



**J.K.K. MUNIRAJAH COLLEGE OF
TECHNOLOGY
(AUTONOMOUS)**



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

2023-2024

DEPARTMENT OF CIVIL ENGINEERING

S.NO	REGISTER NUMBER	STUDENT NAME	PROJECT	INTERNSHIP
1	731220103001	R.DIVAKAR	✓	✓
2	731221103301	S.SUSITHRA		✓
3	731221103301	B.ANANDHAN		✓
4	731221103301	S.MADHESHWARAN		✓

Principal

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DEPARTMENT OF CIVIL ENGINEERING

2023-2024

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

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PROJECT



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DEPARTMENT OF CIVIL ENGINEERING

PROJECT BATCH LIST (2023-24)

S.NO	REGISTER NO	NAME LIST	PROJECT TITLE	GUIDE NAME
1	731220103001	DIVAKAR R	AN EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT OF SAND WITH INDUSTRIAL TEXTILE WASTE	Mrs.V.MOHANAPRIYA

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**AN EXPERIMENTAL INVESTIGATION OF
PARTIAL REPLACEMENT OF SAND WITH
INDUSTRIAL TEXTILE WASTE**



A PROJECT REPORT

Submitted by

DIVAKAR.R

(731220103001)

In partial fulfillment 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 - 638 506

ANNA UNIVERSITY, CHENNAI - 600025

MAY-2024

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BONAFIDE CERTIFICATE

This is to certify that the project report TITLED "AN EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT OF SAND WITH INDUSTRIAL TEXTILE WASTE" is approved record of work done by R.DIVAKAR (731220103001), in partial fulfillment for the award of bachelor of civil engineering of Anna University of technology during the year 2023-2024.



SIGNATURE

Mrs. V. MOHANAPRIYA, M.E.,

SUPERVISOR

Department of civil engineering

J.K.K Munirajah College of Technology

T.N.palayam-638 506



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

HEAD OF THE DEPARTMENT

Department of civil engineering

J.K.K Munirajah College of Technology

T.N.palayam-638 506

Submitted for the end semester viva voice examination held on 11.5.2024



INTERNAL EXAMINER



EXTERNAL EXAMINER



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ABSTRACT

The concrete industry is constantly seeking innovative methods to enhance sustainability while maintaining performance standards. This study explores the feasibility of incorporating industrial textile waste (ITW) as a partial replacement for sand in concrete mixtures. The experiment investigates the mechanical, durability, and micro structural properties of concrete specimens with varying percentages of ITW substitution. Concrete mixtures with 0%, 10%, 20%, and 30% replacement levels by weight of sand are prepared and tested according to relevant ASTM standards. The study evaluates compressive strength, flexural strength, and water absorption characteristics of the specimens to assess the effects of ITW incorporation on concrete performance. Additionally, scanning electron microscopy (SEM) analysis is conducted to examine the microstructure of the concrete matrix with ITW particles. The findings of this research aim to provide insights into the potential of utilizing ITW as a sustainable alternative in concrete production, contributing to waste reduction and environmental conservation efforts in the construction industry.



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CHAPTER - 1

INTRODUCTION

1.1 GENERAL

Globally, the depletion of natural resources continues to accelerate while huge quantities of waste are still piling up. Each year, the construction sector uses more than 3 billion tons of raw materials.

At the international level, great efforts are being made to build a more sustainable economy through the transition from a linear economy to a circular economy.

At the national scale, Romania's sustainable development strategy for 2030 includes the transition to a circular economy. By increasing construction productivity and adopting circular economy concepts, we can reduce waste and save more than USD 100 billion annually.

At present, the influences of each type of waste (construction and demolition wastes and textile wastes) on the properties of concrete are studied. Some research outcomes in the study of concrete with textile wastes and concrete with crushed bricks wastes are presented below.

Due to the rapidly evolving fashion industry, there is a steady increase in the production of textile fibers, textile consumption, and textile waste. Over 9.5 million tons of textiles are used in Europe each year, of which 5.6 million tons are discarded. The combined municipal solid waste stream contains more than 4 million tons of textile waste that are not collected separately.



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CHAPTER - 8

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.**
- **Study concluded that compressive strength of the concrete improved by 5 to 10% up to replacement level of textile waste with sand by 15%.**
- **It could be said that replacement of textile waste with sand improved the split tensile strength up to 5% for the replacement percentage of 15%.**
- **The compressive strength results of cubes and split tensile strengths of cylinder show that the optimum percentage of replacement of textile waste with that of sand was 15%**
- **The workability of concrete increases at all the percentage replacements containing 29% moisture content in red mud.**
- **The first crack load was 45 KN for both sample concrete beams with 0% replacement of textile waste. The first crack load was 50 KN for both sample concrete beams with 5% replacement of textile waste. The first crack load was 50 and 55 KN for sample concrete beams with 10% replacement of textile waste.**
- **The first crack load was 60 KN for both sample concrete beams with 15% replacement of textile waste. The first crack load was 40 KN for both sample concrete beams with 20% replacement of textile waste. For higher replacement of textile waste in sand (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% textile waste is the optimum mix that can be used for construction purposes.**

INTERNSHIP



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DEPARTMENT OF CIVIL ENGINEERING

INTERNSHIP DETAILS (2023-24)

S. N	REGISTER NO	NAME OF THE STUDENT	NAME OF THE COMPANY	LOCATION	DATE
1	731220103001	DIVAKAR R	VJAI BUILDER Planners And Constructions	ER.R.VIJAY HIRETHTHIK 1B/3,B.A.S COMPLEXM,MARKET MAIN ROAD , ANTHIYUR CORNER, BHAVANI- 638301, ERODE DT	18.03.2024 TO 13.04.2024
2	731221103301	SUSITHRA S			
3	731222103001	ANANDHAN B			
4	731222103301	MADHESHWARAN S			

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CO3 Understand the basic concept of stress distribution in loaded soil medium and soil settlement due to consolidation

CO4 Show the understanding of shear strength of soils and its impact of engineering solutions to the loaded soil medium and also will be aware of contemporary issues on shear strength of soils.

CO5 Demonstrate an ability to design both finite and infinite slopes, component and process as per needs and specifications.



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Internship

1 message

Wed Mar 13, 2024 at 4.00 pm

From: V.Mohanapriya <hodcivil@jkkmct.edu.in>

Date : Wed Mar 13, 2024 at 4.00 pm

Subject: Internship - reg

To: VJAI BUILDER <vijayinmass@gmail.com>

Dear **SIR**,

I am requesting to be joining your **VJAI BUILDER**. 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: **DIVAKAR R, SUSITHRA S, ANANDHAN B, MADHESHWARAN S**

Sincerely,

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

Principal
J.K.K.Munirajah College of Technology
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Internship

1 message

Fri Mar 15,2024 at 2.00 pm

From: **VJAI BUILDER** [vijayinmass@gmail.com](mailto:vjayinmass@gmail.com)
Date: Fri Mar 15,2024 at 2.00 pm
Subject: Internship - reg
To: V.Mohanapriya <hodcivil@jkkmct.edu.in>

Dear sir,

I am writing to confirm my acceptance of your internship offer of 18.03.2024 TO 13.04.2024 and to tell you how delighted I am to be joining your **VJAI BUILDER**. 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 18 ,2024 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: **(DIVAKAR R, SUSITHRA S, ANANDHAN B, MADHESHWARAN S)**

Sincerely,

ER.R.VIJAY HIRETHTHIK
1B/3,B.A.S COMPLEXM,MARKET MAIN ROAD ,
ANTHIYUR CORNER,
BHAVANI-638301, ERODE DT.

Principal
J.K.K.Munirajah College of Technology
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Er.R.Vijay Hireththik B.E (Civil)
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Date : 13.04.2024

INTERNSHIP CERTIFICATE

This is to certify that **DIVAKAR R** Final year in Civil Engineering Register no. 731219103001 student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi(T.K), Erode (Dt) – 638506 has undergone the inplant training in our concern, work site From 18.03.2024 TO 13.04.2024 His conduct and character was good during the training period.

For V-JAI BUILDER

R. Vijay Hireththik

Proprietor.

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Date : 13.04.2024

INTERNSHIP CERTIFICATE

This is to certify that **SUSITHRAS** Third year in Civil Engineering Register no. **731220103301** student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi(T.K), Erode (Dt) – 638506 has undergone the inplant training in our concern, work site From 18.03.2024 TO 13.04.2024 His conduct and character was good during the training period.

For V-JAI BUILDER

R. Vijay Hireththik

Proprietor.

[Signature]
Principal

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Date : 13.04.2024

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This is to certify that **ANANDHAN B** Second year in Civil Engineering Register no. 731221103001 student of J.K.K Munirajah College of Technology at T.N Palayam, Gobi(T.K), Erode (Dt) – 638506 has undergone the inplant training in our concern, work site From 18.03.2024 TO 13.04.2024 His conduct and character was good during the training period.

For V-JAI BUILDER

R. Vinu Subramani

Proprietor.

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Date : 13.04.2024

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This is to certify that **MADHESHWARAN S** Second year in Civil Engineering Register no. **731221103301** student of **J.K.K Munirajah College of Technology** at **T.N Palayam, Gobi(T.K), Erode (Dt) – 638506** has undergone the inplant training in our concern, work site From **18.03.2024 TO 13.04.2024**
His conduct and character was good during the training period.

For V-JAI BUILDER

R. V. S. Srinivasan

Proprietor.

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