



REGENT EDUCATION AND RESEARCH FOUNDATION

PROJECT REPORT ON SAND FILTER DESIGN

A Partial report submitted in partial fulfillment of the requirements for The Bachelor of
Technology in Civil Engineering.

SESSION-2022-2023

By

NAME OF STUDENTS

ROLL NO

MD. Aquib Hussain	26301319001
Surajit Bag	26301319002
Subhadip Mondal	26301319003
Ayan Ghosh	26301319004
Ritam Ta	26301319005
Ayush Jash	26301319006
Soumen Mistry	26301319007
Sanjay Maity	26301319009

ANIBRATA PAL

Assistant Professor, RERF

UNDER GUIDANCE OF

ANIKET BHOWMIK

Assistant Professor, RERF



CERTIFICATE

Certified that the project work entitled "**SEDIMENTATION TANK**" is a benefited work carried out by the students of **Bachelor of Technology in Civil Engineering of Regent Education & Research Foundation Group of Institution under Maulana Abul Kalam Azad University of Technology, West Bengal**, during the year 2022-2023. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect to project work prescribed for the side degree.

Signature of HOD



Student's Name are mentioned below

1. MD.Aquib Hussain (26301319001)
2. Surajit Bag (26301319002)
3. Subhadip Mondal (26301319003)
4. Ayan Ghosh (26301319004)
5. Ritam Ta (26301319005)
6. Ayush Jash (26301319006)
7. Soumen Mistry (26301319007)
8. Sanjay Maity (26301319009)



ACKNOWLEDGEMENT

It is our proud privilege to release the feelings of our gratitude in several persons who helped us directly or indirectly to conduct this research project work. We express our heart-felt indebtedness & owe a deep sense of gratitude to our teacher and faculty guide **MR. ANIKET BHOWMICK** sir for his sincere guidance and inspiration in completing this project.

We are extremely thankful to **MR. ANIBRATA PAL** sir and all faculty members of our department for their co-ordination & co-operation and for their kind guidance and encouragement.

We also thank all our friends who have more or less contributed to the preparation of this project report. We will be always indebted to them.

The study has indeed helped us to explore more knowledgeable avenues to our topic and we are sure it will help us in our life.

CONTENT

SL NO.	DESCRIPTION	PAGE NO.
1.	<u>SEDIMENTATION</u>	
	a. BASIC PRINCIPLE OF SEDIMENTATION	
	b.TYPES OF SEDIMENTATION	
	c.USES OF SEDIMENTATION MACHANISM	
2.	<u>SEDIMENTATION TANK</u>	
	a.INTRODUCTION	
	b.TYPES OF SEDIMENTATION TANK	
	c.ADVANTAGES AND DISADVANTAGES OF SEDIMENTATION TANK	
	d.SEDIMENTATION PERFORMANCE	
3.	<u>PRIMARY SEDIMENTATION TANK</u>	
	<u>a.PURPOSE</u>	
	<u>b.TYPES</u>	
	<u>c.FACTORS AFFECTING SEDIMENTATION EFFICIENCY</u>	
	<u>d.DESIGN CRITERIA</u>	
	<u>i.FOR RECTANGULAR TANK</u>	
	<u>ii.FOR CIRCULAR TANK</u>	
4.	<u>REFERENCES</u>	

DEPARTMENT OF CIVIL ENGINEERING
Regent Education & Research Foundation, Group Of Institution
Kolkata-700121, West Bengal, India
November, 2019



A Progress Report
on
RAIN WATER HERVESTING

Submitted By

[PROJECT GROUP NO - 8]

ANIRUDHYA MALAKAR	26301319010
ANIKET BUDHIA	26301319057
PRITAM PRAMANIK	26301319098
RASEL RAIHAN	26301319099
SOHEL RANA	26301319100
SAMIM AKTAR	26301319101
SANU BISWAS	26301319102

PRIYAM MANNA26301319103

In partial fulfilment of the requirements for the award of the degree of

Bachelor of Technology

in

Civil Engineering

Under the guidance of

YUVARAJ MONDAL
(Assistant Professor)

DEPARTMENT OF CIVIL ENGINEERING
RERF BARRACKPORE


CERTIFICATE


This is to certify that the dissertation entitled "TO DESIGN THE ROOF TYPE WATER HARVESTING STRUCTURE" is project work done by PRITAM PRAMANIK(26301319098) under our guidance and supervision. This is the project being submitted of the regent education & research foundation the partial fulfillment of the requirement of the degree of bachelor of technology in civil engineering.


.....
Mr. Souvik Sarkar /Mrs. Laboni Nandi

H.O.D/AH.O.D Department of Civil Engineering




.....
Mr. Kaushik Dutta Roy
Associated Professor
Project Guide


.....
Mrs. Yuvaraj Mondal
Assistant Professor
Project Guide

ACKNOWLEDGEMENT

We We would like to thank our project guide Associated Professor Mr.Kaushik Dutta Roy & Assistant Professor Yuvaraj Mondal, for their technical guidance, constant encouragement and supporting carrying out our project at college.

We profoundly thank Mrs. Souvik sarkar, Head of Civil Engineering Department for her encouragement to successfully complete our project work.

We profoundly thank Mr. Laboni nandi, Additional Head of Civil Engineering Department for his encouragement to successfully complete our project work.

The satisfaction and euphoria that accompany the successful completion of the task would be great but incomplete without the mention of the people who made it possible with their constant guidance and encouragement crowns all the efforts with success.

We also express our sincere gratitude to other staff members, Department of Civil Engineering and our parents for their encouragement and support.

would like to express our gratitude to all the people behind the screen who helped us to transform an idea into a real application.

ABSTRACT

Over the year, the rising population, growing industries and expanding agricultural practices have raised the demand of water supply. Monsoon is still the main hope and source of our agriculture. Hence water conservation had become need of the time. Rainwater harvesting is a way to capture the rainwater at the time of downpour, store that water above the ground or charge the underground water and use it later. as the groundwater resources are depleting, the rainwater harvesting is the only way to solve the water problem. Rainwater harvesting will not only be helpful to meet the demand of water supply but also be helpful to improve the quantity and quality of water. Here in this paper our focus is to design a tank to store rainwater from rooftop of the building to cater the need of water requirement for a building of 4 members.

TABLE OF CONTENT

+ INTRODUCTION

+ LITERATURE REVIEW

+ FUTURE SCOPE OF THE WORK

+ RESEARCH METHEDODOLOGY



◆ REGENT EDUCATION AND RESEARCH FOUNDATION ◆

**Effect of various proportion mixing natural banana Fiber on
OMC and MDD of soil**

**A Project report submitted in partial fulfilment of the requirements for
The Bachelor of Technology in Civil Engineering.**

SESSION-2020-2023

By

▷ ARITRA HAZRA	26301320022
▷ SUMAN PAL	26301320021
▷ ADITYA BARAN PATHAK	26301320017
▷ CHUMKI CHAKRABORTY	26301320019
▷ KALYAN MAITI	26301320018
▷ MAHABUB ALAM	26301320016
▷ SOURAV CHAKRABORTY	26301320015
▷ SUNTAM KUMAR DEY	26301320020

⇒ Under the guidance of ⇒

SUBHADEEP MONDAL

(ASSISTANT PROFESSOR)

DEPARTMENT OF CIVIL ENGINEERING

REGENT EDUCATION AND RESEARCH FOUNDATION

Kolkata, West Bengal



CERTIFICATE

I hereby forward the Project Report entitled "Effect of Various Proportion Mixing Natural Banana Fiber on on OMC and MDD of soil", presented by ROLL- 26301320015-26301320022, Under my guidance and supervision in partial fulfilment of requirements for the degree of Bachelor of Technology in Civil Engineering for the Project work from. REGENT EDUCATION AND RESEARCH FOUNDATION, Kolkata-700121.



SHOUVIK SARKAR (HOD)

ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING

SUBHADEEP MONDAL

ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING

REGENT EDUCATION AND RESEARCH FOUNDATION

Kolkata, West Bengal



ACKNOWLEDGEMENT

We, want to express my overwhelming sense of gratitude to Subhadeep Mondal, ASSISTANT PROFESSOR, of civil engineering department, Regent Education & Regent Foundation, whose guidance, untiring help and valuable advice can help me to carry forward the project.

Date: -19/05/2023

-
- | | |
|-----------------------|-------------|
| ➤ ARITRA HAZRA | 26301320022 |
| ➤ ADITYA BARAN PATHAK | 26301320022 |
| ➤ SUMAN PAL | 26301320021 |
| ➤ CHUMKI CHAKRABORTY | 26301320019 |
| ➤ KALYAN MAITI | 26301320018 |
| ➤ MAHABUB ALAM | 26301320016 |
| ➤ SOURAV CHAKRABORTY | 26301320015 |
| ➤ SUNTAM KUMAR DEY | 26301320020 |

Index

SL.NO.	TITLE	PAGE NO.
1	Acknowledgement	3
2	Abstract	5
3	Introduction	6
4	Types of fiber	7-10
5	Literature Review	11-14
6	Need of present experimental study	15
7	Objective of study	15
8	Scope of present experimental study	16
9	Methodology and Test program	17-25
10	Experimental Results	26
11	Scope of Future study	27
12	References	28

Effect of various proportion mixing natural banana Fiber on OMC and MDD of soil

Abstract

Soil reinforcement is defined as a technique to improve the engineering characteristics of soil. Now a days fiber reinforcement in soil sub grade plays a very important role in civil engineering road construction sites. Now a days all over the world many roads are constructed by using fiber reinforcement in sub grade of soil. Because some times in the construction sites where we construct it happens that the soil sub grade have not sufficient strength. So, we have to provide a large amount of sub grade materials under the road construction for gaining the strength. And if we use the strength gaining materials like any waste material it may be natural and synthetic fibers to improve the strength of soil then we should not provide a large amount of sub grade materials for the road construction so, it will be economical and environmentally friendly. For this purpose, we can use some strength gaining materials like natural fibers, bagasse (BG), jute fiber, hemp fiber, sabia grass and synthetic materials like steel fiber, Polypropylene (PP) fibers, Polyester (PET) fiber etc. these can be used for strength gaining elements. First of all, we collect a soil sample from local area and do the preliminary test to identify the soil basic property like optimum moisture content OMC, maximum dry density MDD. After that we will collect the natural fiber and we will cut the fiber in varies sizes. And then these will be mix with the soil in various proportion. After mixing the fiber then we will find out the OMC & MDD values each and every cases.

Regent Education And Research Foundation Group of Institutions

Department OF Civil Engineering (B. Tech)



PROJECT:

STEEL SLAG AS
COURSE AGGREGATE IN CONCRETE

PROJECT TEAM MEMBERS

SL NO	NAME	ROLL NO
1	SK RIYAJUDDIN	26301320023
2	SHALINE DAS	26301320024
3	NIBEDITA ACHARYA	26301320025
4	SUBHADIP GHOSH	26301320026
5	ANIMA HEMBRAM	26301320027
6	DIPRAJIT KUMAR DAS	26301320028
7	TANMOY BHOWMICK	26301320029
8	SHAIKH MD EMRAN HOSSAIN	26301320030
9	DEBASIS KANRAR	26301320032

GUIDED BY


Prof. SHOUVIK SARKAR
Department of Civil Engineering


Prof. ISHIKA GHOSH
Department of Civil Engineering



INDEX

CHAPTER NO	TOPIC	PAGE NO
1	Introduction	5-6
2	Literature Review	7-10
3	Material & Tests	11-18
4	Concrete mix calculation	19-21
5	conclusion	22
6	Reference	23

Chapter-1

Introduction

The main aim of this research was making rigid pavement by cutting costs for low weight passing vehicle, to study the behaviour of steel slag and changes in the properties of concrete with steel slag replacing the use of natural aggregates. Steel slag is a by-product and using it as aggregates in concrete will might prove an economical and environmentally friendly solution. The demand for aggregates is increasing rapidly and so as the demand of concrete. Thus, it is becoming more important to find suitable alternatives for aggregates in the future. A through literature review was conducted to study and investigate the properties of steel slag aggregates. The results showed that it has properties similar to natural aggregates and it would not cause any harm if incorporated in to concrete. A comparison was made between concrete having natural coarse aggregates and fine aggregate with various percentage so steel slag replaced by volume. Compressive strength, splitting tensile strength for steel slag was similar to conventional concrete. The strength may be affected with time and so long term effects on hardened properties of concrete require further investigation. Effective replacement of steel slag as coarse aggregate in concrete improves compressive strength by 4 to 7% at all the replacements of normal coarse aggregate and the compressive strength has been increased significantly for the replacement of fine aggregate at 30–50% by 4–6%. The concrete incorporating steel slag has higher compressive strength and an increase in density and stability was clearly observed in the specimens replaced with steel slag as coarse aggregate.

Steel slag: -

Steel slag, a by-product of steel making, is produced during the separation of the molten steel from impurities in steel-making furnaces. The slag occurs as a molten liquid melt and is a complex solution of silicates and oxides that solidifies upon cooling. Slag is usually a mixture of metal oxides and silicon dioxide. However, slags can contain metal sulfides and elemental metals.

The major components of these slags include the oxides of calcium, magnesium, silicon, iron, and aluminium, with lesser amounts of manganese, phosphorus, and others depending on the specifics of the raw materials used. Furthermore, slag can be classified based on the abundance of iron among other major components.



Pavement:-

In civil engineering, durable surfacing of a road, airstrip, or similar area. The primary function of a pavement is to transmit loads to the sub-base and underlying soil. Modern flexible pavements contain sand and gravel or crushed stone compacted with a binder of bituminous material, such as asphalt, tar, or asphaltic oil. Such a pavement has enough plasticity to absorb shock. Rigid pavements are made of concrete, composed of coarse and fine aggregate and Portland cement, and usually reinforced with steel rod or mesh. Rigid pavements are constructed of Portland cement concrete slabs resting on a prepared sub base of granular material or directly on a granular sub grade. Load is transmitted through the slabs to the underlying sub grade by flexure of the slabs. There are two main types of road construction. “Rigid pavement,” such as concrete, can only be used on stable ground. “Flexible pavement,” such as bituminous materials, as described below, can be used on ground where some movement is expected.

Rigid pavement:-

Rigid pavements are constructed of Portland cement concrete slabs resting on a Prepared sub base of granular material or directly on a granular subgrade. Load is Transmitted through the slabs to the underlying subgrade by flexure of the slabs. Rigid pavement is the technical term for any road surface made of concrete. Concrete roads Are called rigid while asphalt-covered roads are flexible. These terms refer to the amount of Deformation created in the road surface itself when in use and over time. The largest Advantages to using concrete pavement are in its durability and ability to hold a shape. There Are three basic types of rigid pavement commonly used worldwide. The basic design of rigid pavement is very simple. A surface layer, made up of slabs of Portland cement concrete (PCC), sits on top of a handful of sub-layers. The layer directly Under the PCC is more flexible than the concrete, but still quite rigid. This layer provides a Stable base for the PCC as well as assists in drainage. Some roads have a second sub layer Under the first that is even more flexible, while some simply have the existing soil. The Biggest factor in deciding whether this second layer is necessary is the composition of the Existing material.

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GROUPOF INSTITUTIONS



SUBJECT: PROJECT ON LUNAR GEOLOGY

PROJECT GUIDE: PIYALISINHA

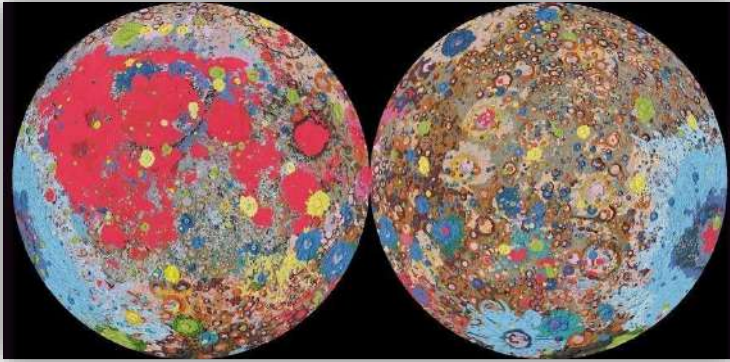


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I owe my most sincere thanks and profound gratitude for the indispensable advice and inspiration rendered by my project guide, Prof. Piyali Sinha.

I would also like to take this opportunity to express my thankfulness for the valuable suggestions and continuous guidance to Prof. Yuvraj Mondal , Head of Civil Engineering Department of Regent Education & Research Foundation Group of Institutions. I also convey my sincere gratitude to all other faculties of Civil Engineering Department who have helped me enlighten with my studies

INTRODUCTION

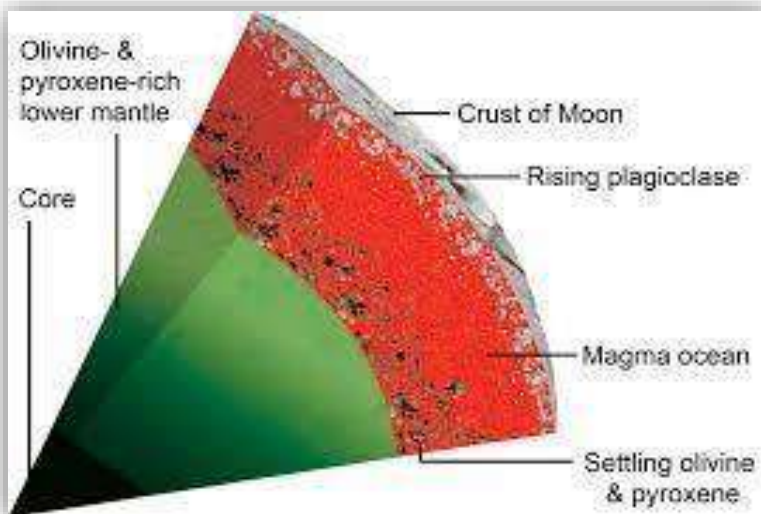


gy, although the latter term can
 nt from that of Earth. The Moon
 ion due to weather; it does not
 ravity, and because of its small
 y of the lunar surface has been

a differentiated body,
 possessing a crust,
 mantle and core.

Geological studies of the
 Moon are based on a
 combination of Earth-
 based telescope
 observations,

measurements from orbiting spacecraft, lunar samples, and geophysical data. A few locations were sampled directly during the Apollo missions in the late 1960s and early 1970s, which returned approximately 385 kilograms of lunar rock and soil to Earth, as well as several missions of the Soviet Luna programme. The Moon is the only extra terrestrial body for which we possess samples with a known geologic context. A handful of lunar meteorites have been recognized on Earth, though their source craters on the Moon are unknown. A substantial portion of the lunar surface has not been explored, and a number of geological questions remain unanswered.



The geological history
 of the Moon has been
 defined into six major
 epochs, called the
 lunar geologic
 timescale. Starting
 about 4.5 billion years
 ago, the newly formed
 Moon was in a molten
 state and was orbiting
 much closer to Earth
 resulting in tidal
 forces. These tidal
 forces deformed the
 molten body into an










REGENT EDUCATION & RESEARCH FOUNDATION
PROJECT REPORT
ON
FIBER REINFORCED CONCRETE (F.R.C.)
WITH JUTE FIBER
Project Work Part II (CE 882)

**A Project report submitted in partial fulfillment of the requirements
for The Bachelor of Technology in Civil Engineering.**



SESSION-2020-2023

BY

 RIGAN SARKAR	26301320050
 SAMORENDRA PAL	26301320049
 ARNAB MAZUMDER	26301320043
 SUSHMITA MONDAL.	26301320048
 NILANJAN MONDAL	26301320046
 MD JABAZ MURSHID	26301320042
 ABHIJIT MANDAL	26301320052

UNDER THE GUIDENCE OF
MRS.LABANI NANDI
(ASSISTANT PROFESSORE)
MISS. MOUMITA MONDAL
(FACULTY)
DEPARTMENT OF CIVIL ENGINEERING

REGENT EDUCATION AND RESEARCH FOUNDATION
Kolkata, West Bengal



CERTIFICATE

I hereby forward the Project Report entitled “FIBER REINFORCED CONCRETE (F.R.C.)”, presented. Under my guidance and supervision in partial fulfillment of requirements for the degree of Bachelor of Technology in Civil Engineering for the Project work from,

REGENT EDUCATION AND RESEARCH FOUNDATION,
Kolkata-700121

Labani Nandi

MRS.LABANI NANDI

(ASSISTANT PROFESSORE)

MISS. MOUMITA MONDAL

(FACULTY)

DEPARTMENT OF CIVIL ENGINEERING

REGENT EDUCATION AND RESEARCH FOUNDATION

Kolkata, West Bengal



ACKNOWLEDGEMENT

We want to express my overwhelming sense of gratitude to MRS.LABANI NANDI & MISS. MOUMITA MONDAL, ASSISTANT PROFESSOR & FACULTY of Civil Engineering Department, Regent Education & Research Foundation, whose guidance, untiring help and valuable advice can help us to carry forward the project.

**REGENT EDUCATION AND RESEARCH FOUNDATION,
Kolkata-700121**

Date – 20.05.23

-
- **RIGAN SARKAR** 26301320050
 - **SAMORENDRA PAL** 26301320049
 - **ARNAB MAZUMDER** 26301320043
 - **SUSHMITA MONDAL.** 26301320048
 - **NILANJAN MONDAL** 26301320046
 - **MD JABAZ MURSHID** 26301320042
 - **ABHIJIT MANDAL** 26301320052

INDEX

SL. NO.	TITLE	PAGE NO.
1.	Acknowledgement	03
2.	Abstract	05
3.	Introduction	05
4.	Types Of Fiber-Reinforced Concrete	05
5.	Fiber Reinforced Concrete Is Used For	08
6.	Benefits Of Fiver Reinforced Concrete:	08
7.	Natural Fiber (Jute Fiber)	09
8.	Deleterious Materials	09
9.	Observations And Results	10 -16
10.	Conclusion	17
11.	References	18

FIBER REINFORCED CONCRETE (F.R.C.)

+ ABSTRACT:

Fiber-Reinforced Concrete (FRC) is concrete consisting fibrous material which increases its structural purity. It holds short discrete fibers that are uniformly distributed and circumstances oriented. This page contains Fiber-Reinforced Concrete (FRC) Seminar and PPT with PDF report.

+ INTRODUCTION:

Fiber-reinforced concrete (FRC) is concrete containing fibrous material which increases its structural integrity.

It contains short discrete fibers that are uniformly distributed and randomly oriented.

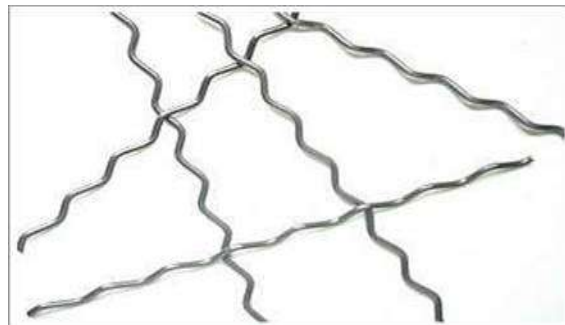
Fibers include steel fibers, glass fibers, synthetic fibers and natural fibers – each of which lends varying properties to the concrete.

+ Types Of Fiber-Reinforced Concrete:

- Steel Fiber-Reinforced Concrete
- Glass Fiber Reinforced Concrete
- Synthetic Fibers
- Natural Fiber Reinforced Concrete

+ Steel Fiber-Reinforced Concrete:

Steel fiber-reinforced concrete is basically a cheaper and easier to use form of rebar reinforced concrete. Rebar reinforced concrete uses steel bars that are laid within the liquid cement, which requires a great deal of prep work but make for a much stronger concrete.



REGENT EDUCATION AND RESEARCH FOUNDATION GROUP OF INSTITUTIONS

DEPARTMENT OF CIVIL ENGINEERING
B.TECH



SUBJECT : PROJECT REPORT ON "DESIGN OF A FACTORY SHED"



PROJECT TEAM MEMBERS

SL NO	NAME	ROLL NO
1	SOMNATH ROY	26301320047
2	SUDIPTA SARKAR	26301320053
3	SHAHARUK MONDAL	26301320054
4	SADAF RAHAMAN	26301320055
5	AMIT SHAW	26301320056
6	SAYANI CHAKRABORTY	26301320058
7	IFTEKHAR ALAM	26301320060
8	PRIYA SAHA	26301320061
9	AMITAVA BASU	26301320062
10	SUMIT KUMAR SARKAR	26301320066

GUIDED BY

Mrs. LABANI NANDI

Asst. Prof. of Civil Engineering, RERF

Miss. MOUMITA MONDAL

Lecturer of Civil Engineering, RERF



REGENT EDUCATION
AND
RESEARCH FOUNDATION GROUP OF INSTITUTIONS

DEPARTMENT OF CIVIL ENGINEERING
B.TECH



CERTIFICATE OF APPROVAL

This is to certify that we have prepared this project report entitled "**DESIGN OF A FACTORY SHED**" under our supervision as a part of their 4th year (Session 2019-2023) curriculum of Department of Civil Engineering, RERF and allowed for submission.

Mrs. LABANI NANDI

Asst. Prof. of Civil Engineering, RERF

Miss. MOUMITA MONDAL

Lecturer of Civil Engineering, RERF

Mr. SOUVIK SARKAN

Head of the Department



Mr. YUVARAJ MANDAL

Ex. Head of the Department

Department of Civil Engineering, RERF Department of Civil Engineering, RERF



REGENT EDUCATION AND RESEARCH FOUNDATION

PROJECT REPORT ON SAND FILTER DESIGN

A Partial report submitted in partial fulfillment of the requirements for The Bachelor of
Technology in Civil Engineering.

SESSION-2022-2023

By

NAME OF STUDENTS

ROLL NO

RAJKUMAR BHAUMIK	26301320064
MD SAHIN AKHTAR	26301320065
SUMIT KUMAR SARKAR	26301320066
LUTFUN NESHA	26301320067
DEEPANNITA SARKAR	26301320068
SAYAN MONDAL	26301320070
SOMIT KUMAR	26301320071
SYED TANZEEL ALAM	26301320072
SIB SHANKAR PANI	26301320073

UNDER GUIDANCE OF

Anibrata Pal.
ANIBRATA PAL
Assistant Professor, RERF

Aniket Das.
ANIKET BHOWMICK
Assistant Professor, RERF

DEPARTMENT OF CIVIL ENGINEERING



CERTIFICATE

I hereby forward the Project Report entitled "RAJKUMAR BHAUMIK" from Roll no 0064 to 0073, Under my guidance and supervision in partial fulfillment of requirements for the degree of Bachelor of Technology in Civil Engineering for the Project work from, REGENT EDUCATION AND RESEARCH FOUNDATION, Kolkata-700121.

.....
Anibrata Pal
ANIBRATA PAL
Assistant professor

.....
Aniket Das.
ANIKET BHOWMICK
Assistant professor

DEPARTMENT OF CIVIL ENGINEERING

Index

SL.NO.	TITLE	PAGE NO.
1	Acknowledgement	4
2	Abstract	5
3	Sand bed filtration concept	6
4	INTRODUCTION	7
5	ADVANTAGE AND DISADVANTAGES OF SAND FILTERS	8
6	Types of sand Filter	9-14
7	Particulate solids capture mechanisms	14
8	Sand Filter theory	15-22
9	Sand Filter Design	23-31
10	Reference	32-34



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Date: -22/05/2023

.....
RAJKUMAR BHAUMIK (26301320064)

RAJKUMAR BHAUMIK	26301320064
MD SAHIN AKTHER.	26301320065
SUMIT KUMAR SARKAR	26301320066
LUTFUN NESHA	26301320067
DEPANNITA SARKAR	26301320068
SAYAN MONDAL	26301320070
SOMIT KUMAR	26301320071
SIB SHANKAR PANI	26301320073

ABSTRACT

The improvement of water quality is closely associated with man-environment relationships. There should be a dialogue between all actors and the community when undertaking water and sanitation activities. For positive results and better sustainability, the community should be involved and participate at all stages of water development and environmental sanitation schemes. A combination of safe drinking water, adequate sanitation and hygiene practices like hand washing is a pre-requisite for morbidity and mortality rate reduction, especially among under five years old children in developing countries. To reduce the incidence and prevalence of diarrhoeal diseases, improvements in the availability, quantity, and quality of water, improved sanitation, and general personal and environmental hygiene are required. The majority of people in developing countries do not have access to piped drinking water and must carry; transport and store water within their homes and in the process the quality of water may deteriorate. Therefore, slow sand filtration has been recognized as an appropriate technology for drinking water treatment in rural areas, and is recognized as a suitable filtration technology for removing water borne pathogens and reducing turbidity. It is capable of improving the physical, chemical, and microbiological quality of water in a single treatment process without the addition of chemicals, and can produce an effluent low in turbidity and free of bacteria, parasites and viruses.

Keywords: bacteria, drinking water, slow sand filter, treatment, turbidity



DRINKING WATER RELATED DISEASES

DEPARTMENT OF CIVIL ENGINEERING

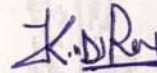
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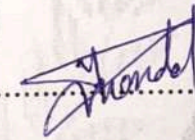
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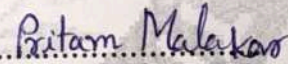
This is to certify that the dissertation entitled "**DRINKING WATER REALED DISEASES**" is project work done by AVIJIT ROY, PRIYA PAUL, ISHIKA DAS, PRITAM DEY, AMRITA BISWAS, ANIRBAN DUTTA, ROHIT KUMAR THAKUR, AKASH BISWAS under our guidance and supervision this is the project is being submitted of the regent education & research foundation the partial fulfilment of the requirement of the degree of bachelor of technology in civil engineering.


.....


Mr. Souvik Sarkar / Mrs. Labani Nandi
H.O.D/A H.O.D Department of Civil Engineering


.....


.....


.....

Mr. Kaushik Dutta Roy
Mr. Yuvaraj Mondal
Mr. Pritam Malakar

Professor Civil
Project Guide, Assistant
Associate Professor,
Civil Engineering Department

CERTIFICATE

It is certified that the work contained in this report titled " **DRINKING WATER
REALLED DIEASES** " is the original work done by

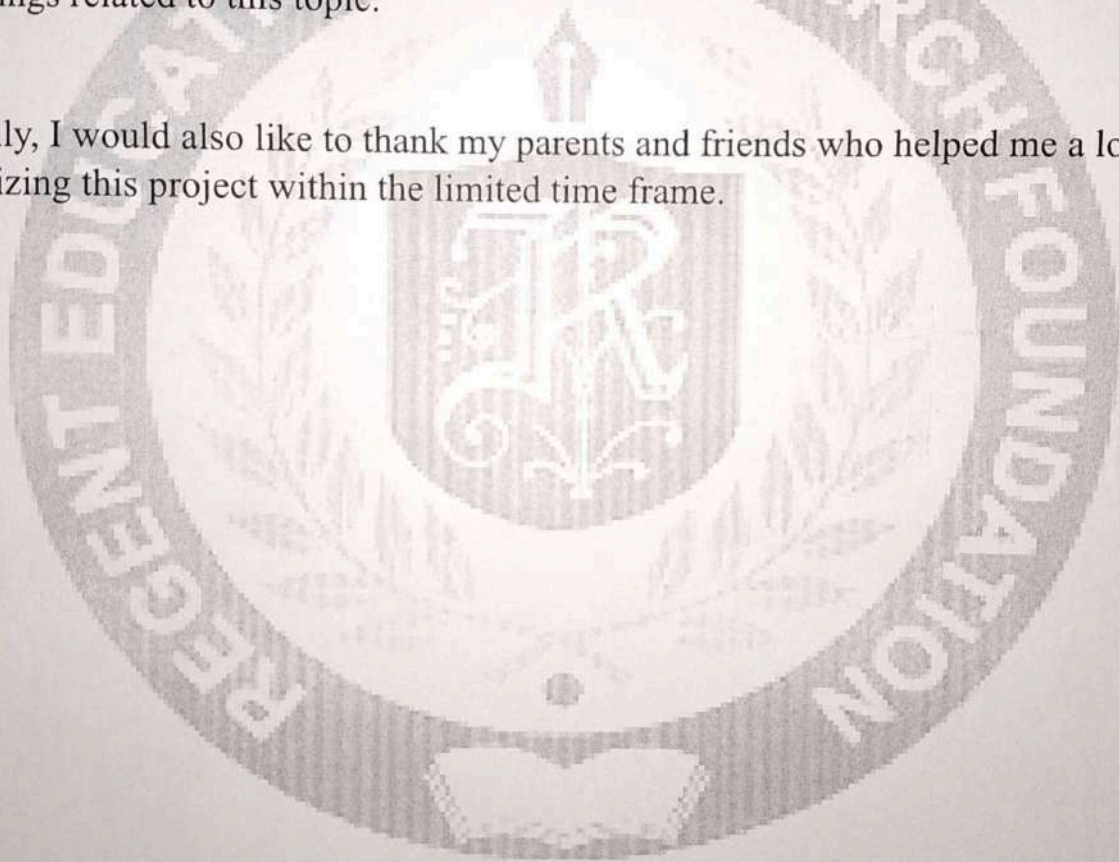
NAME	ROLL	SIGNATURE
AVIJIT ROY	26301320080	A. Roy.
PRITAM DEY	26301320075	Pritam Dey
AMRITA BISWAS	26301320076	Amrita Biswas
ISHIKA DAS	26301320077	Ishika Das.
ANIRBAN DUTTA	26301320078	A. Dutta
ROHIT KUMAR THAKUR	26301320079	R. K. Thakur.
PRIYA PAUL	26301320074	Priya Paul
AKASH BISWAS	26301320081	Akash Biswas.

And has been carried out under our supervision. Mr. Kaushik Dutta Roy & Mr.
Yuvaraj Mondal, Mr. Pritam Malakar.

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Finally, I would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.



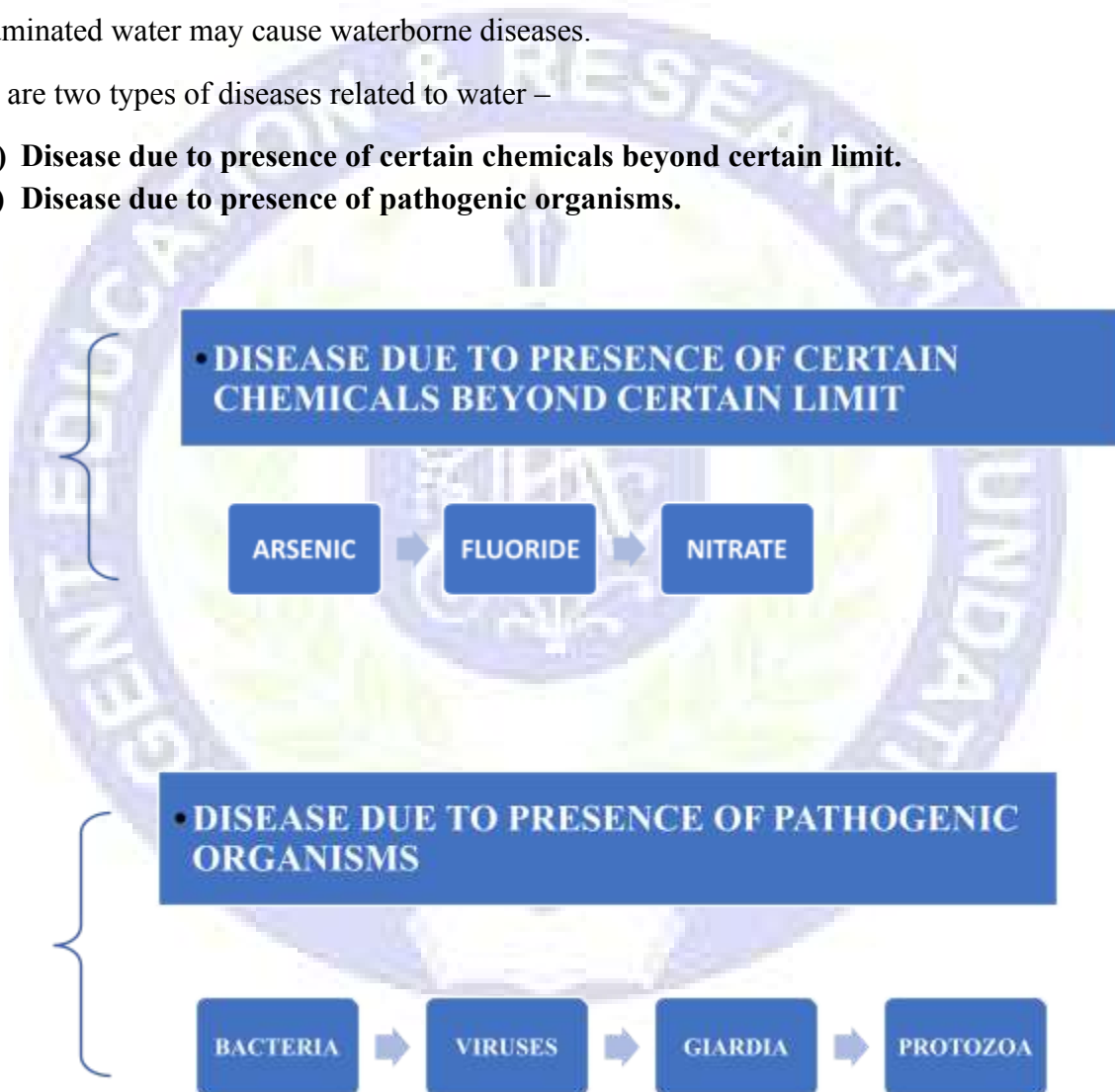
DRINKING WATER RELATED DISEASES

Water is used for drinking and for cooking, washing and many other domestic needs. This water should be safe. The quantity of this water varies, and depends on physical activity level, age, health-related issues, and climatic conditions etc. Safe and readily available water is important for public health. Therefore, the improved water supply and sanitation is very much essential for better management of water resources.

Contaminated water may cause waterborne diseases.

There are two types of diseases related to water –

- A) **Disease due to presence of certain chemicals beyond certain limit.**
- B) **Disease due to presence of pathogenic organisms.**



**REGENT EDUCATION AND RESEARCH FOUNDATION GROUP OF
INSTITUTIONS**



PROJECT (REMOTE SENSING AND SATELLITE IMAGES)

MASTER COPY

PROJECT GROUP – X

**(SUBHRAJIT NANDI, SRIJITA SUTAR, TUFAN GHOSH, TITHI ROUTH,
SUROJIT ROY, AKASH BHATTACHARYYA, TITHI BISWAS)**

SEMESTER – 8th

YEAR – 4th

GUIDED BY – PIYALI SINHA

INDEX

- INTRODUCTION
- OBJECTIVE
- SCOPE OF STUDY
- TYPES OF REMOTE SENSING
- APPLICATION OF REMOTE SENSING
- DIFFERENT TYPES OF SATELLITE IMAGES WITH INTERPRETATION
- CONCLUSIONS


Signature of HOD -



INTRODUCTION

Remote sensing can be broadly defined as the collection and interpretation of information about an object, area, or event without being in physical contact with the object. Aircraft and satellites are the common platforms for remote sensing of the earth and its natural resources. Aerial photography in the visible portion of the electromagnetic wavelength was the original form of remote sensing but technological developments has enabled the acquisition of information at other wavelengths including near infrared, thermal infrared and microwave. Collection of information over a large numbers of wavelength bands is referred to as multispectral or hyper spectral data. The development and deployment of manned and unmanned satellites has enhanced the collection of remotely sensed data and offers an inexpensive way to obtain information over large areas. The capacity of remote sensing to identify and monitor land surfaces and environmental conditions has expanded greatly over the last few years and remotely sensed data will be an essential tool in natural resource management.

OBJECTIVE

- Large forest fires can be mapped from space, allowing rangers to see a much larger area than from the ground.
- Tracking clouds to help predict the weather or watching erupting volcanoes, and help watching for dust storms.
- Tracking the growth of a city and changes in farmland or forests over several years or decades.
- Discovery and mapping of the rugged topography of the ocean floor (e.g., huge mountain ranges, deep canyons, and the “magnetic striping” on the ocean floor).

SCOPE OF STUDY

Remote Sensing and GIS is booming technology in Indian market. It has great scope in both government and private sector. In case of government sector each and every planning is depended on spatial analysis. The project like smart cities, property mapping will provide a big window for GIS person. While private sector has started using location based analysis as location based services like Amazon, Flipkart, BigBasket and food providing services are grooming.

**REGENT EDUCATION & RESEARCH FOUNDATION
GROUP OF INSTITUTION**



REGENT EDUCATION AND RESEARCH FOUNDATION

PROJECT REPORT ON SEDIMENTATION TANK DESIGN

A report submitted in partial fulfilment of the requirements for
Bachelor of Technology in Civil Engineering.

SESSION-2022-2023

By

NAME OF STUDENTS

ROLL NO

1. KALYAN GHORAI	26301320091
2. SUPRIYO BISWAS	26301320092
3. SAIKAT MALLICK	26301320093
4. NURJAHAN KHATUN	26301320094
5. RAKESH PATRA	26301320095
6. NAYEEM AKHTAR	26301320096
7. SUMANA ROY	26301320097
8. SUBHODEEP MUKHERJEE	26301320098
9. SK SHARUKUDDIN	26301320099
10. SUMIT GANGULY	26301320100
11. SUDIPTA ROY	26301320101
12. GITALI BAIN	26301320102
13. KHURSHID ALOM	26301320103
14. JAYADRATHA DEBNATH	26301320104
15. SUPRIYA GANTAIT	26301320105
16. PALASH MONDAL	26301320106
17. SUJOY GHARAMI	26301320107
18. SUSHMITA RAI	26301320108

UNDER GUIDANCE OF

Mr. SWARNENDU SEKHAR DAS & Mr. SK SAFIN IMRAN

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

I hereby forward the Project Report entitled -Sedimentation tank design from Name & Roll no mention below under my guidance and supervision in partial fulfilment of requirements for the degree of Bachelor of Technology in Civil Engineering for the Project work from. REGENT EDUCATION AND RESEARCH FOUNDATION, Kolkata-700121.

SK Saifur Jannan Laskar

ASSISTANT PROFESSOR

Swarandeep Shukla

ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING

<u>NAME OF STUDENTS</u>	<u>ROLL NO</u>
1. KALYAN GHORAI	26301320091
2. SUPRIYO BISWAS	26301320092
3. SAIKAT MALLICK	26301320093
4. NURJAHAN KHATUN	26301320094
5. RAKESH PATRA	26301320095
6. NAYEEM AKHTAR	26301320096
7. SUMANA ROY	26301320097
8. SUBHODEEP MUKHERJEE	26301320098
9. SK SHARUKUDDIN	26301320099
10. SUMIT GANGULY	26301320100
11. SUDIPTA ROY	26301320101
12. GITALI BAIN	26301320102
13. KHURSHID ALOM	26301320103
14. JAYADRATHA DEBNATH	26301320104
15. SUPRIYA GANTAIT	26301320105
16. PALASH MONDAL	26301320106
17. SUJOY GHARAMI	26301320107
18. SUSHMITA RAI	26301320108

[Signature]
Signature of HOD -



REGENT EDUCATION AND RESEARCH FOUNDATION GROUP OF INSTITUTION

Kolkata, West Bengal



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We, want to express my overwhelming sense of gratitude to Mr. SWARNENDU SEKHAR DAS & Mr. SK SAFIN IMRAN LASKAR, ASSISTANT PROFESSOR, of civil engineering department, Regent Education & Regent Foundation, whose guidance, untiring help and valuable advice can help me to carry forward the project.

Date: -

INDEX

SL NO	TITLE	PAGE NO.
1	INTRODUCTION	1
2	SCOPE	2
3	LITERATURE REVIEWS	3-7
4	DESIGN OF THE SEDIMENTATION TANK	8-17
5	IMPLEMENTATION OF THE PROJECT SEDIMENTATION TANK	18-19
6	CONCLUSION	20
7	FUTURE ASPECTS	21
8	LIMITATION	22
9	REFERENCE	23
10	LIST OF FIGURES	24

INTRODUCTION

Sedimentation Tank, also called Settling Tank or Clarifier, component of a modern system of water supply or wastewater treatment. A sedimentation tank allows suspended particles to settle out of water or wastewater as it flows slowly through the tank, thereby providing some degree of purification. A layer of accumulated solids, called sludge, forms at the bottom of the tank and is periodically removed. In drinking-water treatment, coagulants are added to the water prior to sedimentation in order to facilitate the settling process, which is followed by filtration and other treatment steps. In modern sewage treatment, primary sedimentation must be followed by secondary treatment (e.g., trickling filter or activated sludge) to increase purification efficiencies. Sedimentation is usually preceded by treatment using bar screens and grit chambers to remove large objects and coarse solids.

Sedimentation is the 3rd step in a conventional treatment process. It occurs after coagulation and flocculation and before filtration. Sedimentation removes suspended solids with the use of gravity by slowing the flow of water down to allow material to settle. The settleable solids fall to the bottom of the sedimentation basin reducing the load on the filtration process. A sedimentation basin acts like a lake in the sense that it allows particles to settle naturally. Deeper lakes have much higher quality water entering the treatment plant because the water is able to “settle” for a longer period of time. Treatment plants that use imported water from higher turbidity water sources may be required to use conventional treatment with sedimentation for efficient treatment.

Sedimentation is the process of removing suspended coarser particles in water by settling down them to the bottom of tank. For a particle to settle down, the flow velocity must be reduced. This process is carried out in a structure called sedimentation tank or settling tank.

Working Principle of Sedimentation Tank: The main principle involved in the sedimentation tank is to reduce the flow velocity of water which allows the major amount of suspended particles to settle down. The velocity with which the particle is settling is known settling velocity. Sedimentation Tank Design Parameters; Overflow Velocity (V_o): The volume of water applied per unit time per unit horizontal surface area is called over flow velocity. It is also called as surface loading rate or surface over flow rate. Over flow velocity must be less than settling velocity of particle otherwise the particle or sediment will escape without settling.

Flow Through Velocity (V): The velocity of water with which it travels from inlet to outlet of sedimentation tank is called flow through velocity (V). The allowable flow through velocity of water in sedimentation tank is 0.005m/s.

Detention Period (T); Dimensions of Sedimentation Tank; The basin dimensions length, breadth and depth of tank are derived from the volume of the tank and over flow velocity

Sludge Zone Depth: Sludge zone depth is used to collect the sludge which is nothing but settled particles. It is provided only when removal of the sludge takes place manually. Generally it is limited to 0.8 to 1.2 meters.



REGENT EDUCATION AND RESEARCH FOUNDATION

**EFFECT OF VARIOUS PROPORTION MIXING SYNTHETIC CHINA NYLON
CHORD FIBER ON OMC AND MDD OF soil**

**A Project report submitted in partial fulfillment of the requirements for The Bachelor of
Technology in Civil Engineering.**

SESSION-2020-2023

By

▷ SAYAN RAKSHIT	26301320109
▷ SOURAV CHATTERJEE	26301320110
▷ TANIYA MONDAL	26301320111
▷ SHUVRANIL DAS	26301320112
▷ PRITAM SAHA	26301320113
▷ SOUGATA DEY	26301320114
▷ TAMAL KOLEY	26301320116
▷ ASHMITA MANNA	26301320117
▷ ARNAB SAMANTHA	26301320118

⇒ Under the guidance of ⇒

SUBHADEEP MONDAL

(ASSISTANT PROFESSOR)

DEPARTMENT OF CIVIL ENGINEERING

REGENT EDUCATION AND RESEARCH FOUNDATION

Kolkata, West Bengal



CERTIFICATE

I hereby forward the Project Report entitled "EFFECT OF VARIOUS PROPORTION MIXING STYNTHETIC CHINA NYLON CHORD FIBER ON OMC AND MDD OF SOIL", presented by ROLL-26301320109-26301320118, under my guidance and supervision in partial fulfillment of requirements for the degree of Bachelor of Technology in Civil Engineering for the Project work from. REGENT EDUCATION AND RESEARCH FOUNDATION, Kolkata-700121.

SubhadEEP Mondal

.....
SUBHADEEP MONDAL

ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING

Shouvik Sarkar

.....
SHOUVIK SARKAR

HEAD OF THE DEPARTMENT

DEPARTMENT OF CIVIL ENGINEERING



REGENT EDUCATION AND RESEARCH FOUNDATION

Kolkata, West Bengal



ACKNOWLEDGEMENT

We want to express my overwhelming sense of gratitude to Subhadeep Mondal, ASSISTANT PROFESSOR, of Civil Engineering department, Regent Education & Regent Foundation, whose guidance, untiring help and valuable advice can help me to carry forward the project.

Date: -20/05/2023

.....

▷ SAYAN RAKSHIT	26301319084
▷ SOURAV CHATTERJE	26301319090
▷ TANIYA MONDAL	26301319092
▷ SHUVRANIL DAS	26301319085
▷ PRITAM SAHA	26301319088
▷ SOUGATA DEY	26301319089
▷ TAMAL KOLEY	26301319091
▷ ASHMITA MANNA	26301319093
▷ ARNAB SAMANTA	26301319094

INDEX

SL.NO.	TITLE	PAGE NO.
1	Acknowledgement	3
2	Abstract	5
3	Introduction	6
4	Types of fiber	7-10
5	Literature Review	11-14
6	Need of present experimental study	15
7	Objective of study	15
8	Scope of present experimental study	16
9	Methodology and Test program	17-25
10	Experimental Results	26
11	Scope of Future study	27
12	References	28

EFFECT OF VARIOUS PROPORTION MIXING SYNTHETIC CHINA NYLON CHORD FIBER ON OMC AND MDD OF SOIL

Abstract

Soil reinforcement is defined as a technique to improve the engineering characteristics of soil. Now a days fiber reinforcement in soil sub grade plays a very important role in civil engineering road construction sites. Now a days all over the world many roads are constructed by using fiber reinforcement in sub grade of soil. Because some times in the construction sites where we construct it happens that the soil sub grade have not sufficient strength. So we have to provide a large amount of sub grade materials under the road construction for gaining the strength. And if we use the strength gaining materials like any waste material it may be natural and synthetic fibers to improve the strength of soil then we should not provide a large amount of sub grade materials for the road construction so, it will be economical and environmentally friendly. For this purpose we can use some strength gaining materials like natural fibers , bagasse (BG), jute fiber, hemp fiber, sabai grass and synthetic materials like steel fiber ,Polypropylene (PP) fibers, Polyester (PET) fiber etc. these can be use for strength gaining elements. First of all we collect a soil sample from local area and do the preliminary test to identify the soil basic property like optimum moisture content (OMC),maximum dry density (MDD). After that we will collect the synthetic fiber and we will cut the fiber in varies sizes. And then these will be mix with the soil in various proportion. After mixing the fiber then we will find out the OMC & MDD values each and every cases.

REGENT EDUCATION & RESEARCH FOUNDATION



**PROGRESS REPORT OF PROJECT-USE OF INDUSTRIAL WASTE
MATERIAL FOR LIGHT WEIGHT CONCRETE**

**BACHELOR OF TECHNOLOGY, CIVIL ENGINEERING
4TH YEAR**

GROUP MEMBERS OF THE PROJECT

MEMBER NAME	MEMBER ROLL NUMBER
RAJA HIRA	26301320119
PRIYA DAS	26301320120
SAYAN SAHA	26301320121
SUMANTRA CHATTERJEE	26301320122
SAYAN ROY	26301320123
PALASH BHOWMIK	26301320124
UJJAL MAJHI	26301320125
KALYAN SUNDAR MAHAPATRA	26301320126
NISITA DAS	26301320127

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Finally, we would like to express our heartfelt gratitude to our friends and family members for their understanding, encouragement, and unwavering support throughout the project duration. Their belief in our abilities has been a constant source of motivation.


Although it is not possible to mention everyone individually, please accept my sincere thanks if you have contributed to this project in any way.

Once again, we express our deepest gratitude to all those mentioned and the countless others who have played a role, however small, in the successful completion of this project. Without their support, this achievement would not have been possible.

Thank you.


SOUVIK SARKAR
HEAD OF DEPARTMENT
DEPARTMENT OF CIVIL ENGINEERING




ISHIKA GHOSH
PROFESSOR
DEPARTMENT OF CIVIL ENGINEERING

23/08/23

Civil Engrg. Department
Regent Education & Research Foundation
Barrackpore, Kolkata - 121

CONTENTS

Sl. No.	Description	Page No.
1	Introduction	4-5
2	Literature Review	6-9
3	Materials and their properties	10-15
4	Concrete Mix	16-18
5	Result	19
6	Conclusion	20
7	References	21

Chapter 1: INTRODUCTION

The main aim of this research was making rigid pavement by cutting costs for low weight passing vehicle, to study the behavior of steel slag and changes in the properties of concrete with steel slag replacing the use of natural aggregates. Steel slag is a by-product and using it as aggregates in concrete will might prove an economical and environmentally friendly solution. The demand for aggregates is increasing rapidly and so as the demand of concrete. Thus, it is becoming more important to find suitable alternatives for aggregates in the future. A through literature review was conducted to study and investigate the properties of steel slag aggregates. The results showed that it has properties like natural aggregates and it would not cause any harm if incorporated in to concrete. A comparison was made between concrete having natural coarse aggregates and fine aggregate with various percentage so steel slag replaced by volume. Compressive strength, splitting tensile strength for steel slag was like conventional concrete. The strength may be affected with time and so long-term effects on hardened properties of concrete require further investigation. Effective replacement of steel slag as coarse aggregate in concrete improves compressive strength by 4 to 7% at all the replacements of normal coarse aggregate and the compressive strength has been increased significantly for the replacement of fine aggregate at 30–50% by 4–6%. The concrete incorporating steel slag has higher compressive strength and an increase in density and stability was clearly observed in the specimens replaced with steel slag as coarse aggregate.

