A STUDY ON SOIL STABILIZATION USING LIME

A PROJECT REPORT

Submitted by

VARUN V	2017LCV019
MANOJ KUMAR GOWDA B K	2016CVE004
UJWAL GOWDA R	2016CVE908
ANKUSHA RAVI	2016CVE023

In partial fulfillment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

Under the Guidance of

Dr. MADHAVI T

Presidency University

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON SOIL STABILIZATION USING LIME" is a bonafide work of "VARUN V (2017LCV019), MANOJ KUMAR GOWDA B K (2016CVE004), UJWAL GOWDA R (2016CVE908) and ANKUSHA RAVI (2016CVE023)" who have carried out the project work under my supervision.

Dr. Madhavi T	Dr. S. B. Anadinni	Dr. C. Prabhakar Reddy
Project Guide	Dept. Head, Civil Engineering	Dean
Presidency University	Presidency University	School of Engineering Presidency University

Name of the Examiners

1) Dr. Madhavi T

2) Mr. Jagadish Biradar

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named VARUN V, MANOJ KUMAR GOWDA B K, UJWAL GOWDA R and ANKUSHA RAVI hereby declare that the project work entitled **"A STUDYON SOIL STABILIZATION USING LIME"** has been independently carried out by us andsubmitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2018-19. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

VARUN V	2017LCV019
MANOJ KUMAR GOWDA B K	2016CVE004
UJWAL GOWDA R	2016CVE908
ANKUSHA RAVI	2016CVE023

Place – BANGALORE

Date – 30th May 2020

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. Madhavi T,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

VARUN V

MANOJ KUMAR GOWDA B K

UJWAL GOWDA

ANKUSHA RAVI

ABSTRACT

Red soil is non expansive type of soil that expand suddenly and start swelling once it comes in-tuned with wet. due to this property the strength and completely different properties of soil ar very poor. Expansive type of soil shows unpredictable behavior with complete completely different quite stabilizers. Soil stabilization is also a technique to treat a soil to require care of, alter or improve the performance of soil. during this study, the potential marble dirt (by-product of marble industry) and lime stone as useful additives to expansive soil is evaluated. The analysis involves the determination of the advance at intervals the strength properties of NON EXPANSIVE SOIL in its wild still as once mixed with varied proportion of marble dirt and lime stone. The marble dirt in experimental program is obtained from cutting of marble. The environmental degradation due to marble mining is way however the environmental degradation caused by the waste from marble method plants. many researchers have reportable that marble has very high lime (CaO) content up to fifty fifth by weight. The unconfined compression check is conducted by making the specimens of Red soil by adding the variable percentages of marble mud and lime stone and square measure cured for 3, seven and fourteen days. The fascinating modification at intervals the strength properties of the soil square measure discovered.

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

PRESIDENCY GROUP OVER 40 YEARS OF ACADEMIC WISDOM

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi

Final Report

"COMPARATIVE STUDY ON SEISMIC PERFORMANCE OF DIFFERENT LATERAL LOAD RESISTING SYSTEMS FOR G+20 RC STRUCTURE IN ZONE IV"

NADEEM N K	**2016CVE028**
NITHISH V	**2016CVE036**
D AMRUTHA	**2016CVE121**
NAVYA B S	**2017LCV014**

Department of Civil Engineering,

Presidency University, Bangalore

Under the guidance of

GOPALAKRISHNAN N
Assistant Professor
Department of Civil Engineering,
Presidency University, Bangalore

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report entitled "**COMPARATIVE STUDY ON SEISMIC PERFORMANCE OF DIFFERENT LATERAL LOAD RESISTING SYSTEMS FOR G+20 RC STRUCTURE IN ZONE IV**" is a bonafide work of **NADEEM N K (2016CVE028), NITHISH V (2016CVE036), D AMRUTHA (2016CVE121) and NAVYA B S (2017LCV014)** who have carried out the project work under my supervision.

Mr. Goplalakrishnan. N
Project Guide
Presidency University

Dr. S. B. Anadinni
Dept. Head Civil Engineering
Presidency University

Dr. C. Prabhakar Reddy
Dean
School of Engineering
Presidency University

Name of the Examiners **Signature of the Examiners**

1) Mr. Gopalakrishnan N

2) Ms. Anju Mathew

REGISTRAR

DECLARATION

We, the students of final year **B. Tech. (Civil Engineering)**, Presidency University, Bengaluru, named **NADEEM N K, NITHISH V, D AMRUTHA and NAVYA B S** hereby declare that the project work entitled **"COMPARATIVE STUDY ON SEISMIC PERFORMANCE OF DIFFERENT LATERAL LOAD RESISTING SYSTEMS FOR G+20 RC STRUCTURE IN ZONE IV"** has been independently carried out by us and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

NADEEM N K	**2016CVE028**
NITHISH V	**2016CVE036**
D AMRUTHA	**2016CVE121**
NAVYA B S	**2017LCV014**

Place – Bangalore

Date – 30 May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people whom we like to mention with deep gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Honourable Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Gopalakrishnan N**, Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to our departmental University Project Coordinators, **Dr. Madhavi T**, Assistant Professor and **Mr. Navneet Singh**, Assistant Professor, Department of Civil Engineering, for providing all the guidelines and coordinating the completion of the project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean, School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable support.

Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Nadeem N K

Nithish V

REGISTRAR PRESIDENCY UNIVERSITY Registrar BANGALORE

D Amrutha

Navya B S

ABSTRACT

Earthquake control systems refer to those modern techniques in earthquake resistant design, that prevent or divert a major portion of earthquake energy from entering into the main structural system of the structure by applying various techniques.

A natural hazard like earthquake causes damage or collapse of the building if not designed for lateral loads resulting due to earthquake. Hence for seismic resistance for high rise structure it is important to provide exclusive lateral load resisting system

The current study considers G+ 20 RC structure located in zone IV. The study has been carried out for different models such as Bare frame, RC structure with X-bracing, RC structure with shear wall, RC structure with Fluid viscous dampers and RC structure with combination of shear wall & Fluid viscous damper. The Time history analysis is carried out on all the models using ETABSv16 to examine the effect of different lateral load resisting system on seismic parameters like natural time period, base shear, storey shear, storey displacement, storey drift and storey acceleration.

Keywords: Shear Wall, Fluid Viscous Damper (FVD), X - Bracing, Time History analysis

A STUDY ON OBSERVATION AND EXECUTION OF "PRESIDENCY UNIVERSITY PROJECT"

A PROJECT REPORT

Submitted by

MOHAMMED SAQLAIN KHAN 2016CVE029

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Dr. NAKUL RAMMANNA
and
Mr. ASWATH MYSORE VENKATAKRISHNAIAH

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON OBSERVATION AND EXECUTION ON PRESIDENCY UNIVERSITY PROJECT" is a bonafide work of "MOHAMMED SAQLAIN KHAN (2016CVE029)" who have carried out the project work under my supervision.

Dr. Nakul Rammanna Project Guide Presidency University	Dr. S. B. Anadinni Dept. Head, Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Dr. Nakul Ramanna

2) Mr. Ramachandra Gollar

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

I, the student of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named MOHAMMED SAQLAIN KHAN hereby declare that the project work entitled **"A STUDY ON OBSERVATION AND EXECUTION OF PRESIDENCY UNIVERSITY PROJECT"** has been independently carried out by myself and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

MOHAMMED SAQLAIN KHAN 2016CVE029

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, I have received support and guidance from many people which i like to mention deep in gratitude and great pleasure. Firstly, I cordially thank **Presidency University** in platforming such intellectual works and supporting me in all means for my successful completion of the project. I extend my gratitude to my beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

I would like to express my sincere gratitude and indebtedness to my guide **Dr. Nakul Rammanna,** Associate Professor , Department of Civil Engineering and my Co-Guide, **Mr. Ashwath Mysore venkatakrishnaiah,** Project Manager, Presidency University for their valuable guidance and keen interest throughout my project work.

I am thankful to **Ms. Sarah Jacob, Mr. Navneet singh and Dr. Madhavi T,** Assistant Professor, Department of Civil Engineering who has facilitated me all resources and guided me throughout the work as a University project coordinator.

I would also like to thank Mr. Vivek, under whom I have learnt everything I know about the construction project and also for the timely guidance, motivation and much more during the period of my internship project work.

I am thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to me during the period of my project work.

I express my cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in my errors both intellectual and discipline for my representation out in the society for positive survival.

I am grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, I would like to wholeheartedly thank my **family members and friends** for their encouragement and support throughout the work.

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

Mohammed Saqlain Khan

ABSTRACT

The Worldwide Leader in Real Estate Services

CBRE's more than 90,000 professionals provide exceptional outcomes for clients in 100+ countries by combining local market insight, broad services, specialized expertise and premier tools and resources.

CBRE in India

CBRE Group, Inc. (NYSE:CBRE), a Fortune 500 and S&P 500 company headquartered in Los Angeles, is the world's largest commercial real estate services and investment firm (based on 2017 revenue). The company has more than 80,000 employees (excluding affiliates), and serves real estate investors and occupiers through approximately 450 offices (excluding affiliates) worldwide. CBRE offers a broad range of integrated services, including facilities, transaction and project management; property management; investment management; appraisal and valuation; property leasing; strategic consulting; property sales; mortgage services and development services.

CBRE was the first International Property Consultancy to set up an office in India in 1994. Since then, the operations have grown to include more than 8,000 professionals across 10 offices with a presence in over 80 cities in India. As a leading international property consultancy, CBRE provides clients with a wide range of real estate solutions, including Strategic Consulting, Valuations/Appraisals, Capital Markets, Agency Services, Asset Services and Project Management.

The guiding principle at CBRE is to provide strategic solutions that make real estate holdings more productive and economically efficient for its clients across all service lines.

CBRE has been included in the Fortune 500 since 2008, ranking #207 in 2018. It has also been voted the industries top brand by the Lipsey Company for 17 consecutive years and has been named one of Fortunes "Most Admired Companies" in the real estate sector for 6 years in a row.

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

PRESIDENCY GROUP OVER 40 YEARS OF ACADEMIC WISDOM

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi

Final Report

"A COMPARATIVE STUDY ON ENERGY AND LIFE CYCLE COST FOR CONVENTIONAL BUILDING AND PROPOSED GREEN BUILDING"

SACHIN H S	**2016CVE030**
HONEY SUDHILAL	**2016CVE120**
SUMANTH SAMUEL	**2017LCV010**
SACHIN S	**2017LCV027**

Department of Civil Engineering,

Presidency University, Bangalore

Under the guidance of

GOPALAKRISHNAN N
Assistant Professor
Department of Civil Engineering,
Presidency University, Bangalore

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report entitled "**A COMPARATIVE STUDY ON ENERGY AND LIFE CYCLE COST FOR CONVENTIONAL BUILDING AND PROPOSED GREEN BUILDING**" is a bonafide work of **SACHIN H S (2016CVE030), HONEY SUDHILAL (2016CVE120), SUMANTH SAMUEL (2017LCV010) and SACHIN S (2017LCV027)** who have carried out the project work under my supervision.

Mr. Goplalakrishnan N	**Dr. S. B. Anadinni**	Dr. C. Prabhakar Reddy
Project Guide	Dept. Head Civil Engineering	Dean
Presidency University	Presidency University	School of Engineering
		Presidency University

Name of the Examiners	**Signature of the Examiners**
1) Mr. Gopalakrishnan N	
2) Mr. Aayush Kumar	REGISTRAR

DECLARATION

We, the students of final year **B. Tech. (Civil Engineering)**, Presidency University, Bengaluru, named **SACHIN H S, HONEY SUDHILAL, SUMANTH SAMUEL and SACHIN S** hereby declare that the project work entitled **"A Comparative Study on Energy and Life Cycle Cost for Conventional Building and Proposed Green Building"** has been independently carried out by us and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

SACHIN H S	**2016CVE030**
HONEY SUDHILAL	**2016CVE120**
SUMANTH SAMUEL	**2017LCV010**
SACHIN S	**2017LCV027**

Place – Bangalore

Date – 30 May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people whom we like to mention with deep gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Honourable Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Gopalakrishnan N**, Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to our departmental University Project Coordinators, **Dr. Madhavi T**, Assistant Professor and **Mr. Navneet Singh**, Assistant Professor, Department of Civil Engineering, for providing all the guidelines and coordinating the completion of the project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean, School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable support.

Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Sachin H S

Honey Sudhilal

Sumathi Samuel

Sachin S

ABSTRACT

A 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on climate and natural environment. Green buildings preserve precious natural resources by use of alternate/green materials. Alternate/Green Materials are those material which are less resource intensive, locally available and often time recycled materials. Green Buildings also reduce the overall embodied energy as well as operational energy needs by efficient planning. Embodied energy is the energy consumed by all of the processes associated with the production of any material/product, from the mining and processing of natural resources to manufacturing, transport, installation and finishing. To assess or definitively ascertain and certify a building as a 'Green building', several rating systems have been evolved globally. GRIHA, or Green Rating for Integrated Habitat Assessment, is the national rating system of India for buildings. It is a tool which evaluates the environmental performance of a building holistically over its entire life cycle against nationally acceptable benchmarks.

Life Cycle Cost (LCC) is "the total cost of owning, operating, maintaining, and disposing of a building" over a period of time. The continuously rising operation and maintenance cost increases the overall life cycle cost. This can be minimized by investing most efficient solution at initial stage. Life-cycle cost (LCC) calculations help to get better overview of total cost.

The current study presents a comparison between a conventional building and a proposed green building. The study proposes the use of alternative building materials like construction and demolition waste recycled bricks, green cement concrete, gypsum plastering and construction methods like filler slab and Mangalore tile roofing which are locally available and simple to execute also. Embodied Energy calculations for these materials and their conventional counterparts were computed using Input – Output Hybrid Method. The cost estimation for the materials replaced were computed and compared. Adding a few green measures to the building, the possible star rating that the proposed building could achieve as per SVAGRIHA Guidelines was estimated. An effort was also made to compare the approximate Lifecycle cost of the conventional building and the proposed green building using the Present Value estimates.

Keywords: Alternate Building Materials, Alternative building methods, SVAGRIHA Rating, Life Cycle Cost Estimation, Embodied Energy, Green Building, Input-Output Hybrid Method

PROJECT MANAGEMENT PLAN FOR HIGHWAY PROJECT USING "PRIMAVERA"

A PROJECT REPORT

Submitted by

NIDHI.S	2016CVE083
SHAIK ABDUL FAHEEM	2016CVE106
BALLA GAGAN RISHITH	2016CVE087
GANESH GADDAM	2016CVE092

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Mr. AHAMED SHARIF

Presidency University
2018-2019

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "PROJECT MANAGEMENT PLAN FOR HIGHWAY PROJECT USING PRIMAVERA" is a bonafide work of "NIDHI.S (2016CVE083), SHAIK ABDUL FAHEEM (2016CVE106), BALLA GAGAN RISHITH (2016CVE087) and GANESH GADDAM (2016CVE092)" who have carried out the project work under my supervision.

Mr. Ahamed Sharif Project Guide Presidency University	Dr. S B Anadinni Dept.Head CIVIL Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Mr. Ahamed Shariff

2) Mr. Navneet Singh

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named NIDHI.S, SHAIK ABDUL FAHEEM, BALLA GAGAN RISHITH and GANESH GADDAM hereby declare that the project work entitled **"PROJECT MANAGEMENT PLAN FOR HIGHWAY PROJECT USING PRIMAVERA"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

NIDHI.S	2016CVE083
SHAIK ABDUL FAHEEM	2016CVE106
BALLA GAGAN RISHITH	2016CVE087
GANESH GADDAM	2016CVE092

Place – BANGALORE

Date – 27th May 2019

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

REGISTRAR

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor and Registrar.**

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Ahamed Sharif,** Assistant Professor, Department of Civil Engineering Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. Madhavi T** Professor, Department of Civil Engineering and **Mr. Navneet Singh** Assistant Professor, Department of Civil Engineering, Presidency University who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

NIDHI.S

SHAIK ABDUL FAHEEM

BALLA GAGAN RISHITH

GANESH GADDAM

ABSTRACT

With the fierce present day competition in construction market along with aggressive time durations for vast projects construction industry has become very challenging. Therefore profit margin of construction enterprises is getting smaller and smaller, and cost control of construction projects has become more and more important. So, the control of construction project time and cost becomes one of the core areas in project management. Construction project management is a systematic, comprehensive and dynamic subject, requiring construction project manager to regularize and standardize the organizational goal, quality, safety, time and cost of construction project. In this project, in order to achieve the project time and cost control effectively and create greater economic benefits, construction project management tools, techniques and cost, time control measures were studied and implemented for a highway project NH544-e.

A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING CONCRETE

A PROJECT REPORT

Submitted by

AKSHAY S	2016CVE066
ALOKH A REDDY	2016CVE086
ROHIT KUMAR S	2016CVE105
VINOD RATHOD	2017LCV029

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING
SCHOOL OF
ENGINEERING

Under the Guidance of

Dr. SHRISHAIL B ANADINNI

Presidency University

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING CONCRETE" is a bonafide work of "AKSHAY S (2016CVE066), ALOKH A REDDY (2016CVE086), ROHIT KUMAR S (2016CVE105) and VINOD RATHOD (2017LCV029)" who have carried out the project work under my supervision.

Dr. S. B. Anadinni
Project Guide & Dept. Head,
Civil Engineering
Presidency University

Dr. C. Prabhakar Reddy
Dean
School of Engineering
Presidency University

Name of the Examiners

1) Dr. S B Anadinni

2) Dr. Nakul Ramanna

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B. Tech, in Civil Engineering, Presidency University, Bengaluru, named AKSHAY S, ALOKH A REDDY, ROHIT KUMAR S and VINOD RATHOD hereby declare that the project work entitled **"A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING CONCRETE"** has been independently carried out by us and submitted in partial fulfilment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

Akshay S	2016CVE066
Alokh A Reddy	2016CVE086
Rohit Kumar S	2016CVE105
Vinod Rathod	2017LCE029

Place: BANGALORE

Date:

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we would like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Vice-Chancellor, Registrar, and Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. S B Anadinni,** Professor and Head, Department of Civil Engineering for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C. Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation Ultimately, we would like to wholeheartedly thank our **family members And friends** for their encouragement and support throughout the work.

Akshay S

Alokh A Reddy

Rohit Kumar S

Vinod Rathod

ABSTRACT

The imagination of a world without concrete is impossible. Concrete is a soul of infrastructures. Concrete is necessary to gain strength in structures. Conventional concrete, which is the mixture of cement, fine aggregate, coarse aggregate and water, needs curing to achieve strength. So it is required to cure for a minimum period of 28 days for complete hydration of cement and to achieve target strength. Lack of proper curing can badly affect the strength and durability. Self-curing concrete is one type of modern concrete, which cure itself by retaining water (moisture content) in it. The use of POLYETHYLENE GLYCOL in conventional concrete as an chemical admixture helps better hydration and hence the strength of concrete can be achieved. In this experimental work, an attempt has been made to produce a self-curing concrete using a chemical admixture (PEG600). The ingredients for M25 grade of concrete have been arrived by using IS code mix design procedure. With all these ingredients self-curing concrete was prepared by the addition 2% of chemical admixture (PEG600) by weight of cement. The required specimens were casted to compare the compressive strength, split tensile strength and flexural strength of the self-curing concrete for 7, 14 and 28 days. The results of the self-curing concrete have compared with normal concrete and arrived the better results. The test result indicates that use of water-soluble polymers in concrete has improved performance of concrete without any external curing. Based on the experiments results, suitable conclusion were drawn.

A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING PERVIOUS CONCRETE

A PROJECT REPORT

Submitted by

LOHITH K.	2016CVE116
HARSHITHA R.	2016CVE075
PRAJWAL C. K.	2016CVE113
SHASHIKUMAR PATIL	2017LCV037

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Dr. SHRISHAIL B ANADINNI

Presidency University

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING PERVIOUS CONCRETE" is a bonafide work of "LOHITH K. (2016CVE116), HARSHITHA R. (2016CVE075), PRAJWAL C. K. (2016CVE113) and SHASHIKUMAR PATIL (2017LCV037)" who have carried out the project work under my supervision.

Dr. S. B. Anadinni
Project Guide & Dept. Head,
Civil Engineering
Presidency University

Dr. C. Prabhakar Reddy
Dean
School of Engineering
Presidency University

Name of the Examiners

1) Dr. S B Anadinni

2) Dr. Nakul Ramanna

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B. Tech, in Civil Engineering, Presidency University, Bengaluru, named LOHITH K, HARSHITHA R, PRAJWAL CK and SHASHIKUMAR PATIL hereby declare that the project work entitled **"A STUDY ON MECHANICAL PROPERTIES OF SELF-CURING PERVIOUS CONCRETE"** has been independently carried out by us and submitted in partial fulfilment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

Lohith K	2016CVE116
Harshitha R	2016CVE075
Prajwal CK	2016CVE113
Shashikumar Patil	2017LCV037

Place: BANGALORE

Date:

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we would like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Vice-Chancellor, Registrar, and Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr.S.B.Anadinni,** Professor and Head, Department of Civil Engineering for his valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C. Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Lohith K

Harshitha R

Prajwal CK

Shashikumar Patil

ABSTRACT

Water is the most essential element for life on Earth. Many urban cities all over the world are facing huge waters shortage. If we take the example of Bangalore, there is a larger population which is dependent on groundwater since they do not come under the Cauvery water scheme. Due to overuse of groundwater because of the high population density, the bore-wells are getting dry and the water supply is supplemented with the ground water from nearby villages. This problem could be addressed, by using a product called Self-Curing Pervious Concrete Block. Precipitation in the form of rain can be recharged underground effectively by using Self-Curing Pervious Concrete and thereby reducing flooding. Previous Concrete blocks is an effective source control technology for such situations.

Pervious concrete is a special type of concrete with high porosity used for concrete flat work applications that allow from precipitation and other source to pass directly through, thereby reducing the runoff from a site and allowing ground water recharge. This porosity is attained by highly interconnected void content. Typically, pervious concrete has little or no fine aggregate and has just enough cementing paste to coat the coarse aggregate particles while preserving the interconnectivity of the voids.

Pervious concrete is traditionally used in parking areas, walkways in parks and gardens, residential streets, pedestrian walkways and green houses, basketball and volleyball courts etc. Pervious concrete in an important application for the sustainable construction and is one of many low impact development techniques used by builders to protect water quality.

In the experimental work, an attempt is made to investigate the mechanical properties of the pervious concrete. Mix is prepared by taking the ratio 1:4 ie, one part cement and 4 part of coarse aggregate and with w/c ratio 0.4 without adding any fine aggregate. This concrete is also called no fine concrete. The required specimen are casted to find the compressive strength, split tensile strength and flexural strength of self-curing pervious concrete and conventional concrete. The experimental results have been compared for 7days, 14days and 28days and also drawn the useful conclusions.

PRESIDENCY UNIVERSITY BANGALORE

2019-2020

ANALYSIS AND DESIGN OF COMMERCIAL BUILDING (G+2) USING STAAD PRO

A PROJECT REPORT ON

Submitted by

SHRISHAIL MAGADI	(2017LCV046)
ARUN KUMAR H	(2017LCV011)
UMESH KATTIMANI	(2017LCV018)
SANDEEPA S M	(2016CVE037)

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
In
CIVIL ENGINEERING
SCHOOL OF ENGINEERING

Under the Guidance of
Mr. Akash Kumar Behera

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY BANGALORE

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "ANALYSIS AND DESIGN OF COMMERCIAL BUILDING G+2 USING STAAD PRO"**SHRISHAIL MAGADI**(2017LCV046), **ARUN KUMAR H**(2017LCV011), **UMESH KATTIMANI**(2017LCV018),**SANDEEPA S M**(2016CVE037), who have carried out the project work under my supervision.

Mr. Akash Kumar Behera
Project Guide
Presidency University

Dr. S. B. Anadinni
Dept. Head, Civil
Engineering Presidency
University

Dr. C. Prabhakar Reddy
Dean
School of Engineering
Presidency University

Name of the Examiners

1) Mr. Akash Kumar Behera

2) Mr. Deepak Arora

REGISTRAR

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named SHRISHAIL ,ARUNKUMAR UMESH.K,SANDEEP, Khereby declare that the project work entitled **"ANALYSIS AND DESIGN OF COMMERCIAL BUILDING G+2 USING STAAD PRO"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

SHRISHAIL MAGADI	2017LCV046
ARUN KUMAR H	2017LCV011
UMESH KATTIMANI	2017LCV018
SANDEEP SM	2016CVE037

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

Place – BANGALORE
Date – 30th May 2020

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitudeand indebtedness to our guide **Mr. Akash Kumar Behera,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

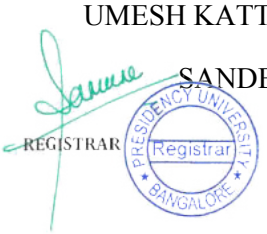
Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

SHRIEHAIL MAGADI

ARUN KUMAR H

UMESH KATTIMANI

SANDEEP SM



ABSTRACT

- The principle objective of this project is to analyze and design Electrical Substation [G + 1] using STAAD. Pro. The design involves load calculations manually and analyzing the whole structure by STAAD. Pro.

- STAAD. Pro features a state-of-the-art user interface, visualization tools, powerful analysis and design engines with advanced finite element and dynamic analysis capabilities. From model generation, analysis and design to visualization and result verification, STAAD. Pro is the professional's choice.

- STAAD. Pro has a very interactive user interface which allows the users to draw the frame and input the load values and dimensions. Then according to the specified criteria assigned it analyses the structure and designs the members with reinforcement details for RCC frames. Our final work was the analysis and design of G+1 3D RCC frame under various load combinations.

- The materials were specified and cross-sections of the beam and column members were assigned. The codes of practice to be followed were also specified for design purpose with other important details. Then STAAD. Pro was used to analyze the structure and design the members. In the post-Processing mode, after completion of the design, we can work on the structure and study the BM and SF values with the generated diagrams.

- The design of the building is dependent upon the minimum requirements as prescribed in the Indian Standard Codes. The minimum requirements pertaining to the structural safety of buildings are being covered by way of laying down minimum design loads which have to be assumed for dead loads, imposed loads, and other external loads like Wind load Earthquake load, the structure would be required to bear. Complicated and high-rise structures need very time taking and cumbersome calculations using conventional manual methods. STAAD. Pro provides us a fast, efficient, easy to use and accurate platform for analyzing and designing structures.

ASSESSMENT OF SPATIAL DISTRIBUTION OF GROUND WATER QUALITY USING ANOVA

A PROJECT REPORT

Submitted by

SYED ATIF JUNAID	2016CVE019
AMITH GOWDA B R	2016CVE059
VEERENDRA H S	2017LCV006

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mrs. SHWETHA A

Presidency University

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "ASSESSMENT OF SPATIAL DISTRIBUTION OF GROUNDWATER QUALITY USING ANOVA" is bonafide work of "**SYED ATIF JUNAID (2016CVE019), AMITH GOWDA BR (2016CVE059), and VEERENDRA HS (2017LCV006**)" who have carried out the project work under my supervision.

Mrs. Shwetha A	Dr. S. B. Anadinni	Dr. Prabhakar Reddy
Project Guide	Dept. Head Civil Engineering	Dean School of Engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners

1) Mrs. Shwetha A

2) Ms. Aashi Agarwal

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named AMITH GOWDA B.R, SYED HATIF JUNAID and VEERENDRA H.S hereby declare that the project work entitled **"ASSESSMENT OF SPATIAL DISTRUBUTION OF GROUND WATER QUALITY USING ANOVA"** has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

AMITH GOWDA B.R	2016CVE059
SYED ATIF JUNAID	2016CVE019
VEERENDRA H S	2017LCV006

Place: BENGALURU

Date: 26-May-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mrs. Shwetha A,** Assistant professor, Department of Civil Engineering, Presidency University for her valuable guidance and keen interest throughout our project work.

We are thankful to **Ms. Sarah jacob** Assistant Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We express our amiable gratitude to the organizations such as **Survey of India, Department of Mines and Geology, Bangalore, Soil Survey of India, Bangalore, Karnataka state Natural Disaster Monitoring Centre, Panchayat Raj Engineering Department, Hoskote Geological Survey of India, Bangalore** for their wonderful cooperation in facilitating the required data for our project work.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, We would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Amith Gowda BR

Syed Atif Junaid

Veerendra HS

ABSTRACT

The development rate of Bengaluru the capital city of Karnataka is one of the best example to positively reflect globalization and negatively reflect higher rate of pollution. This case study is an assessment on "Assessment of Spatial Distribution of Groundwater Quality Using Anova" in Hoskote, Devanahalli, Bangalore East and Anekal Taluk's. Bengaluru is the Silicon Valley of India and has several IT cum special economic zones in it that has diversified population dwelling in and around Bengaluru. These 4 Taluk's is selected because of its higher growth rate in-terms of residential, IT and industrial zones. The main objective of this study is to assess groundwater contamination and vulnerability. Here R and ANOVA Software is used in this study for a better assessment over the pollution zones. The overall view of the Water Quality of the present study zone had p-valve for pH had less than 0.05 indicating the deteriorated water quality. The p-value used for all parameters showed that the calculated p-values of many parameters especially pH, TDS, nitrate and chlorides are more than the tabulated values resulting in rejection of null hypothesis which indicated that there is a significant difference between the month of January and February. This study proves that anthropogenic impact and water table depth are greatly influential for ground water vulnerability and other related issues are also addressed.

Key words: Groundwater, , R software, ANOVA, Anthropogenic Impact.

AUGMENTED REALITY IN CIVIL ENGINEERING

A PROJECT REPORT

Submitted By

DEEPAK RAJU C G

HAKIM SIBTAIN

In partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. Aaron Darius Vaz

ASSISTANT PROFESSOR

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Presidency University

(Private University established in Karnataka State by Act No.41 of 2013)
Itgalpura, Rajanukunte, Yelahanka, Bengaluru-560064

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajanukunte, Yelahanka, Bengaluru 560064

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

DEPARTMENT OF CIVIL ENGINEERING

BONAFIDE CERTIFICATE

Certified that this project report "**AUGMENTED REALITY IN CIVIL ENGINEERING**" Is the bonafide work of

"**DEEPAK RAJU C G** and **HAKIM SIBTAIN**", who carried out the work under my supervision,

SIGNATURE	**SIGNATURE**	**SIGNATURE**
Mr. Aaron Darius Vaz	**Dr. S. B. Anadinni**	**Dr. C. Prabhakar Reddy**
SUPERVISOR ASSISTANT PROFESSOR CIVIL DEPARTMENT Presidency University	**HEAD OF THE DEPARTMENT** CIVIL DEPARTMENT Presidency University	**DEAN SCHOOL OF ENGINEERING** Presidency University

Name of the Examiners

1) Mr. Aaron Darius Vaz

2) Ms. Anju Mathew

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named **DEEPAK RAJU C G** and **HAKIM SIBTAIN** hereby declare that the project work entitled **"AUGMENTED REALITY IN CIVIL ENGINEERING"** has been independently carried out by us and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

NAME	ID.NO	SIGNATURE
DEEPAK RAJU C G	**2016CVE073**	
HAKIM SIBTAIN	**2016CVE115**	

PLACE: Presidency University,
Itgalpura, Rajanakunte,
Yelahanka,
Bengaluru 560064
Karnataka, India

DATE:

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENTS

The satisfaction of successful completion of any task could not be complete without acknowledging those persons whose guidance and continued support made my efforts a successful one. I would like to extend my sincere thanks to all of them.

Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting me in all means for the successful completion of my project. We extend our sincerest gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, and Dean-School of Engineering** for their support and encouragement in completion of the project.

With a deep sense of gratitude we express our thanks to **Mr. Aaron Darius Vaz, Supervisor,** Asst. professor, Civil department who helped us in every stage of this project through his guidance and constant supervision as well as providing necessary information regarding the project & also for his support in completing the project.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, and encouragement provided to us during the period of our project work.

We are thankful to **Dr. C Prabhakar Reddy**, Dean School of Engineering and Presidency University.

Finally, we would like to express our sincerest gratitude towards our **Parents, Family & Friends** for their kind co-operation and encouragement, which helped us in completion of this project.

Deepak Raju C G

Hakim Sibtain

ABSTRACT

Augmented Reality has been a topic in software development circles for a number of years, but it's getting renewed focus and attention with the release of products like Google Glass. Augmented Reality is a technology that works on computer vision based recognition algorithms to augment sound, video, graphics and other sensor based inputs on real world objects using the camera of your device. It is a good way to render real world information and present it is an interactive way so that virtual elements become part of the real world.

We as students in this world of growing technology want to keep up to the world and want to be part of this technology. As the growth of technology in this world, students are more oriented towards technical fields and want to be part of it. Augmented reality is also the part of this real world technology and people use it to bring a change in education and work firms.

This project focuses on study of Augmented Reality being introduced in Civil Engineering. This project mainly focuses on introducing, Augmented Reality in Civil Engineering, design and structural analysis of a structure to give a complete product design along with the cost estimate.

It is estimated that 2.5 billion AR apps will be downloaded annually and will generate revenue of more than $1.5 billion by 2019. This is because AR apps will not be limited to conventional mobile apps. There will be new markets like Google Glass, which will open more forms of development and use. The main purpose of this project is to bring about a change in the education and construction firms and make reading a blueprint easier, also in highlighting the design of the structure and the infrastructure to a client with hand held experience of the structure before execution of the plan. .

EFFECT OF ADDITION OF RICE HUSK CHARCOAL ON CONCRETE COMPRESSIVE STRENGTH

A PROJECT REPORT

Submitted by

SHILPA R	2016CVE011
AJITH KUMAR M	2016CVE012
S GAGAN	2016CVE082
B SAI KUMAR REDDY	2016CVE089

In partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. DAYALAN J

PRESIDENCY UNIVERSITY

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

REGISTRAR

PRESIDENCY UNIVERSITY
Registrar
BANGALORE

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru-560064

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

2019-2020

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report **"**EFFECT OF ADDITION OF RICE HUSK CHARCOAL ON CONCRETE COMPRESSIVE STRENGTH**"** is bonafide work of "**SHILPA R (2016CVE011), AJITH KUMAR M (2016CVE012), S GAGAN (2016CVE082), and B SAI KUMAR REDDY (2016CVE089)"** who have carried out the project work under my supervision.

Mr. DAYALAN J	**Dr. S B ANADINNI**	**Dr.C PRABHAKARREDDY**
Project Guide	Head of Dept.	Dean
Presidency University	Civil Engineering	School of Engineering
	Presidency University	Presidency University

Name of the Examiners

1) Mr. Dayalan J

2) Mr. Jagadish Biradar

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We are the students of second year B.Tech, Civil Engineering, Presidency University, Bangalore, named Ms.SHILPA R, Mr. AJITH KUMAR M, Mr. S GAGAN and Mr. B SAI KUMAR REDDY hereby declare that the project work entitled "EFFECT OF ADDITION OF RICE HUSK CHARCOAL ON CONCRETE COMPRESSIVE STRENGTH" has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2018-19. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

SHILPA R	2016CVE011
AJITH KUMAR M	2016CVE012
S GAGN	2016CVE082
B SAI KUMAR REDDY	2016CVE089

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Dayalan J,** Assistant professor, Department of Civil Engineering, Presidency University for her valuable guidance and keen interest throughout our project work.

We are thankful to **Dr.Madhavi T** Assistant Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to Teaching and Non-Teaching staff of Department of Civil Engineering and also staff from other Departments who have extended their valuable help and cooperation

Ultimately, we would wholeheartedly thank our family members and friends for their encouragement and support throughout the work.

SHILPA R, AJITH KUMAR M, S GAGAN, B SAI KUMAR REDDY

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ABSTRACT

Along with the advancement of time, technology in the field of building construction, especially concrete manufacturing, is also experiencing very rapid development, almost every aspect of human life is always associated with concrete. The use of added materials has been done in the process of concrete admixture. Based on this, this study aimed to determine the increase in optimal compressive strength of concrete with additional material of husk charcoal and compressive strength of the plan at 28 days is 20 MPa. In this study using the percentage variation of husk charcoal 2 %, 4 %, and 6 % by weight of cement. The analytical review of this research is the compressive strength, with concrete cylindrical specimens having a diameter of 15 cm and a height of 30 cm. The concrete mix planning method uses the Indonesian National Standard (SNI) method. The material for this experiment is rice husk which is made into charcoal by manual process. After testing and research, the results show that the use of rice husk charcoal results in reduced workability because the absorption capacity of rice husk is quite high, and the strength of concrete with the addition of husk charcoal by 2 %, 4 %, and 6 % concrete increases its strength from compressive strength concrete plans of 20 MPa. Concrete compressive strength with a mixture of 2% husk charcoal produces compressive strength of 24, 3 MPa, there is an increase of 4, 3 MPa with the addition of husk charcoal by 2 %.

“Energy Auditing in Educational Institutions”

A PROJECT REPORT

Submitted by

MANJU Y - 2017LCV005
DARSHSAN H S - 2017LCV009
SHARATH K G - 2017LCV012
VINAY K A - 2017LCV023

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
In
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Dr. K VENKATESHA RAJU
Asst. Professor

Presidency University
May -2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report **"Energy Auditing in Presidency institutions"** is bonafide work of "MANJU Y- 2017LCV005, DARSHSAN H S- 2017LCV009, SHARATH K G - 2017LCV012, VINAY K A (2017LCV023)" who have carried out the project work under my supervision.

Dr. K VENKATESHA RAJU	**Dr. S. B. Anadinni**	**Dr. C Prabhakar Reddy**
Project Guide	Head of Dept.	Dean School of Engineering
Presidency University	Civil Engineering	Presidency University
	Presidency University	

Name of the Examiners

1) Dr. Venkatesha Raju

2) Mr. Bhavan Kumar M

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We are the students of second year B.Tech, Civil Engineering, Presidency University, Bengaluru, named Mr. MANJU Y, DARSHSAN H S, SHARATH K G and Vinay K A hereby declare that the project work entitled **"Energy Auditing in Educational Institutions"** has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20.

Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

Manju Y - 2017LCV005
Darshsan H S - 2017LCV009
Sharath K G -2017LCV012
Vinay K A -2017LCV023

PLACE: Benagluru

DATE: 30.05.2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. K VENKATESHA RAJU,** professor, Department of Civil Engineering, Presidency University for his valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

ABSTRACT

An increasing energy price, severe power shortage, widening in supply gap, efficiency and conservation measure have gained more attention in the recent years. Buildings in educational institutions are consuming more energy and the possibility for energy saving is also substantial. But, in India, educational institutions are ignored as a contributor to energy intensive operations within the commercial buildings sector.

The electricity cost is one of the manageable costs within an institute's budget. So, the educational institutions are having lack of interest in energy conservation (EC). An energy study stated that 5-20% of energy can be saved in an educational institution through Energy Audit. An energy audit is carried out to find chances to reduce the amount of energy input into the system, without affecting the outputs when the object of study is the buildings of an educational institution, then reducing energy consumption while maintaining or improving student comfort, health and safety are of main concern.

FEASIBILITY STUDY OF SOLAR PHOTOVOLTAIC POWER GENERATION SYSTEM IN PRESIDENCY UNIVERSITY CAMPUS

A PROJECT REPORT

Submitted by

MIYASAB BALIKAI	2017LCV043
BURHAN INAYAT	2016CVE090
SHAIK MUNEEB UR REHMAN	2016CVE064
AVANI P	2016CVE076

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Dr. Mohammad Shahid

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "Feasibility Study of Solar Photovoltaic Power Generation System in Presidency University Campus" is a bonafide work of "MIYASAB BALIKAI (2017LCV043), BURHAN INAYAT (2016CVE090), SHAIK MUNEEB UR REHMAN (2016CVE064) and AVANI P (2016CVE076)" who have carried out the project work under my supervision.

Dr. Mohammad Shahid Project Guide Presidency University	Dr. S. B. Anadinni Dept. Head, Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Dr. Mohammad Shahid

2) Dr. Jagdish Godihal

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named MIYASAB BALIKAI, BURHAN INAYAT, SHAIK MUNEEB UR REHMAN and AVANI P hereby declare that the project work entitled **"Feasibility Study of Solar Photovoltaic Power Generation System in Presidency University Campus"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

MIYASAB BALIKAI	2017LCV043
BURHAN INAYAT	2016CVE090
SHAIK MUNEEB UR REHMAN	2016CVE064
AVANI P	2016CVE076

Place – BANGALORE

Date – 31th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

REGISTRAR

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. Mohammad Shahid,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Mr. Navaneet Singh** Assistant Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Miyasab Balikai

Burhan Inayat

Shaik Muneeb Ur Rehman

Avani P

ABSTRACT

Because of the daily growing demand for energy we have to find the more and new alternatives of energy to satisfy the demand. One of the most common sources of energy now a day is Solar and its production over other energy sources rising globally. Currently 31% of energy demand is satisfied by solar energy in India and totally it contributes approximate 22% of energy that India totally produced domestically. In India Government-funded and subsidized solar electricity production is not less than approximately 6.4 MW per year as of 2005 which is comparatively more with respect to other developing countries. In this study we calculated the area required equal to 7834 sq.m for setting up a solar system for power generation with the total initial investment of Rs. 37,338,233 and the payback period of 5.8 years. The solar power solar can generate about 91203kwh of electricity per year with a life time saving of about Rs.162, 113,891.

The renewable energy system have a large number of environmental benefits with the reduction in about 556 tons of carbon dioxide per year as per American Clean Energy Standards.

AN EXPERIMENTAL INVESTIGATION ON REPLACEMENT OF SAND IN CEMENT CONCRETE BY COPPER SLAG

A PROJECT REPORT

Submitted by

ANUSHA M S	2016CVE006
NISHA M	2016CVE015
SUCHITHRA G N	2016CVE045
GAGANA K J	2017LCV007

In partial fulfilment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

MS. ANJU MATHEW
ASSISTANT PROFESSOR
DEPARTMENT OF CIVIL ENGINEERING

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

Presidency University
2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "AN EXPERIMENTAL INVESTIGATION ON REPLACEMENT OF SAND IN CEMENT CONCRETE BY COPPER SLAG" is bonafide work of "ANUSHA M S (2016CVE006), NISHA M (2016CVE015), SUCHITHRA G N (2016CVE045) and GAGANA K J (2017LCV007)" who have carried out the project work under my supervision.

Ms. Anju Mathew	Dr. S. B. Anadinni	Dr. C. Prabhakar Reddy
Project Guide	Dept. Head Civil Engineering	Dean School of Engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners

1) Ms. Anju Mathew

2) Mr. Gopalakrishnan

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named ANUSHA M S, NISHA M, SUCHITHRA G N and GAGANA K J hereby declare that the project work entitled **"AN EXPERIMENTAL INVESTIGATION ON REPLACEMENT OF SAND IN CEMENT CONCRETE BY COPPER SLAG"** has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2018-19. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

ANUSHA M S	2016CVE006
NISHA M	2016CVE015
SUCHITHRA G N	2016CVE045
GAGANA K J	2017LCV007

Place – BANGALORE

Date – 27th May 2019

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Ms. Anju Mathew**, Assistant Professor, Department of Civil Engineering, Presidency University for her valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. Madhavi T** and **Mr. Navneet Singh Thakur,** Assistant Professors, Department of Civil Engineering who have facilitated us with all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S B Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

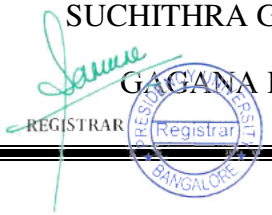
Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

ANUSHA M S

NISHA M

SUCHITHRA G N

GAGANA K J



ABSTRACT

In the present scenario carbon emission and sand-mining are major concerns due to its hazardous effect to environment and creating serious imbalance to the ecosystem. Various studies have been conducted using by-products like copper slag as partial replacement of fine aggregate. Different researchers have also revealed numerous uses of copper slag. as a replacing agent in determining the strength of concrete. A comprehensive review of studies has been presented in this paper for scope of replacement of fine aggregate from copper slag in concrete.

Key words: COPPER SLAG, FINE AGGREGATE, REPLACEMENT, CONCRETE, STRENGTH

"Study on Fresh Properties and Mechanical Properties of Fibre Reinforced Self Compacting Concrete Using FlyAsh as Partial Replacement of Cement"

A PROJECT REPORT
Submitted by

CHARAN KUMAR K C	2016CVE031
KRISHNA REDDY	2016CVE051
PRAHLAD PATROTI	2017LCV016
ANANDKUMAR B	2017LCV036

In partial fulfillment for the award of the degree Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING SCHOOL OF

ENGINEERING

Under the Guidance of
Mr.Ramchandra Goller
And Co-Guide
Mr. Manjunath. P

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru - 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report **"Study on Fresh Properties and Mechanical Properties of Fibre Reinforced Self Compacting Concrete Using FlyAsh as Partial Replacement of Cement"** is bonafide work of "CHARAN KUMAR K C (2016CVE031), KRISHNA REDDY (2016CVE051), PRAHLAD PATROTI (2017LCV016), and ANANDKUMAR B (2017LCV036) who have carried out the project work under my supervision

Mr. Ramchandra Gollar Project Guide	Dr. S. B. Anadinni Dept. Head Civil Engineering	Dr. C. Prabhakar Reddy Dean School of Engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners :

1) Mr. Ramachandra Gollar

2) Mr. Ahamed Sharif

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named CHARAN KUMAR K C, KRISHNA REDDY, PRAHLAD PATROTI and ANANDKUMAR B hereby declare that the project work entitled

"Study on Fresh Properties and Mechanical Properties of Fibre Reinforced Self Compacting Concrete Using FlyAsh as Partial Replacement of Cement" has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

CHARAN KUMAR K C	**2016CVE031**
KRISHNA REDDY	**2016CVE051**
PRAHLAD PATROTI	**2017LCV016**
ANANDKUMAR B	**2017LCV036**

Place – BANGALORE

Date –

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in allmeans for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. S. B. Anadinni,** Head of the Department and our Co-Guide **Mr.Ramchandra Goller** Lecturer, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. Madhavi and Mr.Navneet Singh**, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, We would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Charan K. C

Krishna Reddy

Prahlad Patroti

Anand kumar

ABSTRACT

Fibre-reinforced self-compacting concrete (FRSCC) is a new building material that combines positive characteristics of workability of self-compacting concrete (SCC) with enhanced characteristics of hardened concrete due to fibre addition. In literature, metallic and synthetic fibres are used as the SCC reinforcement. From the literature it may be established that workability properties of SCC are more adversely affected by the use of metallic fibres. Also, metallic fibres are more effective than synthetic fibres in increasing the mechanical properties of SCC.

FLUORIDE AND NITRATE CONTAMINATIONS IN GROUND WATER: CAUSES, EFFECTS AND REMDIAL MEASURES

A PROJECT REPORT

Submitted by

DARSHAN P	**(2016CVE003)**
VISHNU K VINOD	**(2016CVE024)**
NISCHIT N J	**(2016CVE041)**
VINUTHA G	**(2016CVE125)**

In partial fulfilment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Dr. CHANDANKERI G G

Associate Professor
Department of Civil Engineering

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru-560064

BONAFIDE CERTIFICATE

Certified that this report "FLUORIDE AND NITRATE CONTAMINATIONS IN GROUND WATER: CAUSES, EFFECTS AND REMDIAL MEASURES" is a bonafide work of "DARSHAN P (2016CVE003), VISHNU K VINOD (2016CVE024), NISCHIT N J (2016CVE041), VINUTHA G (2016CVE125)" who have carried out the project work under my supervision.

Dr. Chandankeri G	Dr. S. B. Anadinni	Dr. C. Prabhakar Reddy
Project Guide Presidency University	Dept. Head Civil Engineering Presidency University	Dean School of Engineering Presidency University

Name of the Examiners :

1) Dr. Chandankeri G

2) Dr. Venkatesha Raju

REGISTRAR

DECLARATION

We the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named Darshan P, Vishnu K Vinod, Nischit N J and Vinutha G hereby declare that the project work entitled **"An Analysis of Water Quality in Bagepalli: Causes, Effects and Remedial Measures"** has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-2020. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

Mr. Darshan P

Mr. Vishnu K Vinod

Mr. Nischit NJ

Ms. Vinutha G

Date: 29th May 2020

ACKNOWLEDGEMENT

During this project work, we have received support and guidance from many people which we like to mention our gratitude and great pleasure. Firstly, we cordially thank **Presidency University** for framing such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our Hounarable **Chancellor, Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our inaccuracies both rational and discipline for our representation in the society for positive survival.

We are grateful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support, guidance and encouragement during our project work.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. Chandankeri G.G.,** Associate Professor and **Mr. Santhosh S.B,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are grateful to officials of Karnataka State Remote Sensing Centres, Bangalore for providng valuable information and also **Mr. Borappa** Senior Geologist of district ground water Directorate and **Mr.Shastri,** Rural drinking water and sanitation department for their great cooperation in facilitating the required data for our project work.

We would like to acknowledge **Mr.Naveen Kumar A R** for his valuable inputs for our project.

We are thankful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

Finally, we would wholeheartedly grateful to our **family members and friends** for their encouragement and support throughout the work.

REGISTRAR PRESIDENCY UNIVERSITY Registrar BANGALORE

ABSTRACT

Ground water is a main source of drinking and domestic use for rural and urban population of India. The aim of current study is to assess ground water quality in Bagepalli taluk. Water samples data were collected from different organisations pertaining to Bagepalli taluk, Chikka Ballapur District and data were analysed for the parameters like fluoride, nitrate, iron, pH and calcium carbonate. The various spatial and non-spatial data were created using ArcGIS and presented in the report. The base data of fluoride and nitrate are then calculated assuming an increase by 5% and 10% to understand short and long term effect on human health and to provide preventive measures to the local community. Although, the Government of Karnataka is providing fluoride free water to the people of Bagepalli taluk, but there are few cases of fluorosis, especially among the old people. The other concern is the fluoride is present in the groundwater tapped from the deeper aquifers and are using for irrigation and other non-drinking purposes. The produce from agriculture may affects to the local community in the long term.

DESIGN AND ANALYSIS OF PRE-ENGINEERED BUILDING

A PROJECT REPORT

Submitted by

DHANRAJ SUTHAR	2016CVE107
MANIK PRABHU	2016CVE904
AJAY PATIL	2015CVE903

In partial fulfilment for the award of the degree Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. DEEPAK ARORA

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Presidency University

2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY
Registrar
BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "DESIGN AND ANALYSIS OF PRE-ENGINEERED BUILDINGS" is a bonafide work of "DHANRAJ SUTHAR (2016CVE107), MANIK PRABHU (2016CVE904), AJAY PATIL (2016CVE903)" who have carried out the project work under my supervision.

Mr. Deepak Arora Project guide Presidency University	Dr. S. B. Anadinni Head, Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Mr. Deepak Arora

2) Mr. Ahamed Sharif

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named DHANRAJ SUTHAR, MANIK PRABHU, AJAY PATIL hereby declare that the project work entitled **"DESIGN AND ANALYSIS OF PRE-ENGINEERED BUILDINGS"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

DHANRAJ SUTHAR 2016CVE107
MANIK PRABHU 2016CVE904
AJAY PATIL 2016CVE903

Place – BANGALORE
Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. S B Anadinni,** Professor and Head, Department of Civil Engineering and our Guide, **Mr. Deepak Arora,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Mr. Navneet Singh and Dr. Madhavi T** Assistant Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.
We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation. Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Dhanraj Suthar
Manik Prabhu
Ajay Patil

ABSTRACT

Steel is the material of choice for design because it is inherently ductile and flexible. It flexes under extreme loads rather than crushing and crumbling. Structural steel's low cost, strength, durability, design flexibility, adaptability and recyclability continue to make it the material of choice in building construction. Fast construction lowers overhead expenses for construction management services. In structural engineering, a pre-engineered building (PEB) is designed by a manufacturer to be fabricated using a pre-determined inventory of raw materials and manufacturing methods that can efficiently satisfy a wide range of structural and aesthetic design requirements. In pre-engineered building concept the complete designing is done at the factory and the building components are brought to the site in knock down condition. An efficiently designed pre-engineered building can be lighter than the conventional steel buildings by up to 30%. Lighter weight equates to less steel and a potential price savings in structural framework.

In this project work, a pre engineering building was modeled of length 75m, width 20m and height 5m which is located in Bangalore, using Staad.Pro using tapered I- sections. Building was subjected to dead load, live load, wind load as per IS:875 and combination of load using IS:800-2007. Wind load was calculated using manual calculation as Indian standard code for wind calculation is not available in Staad.Pro. The PEB was analyze and design using IS:800-2007 with the help of Staad.Pro. After analyze, it was notices that bending moment is more where the more section is available and vice-versa. It means, PEB are cost efficient.

PRESIDENCY UNIVERSITY

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY GROUP OVER 40 YEARS OF ACADEMIC WISDOM

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi

REPORT

on

A STUDY ON *"PERFORMANCE OF STRUCTRUAL LIGHT WEIGHT CONCRETE WITH GFRP & STEEL FIBRE AS REINFORCEMENT"*

SHIVAKUMAR V. DALALI (2016CVE065)

HEMANTH KUMAR J. (2017LCV003)

VINAYAKA M.T. (2017LCV008)

SHUBHAM TIWARI (2017LCV022)

Department of Civil Engineering,

Presidency University, Bangalore

Under the guidance of

Dr. RATNA TEJ REDDY REGISTRAR

Department of Civil Engineering,

Presidency University, Bangalore

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON "PERFORMANCE OF STRUCTURAL LIGHT WEIGHT CONCRETE BEAMS WITH GFRP & STEEL FIBRE AS REINFORCEMENT" is a bonafide work of "SHIVKUMAR V DALALI(2016CVE065), HEMANTH KUMAR J(2017LCV003),VINAYAKA M T(2017LCV008) and SHUBHAM TIWARI (2017LCV022)" who have carried out the project work under my supervision.

Dr. RATNA TEJ REDDY Project Guide Presidency University	Dr. S. B. Anadinni Dept. Head Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiner's

1) **Dr. Ratna Tej Reddy**

2) Dr. Nakul Ramanna

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named SHIVKUMAR V DALALI , HEMANTH KUMAR J,VINAYAKA M T, SHUBHAM TIWARI hereby declare that the project work entitled "**A STUDY ON PERFORMANCE OG STRUCTURAL LIGHT WEIGHT CONCRETE WITH GFRP AND STEEL FIBER AS REINFORCEMENT"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

SHIVAKUMAR V DALALI	2016CVE065
HEMANTH KUMAR J	2017LCV003
VINAYAKA M T	2017LCV008
SHUBHAM TIWARI	2017LCV022

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and in debtedness to our Head Department of Civil Engineering **Dr.S B Anadinni,** our Project Guide **Dr. Ratna Tej Reddy,** Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Mr. Navneet Singh** Assistant Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Shivkumar V Dalali
Hemanth Kumar J
Vinayaka M T
Shubham Tiwari

ABSTRACT

In this research the flexural behavior of lightweight concrete with inclusion of steel and GFRP reinforced bar is investigated. Pumice aggregate is used for the replacement of normal weight aggregate to reduce the density of concrete in order to achieve lightweight concrete. The methodology consisted of comparing the results of conventional concrete to light weight concrete reinforced with GFRP and steel fiber. Light Weight Aggregate Concrete (LWAC) and fiber reinforced LWAC. The beams are produced with two types of fiber reinforced LWAC, plain LWAC and conventional concrete with similar compressive strength to allow for the comparison of structural performance of the beam. The fibers are added in the LWAC to increase the ductility of the concrete in order to increase the energy absorption capacity and to control the faster rate of crack development. Steel fiber in concrete beams provide better crack control and resistance to deformation of beams. The beam specimens with inclusion of steel fiber shows considerable improvement in the load carrying capacity as compared to the specimen with inclusion of GFRP. The present investigation aims at studying the effect of pumice aggregate along with steel and GFRP on structural behavior of GFRP Reinforced Light Weight Concrete (GFRLWC) in order to make it a viable structural material to be used in construction industry.

KEYWORDS – Flexural behavior, ductility of concrete , lightweight, steel fiber, density of concrete, GFRP.

EXPERIMENTAL STUDY ON UTILIZATION OF WASTE IN CEMENT CONCRETE

A PROJECT REPORT

Submitted by

AFREEN ZARGAR (2016CVE085)

NIHAL DAS (2016CVE098)

UDAY RAVI A R (2016CVE126)

JEEVAN S (2017LCVO45)

In partial fulfilment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. SANTHOSH M B

Assistant Professor
Department of Civil Engineering

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru-560064

BONAFIDE CERTIFICATE

Certified that this report "AN EXPERIMENTAL STUDY ON UTILIZATION OF WASTE IN CEMENT CONCRETE" is a bonafide work of **"AFREEN ZARGAR (2016CVE085), NIHAL DAS (2016CVE098), UDAY RAVI A.R. (2016CVE126) and JEEVAN S (2017LCV045)"** who have carried out the project work under my supervision.

Mr. Santhosh M.B.	**Dr. S. B. Anadinni**	**Dr. C. Prabhakar Reddy**
Project Guide	Dept. Head, Civil Engineering	Dean of school of engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners

1) Mr. Santhosh M B

2) Mr. Jagadish Biradar

REGISTRAR

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named "AFREEN ZARGAR(2016CVE085), NIHAL DAS (2016CVE098), UDAY RAVI A.R. (2016CVE126) and JEEVAN S (2017LCV045)" hereby declare that the project work entitled **"AN EXPERIMENTAL STUDY ON UTILIZATION OF WASTE IN CEMENT CONCRETE"** has been independently carried out by us and submitted in partial fulfilment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

AFREEN ZARGAR (2016CVE085)

NIHAL DAS (2016CVE098)

UDAY RAVI A.R. (2016CVE126)

JEEVAN S (2017LCV045)

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We would like to express our sincere gratitude and indebtedness to our guide

Mr Santhosh M B Assistant professor, Department of Civil Engineering, Presidency University for his valuable guidance and keen interest throughout our project work.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

ABSTRACT

Concrete is a composite material which has wider application in construction industry because of strength and durability. The construction of long span bridge, high rise building, offshore structures, and other mega structures requires materials, with increasingly improved properties, particular strength, stiffness, toughness, ductility, durability. In the cause instances, simultaneous improvement in a combination of properties is needed. Such material often called "High Performance Materials" and "Advanced Materials" and they are basically different from other conventional materials. This project work emphasis on the study of using steel scrap and manufacture sand in the innovative construction industry. "Steel scrap" concrete is a concrete containing fibrous material that is uniformly distributed and casually oriented. The steel scrap waste material which is obtainable from the lathe can be used as steel fiber for the innovative construction industry and in pavement construction. It is generated by each lathe industries Dumping of these wastes contaminates the soil and groundwater, which creates a harmful environment. In addition, to get sustainable development and environmental benefits, lathe scrap with concrete is likely to be used. In this project steel scrap concrete using lathe waste is prepared and its properties are studied. "Manufactured sand" is such alternative for good quality Natural River sand due to depletion of resources and restriction due to environmental consideration has made concrete manufacturers look for suitable alternative fine aggregate. Though it has been in use in concrete manufacturing in India, the percentage of its contribution is still very negligible in many parts of the country. The tests conducted were slump test, compressive strength test, split tensile strength test and. For this concrete cubes, beams and cylinders were cast and cured and tests were done at 7th day, 14th day and 28th day.

An experimental research is made on the utilization of plastic waste, High Density Polyethylene (HDPE) as coarse aggregates in concrete with a percentage replacement of 5%.The laboratory tests include slump test, compressive strength and water absorption were conducted in this research.

Key words: Concrete, High Performance Materials, Advanced Materials, High Density Polyethylene, Steel scrap, manufactured sand.

CONSTRUCTION OF FIBER REINFORCED CEMENT CONCRETE ROAD

A PROJECT REPORT

Submitted by

AVINASH	**(2016CVE055)**
BHARATHREDDY	**(2016CVE088)**
MANJUNATH	**(2017LCV004)**
SHIVAKUMAR	**(2017LCVO13)**

In partial fulfilment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. SANTHOSH M B

Assistant Professor
Department of Civil Engineering

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru-560064

BONAFIDE CERTIFICATE

Certified that this report "CONSTRUCTION OF FIBER REINFORCED CEMENT CONCRETE ROAD" is a bonafide work of **"AVINASH (2016CVE055), BHARATHREDDY (2016CVE088), MANJUNATH (2017LCV004) and SHIVAKUMAR (2017LCV013)"** who have carried out the project work under my supervision.

Mr. Santhosh M.B.
Project Guide
Presidency University

Dr. S. B. Anadinni
Dept. Head, Civil Engineering
Presidency University

Dr. C. Prabhakar Reddy
Dean of school of engineering
Presidency University

Name of the Examiners

1) Mr. Santhosh M B

2) Mr. Dayalan J

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.TECH, Civil Engineering, Presidency University, Bengaluru, named "AVINASH (2016CVE055), BHARATHREDDY (2016CVE088), MANJUNATH (2017LCV004 and SHIVAKUMAR (2017LCV013" hereby declare that the project work entitled **"CONSTRUCTION OF FIBER REINFORCED CEMENT CONCRETE ROAD"** has been independently carried out by us and submitted in partial fulfilment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

AVINASH (2016CVE055)

BHARATHREDDY (2016CVE088)

MANJUNATH (2017LCV004)

SHIVAKUMAR (2017LCV013)

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We would like to express our sincere gratitude and indebtedness to our guide

Mr Santhosh M B Assistant professor, Department of Civil Engineering, Presidency University for his valuable guidance and keen interest throughout our project work.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

INDEX

PROJECT REPORT:

After completion of all investigation work, survey work design of different structural, tests on material & total estimate of the project, a report should be prepared & submitted to the higher authorities for approval. The report should include information relation to the following:

1. Introduction to the project.
2. Necessity & Background of the project.
3. Justification for selection of the project.
4. Procedure adopted for the all tests conducted on material.
5. Detailed estimation on all items.
6. Detailed specification for the construction work.
7. Overall benefits of the project.
8. Maps to be submitted.
9. Conclusion.

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

LAB CONSTRUCTION AND EVALUATION OF A CEMENT CONCRETE POROUS PAVEMENT

A PROJECT REPORT

Submitted by

RANJITH REDDY M A	2017LCV028
SUHAS K	2017LCV025
SHARAN S P	2017LCV026
SWAROOP G	2017LCV032

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Mr. AAYUSH KUMAR

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "LAB CONSTRUCTION AND EVALUATION OF A CEMENT CONCRETE POROUS PAVEMENT" is a bonafide work of "RANJITH REDDY M A (2017LCV028), SUHAS K (2017LCV025), SHARAN S P(2017LCV026) and SWAROOP G (2017LCV032)" who have carried out the project work under my supervision.

Mr. Aayush Kumar Asst. Professor Presidency University	Dr. S. B. Anadinni Dept. Head, Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Mr. Aayush Kumar

2) Ms. Anju Mathew

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named RANJITH REDDY M A, SUHAS K, SHARAN S P and SWAROOP G hereby declare that the project work entitled "LAB CONSTRUCTION AND EVALUATION OF A CEMENT CONCRETE POROUS PAVEMENT" has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-2020. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

RANJITH REDDY M A	2017LCV028
SUHAS K	2017LCV025
SHARAN S P	2017LCV026
SWAROOP G	2017LCV031

Place – BENGALURU

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people for whom we would like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Aayush Kumar,** Assistant Professor, Department of Civil Engineering, Presidency University for his valuable guidance and keen interest in our project work.

We are thankful to **Dr. Madhavi M,** Assistant Professor, Department of Civil Engineering who has facilitated us with all resources and has guided us throughout the work as the University Project Coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave his time in corrections and rectifications of our errors both intellectually and discipline wise for our representation in the society.

We are grateful to the **Teaching and Non-Teaching staff** of the Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Ranjith Reddy M A

Suhas K

Sharan S P

Swaroop G

ABSTRACT

Pervious concrete is a relatively new concept for draining out water from pavements which helps to increase ground water level and can also be used for many purpose like agriculture, waste water treatment and recycling of water. Pervious concrete as a paving material has recently gained greater importance due to its ability to allow water to flow through itself to minimize storm water runoff on the pavement. This technology is in high demand due to rising global temperatures, lowering of ground water table and occurrence of urban floods. This pavement creates more efficient land use due its water conservative nature.

The term "pervious concrete" typically describes a near-zero-slump, open-graded material consisting of Portland cement, coarse aggregate, little or no fine aggregate, admixtures, and water. The combination of these ingredients produce a hardened material with connected pores, ranging in size from 2 to 8mm, that allow water to pass through easily. Ultimately, the durability of the porous pavement and its effective use depends on its mix design and quality control during construction. This study aims at using conventional coarse aggregates in lab construction of porous pavements followed by its evaluation with respect to its compressive strength and permeability. In addition, the use of light weight aggregates (pumice) is explored as a potential material for use in porous pavements as a replacement for the conventional coarse aggregates.

The major applications of concrete pavements are in parking lots where majority of the load is static as compared to asphalt pavements where rolling load is present. This study therefore primarily deals with an evaluation of the lab performance of porous concrete pavements under static loading suitable for parking lots which can later be correlated with field performance later.

DROUGHT ANALYSIS BY USING SPI [STANDARDIZED PRECIPITATION INDEX]

A Project Report

Submitted by

MALLIK A METHRE	2016CVE053
JAGDISH RAMSINGH	2016CVE038
PAVANKUMAR HADPAD	2016CVE056
BHEEMRAO	2016CVE016

Under the guidance of

DR.SHRISHAIL ANADINNI

AND

MS.AASHI AGARWAL

In partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

At

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

2019-2020

Presidency university

Itgalpur, Rajankunte, Yelhanka, Bengaluru 560064

REGISTRAR (Research)

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Department of civl engineering

BONAFIDE CERTIFICATE

This is Certified that this project report "A STUDY ON PERFORMANCE OF DROUGHT ANALYSIS BY USING SPI" being submitted by " MALLIK A METHRE(2016CVE053), JAGDISH RAMSINGH(2016CVE038),PAVANKUMAR HADPAD(2016CVE056)and BHEEMRAO(2016CVE016)"in partial fulfillment of requirement for the award of degree of Bachelor of Technology in civil engineering is a bonafide work carried out under my supervision.

Ms Aashi Agarwal

Project Guide

Asst. Professor in

Department of Civil

Engineering

Dr.Shrishail anadinni

Project Guide & Head of the Department

Department of Civil

Engineering

Dr. C. Prabhakar Reddy

Dean School of Engineering

Presidency University

Name of the Examiners

1) Ms. Aashi

2) Mr. Ahamed Sharif

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the student of final year B.Tech civil engineering presidency university Bengaluru, named MALLIK A METHRE ,JAGDISH RAMSINGH ,PAVANKUMAR HADPAD and BHEEMRAO here by declare that the project work entitled "DROUGHT ANALYSIS BY USING SPI(STANDARDIZED PRECIPITATION INDEX)" has been independently carried out by us and submitted in partial fullfillment for the award of the degree of bachelor of technology in civil engineering during the academic year of 2018 -2019 .Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

MALLIK A METHRE	2016CVE052
JAGDISH RAMSINGH	2016CVE038
PAVANKUMAR HADPAD	2016CVE056
BHEEMRAO	2016CVE016

PLACE : Bangalore

DATE :30/05/2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

First of all, we indebted to the god almighty for giving us an opportunity to excel in our efforts to complete this project on time.

We are extremely grateful to Dr.c.prabhakar Reddy ,Dean school of engineering and Dr. shrishail anadinni ,Head of the department,Department of civil engineering for providing all the requirement permissions,Motivation,and timely guidance for successful completion of this project.

We,sincerely thank our project guide Asst. Professor .Ms Aashi Agarwal for the guidance help and motivation .Apart from the area of work we learnt a lot from her.Which we are sure will be useful for future in different stages in our life.We would like to express our gratitude to faculty coordinator and all faculty for their revive and guidance.

We are grateful to Teaching and non Teaching staff of department of civil engineering and also staff from other Department who have extended their valuable work and corporation.

ABSTRACT

Drought indices are commonly used for detection monitoring and evaluation of drought events.One of the most commonly used drought indices is the Standardized precipitation index(SPI).This paper presents the the effect of theoretical distribution selection of SPI values and analysis of drought events for selected meterological station in karnataka(Kalburgi).

We found that SPI on the annual time scale shows a similar pattern of occurance of dry and wet periods at district kalaburgi . The study area kalburgi with an average temperature of about 40°C.The successive failure of rain occurance during the year 1972 and 1973, when large numbers of people were affected. We have to adopt necessary methods to conserve the quality and quantity of groundwater. One of that is (SPI).

To minimize the problems caused by water scarcity we have to follow certain technological procedures like irrigation, regulated consumption of ground water, sprinkler irrigation, contour farming, crop rotation, rainwater harvesting, recycling of drainage water etc. Rainfall is the most important natural hydrologic event and is a unique phenomenon varying both in space and time, the rainfall distribution is very uneven and it not only varied considerably from place to place but also fluctuates from year to year.To know the drought area in Kalburgi we have come with standardized precipitation index to neutralize the problem and adopt suitable frame work to increase the strategy of people in Kalburgi area.

STUDY ON STABILIZATION OF SOIL BLOCKS USING SUGARCANE BAGASSE

A PROJECT REPORT

Submitted by

GURU DIXITH P M	2016CVE072
B K NIKHIL KASHYAP	2016CVE060
RAHUL RANGANATH	2016CVE017
VISHVANATHA G	2016CVE013

In partial fulfillment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. JAGDISH B BIRADAR

Presidency University

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

2019-2020

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "STUDY ON STABILIZATION OF SOIL BLOCKS USING SUGARCANE BAGASSE" is bonafide work of "VISHVANATHA G - (2016CVE013), RAHUL RANGANATH- (2016CVE017), B K NIKHILKASHYAP - (2016CVE060), GURU DIXITH P M - (2016CVE072)" who have carried out the project work under my supervision.

Mr. JAGDISH B BIRADAR	**Dr. S. B. Anadinni**	**Dr. C Prabhakar Reddy**
Asst. Professor	Head of Dept	Dean
Project Guide	Civil Engineering	School of Engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners

1) Mr. Jagdish Biradar

2) Dr. Madhavi T

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We the students of fourth year B.Tech, Civil Engineering, Presidency University, Bengaluru, named Mr. VISHVANATHA G, RAHUL RANGANATH, B K NIKHIL KASHYAP & GURU DIXITH P M hereby declare that the project work entitled **"**STUDY ON STABILIZATION OF SOIL BLOCKS USING SUGARCANE BAGASEE**"** has been independently carried out and submitted in the partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

GURU DIXITH P M	2016CVE072
B K NIKHIL KASHYAP	2016CVE060
VISHVANATHA G	2016CVE013
RAHUL RANGANATH	2016CVE017

Place: Bengaluru

Date:

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Engineering** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide

Mr. JAGDISH B BIRADAR Assistant professor, Department of Civil Engineering, Presidency University for her valuable guidance and keen interest throughout our project work.

We are thankful to **Ms. MADHAVI Assistant** Professor, Department of Civil Engineering who has facilitated us all resources and guided us throughout the work as a University project coordinator.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

We would also like to thank, lab in charge-**Mr. SAMBHRAM**, and lab assistants who helped us out.

Ultimately, we would wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ABSTRACT

The study involved investigating the performance of ordinary Portland cement (OPC) stabilized soil blocks amended with sugarcane bagasse ash (SBA). Locally available soil was tested for its index properties. This soil was stabilized using 4% and 8% OPC for manufacture of blocks of size 19 cm × 9 cm × 9 cm. The blocks were admixed with 6%, 8%, and 12% SB by weight of dry soil during casting, with plain OPC stabilized blocks acting as control. They were then subjected to compressive strength, water absorption, and efflorescence tests in accordance with Bureau of Indian standards (BIS) specifications. Addition of SB increased the compressive strength of the blocks and slightly increased the water absorption but still met the standard requirement of BIS code. It is concluded that addition of SB to OPC in stabilized block manufacture was capable of producing stabilized blocks at reduced OPC content that met the minimum required standards.

THE STUDY & BEHAVIOUR OF WASTE PVC PLASTIC ON BITUMINOUS MIXES

A PROJECT REPORT

Submitted by

DA NAVEEN KUMAR	2016CVE097
PAVANKUMAR MOTEPPA PUJAR	2016CVE033
JANARDAN P V	2016CVE025

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
In
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr.Amaresha

Lecturer

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY
Registrar
BANGALORE

PRESIDENCY UNIVERSITY
Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "THE STUDY & BEHAVIOUR OF WASTE PVC PLASTIC ON BITUMINOUS MIXES" is a bonafide work of "DA NAVEEN KUMAR (2016CVE097) ,PAVANKUMAR MOTEPPA PUJAR (2016CVE033) JANARDAN P V (2016CVE025)" who have carried out the project work under my supervision.

Mr. Amaresha
Lecturer
Project Guide
Presidency
University

Dr. S B ANADINNI
Department of HOD
Presidency University

Dr. C. Prabhakar Reddy
Dean School of Engineering
Presidency University

Name of the Examiners

1) Mr. Amaresha

2) Mr. Navaneet Singh

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named " DA NAVEEN KUMAR, PAVANKUMAR MOTEPPA PUJAR JANARDAN P V " hereby declare that the project work entitled **"THE STUDY & BEHAVIOUR OF WASTE PVC PLASTIC ON BITUMINOUS MIXES"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

DA NAVEEN KUMAR	2016CVE097
PAVANKUMAR MOTEPPA PUJAR	2016CVE033
JANARDAN P V	2016CVE025

Place – BANGALORE
Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide Mr. Amresha, lecturer Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

DA NAVEEN KUMAR

PAVANKUMAR MOTEPPA PUJAR

JANARDAN P V

ABSTRACT

The main objective of this project is use of waste PVC plastic material in the flexible pavement construction and to analyze the Marshall Stability values. In India bituminous surfaced flexible pavements are most widely used but various distresses like bleeding, rutting, shoving, pot holes and cracking are forming due to several reasons like overloading, temperature variations and increased traffic intensity of roads etc., Using of waste PVC plastic can also help to recycling of the plastic waste and for the protection of environment. Many studies have revealed that properties of bituminous mixes can be modified with the addition of additives and this project aims for use of modified bitumen by using waste PVC plastic at different percentages by weight of bitumen and to investigate the engineering properties of the asphaltmixtures.

Keywords: *Bituminous mix, Marshall Stability, Modified Bitumen, Optimum Bitumen Content, Polyvinyl Chloride PVC, Waste PVC Pipes.*

DESIGN OF MULTI-STOREY BUILDING USING STAAD PRO

A PROJECT REPORT

Submitted by

MOHAMMED ASLAM K P	2016CVE095
NAVAF V	2016CVE096
NIVEDH	2016CVE099
UMAR FAROOQ P K	2016CVE124

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
In
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. Akash Kumar Behera

Presidency University

2019 - 2020

PRESIDENCY UNIVERSITY
Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "DESIGN OF MULTI-STOREY BUILDING USING STAAD PRO" is a bonafide work of "MOHAMMED ASLAM K P (2016CVE095), NAVAF V (2016CVE095), NIVEDH (2016CVE099) and UMAR FAROOQ P K (2016CVE124)" who have carried out the project work under my supervision.

Mr. Akash Kumar Behera
Project Guide
Presidency University

Dr. S. B. Anadinni
Dept. Head, Civil Engineering
Presidency University

Dr. C. Prabhakar Reddy
Dean School of Engineering
Presidency University

Name of the Examiners

1) Mr. Akash Kumar Behera

2) Mr. Deepak Arora

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named MOHAMMED ASLAM K P, NAVAF V, NIVEDH and UMAR FAROOQ P K hereby declare that the project work entitled **"DESIGN OF MULTI-STOREY BUILDING USING STAAD PRO"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-20. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

MOHAMMED ASLAM KP	2016CVE095
NAVAF V	2016CVE096
NIVEDH	2016CVE099
UMAR FAROOQ P K	2016CVE124

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr. Akash Kumar Behera,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance and keen interest throughout our project work.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

MOHAMMED ASLAM K P

NAVAF V

NIVEDH

UMAR FAROOQ P K

ABSTRACT

- The principle objective of this project is to analyze and design Electrical Substation [G + 1] using STAAD. Pro. The design involves load calculations manually and analyzing the whole structure by STAAD. Pro.

- STAAD. Pro features a state-of-the-art user interface, visualization tools, powerful analysis and design engines with advanced finite element and dynamic analysis capabilities. From model generation, analysis and design to visualization and result verification, STAAD. Pro is the professional's choice.

- STAAD. Pro has a very interactive user interface which allows the users to draw the frame and input the load values and dimensions. Then according to the specified criteria assigned it analyses the structure and designs the members with reinforcement details for RCC frames. Our final work was the analysis and design of G+1 3D RCC frame under various load combinations.

- The materials were specified and cross-sections of the beam and column members were assigned. The codes of practice to be followed were also specified for design purpose with other important details. Then STAAD. Pro was used to analyze the structure and design the members. In the post-Processing mode, after completion of the design, we can work on the structure and study the BM and SF values with the generated diagrams.

- The design of the building is dependent upon the minimum requirements as prescribed in the Indian Standard Codes. The minimum requirements pertaining to the structural safety of buildings are being covered by way of laying down minimum design loads which have to be assumed for dead loads, imposed loads, and other external loads like Wind load Earthquake load, the structure would be required to bear. Complicated and high-rise structures need very time taking and cumbersome calculations using conventional manual methods. STAAD. Pro provides us a fast, efficient, easy to use and accurate platform for analyzing and designing structures.

A STUDY ON PROPOSAL OF TRAFFIC SIGNAL AT PARACHUTE REGIMENT, MUNNIREDDY PALYA

A PROJECT REPORT

Submitted by

UMMAI AIMEN	2016CVE001
MOHAMMED SHAHID RAZA	2016CVE039
UMMAI MUHAIMEEN	2016CVE067
OZAIR NAWAZ SHARIFF	2016CVE128

In partial fulfilment for the award of the degree Of

BACHELOR OF TECHNOLOGY

in

CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of

Mr. Deepak Arora

PRESIDENCY UNIVERSITY

2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengaluru 560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "A STUDY ON PROPOSAL OF TRAFFIC SIGNAL AT PARACHUTE REGIMENT, MUNNIREDDY PALYA" is a bonafide work of "UMMAI AIMEN (2016CVE001), UMMAI MUHAIMEEN (2016CVE067), OZAIR NAWAZ SHARIFF (2016CVE128) and MOHAMMED SHAHID RAZA (2016CVE039)" who have carried out the project work under my supervision.

Mr. Deepak Arora	Dr. S. B. Anadinni	Dr. C. Prabhakar Reddy
Project Guide	Dept. Head, Civil Engineering	Dean School of Engineering
Presidency University	Presidency University	Presidency University

Name of the Examiners

1) Mr. Deepak Arora

2) Ramachandra Gollar

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru namely UMMAI AIMEN, UMMAI MUHAIMEEN, OZAIR NAWAZ SHARIFF AND MOHAMMED SHAHID RAZA hereby declare that the Project work entitled **"*A proposal of traffic signal at PARACHUTE REGIMENT, MunireddyPalya*"** is a submission which has been independently carried out by us which represents few of our own ideas in our words and where others ideas or words have been included, under the guidance and supervision of **Mr. Deepak Arora**, Assistant Professor, Department of Civil Engineering, Presidency University, Bengaluru submitted in partial fulfilment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year 2019-2020.

Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

UMMAI AIMEN- 2016CVE001

UMMAI MUHAIMEEN- 2016CVE067

OZAIR NAWAZ SHARIIFF- 2016CVE128

MOHAMMED SHAHID RAZA- 2016CVE039

Place – BANGALORE

Date – 30th MAY 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in plat forming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Pro-chancellor, Vice-Chancellor, Registrar, Dean-School of Law and Dean-School of Management** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Mr.Deepak Arora,** Assistant Professor, Department of Civil Engineering, Presidency University for their valuable guidance, keen interest throughout our project work, for his enthusiasm, patience, helpful information, practical advice and unceasing ideas that have helped us tremendously at all times in completion of this project. His immense knowledge and profound experience has enabled us to complete this project successfully.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation.

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Ummai Aimen

Ummai Muhaimeen

Ozair Nawaz Shariff

Mohammed Shahid Raza

ABSTRACT

The design of traffic signal at an intersection has a direct control on its safety and operation from a design and user-ability point of view. Design elements that are particularly important include the number of lanes provided on each approach and for each movement. These problems can solve by providing an efficient traffic signal control at the intersection for continuous movement of vehicles through the intersection.According to traffic signal, most traffic signal timing plans are designed to minimize vehicle delay based on the traffic volumes seen in the past, not the present. Traffic count studies are to be made to determine the number, movement and classification of vehicles at an intersection.Basically, there are four methods which are used in designing of traffic signal named as Trial cycle method, IRC method, Approximate method and Webster method.

In this project, location is identified as **Parachute Regiment, Munireddy Palya** because problems like heavy traffic volume, road accidents, conflicts and congestions.Initially, we counted the traffic volume (number of vehicles) from each phase (4 phases) manually for 15 minutes in an hour then we calculated the number of vehicles for the peak hour. Due to mixed traffic condition, we converted into a standard vehicle that is called as Passenger Car Unit (PCU) for uniformity in cycle length calculation. In this project, we used**Webster's Method** for calculating the optimum cycle length and the phase timings for different phase.

Key words- Signal Design, PCU, Webster's Method

UTILIZATION OF METAL WASTE FROM PAPER MILL INDUSTRY IN CONCRETE

A PROJECT REPORT

Submitted by

Manuragh R J	2016CVE009
Mebin Mathew	2016CVE021
Hitaishi H	2016CVE042
Deepak	2016CVE049

In partial fulfillment for the award of the degree
Of
BACHELOR OF TECHNOLOGY
in
CIVIL ENGINEERING

SCHOOL OF ENGINEERING

Under the Guidance of
Dr. Nakul Ramanna

Presidency University
2019-2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

PRESIDENCY UNIVERSITY

Itgalpura, Rajankunte, Yelahanka, Bengalore-560064

Department of Civil Engineering

BONAFIDE CERTIFICATE

Certified that this report "**UTILIZATION OF METAL WASTE FROM PAPER MILL INDUSTRY IN CONCRETE**" is a bonafide work of "MANURAGH R J (2016CVE009), MEBIN MATHEW (2016CVE021), HITAISHI H (2016CVE042) and DEEPAK (2016CVE049)" who have carried out the project work under my supervision.

Dr. Nakul Ramanna Project Guide Presidency University	Dr. S. B. Anadinni Dept. Head, Civil Engineering Presidency University	Dr. C. Prabhakar Reddy Dean School of Engineering Presidency University

Name of the Examiners

1) Dr. Nakul Ramanna

2) Dr. Jagdish Godihal

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

DECLARATION

We, the students of final year B.Tech, Civil Engineering, Presidency University, Bengaluru, named MANURAGH R J, MEBIN MATHEW, HITAISHI H and DEEPAK hereby declare that the project work entitled **"UTILIZATION OF METAL WASTE FROM PAPER MILL INDUSTRY IN CONCRETE"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of Bachelor of Technology in Civil Engineering during the academic year of 2019-2020. Further, the matter embodied in the project report has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

MANURAGH R J	2016CVE009
MEBIN MATHEW	2016CVE021
HITAISHI H	2016CVE042
DEEPAK	2016CVE049

Place – BANGALORE

Date – 30th May 2020

REGISTRAR

PRESIDENCY UNIVERSITY Registrar BANGALORE

ACKNOWLEDGEMENT

For completing this project work, we have received support and guidance from many people which we like to mention deep in gratitude and great pleasure. Firstly, we cordially thank **Presidency University** in platforming such intellectual works and supporting us in all means for our successful completion of the project. We extend our gratitude to our beloved **Chancellor, Vice-Chancellor and Registrar** for their support and encouragement in completion of the project.

We would like to express our sincere gratitude and indebtedness to our guide **Dr. Nakul Ramanna,** Associate Professor, Department of Civil Engineering, Presidency University for the valuable guidance, and keen interest throughout our project work.

We are thankful to **Dr. Madhavi T and Mr. Navneet Singh,** Assistant Professors, Department of Civil Engineering, who facilitated all resources and guided us throughout the work as a University Project Coordinators.

We are thankful to **Dr. S. B. Anadinni**, Head of the Department, Department of Civil Engineering, Presidency University for his moral support and motivation, timely guidance, advice and encouragement provided to us during the period of our project work.

We express our cordial thanks to **Dr. C Prabhakar Reddy**, Dean School of Engineering, Presidency University, who always gave time in corrections and rectifications in our errors both intellectual and discipline for our representation out in the society for positive survival.

We are thankful to **Mr. Sambhram B Kavi**, Department of civil Engineering, presidency university for support during the project and resource.

We are grateful to **Teaching and Non-Teaching staff** of Department of Civil Engineering and also **staff from other Departments** who have extended their valuable help and cooperation

Ultimately, we would like to wholeheartedly thank our **family members and friends** for their encouragement and support throughout the work.

Manuragh R J

Mebin Mathew

Hitaishi H

Deepak

ABSTRACT

Concrete is one of the world most widely used construction material. However, since the early 1800's, it has been known that concrete is weak in tension. Weak tensile strength combined with brittle behavior result in sudden tensile failure without warning. This is obviously not desirable for any construction material. Thus, concrete requires some form of tensile reinforcement to compensate its brittle behavior and improve its tensile strength and strain capacity to be used in structural applications. Historically, steel has been used as the material of choice for tensile reinforcement in concrete. Unlike conventional reinforcing bars, which are specifically designed and placed in the tensile zone of the concrete member, fibers are thin, short and distributed randomly throughout the concrete member. Fibers are commercially available and manufactured from steel, plastic, glass and other natural materials. Steel fibers can be defined as discrete, short length of steel having ratio of its length to diameter (i.e. aspect ratio) in the range of 20 to 100 with any of the several cross-section, and that are sufficiently small to be easily and randomly dispersed in fresh concrete mix using conventional mixing procedure. Utilization of fibers in concrete results in better crack control and improvement in compressive strength and flexural strength.

This research deals with utilization of metal waste from paper mill industry (staples) in concrete. Its effect on compressive strength, flexural strength and split tensile strength of OPC are studied and reported. Ultrasonic pulse velocity test (NDT) has also been used for qualitative assessment of this steel fiber reinforced concrete.

.