

THE ASSAM ROYAL GLOBAL UNIVERSITY
BETKUCHI, GUWAHATI-35



PROJECT REPORT

ON

**'A COMPARATIVE STUDY OF A MULTISTORIED RCC BUILDING USING BURNT
CLAY BRICKS AND AUTOCLAVED AERATED CONCRETE BLOCKS'**

Submitted in partial fulfilment of requirement for the degree of
Bachelor of Technology

In

CIVIL ENGINEERING

Under



ROYAL GLOBAL UNIVERSITY
GUWAHATI

Devval
HOD/Coordinator
Deptt. of Civil Engineering
Royal School of Engineering & Technology
The Assam Royal Global University
Guwahati

SUBMITTED BY

1. BARSHA BEZBARUAH (172021007)
2. DIPASHRI BHARALI (182021003Lat.)
3. NEETA GOSWAMI (182021008 Lat.)
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PROJECT GUIDE

Mr.MrigendraDev Sharma
Lecturer

ROYAL SCHOOL OF ENGINEERING AND TECHNOLOGY



ROYAL GLOBAL UNIVERSITY
GUWAHATI

Session 2020-2021

**DEPARTMENT OF
CIVIL ENGINEERING
CERTIFICATE OF SUBMISSION**

This is to certify that the 7th semester project report work entitled 'A COMPARATIVE STUDY OF A MULTISTORIED RCC BUILDING USING BURNT CLAY BRICKS AND AUTOCLAVED AERATED CONCRETE' BLOCKS' is a bonafide work carried out by Barsha Bezbaruah, Dipashri Bharali, Neeta Goswami and Susmita Debbarma students of 7th semester in the partial fulfilment for the awarded of Bachelor of Technology in Civil Engineering of Royal School of Engineering and Technology under Royal Global University during the academic session 2020-2021. I approve the report for submission as required for partial fulfilment for the award of Bachelor of Technology Degree.


Prof. (Dr.) Arnab Sarma

HOD, Department of Civil Engineering


Royal School of Engineering & Technology


HOD/Coordinator
Deptt. of Civil Engineering
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ABSTRACT

A building has been defined as an enclosed structure intended for human occupancy. With the increases in material cost in the construction work, there is a need to find more cost saving alternatives so as to maintain the cost of construction of houses , multi-storey etc. which can be affordable to people. In the manufacturing of burnt clay bricks, smoke is evolved at a great extent and also some toxic gases which can harm the environment. So as to overcome with these problem, Autoclaved Aerated Concrete (AAC) blocks are used which is more economical and eco-friendly. Autoclaved Aerated Concrete (AAC) is a lightweight concrete building material cut into masonry blocks or formed larger planks and panels. In various parts of the world it has been used successfully as a building material. Cost of construction is reduced and it will be safe and economical in earthquake forces also.

This project includes the analysis and design of a multi-storeyed RCC structure comparing autoclave aerated concrete and conventional brick in the form of steel consumptions. The principal objective of this project is to make a comparative study of a multi-storeyed RCC building using burnt clay bricks and autoclaved aerated concrete (AAC) blocks. The analyses of the structures were done using STAAD Pro software considering the effects of dead load and live load. The wall load was calculated using unit weight of burnt clay bricks and autoclaved aerated concrete (AAC) blocks. Live load has been considered from relevant I.S. codes.


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**THE ASSAM ROYAL GLOBAL UNIVERSITY
BETKUCHI, GUWAHATI-35**



PROJECT REPORT

ON

'RICE HUSK ASH ANALYSIS IN M20 CONCRETE'

Submitted in partial fulfilment of requirement for the degree of
Bachelor of Technology
In
CIVIL ENGINEERING
Under

R. S. Hazarika
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PROJECT GUIDE

Mr. Bhabatosh Hazarika
Lecturer

ABSTRACT

Solid material is a crucial element for assessing the quality of the structure. The reality that India is a developed country with a super system and alignment in the strongest nations of the world. The strength of the substance used should be good enough for the solid structure.

What if the used concrete has a high strength and we can still conserve the material and make it environmentally safe. This is the better idea to make the structure environmentally sustainable and less useful.

With the aid of high-performance concrete, the key goal of the project is to speed up infrastructure improvement. The key benefit of the project is that we can use waste material produced during agriculture to increase material strength and use it for the building of mega structures.

This research focuses on the possible use of Rice Husk ash (RHA) in concrete mixtures. RHA comes from burning the rice husk, a rice milling by-product. The content of rice husks is roughly 18%-22% by weight. Research indicates, the cement made of RHA as a partial cement replacement has higher performance than standard concrete, levels of 5 percent, 10 percent, 15 percent and 20 per cent by weight of cement. In addition, the use of RHA will lead to a drop in concrete building costs as well as a decline in environmental greenhouse effects.

As environmental interest has been increasing and the need to save energy and resources has been made to use the husk as an additional cementing medium and to mix it at the regulated temperature and atmosphere.

R. D. D. D.
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**ROYAL SCHOOL OF ENGINEERING AND TECHNOLOGY
GUWAHATI, ASSAM 781035**



**ROYAL GLOBAL UNIVERSITY
GUWAHATI**

A Project Report (2020-2021)

On

STUDY ON THE BEHAVIOUR OF STEEL CONCRETE COMPOSITE STRUCTURE

Submitted in partial fulfillment of requirement for the Degree of

Bachelor of Technology

In

CIVIL ENGINEERING

Under

ROYAL GLOBAL UNIVERSITY

GUWAHATI

SUBMITTED BY:

CHINGTHAM ANJALI DEVI(172021013)

MAISNAM NICKY LUWANG(172021026)

NONGMAITHEM NILANJIT SINGH(172021032)

PRINCHI NGATHEM(172021034)

PROJECT GUIDE:

MS. DIMPA MONI KALITA

LECTURER,

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**ROYAL GLOBAL UNIVERSITY
GUWAHATI**


**DEPARTMENT
OF
CIVIL ENGINEERING**

CERTIFICATE OF SUBMISSION

This is to certify that the project undertaken by **Chingtham Anjali Devi** (172021013), **Maisnam Nicky Luwang** (172021026), **Nongmaithem Nilanjit Singh** (172021032) and **Princhi Ngathem** (172021034) of **B. Tech 7th semester**, Civil Engineering of Royal School of Engineering & Technology (RSET), Guwahati under Royal Global University (RGU), Guwahati during the academic year of **2017-2021**, have sincerely done the bonafide report on topic “**Study on the behaviour of a Steel Concrete Composite Structure**” with the supervision and guidance of the undersigned.

Date:

Place: Guwahati


Head Coordinator
Deptt. of Civil Engineering
Royal School of Engineering & Technology
The Assam Royal Global University
Guwahati
Professor and Head

Civil Engineering Department,

Royal School of Engineering and Technology,

Guwahati-35

ABSTRACT

Structural Steel-Concrete composite structures are nowadays very popular owing to their advantages over conventional Concrete and Steel constructions. Concrete structures are bulky and impart more seismic weight as compare to composite structure. Composite Construction combines the better properties of both steel and concrete along with lesser cost, speedy construction, fire protection etc. This paper deals with the study of the behaviour of a multi-storeyed building and comparative study of RCC (Reinforced Cement Concrete) and SCC (Steel Concrete Composite) structure using STAAD.Pro software. Comparison of parameters like nodal displacement, deflection, bending moment and shear force is done with Composite and R.C.C. structures. The results are compared and it is found that composite structure are more good in several aspects.


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THE ASSAM ROYAL GLOBAL UNIVERSITY
BETKUCHI, GUWAHATI-35



PROJECT REPORTON

Static Compaction Test and Determinations of Equivalent

Static Pressure.

Submitted in partial fulfillment of requirement for the degree of Bachelor of Technology

In

CIVIL ENGINEERING

Under



ROYAL GLOBAL UNIVERSITY

GUWAHATI

SUBMITTED BY

1. BAIBHAB RAJ BHARADWAJ (172021006)
2. NILKAMAL DAS (172021030)
3. HRIDAYANANDA HAZARIKA (172021022)
4. SOHEL M RAHMAN (172021040)

PROJECT GUIDE

RAJESH DEB

(Assistant Professor)

R. Deval
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ROYAL SCHOOL OF ENGINEERING & TECHNOLOGY




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GUWAHATI

DEPARTMENT
OF
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CERTIFICATE OF APPROVAL

This is to certify that Baibhab raj bharadwaj (172021006), Nilkamal Das (172021030), Hridayanda Hazarika (172021022), Sohel M Rahman (172021040) students of B. Tech 7th semester, have sincerely done the report on the project titled, "Static Compaction Test and Determinations of Equivalent Static Pressure." during the academic session 2020-21 under my guidance & supervision.

Date: 29/1/21

Place: GUWAHATI


Nilkamal Das
Deptt. of Civil Engineering
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Rajesh Deb,
Assistant Professor,
Department of Civil Engineering, RSET,
Betkuchi, Ghy-35

ROYAL SCHOOL OF ENGINEERING AND TECHNOLOGY



ROYAL GLOBAL UNIVERSITY
GUWAHATI

Session 2020-2021

DEPARTMENT OF CIVIL
ENGINEERING
CERTIFICATE OF SUBMISSION

This is to certify that the 7th semester project report work entitled "Static Compaction Test and Determinations of Equivalent Static Pressure" is a bonafide work carried out by SOHEL M RAHMAN, BAIBHAB RAJ BHARADWAJ, HRIDAYANANDA HAZARIKA and NILKAMAL DAS

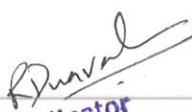
students of 7th semester in the partial fulfillment for the awarded of Bachelor of Technology in Civil Engineering of Royal School of Engineering and Technology under Royal Global University during the academic session 2020- 2021. I approve the report for submission as required for partial fulfilment for the award of Bachelor of Technology Degree.

Prof. (Dr.) Arnab Sharma
HOD, Department of Civil Engineering Royal School
of Engineering & Technology

Arnab Sharma
HOD/Coordinator
Dept. of Civil Engineering
Royal School of Engineering & Technology
The Assam Royal Global University
Guwahati

ABSTRACT

Soil compaction is an important part of civil construction. We can draw the compaction curve between moisture content and dry unit weight of all types of soil that may be used for the project. The relationships between moisture content and dry unit weight of the soil is a function of the compactive effort. The modified proctor test, the Reduced modified proctor test, the Standard Proctor Test and the reduced standard proctor test are Dynamic Method which uses different compactive method. However we performed only the modified proctor test both dynamic and static way. These tests required considerable time and effort and also this have some imperfection. In the present study, the laboratory procedure is devised to determine the relationship between moisture Content and Dry unit weight by using static compaction method and dynamic compaction method. After doing that modified proctor test both dynamically and statically we have come to know that static compaction pressure test is less. The analysis show that the relation between water contains and dry unit weight in static compaction for different static pressure is parabolic in nature.


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The Assam Royal Global University
Guwahati

ROYAL GLOBAL UNIVERSITY



PROJECT REPORT

ON

**SLOPE STABILITY ANALYSIS OF LANDSLIDE PRONE AREAS IN
AND AROUND THE CITY OF GUWAHATI.**

Submitted in partial fulfillment of the requirements for the Degree

of Bachelor of Technology

In

DEPARTMENT

OF

CIVIL ENGINEERING

THE ASSAM ROYAL GLOBAL UNIVERSITY

SUBMITTED BY

Ashiqul Haque (192021001)

Kaushik Dey (192021013)

Meghraj Malakar (192021020)

Himangshu Kashyap (192021022)

Narendra Deo Sharma (192021025)

Tencoming P Langbang (192021032)

PROJECT SUPERVISOR

Mr. Yudhajit Dey

Asst. Professor

Dept. Of Civil Engineering

RSET (RGU)


HOD/Coordinator
Deptt. of Civil Engineering
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The Assam Royal Global University
Guwahati

CERTIFICATE



ROYAL GLOBAL UNIVERSITY

GUWAHATI

This is to certify that this work entitled “**Slope Stability Analysis of Landslideprone areas in and around the city of Guwahati**” submitted by Ashiqul Haque(192021001), Kaushik Dey(192021013), Meghraj Malakar (192021020), Himangshu Kashyap(192021022), Narendra Deo Sharma (192021025), Tencoming P Langbang(192021032), 7th Semester student of Department of Civil Engineering to The Assam Royal Global University in partial fulfilment for the requirement of Bachelor of Technology in Civil Engineering for the academic year 2019-2023 is a record of genuine project work, under my guidance and supervision.

I have found them sincere and hard-working. I wish him all success in his futureendeavour.

Date: 19.06.2023

Place: Guwahati

SIGNATURE

Mr. YUDHAJIT DEY

Assistant Professor

Dept. of Civil Engg.

Royal Global University

SIGNATURE

DR. ARAB SARMA

Head of Department

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Dr. Arab Sarma
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ABSTRACT

Slope stability analysis is a process used to assess the stability of slopes and determine their susceptibility to failure or movement. The analysis involves evaluating the factors that influence slope stability, such as soil or rock properties, slope geometry, water conditions, and external loads. By understanding these factors, engineers can design appropriate measures to mitigate potential slope failures and ensure the safety of structures and people in the vicinity.

Laboratory testing and field sampling are performed to determine the geotechnical properties of the soil or rock material. Key properties include shear strength, cohesion, angle of internal friction, permeability, and unit weight.

The factor of safety (FoS) is calculated to assess the stability of the slope. The FoS represents the ratio of resisting forces (such as shear strength) to driving forces (such as gravitational forces). A factor of safety greater than 1 indicates a stable slope, while a factor less than 1 suggests potential instability.

If the factor of safety is between 1 - 1.25 is questionable safe.

If the factor of safety is between 1.25 - 1.4 is satisfactory for routine cuts and fills, questionable for dams, or where failure would be catastrophic.

If the factor of safety greater than 1.4 is satisfactory for dams.


Based on the stability analysis results, appropriate mitigation measures can be designed and implemented to improve slope stability. These measures may include slope reinforcement, drainage improvements, terracing, retaining structures, or vegetation management.

This study presents a comprehensive slope stability analysis of the hills in and around of Guwahati, aimed at assessing the stability of the slopes and identifying potential risks of slope failure. A geotechnical investigation was conducted, including field surveys and laboratory testing to collect soil and slope geometry information. Various analytical and numerical methods, such as Swedish Circle method and Friction Circle method, were applied to evaluate slope stability and determine the factor of safety.

The study revealed that the hills in Guwahati exhibit diverse slope geometries and soil characteristics, indicating a range of stability conditions. Factors such as soil strength, groundwater conditions, and applied loads were found to significantly influence slope stability. The analysis identified critical failure surfaces and evaluated the factor of safety for each slope.

Furthermore, sensitivity analysis was performed to assess the impact of varying parameters on slope stability. Mitigation measures, including the installation of drainage systems and slope reinforcement techniques, were recommended for slopes with lower factors of safety.

This study provides valuable insights into the slope stability of the hills in Guwahati and serves as a foundation for future engineering projects in the region. The findings contribute to a better understanding of the factors affecting slope stability and inform decision-making processes related to infrastructure development and risk management in hilly areas.


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**ROYAL SCHOOL OF ENGINEERING
& TECHNOLOGY**

PROJECT REPORT

ON

**“Effect of Walnut and Tamarind shells on the Engineering properties
of Industrially Contaminated Soil”**

*Submitted in partial fulfilment of the requirement for the Degree of
Bachelor of Technology*

in

CIVIL ENGINEERING (2019-2023)

Under



ROYAL GLOBAL UNIVERSITY

GUWAHATI

SUBMITTED BY:

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UNDER THE GUIDANCE OF:

Mr. Rajesh Deb
Assistant professor


Co-ordinator
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GUWAHATI



ROYAL GLOBAL UNIVERSITY
GUWAHATI

This to certify that the project entitled "Effect of Walnut and Tamarind shells on the Engineering properties of Industrially Contaminated Soil" undertaken by the following students of 8th Semester B.Tech (Civil Engineering), RSET, Ghy-35, for partial fulfilment of the requirement for the award of the degree of Bachelor of Technology in Civil Engineering is carried out by them under my supervision and guidance.

1. Dhruvajyoti Das (192021007)
2. Okie Sangchoju (202021004)
3. Manish Gogoi (192021018)
4. Oasis Hulang (192021026)
5. Deep Jyoti Patgiri (192021006)
6. Sidhu Dange (182021054)

DATE: 22/6/23

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22/6/23
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ABSTRACT

This project aims to check the effectiveness of waste Walnut and Tamarind shells material on the engineering properties of Contaminated soil. The main purpose is to select some dry fruit shells which helps in enhancing the engineering properties of soil. Soil reinforcement has been introduced into the field of geotechnical engineering for many years in order to improve the properties of ground soil in specific engineering projects. Considering these, a series of tests were performed with Contaminated soil with waste fiber as reinforcement at various percentage content to find out its effects on the soil and to find whether the particular soil-reinforcement combination is useful.


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**ROYAL SCHOOL OF ENGINEERING &
TECHNOLOGY**

PROJECT REPORT

On

FLOATING CONCRETE

Submitted in partial fulfilment of the requirement for the degree of

Bachelor of Technology

In

DEPARTMENT OF CIVIL ENGINEERING



ROYAL GLOBAL UNIVERSITY
GUWAHATI

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KAUSHIK KUMAR DAS (192021014)

KRITARTHA PRATIM KHATANAR

(192021016)

8TH SEMESTER

BTECH – CIVIL ENGINEERING

UNDER THE GUIDANCE OF

MR. RISHIKESH DUARAH

ASSISTANT PROFESSOR

CIVIL DEPARTMENT

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R Duarah
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CERTIFICATE

This is to certify that the thesis entitled "Floating Concrete" submitted by students of 8th Semester of Department of Civil Engineering of The Assam Royal Global University in partial fulfilment for the requirement of Bachelor of Technology for the academic year 2019- 2023 is a record of genuine project work, under my guidance and supervision.

I have found them sincere and hardworking. I wish them all success in their future endeavour.

Date: 19/06/2023

Place: GUWAHATI


Head/Coordinator
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Dept. of Civil Engineering

SIGNATURE:
DR. ARNAB SHARMA
Head of Department
Dept. of Civil Engineering

ABSTRACT

Floating concrete is a fluid mixture of density less than water, which is suitable to build floating structures, reducing the consumption of land for buildings. This project report addresses the procedure of preparation of mix proportion of floating concrete, materials used & various test results of compressive strength at the age of 14 days & flow, for acceptance of this concrete. A floating concrete structure is usually a solid body made of reinforced concrete & an inner chain of chambers filled with a lightweight impermeable material.

Structural Low Density Aggregate Concrete has an ability to reduce the self-weight of the structure as well as reduces the risk of earthquake damages to a structure because earthquake forces are proportional to mass of the structure. For structural application of lightweight concrete, the density is more important than the strength. A low density for the same strength level reduces the self-weight, foundation size and construction costs. Floating concrete can be effectively used for building structures such as slabs, barges, buildings etc. Since maximum portion of earth is covered with water, it minimizes the consumption of land for construction works & this is an environment friendly method of construction of boats replacing wood & metals.

In this project we are using lightweight aggregate concrete i.e. produced using amorphous volcanic glass called Perlite. The perlite aggregate has a wide range of uses generally due to its properties of extremely low bulk density, high brightness, high absorption, low thermal and acoustical conductivity and non-flammability. In this study, structural lightweight aggregate concrete was designed with natural Perlite aggregate that will provide an advantage of reducing dead weight of structure also compared the strength of normal concrete with perlite concrete by fully replacing coarse aggregate with perlite by varying the water cement ratio in perlite concrete.

This review article contains structural properties, treatments, novel researches, practical tests of cube testing etc to analyse the situations for the concrete to float. The objective of this review article is to provide future researchers with the latest research findings, limitations and improvements in this subject.


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