ACADEMIC YEAR (2021-2022)		
	J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY,T.N.PALAYAM **Approved by AICTE , new Delhi And Affiliated to anna University , Chennai.**	**Metric No 1.3.2**

S.No	Name of the course	course code	programme offering	Experimental learning		Number of students
				project work	internship	
Program specific courses						
(2021-2022)Regulation-2017						
1	Soil Mechanics	CE8491	Civil Engineering		✓	8
2	Design of Reinforced Cement Concrete Elements	CE8501	Civil Engineering	✓	✓	6
3	Water Supply Engineering	EN8491	Civil Engineering	✓		5
4	Foundation Engineering	CE8591	Civil Engineering	✓		4
5	Estimation and Quantity Surveying	CE8701	Civil Engineering	✓	✓	8
6	Project work	CE8811	Civil Engineering	✓		8

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T.N. Palayam (Po), Gobi (Tk), Erode (Dt) – 638 506

S.NO	REGISTER NUMBER	STUDENT NAME	PROJECT	INTERNSHIP
1	731218103001	GANGA M	✓	✓
2	731218103002	JAYASURIYA J	✓	✓
3	731218103003	KAVYA M	✓	
4	731218103005	MUNIESWARAN S	✓	✓
5	731218103006	RAJ KUMAR V	✓	✓
6	731218103009	TANA LALIK	✓	
7	731218103301	POORNIMA S	✓	✓
8	731218103302	TAMIL SELVI M	✓	✓

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DEPARTMENT OF CIVIL ENGINEERING

S.NO	Name Of The Course That Include Experiential Learning through Project/ Industrial Training / Industrial Visit
1	Soil Mechanics
2	Design of Reinforced Cement Concrete Elements
3	Water Supply Engineering
4	Foundation Engineering
5	Estimation and Quantity Surveying
6	Project Work

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PROJECT

CE8811 **PROJECTWORK** L T P C
0 0 20 10

OBJECTIVE:

- To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination.

STRATEGY:

The student works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction. The student will be evaluated based on the report and the viva voce examination by a team of examiners including one external examiner.

TOTAL: 300 PERIODS

OUTCOME:

- On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

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CE8491 **SOIL MECHANICS** L T P C

3 0 0 3

OBJECTIVE:

- To impart knowledge to classify the soil based on index properties and to assess their engineering properties based on the classification. To familiarize the students about the fundamental concepts of compaction, flow through soil, stress transformation, stress distribution, consolidation and shear strength of soils. To impart knowledge of design of both finite and infinite slopes.

UNIT I SOIL CLASSIFICATION AND COMPACTION 9

History – formation and types of soil – composition - Index properties – clay mineralogy structural arrangement of grains – description – Classification – BIS – US – phase relationship –Compaction – theory – laboratory and field technology – field Compaction method – factors influencing compaction.

UNIT II EFFECTIVE STRESS AND PERMEABILITY 9

Soil - water – Static pressure in water - Effective stress concepts in soils – Capillary phenomena– – Permeability – Darcy's law – Determination of Permeability – Laboratory Determination (Constant head and falling head methods) and field measurement pumping out in unconfined and confined aquifer – Factors influencing permeability of soils – Seepage - Two dimensional flow – Laplace's equation – Introduction to flow nets – Simple problems Sheet pile and wier.

UNIT III STRESS DISTRIBUTIONAND SETTLEMENT 9

Stress distribution in homogeneous and isotropic medium – Boussines of theory – (Point load, Line load and udl) Use of Newmarks influence chart –Components of settlement – Immediate and consolidation settlement – Factors influencing settlement – Terzaghi's one dimensional consolidation theory – Computation of rate of settlement. – √t and log t methods. e-log p relationship consolidation settlement N-C clays – O.C clays – Computation.

UNIT IV SHEAR STRENGTH 9

Shear strength of cohesive and cohesion less soils – Mohr-Coulomb failure theory – shear strength - Direct shear, Triaxial compression, UCC and Vane shear tests – Pore pressure parameters – Factors influences shear strength of soil.

UNIT V SLOPE STABILITY 9

Infinite slopes and finite slopes — Friction circle method – Use of stability number –Guidelines for location of critical slope surface in cohesive and c - soil – Slope protection measures.

TOTAL: 45 PERIODS

OUTCOMES:

Students will be able to

- classify the soil and assess the engineering properties, based on index properties.
- Understand the stress concepts in soils
- Understand and identify the settlement in soils.
- Determine the shear strength of soil
- Analyze both finite and infinite slopes.

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CE8591 **FOUNDATION ENGINEERING** L T P C

3 0 0 3

OBJECTIVE:

- To impart knowledge to plan and execute a detail site investigation programme, to select geotechnical design parameters and type of foundations. Also to familiarize the students for the geotechnical design of different type of foundations and retaining walls.

UNIT I SITE INVESTIGATION AND SELECTIONOF FOUNDATION 9

Scope and objectives – Methods of exploration – Auguring and boring – Wash boring and rotary drilling – Depth and spacing of bore holes – Soil samples – Representative and undisturbed – Sampling methods – Split spoon sampler, thin wall sampler, Stationary piston sampler – Penetration tests (SPT and SCPT) – Data interpretation - Strength parameters - Bore log report and Selection of foundation.

UNIT II SHALLOW FOUNDATION 9

Location and depth of foundation – Codal provisions – Bearing capacity of shallow foundation on homogeneous deposits – Terzaghi's formula and BIS formula – Factors affecting bearing capacity – Bearing capacity from in-situ tests (SPT, SCPT and plate load) – Allowable bearing pressure – Seismic considerations in bearing capacity evaluation. Determination of Settlement of foundations on granular and clay deposits – Total and differential settlement – Allowable settlements – Codal provision – Methods of minimizing total and differential settlements.

UNIT III FOOTING SAND RAFTS 9

Types of Isolated footing, Combined footing, Mat foundation – Contact pressure and settlement distribution – Proportioning of foundations for conventional rigid behavior – Minimum thickness for rigid behavior – Applications – Compensated foundation – Codal provision

UNIT IV PILE FOUNDATION 9

Types of piles and their functions – Factors influencing the selection of pile – Carrying capacity of single pile in granular and cohesive soil – Static formula – Dynamic formulae (Engineering news and Hileys) – Capacity from in situ tests (SPT and SCPT) – Negative skin friction – Uplift capacity- Group capacity by different methods (Field's rule, Converse – Labarra formula and block failure criterion) – Settlement of pile groups – Interpretation of pile load test (routine test only), Under reamed piles – Capacity under compression and uplift – Cohesive – expansive – non expansive – Cohesion less soils – Codal provisions.

UNIT V RETAINING WALLS 9

Plastic equilibrium in soils – Active and passive states – Rankine's theory – Cohesion less and cohesive soil – Coulomb's wedge theory – Condition for critical failure plane – Earth pressure on retaining walls of simple configurations – Culmann's Graphical method – Pressure on the wall due to line load – Stability analysis of retaining walls – Codal provisions.

TOTAL: 45 PERIODS

OUTCOMES:

Students will be able to

- Understand the site investigation, methods and sampling.
- Get knowledge on bearing capacity and testing methods.
- Design shallow footings.
- Determine the load carrying capacity, settlement of pile foundation.
- Determine the earth pressure on retaining walls and analysis for stability.

AN EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH COCONUT SHELL

PROJECT REPORT

Submitted by

RAJKUMAR.V	**731218103006**
TANA LALIK	**731218103009**
POORNIMA. S	**731218103301**

In partial fulfilment for the requirement of award of the degree

of

BACHELOR OF ENGINEERING

In

DEPARTMENT OF CIVIL ENGINEERING

J.K.K. MUNIRAJAH COLLEGE OF TECHNOLOGY

T.N PALAYAM

ANNA UNIVERSITY::CHENNAI 600 025

JUNE- 2022

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

BONAFIDE CERTIFICATE

This is to certify that the project titled, **"AN EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH COCONUT SHELL"** is approved record of work done by **RAJKUMAR. V (731218103006), TANA LALIK (731218103009) and POORNIMA.S (731218103301)** in partial fulfilment for the award of **Bachelor of Civil Engineering** of Anna University of technology during the year 2021-2022.

I. Benazir 23/6/22

SIGNATURE

Mrs. I. BENAZIR BANU, M.E.,

SUPERVISOR

Assistant professor

Department of Civil Engineering

J K K Munirajah College of Technology

T N Palayam – 638 506

23/6/22

SIGNATURE

Mrs.V.MOHANAPRIYA., M.E.,

HEAD OF THE DEPARTMENT

Assistant professor

Department of Civil Engineering

J K K Munirajah College of Technology

T N Palayam – 638 506

Submitted for the end semester viva-voce examination held on 23.06.2022.

23/6/22

Internal Examiner

External Examiner

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.

ABSTRACT

The high cost of conventional construction material affects and economy of structure. The possibility of utilizing recycled coconut shell aggregate in concrete as coarse aggregate is examined in the present study. The coconut shell material is the light weight material produced light weight concrete. The replacement of coarse aggregate of coconut shell by 25%,50% and 75% design mix M20 and testing of specimen are conducted 7,14, and 28 days of curing. The compressive strength, split tensile test and flexural test concrete test the main objective is to encourage the use of these waste product as construction.

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CHAPTER 9

CONCLUSION

The purpose of this research is to compare and find out the characteristic strength of M-20 grade Coconut Shell Concrete at the water cement ratio of 0.50. Using the waste coconut shell by replacing fast depleting conventional aggregate source construction material and thereby getting the solution for social and environmental issues. Based on experimental investigations concerning the compressive strength of concrete, the following observations are drawn:

1. On 25% partial replacement of natural coarse aggregate with Waste Coconut Shell, Compressive Strength ofcoconut shell concrete has obtained 18.22 N/mm^2 at 28 days. 50% partial replacement of natural coarse aggregate with Waste Coconut Shell, Compressive Strength of coconut shell concrete has obtained 19.22 N/mm^2 at 28 days. 75% partial replacement of natural coarse aggregate with Waste Coconut Shell, Compressive Strength of coconut shell concrete has obtained 19.82 N/mm^2 at 28 days.
2. Thus, making the replacement both technically and economically feasible and viable. On further replacement, decrease in the compressive strength of Coconut Shell Concrete has been observed.
3. Experimental results and discussions of researches on coconut shell confirm that the coconut shell has potential as lightweight aggregate in concrete. Also, using the coconut shell as aggregate in concrete can reduce the material cost in construction because of the low cost and its abundant agricultural waste.
4. Coconut Shell Concrete can also be for non-structural members eg. partition wall, hollow concrete brick, floors tiles etc.
5. Use of coconut shell waste as aggregate will reduce depletion of natural sources of conventional aggregate and will also be helpful to make eco - friendly environment.

Gmail

Internship
1 message

Thu Feb 24,2022 at 3.00 PM

From: V.Mohanapriya < priyaharesh93@gmail.com>
Date: Thu Feb 24,2022 at 3.00 PM
Subject:Internship - reg
To: AGN Construction <agnconstruction@gmail.com>

DearSir ,

I am requesting to be joining your AGN CONSTRUCTION. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students:**(POORNIMA S, RAJKUMAR V,TANALALIK)**

Sincerely,

Head Of The Depatment –(CIVIL) ,
JKK Munirajah College of Technology,
T.N.Palayam, Erode-638506, Tamilnadu.

PRINCIPAL
JKK MUNIRAJAH COLLE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

Gmail

Internship
1 message

Wed 02 March 2022 at 2.00 pm

From: AGN Construction <agnconstruction@gmail.com>
Date: Wed 02 March 2022 at 2.00 pm
Subject:Internship - reg
To: V.Mohanapriya <priyaharesh93@gmail.com>

Dear **Sir ,**

I am writing to confirm my acceptance of your internship offer of 16/03/2022 TO 30/04/2022 and to tell you how delighted I am to be joining your AGN CONSTRUCTION. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

As we discussed, I will report at 8:00 a.m. on MARCH 16,2022 and will be ready to take on my first assignment as an intern for your company. Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students(POORNIMA S, RAJKUMAR V,TANALALIK)

Sincerely,

R.GANAPTHY
AGN CONSTRUCTION ,
350,ASIRIYAR NAGAR ,GOBI.

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

AGN Construction

INTERNSHIP CERTIFICATE

TO WHOM SO EVER IT MAYCONCERN

This is to certify that **POORNIMA S** Final year in civil Engineering Register no. **7312181103301** student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi (T.K), Erode (Dt) – 638506 has undergone the **Intern** training in our concern, work site at AGN Constructions site building from 16/03/2022-30/04/2022 .Her conduct and character was good during the training period.

FOR AGN

PRINCIPAL
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OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

DATE:30/04/2022

AUTHORIZED SIGNATURE

Office Address:
350, Asiriyar Nagar, Gobi (Tk), Erode (Dt)
Mobile no: 96290 20356, 98437 68536

AGN Construction

INTERNSHIP CERTIFICATE

TO WHOM SO EVER IT MAYCONCERN

This is to certify that **RAJKUMAR V** Final year in civil Engineering Register no. **731218103 006** student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi (T.K), Erode (Dt) – 638506 has undergone the **Intern** training in our concern, work site at AGN Constructions site building from 16/03/2022-30/04/2022 .His conduct and character was good during the training period.

FOR AGN

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

DATE:30/04/2022

AUTHORIZED SIGNATURE

Office Address:
350, Asiriyar Nagar, Gobi (Tk), Erode (Dt).
Mobile no: 96290 20356, 98437 68536

AGN Construction

INTERNSHIP CERTIFICATE

TO WHOM SO EVER IT MAYCONCERN

This is to certify that **TANA LALIK** Final year in civil Engineering Register no. **731218103009** student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi (T.K), Erode (Dt) – 638506 has undergone the **Intern** training in our concern, work site at AGN Constructions site building from 16/03/2022-30/04/2022 .His conduct and character was good during the training period.

FOR AGN

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OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

DATE:30/04/2022

AUTHORIZED SIGNATURE

Office Address:
350, Asiriyar Nagar, Gobi (Tk), Erode (Dt)
Mobile no: 96290 20356, 98437 68536

CE8701 ESTIMATION, COSTING ANDVALUATIONENGINEERING L T PC
3 0 0 3

OBJECTIVE:

- The students will acquire knowledge in estimation, tender practices, contract procedures, and valuation and will be able to prepare estimates, call for tenders and execute works.

UNITI QUANTITYESTIMATION **9**

Philosophy – Purpose – Methods of estimation – Types of estimates – Approximate estimates – Detailed estimate – Estimation of quantities for buildings, bituminous and cement concrete roads, septic tank, soak pit, retaining walls – culverts (additional practice in class room using computer softwares)

UNITII RATE ANALYSIS ANDCOSTING **9**

Standard Data – Observed Data – Schedule of rates – Market rates – Standard Data for Man Hours and Machineries for common civil works – Rate Analysis for all Building works, canals, and Roads– Cost Estimates (additional practice in class room using Computer softwares) - (Analysis of rates for the item of work asked, the data regarding labour , rates of material and rates of labour to be given in the Examination Question Paper)

UNITIII SPECIFICATIONS, REPORTSANDTENDERS **9**

Specifications – Detailed and general specifications – Constructions – Sources – Types of specifications – Principles for report preparation – report on estimate of residential building – Culvert – Roads – TTT Act 2000 – Tender notices – types – tender procedures – Drafting model tenders , E-tendering-Digital signature certificates- Encrypting -Decrypting – Reverse auctions.

UNITIV CONTRACTS **9**

Contract – Types of contracts – Formation of contract – Contract conditions – Contract for labour, material, design, construction – Drafting of contract documents based on IBRD / MORTH Standard bidding documents – Construction contracts – Contract problems – Arbitration and legal requirements.

UNITV VALUATION **9**

Definitions – Various types of valuations – Valuation methods - Necessity – Capitalised value – Depreciation – Escalation – Valuation of land – Buildings – Calculation of Standard rent – Mortgage – Lease

TOTAL: 45 PERIODS

OUTCOMES:

The student will be able to

- Estimate the quantities for buildings,
- Rate Analysis for all Building works, canals, and Roads and Cost Estimate
- Understand types of specifications, principles for report preparation, tender notices types.
- Gain knowledge on types of contracts
- Evaluate valuation for building and land.

CE8501 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS L T P C
3 2 0 4

OBJECTIVES:

- To introduce the different types of philosophies related to design of basic structural elements such as slab, beam, column and footing which form part of any structural system with reference to Indian standard code of practice.

UNIT I INTRODUCTION **9+6**

Objective of structural design-Steps in RCC Structural Design Process- Type of Loads on Structures and Load combinations- Code of practices and Specifications - Concept of Working Stress Method, Ultimate Load Design and Limit State Design Methods for RCC –Properties of Concrete and Reinforcing Steel - Analysis and Design of Singly reinforced Rectangular beams by working stress method - Limit State philosophy as detailed in IS code - Advantages of Limit State Method over other methods - Analysis and design of singly and doubly reinforced rectangular beams by Limit State Method.

UNIT II DESIGN O FBEAMS **9+6**

Analysis and design of Flanged beams for – Use of design aids for Flexure - Behavior of RC members in Shear, Bond and Anchorage - Design requirements as per current code - Behavior of rectangular RC beams in shear and torsion - Design of RC members for combined Bending, Shear and Torsion.

UNIT III DESIGN OF SLABS AND STAIRCASE **9+6**

Analysis and design of cantilever, one way simply supported and continuous slabs and supporting beams-Two way slab- Design of simply supported and continuous slabs using IS code coefficients-Types of Staircases – Design of dog-legged Staircase.

UNIT IV DESIGN OF COLUMNS **9+6**

Types of columns –Axially Loaded columns – Design of short Rectangular Square and circular columns –Design of Slender columns- Design for Uni axial and Biaxial bending using Column Curves

UNIT V DESIGN OF FOOTINGS **9+6**

Concepts of Proportioning footings and foundations based on soil properties-Design of wall footing – Design of axially and eccentrically loaded Square, Rectangular pad and sloped footings – Design of Combined Rectangular footing for two columns only.

TOTAL: 75 PERIODS

OUTCOMES:

Students will be able to

- Understand the various design methodologies for the design of RC elements.
- Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.
- design the various types of slabs and staircase by limit state method.
- Design columns for axial, uniaxial and biaxial eccentric loadings.
- Design of footing by limit state method.

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CE8811	PROJECTWORK	L T P C 0 0 20 10

OBJECTIVE:

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STRATEGY:

The student works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction. The student will be evaluated based on the report and the viva voce examination by a team of examiners including one external examiner.

TOTAL: 300 PERIODS

OUTCOME:

- On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

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GOBI (Tk), ERODE (Dt).

AN EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT BY CHALK PIECE POWDER

PROJECT REPORT

Submitted by

GANGA.M	**731218103001**
KAVYA .M	**731218103003**
MUNIESWARAN.S	**731218103001**

In partial fulfilment for the requirement of award of the degree

of

BACHELOR OF ENGINEERING

in

DEPARTMENT OF CIVIL ENGINEERING

J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY

T.N PALAYAM

ANNA UNIVERSITY: CHENNAI 600 025

JUNE - 2022

BONAFIDE CERTIFICATE

This is to certify that the project titled, "**AN EXPERIMENTAL, INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT BY CHALK PIECE POWDER**" is approved record of work done by **GANGA.M (731218103001), KAVYA.M (7312181030003) and MUNIESWARAN.S (731218103005)** in partial fulfilment for the award of **Bachelor of Civil Engineering** of Anna University of technology during the year 2021-2022.

V. Sathi

SIGNATURE

Ms. V.SATHIYAPRIYA., M.E.

SUPERVISOR

Assistant professor

Department of Civil Engineering

JKK Munirajah College of Technology

T N Palayam – 638 506

23/6/22

SIGNATURE

Mrs. MOHANAPRIYA., M.E.,

HEAD OF THE DEPARTMENT

Assistant professor

Department of Civil Engineering

JKK Munirajah College of Technology

T N Palayam – 638 506

Submitted for the end semester viva-voce examination held on - 23 - 06 - 2022

23/6/22

Internal Examiner

External Examiner

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

ABSTRACT

This experimental study desires to answer the problem faced by the construction industry due to scarcity of construction materials at the time of needy situation. Thus we initiated to use "CHALK PIECE POWDER" as replacement of cement to lessen the required volume of fine aggregate and depreciate its cost as well as to support economic problem. Sample were made in the proportion of 25%, 50%, 75% and 100% in which "CHALK PIECE POWDER" are being every sample had undergone curing period, specimen was being tested and determined its compressive strength, flexural strength and tensile strength. First sample which has 0% of replacement whereas 25%, 50%, 75%, 100% of replacement were done statistically as per the calculation and the requirement.

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GOBI (Tk), ERODE (Dt).

CHAPTER 10

CONCLUSION

On the basis of results obtained ,following conclusion can be drawn

1. 75% replacement of the chalk piece powder showed 15% increase in compressive strength at 7 days and 25%increase in compressive strength at 28 days.

2. Cement can be replaced by chalk piece powder up to 75% by weight showing 10% increasing in compressive strength at 28 days.

3. With increase in chalk piece powder content , percentage water absorption decreases.

4. With increase in chalk piece content , average weight decreases by 10% for mixture with 75% chalk piece content thus making chalk piece concrete light weight .

5. Workability of concrete mix increases with increase in chalk piece powder content.

Gmail

Internship
1 message

Thu March 24,2022 at 4.00 pm

From: V.Mohanapriya <priyaharesh93@gmail.com>
Date : Thu March 24,2022 at 4.00 pm
Subject:Internship - reg
To: Q RMC COMPANY <qrmc company @gmail.com>

Dear SIR ,

I am requesting to be joining your **Q RMC COMPANY**. The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students: (GANGA M ,KAVYA M, MUNIESWARAN S)

Sincerely,

Head Of The Department –(CIVIL),
JKK Munirajah College of Technology,
T.N.Palayam, Erode-638506, Tamilnadu.

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

Gmail

Internship
1 message

Sat 26 Feb ,2022 at 2.00 pm

From: Q RMC COMPANY<q rmc company @gmail.com>
Date: Sat 26 Feb ,2022 at 2.00 pm
Subject: Internship - reg
To:**V.Mohanapriya** <priyaharesh93@gmail.com>

Dear **sir**,

I am writing to confirm my acceptance of your internship offer of 16/03/2022 TO 30/04/0202 and to tell you how delighted I am to be joining your **Q RMC COMPANY.** The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

As we discussed, I will report at 8:00 a.m. on MARCH 16 ,2022 and will be ready to take on my first assignment as an intern for your company. Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students: (GANGA M ,KAVYA M, MUNIESWARAN S)

Sincerely,

ARIVUVALAGAN B
Q RMC COMPANY
ARASUR AMMAN NAGAR ,
COIMBATORE .

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

Q RMC

INTERNSHIP CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **KAVYA M** , **Fourth** - year in civil engineering Register No. **731218103003** student of J.K.K. Munirajah college of technology at T.N.Palayam , Gobi (TK) , Erode (Dt) -638 506 had undergone the inplant training in our concern ,work site at residential building at **16/03/2022 TO 30/04/2022** . Her conduct and character was good during the training period.

FOR Q RMC

Date :.30/04/2022

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

AUTHORIZED SIGNATORY

Office Address:
SF No.83, East Arasur Village, Arasur Amman Nagar, Coimbatore - 641 407.

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This is to certify that **MUNIESWARAN S,** **Fourth**-year in civil engineering Register No. **731218103005** student of J.K.K. Munirajah college of technology at T.N.Palayam , Gobi (TK) , Erode (Dt) -638 506 had undergone the inplant training in our concern ,work site at residential building at **16/03/202 to 30/04/2022** . His conduct and character was good during the training period.

Date : **30/04/2022**

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JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
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GOBI (Tk), ERODE (Dt).

FOR Q RMC

AUTHORIZED SIGNATORY

Office Address:
SF No.83, East Arasur Village, Arasur Amman Nagar, Coimbatore - 641 407.

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This is to certify that **GANGA M** , **Fourth** - year in civil engineering Register No. **731218103001** student of J.K.K. Munirajah college of technology at T.N.Palayam , Gobi (TK) , Erode (Dt) -638 506 had undergone the inplant training in our concern ,work site at residential building at **16/03/2022 TO 30/04/2022** Her conduct and character was good during the training period.

Date :30/04/2022

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AUTHORIZED SIGNATORY

Office Address:
SF No.83, East Arasur Village, Arasur Amman Nagar, Coimbatore - 641 407.

CE8491	SOIL MECHANICS	L T P C
		3 0 0 3

OBJECTIVE:

- To impart knowledge to classify the soil based on index properties and to assess their engineering properties based on the classification. To familiarize the students about the fundamental concepts of compaction, flow through soil, stress transformation, stress distribution, consolidation and shear strength of soils. To impart knowledge of design of both finite and infinite slopes.

UNIT I SOIL CLASSIFICATION AND COMPACTION 9

History – formation and types of soil – composition - Index properties – clay mineralogy structural arrangement of grains – description – Classification – BIS – US – phase relationship –Compaction – theory – laboratory and field technology – field Compaction method – factors influencing compaction.

UNIT II EFFECTIVE STRESS AND PERMEABILITY 9

Soil - water – Static pressure in water - Effective stress concepts in soils – Capillary phenomena– – Permeability – Darcy's law – Determination of Permeability – Laboratory Determination (Constant head and falling head methods) and field measurement pumping out in unconfined and confined aquifer – Factors influencing permeability of soils – Seepage - Two dimensional flow – Laplace's equation – Introduction to flow nets – Simple problems Sheet pile and wier.

UNIT III STRESS DISTRIBUTIONAND SETTLEMENT 9

Stress distribution in homogeneous and isotropic medium – Boussines of theory – (Point load, Line load and udl) Use of Newmarks influence chart –Components of settlement – Immediate and consolidation settlement – Factors influencing settlement – Terzaghi's one dimensional consolidation theory – Computation of rate of settlement. – √t and log t methods. e-log p relationship consolidation settlement N-C clays – O.C clays – Computation.

UNIT IV SHEAR STRENGTH 9

Shear strength of cohesive and cohesion less soils – Mohr-Coulomb failure theory – shear strength - Direct shear, Triaxial compression, UCC and Vane shear tests – Pore pressure parameters – Factors influences shear strength of soil.

UNIT V SLOPE STABILITY 9

Infinite slopes and finite slopes — Friction circle method – Use of stability number –Guidelines for location of critical slope surface in cohesive and c - soil – Slope protection measures.

TOTAL: 45 PERIODS

OUTCOMES:

Students will be able to

- classify the soil and assess the engineering properties, based on index properties.
- Understand the stress concepts in soils
- Understand and identify the settlement in soils.
- Determine the shear strength of soil
- Analyze both finite and infinite slopes.

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CE8701 **ESTIMATION, COSTING ANDVALUATIONENGINEERING** L T PC
3 0 0 3

OBJECTIVE:

- The students will acquire knowledge in estimation, tender practices, contract procedures, and valuation and will be able to prepare estimates, call for tenders and execute works.

UNITI QUANTITYESTIMATION 9

Philosophy – Purpose – Methods of estimation – Types of estimates – Approximate estimates – Detailed estimate – Estimation of quantities for buildings, bituminous and cement concrete roads, septic tank, soak pit, retaining walls – culverts (additional practice in class room using computer softwares)

UNITII RATE ANALYSIS ANDCOSTING 9

Standard Data – Observed Data – Schedule of rates – Market rates – Standard Data for Man Hours and Machineries for common civil works – Rate Analysis for all Building works, canals, and Roads– Cost Estimates (additional practice in class room using Computer softwares) - (Analysis of rates for the item of work asked, the data regarding labour , rates of material and rates of labour to be given in the Examination Question Paper)

UNITIII SPECIFICATIONS, REPORTSANDTENDERS 9

Specifications – Detailed and general specifications – Constructions – Sources – Types of specifications – Principles for report preparation – report on estimate of residential building – Culvert – Roads – TTT Act 2000 – Tender notices – types – tender procedures – Drafting model tenders , E-tendering-Digital signature certificates- Encrypting -Decrypting – Reverse auctions.

UNITIV CONTRACTS 9

Contract – Types of contracts – Formation of contract – Contract conditions – Contract for labour, material, design, construction – Drafting of contract documents based on IBRD / MORTH Standard bidding documents – Construction contracts – Contract problems – Arbitration and legal requirements.

UNITV VALUATION 9

Definitions – Various types of valuations – Valuation methods - Necessity – Capitalised value – Depreciation – Escalation – Valuation of land – Buildings – Calculation of Standard rent – Mortgage – Lease

TOTAL: 45 PERIODS

OUTCOMES:

The student will be able to

- Estimate the quantities for buildings,
- Rate Analysis for all Building works, canals, and Roads and Cost Estimate.
- Understand types of specifications, principles for report preparation, tender notices types.
- Gain knowledge on types of contracts
- Evaluate valuation for building and land.

CE8811 **PROJECTWORK** **L T P C**
0 0 20 10

OBJECTIVE:

- To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination.

STRATEGY:

The student works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction. The student will be evaluated based on the report and the viva voce examination by a team of examiners including one external examiner.

TOTAL: 300 PERIODS

OUTCOME:

- On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

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AN EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT OF CEMENT WITH REDMUD

A PROJECT REPORT

Submitted By

JAYASURYA.J	**731218103002**
THAMILSELVI.M	**731218103302**

in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

in

CIVIL ENGINEERING

JKK MUNIRAJAH COLLEGE OF TECHNOLOGY

TN-PALAYAM – 638 506

ANNA UNIVERSITY: CHENNAI 600 025

JUNE - 2022

BONAFIDE CERTIFICATE

Certified that this project report is the titled "**EXPRIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT WITH REDMUD**" is approved record of work done by **JAYASURYA.J (731218103002) & THAMILSELVI.M (731218103302)** impartial fulfillment for the award of **Bachelor of Civil Engineering** of Anna University, Chennai Technology during the year 2022.

23/06/22

SIGNATURE

Mrs.P. REENA., M.E.

SUPERVISOR

Department of Civil Engineering,

J K K Munirajah College of Technology

T.N. Palayam – 638506

23/6/22

SIGNATURE

Mrs.V. MOHANAPRIYA., M.E.,

HEAD OF THE DEPARTMENT

Department of Civil Engineering,

J K K Munirajah College of Technology

T.N. Palayam – 638506

Submitted for the project viva-voice examination held on ..23-06-2022.....

23/6/22

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

ABSTRACT

This research investigates experimentally behavior of red mud with concrete. In this study, the cement replaced with various percentage of red mud in concrete and checked out various mechanical properties. Red mud replace with cement and different percentages (25%, 50% and 75%) and also it effects on the strength and other properties of concrete. That is checked for different grades of concrete M25. The mechanical properties investigated in current study include compressive strength, split tensile strength, flexural strength and study on red mud. Red mud, cement, industrial waste, mechanical properties of concrete

The compressive strength, flexural strength and split tensile strength of concrete curing and tested for (7, 14 & 28) days has been found to the replacements of concrete. The results show as effective for practical purpose.

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CHAPTER 9

CONCLUSION

This work relates to the usage of the red mud residue from alumina plant, a waste cheap material used in the concrete mixtures. The following conclusions were drawn based on the experimental investigations carried and the results obtained from those tests, which are as follows:

9.1 The study concluded that compressive strength of the concrete improved by 4 to 10 % up to replacement level of red mud with cement by 15 %.

9.2 It could be said that replacement of red mud with cement improved the spilt tensile strength up to 4% for the replacement percentage of 15%.

9.3 The compressive strength results of cubes and split tensile strengths of cylinder show that the optimum percentage of replacement of red mud with that of cement was 15%

9.3 The workability of concrete increases at all the percentage replacements containing 29% moisture content in red mud.

9.4 The first crack load was 45 KN for both sample concrete beams with 0 % replacement of red mud. The first crack load was 50 KN for both sample concrete beams with 5 % replacement of red mud. The first crack load was 50 and 55 KN for sample concrete beams with 10 % replacement of red mud.

9.5 The first crack load was 60 KN for both sample concrete beams with 15 % replacement of red mud. The first crack load was 40 KN for both sample concrete beams with 20 % replacement of red mud.

9.6 For higher replacement of red mud in cement (greater than 15%) the compressive and split tensile strength decreases due to an increase of free water content in the mix.

Hence the mix proportion containing 15 % red mud is the optimum mix that can be usedfor construction purposes.

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Gmail

Internship
1 message

Thu Feb 24,2022 at 2.00 pm

From: V.Mohanapriya <priyaharesh93@gmail.com>
Date : Thu Feb 24,2022 at 2.00 pm
Subject:Internship - reg
To: MAXCADD MAXCADD <maxcadd@gmail.com>

Dear SIR ,

I am requesting to be joining your **MAXCADD, COIMBATORE.** The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students: (JAYASURIYA J, TAMIL SELVI M)

Sincerely,

Head Of The Department –(CIVIL),
JKK Munirajah College of Technology,
T.N.Palayam, Erode-638506, Tamilnadu.

PRINCIPAL
JKK MUNIRAJAH COLLEGE
OF TECHNOLOGY
T.N. PALAYAM (Po)-638 506.
GOBI (Tk), ERODE (Dt).

Gmail

Internship
1 message

Tue 09 Mar 2022 at 3.00 pm

From: MAXCADD MAXCADD <maxcadd@gmail.com>
Date: Tue 09 Mar 2022 at 3.00 pm
Subject: Internship - reg
To: **V.Mohanapriya** <priyaharesh93@gmail.com>

Dear **sir**,

I am writing to confirm my acceptance of your internship offer of 16/03/2022 TO 30/04/2022 and to tell you how delighted I am to be joining your **MAXCADD, COIMBATORE MAXCADD, COIMBATORE.** The requirements are exactly what I have prepared for and hoped to do. I feel confident that I can make a significant contribution to your organization while at the same time learning from your staff.

As we discussed, I will report at 8:00 a.m. on MARCH 16 ,2022 and will be ready to take on my first assignment as an intern for your company. Additionally, I shall complete all insurance forms for the new intern orientation. I look forward to working with you and your fine team. I appreciate your confidence in me and providing the chance to work with and observe your outstanding staff.

Ref: following the students: (JAYASURIYA J, TAMIL SELVI M)

Sincerely,

RAMESH .G
MAXCADD ,COIMBATORE .

PRINCIPAL
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ISO 9001:2008 Certified Training Centre

DATE:30/04/2022

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This is to certify that **THAMILSELVI M** *Final year in civil engineering Reg No.* **731218103302** *student of J.K.K. Munirajah college of technology at T.N.Palayam , Gobi (TK) , Erode (Dt) -638 506 completed the training course on work site at residential building at* **16/03/2022 to 30/04/2022** .Her *conduct and character was good during the training period.*

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AUTHORIZED SIGNATORY

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DATE:30/04/2022

INTERNSHIPCERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **JAYA SURYA J** - **Final** *year in civil engineering Reg No.* **731218103002** *student of J.K.K. Munirajah college of technology at T.N.Palayam , Gobi (TK) , Erode (Dt) -638 506 completed the training course on work site at residential building at* **16/03/2022 to 30/04/2022** *. His conduct and character was good during the training period.*

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