthattheprojectreportentitled**"SMART SOLUTIONS FOR MEASURING DISTANCES"** submitted by RAHUL DEV and SHREYANSH SINGHin partial fulfillment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....01/5/2025.....

DR. ASHISH KUMAR PARASHAR

Sign. K Meshram 05/05/25

EXAMINER

05/05/25

DR. M.C.RAO
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

This project presents a smart, sensor-based solution for measuring distances using the Arduino Uno microcontroller and HC-SR04 ultrasonic sensors. The objective is to design a portable, efficient, and accurate system capable of measuring the length, width, and height of various structures and objects, and computing area and volume. The system includes a 16x2 LCD display, a Bluetooth module, and calibration mechanisms to enhance accuracy.

Through principles of echolocation, ultrasonic sensors calculate distance by sending and receiving sound waves. The Arduino processes this data and displays it in real-time. The project explores real-world applications such as room measurement, road width assessment, and bridge height detection, demonstrating the versatility of the system in civil engineering contexts.

To ensure data reliability, the system integrates error compensation techniques and supports Bluetooth-based mobile app integration for remote control and data logging. With an average error rate of around 5–10%, this smart measuring tool presents a cost-effective alternative to traditional manual methods, paving the way for future innovations in automated infrastructure measurement and smart construction practices.

Report on
Mini Project I (Code -CEUDPT1)

APPLICATION OF VASTU SHASTRA IN RESIDENTIAL SPACE USING AUTOCAD AND REVIT

Submitted BY

1. Vishwajeet Bhagat (23024148)
2. Sougata Karmakar (23024139)
3. Aishwary Raj Dua (23024150)

B. Tech IVth Semester

Under the Guidance

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Session 2024-25

DEPARTMENT OF CIVIL ENGINEERING
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Certified that the project report entitled **"APPLICATION OF VASTU SHASTRA IN RESIDENTIAL SPACE USING AUTOCAD AND REVIT"** submitted by **VISHWAJEET BHAGAT** (23024148),**SOUGATA KARMAKAR** (23024139), and **AISHWARY RAJ DUA** (23024150) in partial fulfillment of the requirements of the award of degree of Master of Technology in Structural Engineering, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....

MR. VINOD KUMAR
(SUPERVISOR)

Sign.....

Sign.....

EXAMINER(S)

Sign.....
Prof. M. Chakradhara Rao
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

AUTOCAD and **REVIT** is an essential tool in the engineering, design, and architecture industries, as it allows users to create precise and accurate designs quickly and efficiently. It includes various tools and features, such as drafting tools, annotation tools, and collaboration tools, that enable users to create complex designs and collaborate seamlessly.

The purpose of mini project is to develop a good learning in **AUTOCAD** and **REVIT** for designing any structural building's plan, elevation, section and 3D model according to VASTU SHASTRA. As a civil Engineer we are able to draw a complete a building plan of any residential building along with Vastu.

After the completion of this whole project, we will able to draw a complete plan and detailing of any structural building which will gives a major impact in our civil engineering career.

CHARACTERISATION OF LEACHATE AND IT'S IMPACT ON SURFACE & GROUND WATER QUALITY OF A CLOSED DUMPSITE- BILASPUR,(C.G.).

Project Report Submitted in Partial Fulfillment of Academic Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By

SNEHA SAHU (23024138)

UMESH KUMAR NIM (23024147)

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Under The Guidance of

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Session 2024-2025

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CERTIFICATE

Certified that the project report entitled "CHARACTERISATION OF LEACHATE AND IT'S IMPACT ON SURFACE & GROUND WATER QUALITY OF A CLOSED DUMPSITE- BILASPUR,(C.G.)." submitted by Sneha Sahu, Umesh Kumar Nim, Chandan Chandra and Likha Tai 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 Vishwvidyalaya Bilaspur is accorded to the student's work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....

Dr. Bijoli Mondal

1. 08/05/25

2.

Sign.....

EXAMINER(S)

Prof. M. CHAKRADHAR RAO
Head of Department
Civil Engineering Department,
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Guru Ghasidas Vishwavidyalaya

ABSTRACT

This study aims to assess the **CHARACTERISATION OF LEACHATE AND IT'S IMPACT ON SURFACE & GROUND WATER QUALITY OF A CLOSED DUMPSITE-BILASPUR,(C.G.).** The aim of the study is to assess the characteristics of leachate and its impact on surrounding agricultural land. Leachate samples were collected from active dumping areas, while soil and plant samples were taken from nearby agricultural sites. Key water quality parameters such as pH, dissolved oxygen (DO), biological oxygen demand (BOD), chemical oxygen demand (COD), and total dissolved solids (TDS), along with heavy metals including copper (Cu), zinc (Zn), lead (Pb), cadmium (Cd), and nickel (Ni), were analyzed.

The results indicated that untreated leachate had high concentrations of BOD (96 mg/l), COD (1343 mg/l), and TDS (7120 mg/l), exceeding standard environmental limits. In contrast, treated leachate showed improved values within acceptable limits. Although heavy metals in leachate were below toxic levels, the concentration of lead in soil and the levels of copper, zinc, and lead in plant samples exceeded critical thresholds.

These findings highlight the potential environmental and agricultural risks associated with untreated leachate. The study emphasizes the need for proper treatment of landfill leachate and regular monitoring of soil and plant health to minimize long-term adverse impacts on agricultural ecosystems.

A Mini Project on

COOL ROOF TECHNOLOGY USING PLASTIC STRUCTURE INSTEAD OF EASTHEN POTS

Report Submitted in partial fulfilment of Academic Project

Requirement for the Award of Degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted By

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Under The Guidance of

Dr. Nikhil Kumar Verma

Associate Professor

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2024- 2025

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Certified that the project report entitled **"COOL ROOF TECHNOLOGY USING PLASTIC STRUCTURE INSTEAD OF EARTHEN POTS"** submitted by TARUN JANARDAN JANGDE , AMAN RAJGIR, BHUPENDRA in partial fulfillment of the requirements of the award of degree of Bachelor of Technology *in Civil Engineering*, Department of Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur is accorded to the student's own work, carried out by him in the Department of Civil Engineering during session 2024-2025 under my supervision and guidance.

Sign.....02/05/2025.....

Dr. Nikhil Kumar Verma

Sign.....

Examiner(s)

Dr. M. Chakradhara. Rao
Head of Department
Civil Engineering Department,
School of Studies in Engineering and Technology
Guru Ghasidas Vishwavidyalaya

ABSTRACT

Climate change and urban heat islands are intensifying the demand for sustainable building solutions that address both thermal comfort and water scarcity. This study proposes the Hybrid Eco Cool Roof System, a novel, cost-effective, and climate-adaptive roofing innovation that combines passive cooling and atmospheric water harvesting. The system comprises vertically aligned recycled PET (Polyethylene Terephthalate) circular modules integrated beneath a PET sheet, supported by a layer of melted PET insulation and reinforced with a mortar-embedded mesh structure. This multi-layered arrangement creates an effective air insulation pocket and condensation interface for dew and fog water capture.

The design facilitates natural heat resistance, moisture collection, and structural durability while remaining lightweight and scalable. Preliminary simulations predict an indoor temperature reduction of 6–8°C during peak summer months, along with measurable atmospheric water yield. This integrated approach directly and indirectly addresses all 17 Sustainable Development Goals (SDGs), including clean water, affordable clean energy, climate action, sustainable cities, and responsible consumption.

The system requires minimal maintenance, uses recycled materials, and can be adapted across rural and urban environments. The results suggest a paradigm shift in sustainable infrastructure design, highlighting the feasibility of solving multiple global challenges through a single innovative intervention.