BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mangalpally (Village), Ibrahimpatnam (Mandal), Ranga Reddy (District), Telangana-501510

1.3.3 : Percentage of students undertaking project work/ field work / internship (Data for the latest completed academic year) (10)

Academic Year 2018-19

S. No.	Department	Descriptions	Total Count
1.	B.Tech-CIVIL	Major Project Work	74
2.	B.Tech-EEE	Major Project Work	116
3.	B.Tech-MECHANICAL	Major Project Work	72
4.	B.Tech-ECE	Major Project Work	161
5.	B.Tech-CSE	Major Project Work	222
6.	B.Tech-IT	Major Project Work	43
7.	MBA	Major Project Work	10
8.	M.TECH	Major Project Work	19
9.	B.Tech-(CIVIL, EEE, MECHANICAL, ECE, CSE) MBA	Internship	134
10.	B.Tech-(EEE, MECHANICAL,ECE, CSE, 1ST YEAR STUDENTS) MBA,	Industrial visit	693
TOTAL COUNT			1544

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
Mangalpally(V), Ibrahimpatnam, R R District E1

PRINCIPAL

Principal
Bharat Institute of Engg. and Tech
Mangalpally(V), Ibrahimpatnam(M)
Ranga Reddy (Dist)-Telangana-501510

Bharat Institute of Engineering and Technology, Hyderabad				
Department of Civil Engineering				
Major Project 2018-19				
Batch No	Hall Ticket no	Name	Major Project Title	Guide name
B1	15E11A0101	A Vaishnavi	Partial replacement of cement by rice husk ash	T Ramprasanna Reddy
	15E11A0149	V Chandu Goud		
	13E11A0103	Aravind Netha		
	14E11A0143	M Sairaj Mohan		
B2	15E11A0164	Shareef ahmed	Study on fresh and harden properties of self compacting concrete by using mineral admixtures and plastic waste	M. Sai neeraja
	15E11A0172	B.Pradeep kumar		
	16E15A0104	B Naveen		
	16E15A0126	V Radha Meenakshi		
B3	15E11A0103	DONDA TEJASRI	analysis of shallow foundations on uneven slopes	Mr.T.kanakeswara rao
	15E11A0105	NYALAKONDA SRAVANTHI		
	15E11A0108	VARSHA BHAGYALAKSHMI		
	15E11A0134	MOHAMMED ANSAR		
B4	15E11A0131	M Saiteja	An Experimental investigation on mechanical properties of concrete by partial replacement of cement with flyash and fine aggregates with quartz Sand	Sri.G.S.V.S Chaithanya
	15E11A0132	M.Sreekanth Reddy		
	15E1A0138	P.Pranay Reddy		
	14E11A0136	P Naveen Kumar		
B5	16E15A0118	P.Shiva sai	A case study on old building by using rehabilitation method	Ms. V. Aparna
	16E15A0114	K.Thirupataiah		
	15E11A0165	S.Bharath Reddy		
	15E11A0168	V.Prashanth		
B6	15E11A0153	ISLAVATH SHANKAR (15E11A0153)	Study on partial replacement of cement with metakaoline and glass fibre	S. Vineela
	15E11A0163	PRANEEL S (15E11A0163)		
	16E15A0109	GARJE VISHAL KUMAR (16E15A0109)		
	16E15A0125	VALISHETTI SAIKIRAN (16E15A0125)		
B7	15E11A0120	GURRAM BIKSHAPATHI	soil stabilization by using industrial waste	K.Kanakeswar Rao
	15E11A0124	GURRAPU NITISH KUMAR		
	15E11A0141	PANNALA SHASHIVARDHAN		
	15E11A0148	V B BHARATH		
B8	15E11A0157	M S H Karthik	Analysis and design of Pre Engineer Building using staad pro	J Naresh
	15E11A0166	T Sai Prasad		
	16E15A0108	G Pavan Kumar		
	16E15A0113	J Jagan		
B9	15E11A0111	ATIAVATHALI ABHILASH REDDY	A study on mechanical properties of bacterial concrete	Sri.G.S.V.S Chaithanya
	15E11A0123	GUNDAMAINA UMA SHANKER		
	15E11A0142	PASUPUNENI RAHUL REDDY		
	15E11A0147	THANNERU SAI RAGHAVA		

B10	15E11A0151	A Vinod kumar	Experimental investigation on black cotton soil by using glass powder	Mr P Nagaraju
	15E11A0155	K Thirupathi		
	16E11A0106	E Raghavendhar		
	16E15A0116	K Shiva kumar		
B11	15E11A0140	PANJUGULA PRASHANTH	Experimental studies on Silica Fume concrete	Madhava Krishna Reddy
	15E11A0145	SURENDHAR REDDY YELUGURI		
	15E11A0110	AJITH KUMAR REDDY THUMMALA		
B12	15E11A0102	BAKLIWAL POORNIMA KUMARI JAIN	Comparitive study on concrete properties of Binary blended self compacting concrete	Vishnu Priya
	15E11A0113	BANDI SAIRAM		
	15E11A0139	P.SANJAY BHARGAV		
B13	15E11A0104	NUNNA RAMA	Design of Drainage network using SWMM for BIET campus	Ramesh Chandra Bagadi
	15E11A0118	DEEKONDA SHIVA PRASAD		
	15E11A0121	GALIPELLI VIVEK		
	15E11A0128	KONDAPALLI SRINIVAS		
B14	16E15A0103	B.VENKATESH (16E15A0103)	Comparitive study of multistoreyed building by eqvivalent static analysis and response spectrum analysis with shear walls using ETABS	Ravishankar. V.L
	16E15A0107	GAJJALA SHIVA SHANKAR VARAPRASAD GOUD (16E15A0107)		
	15E11A0160	NOMULA PRAVEEN (15E11A0160)		
	15E11A0170	YELUGURI VAMSHIDHAR REDDY (15E11A0170)		
B15	15E11A0154	K Manoj	Study on previous concrete made with different size aggregate	Mr.Ramesh Chandra bajadi
	16E15A0112	G Nagaraju		
	16E15A0105	B Rakesh		
	16E15A0123	T Arun kumar		
B16	16E15A0103	B VENKATESH	Comparative study of multi storeyed building by equivalent static analysis and response spectrum analysis with shear walls using E-Tabs	Mr.Ravi shankar.v.l
	16E15A0107	GSS VARA PRASAD GOUD		
	15E11A0160	N.PRAVEEN		
	15E11A0170	V VAMSHIDHAR REDDY		
B17	15E11A0106	PALLA CHAITANYA	Experimental studies on utilization of recyclied aggrigates	G.N.V.Sai teja
	15E11A0114	BOOMA PRUDHVI		
	15E11A0136	NADEEM PATEL		
	15E11A0150	VEGARAJU NAGENDRA		
B18	15E11A0158	M.Ramsingh	Comparative analysis and design of residential building	Mr J Naresh
	15E11A0167	U.Naveen		
	16E15A0119	S.Anitha		
	16E11A0119	S.Mahesh		
B19	15E11A0107	SWEEYA SANKURU	Stabilization of BC soil using Egg shell powder	P Nagaraju
	15E11A0127	KAMA RANA DEEPAK		
	15E11A0143	PURELLA ROHITH		
	13E11A0180	CH. VISHNU		

A PROJECT REPORT

ON

PARTIAL REPLACEMENT OF CEMENT BY RICE HUSK ASH

Submitted in partial fulfilment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

BY

A. VAISHNAVI	**15E11A0101**
V.CHANDU GOUD	**15E11A0149**
ARAVIND NETHA	**13E11A0103**
M.SAIRAJ MOHAN	**14E11A0143**

Under the esteem guidance of

T.RAM PRASANNA REDDY

ASSISTANT PROFESSOR,

DEPARTMENT OF CIVIL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

MANGALPALLY (V), IBRAHIMPATNAM (M), R.R.DISTRICT- 501510

2015-2019

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mangalpally (V), Ibrahimpatnam(M), Ranaga Reddy District-501510

Department of Civil Engineering

CERTIFICATE

This is to certify that the project report entitled **"PARTIAL REPLACEMENT OF CEMENT BY RICE HUSK ASH"** that is being submitted by A.VAISHNAVI (15E11A0101), V.CHNADU GOUD (15E11A0149), ARAVIND NETHA (13E11A0103), M.SAIRAJ MOHAN (14E11A0143) in partial fulfilment for the award of the Degree of Bachelor of technology in civil engineering to Jawaharlal Nehru Technological University is a record of bonafide work carried out by him under my guidance and supervision.

Signature of Internal Guide

Mr.T.RAM PRASANNA REDDY

Assistant Professor,

Dept. of Civil Engineering.

External Examiner

Head of the Department

PRINCIPAL

ABSTRACT

In India rice milling produces a byproduct which is known as husk. This husk is used as fuel in rice mill to produce stream for boiling process. This husk contains near about 75% organic matter and remaining25%of this husk is modified into ash during firing process which is known as rice hush ash. This rice husk ash (RHA) contains near about 85% to 95% of amorphous ssilica. By using this in concrete, we can improve the properties of concrete. The replacement is done partially in proportion of 0% to 20% and its effects on workability on RHA were investigated for 20% of RHA the hardened properties such as compressive strength observe were good. The highest compressive strength at 20% RHA replacement as compared to 0% RHA replacement at 14,21, and 28 days

Over 5% of global CO2 emissions can be attributed to Portland cement production. Demand for cement continues to grow. It increases in the cost of conventional building materials and to provide a sustainable growth, the entire construction industry is in search of a suitable and effective waste product that would considerably minimize the use of cement and ultimately reduce the construction cost. For this objective, the use of industrial waste products and agricultural byproducts are very constructive. These industrial wastes and agricultural byproducts such as Fly Ash, Rice Husk Ash, Silica Fume, and Slag etc. can be used as cementing materials because of their pozzolonic behavior, which otherwise require large tracts of lands for dumping. Large amounts of wastes obtained as byproducts from many of the industries can be the main sources of such alternate materials. The world rice harvest is estimated as 738.1 million tons per year and India is second largest producer of rice in the world with annual production of 152.6 million tons per year.

Thus the concrete industry offers an ideal method to integrate and utilize a number of waste materials, which are socially acceptable, easily available, and economically within the buying powers of an ordinary man. Presence of such materials in cement concrete not only reduces the carbon dioxide emission, but also Imparts significant improvement in workability and durability.

CHAPTER – 6

CONCLUSION

At all the cement replacement levels of Rice husk ash, the rate of development of compressive strength up to 7 days is slower as compared with that of concrete in which RHA content is zero, while the rate of development of strength gradually increases after 14 days up to 28 days in case of RHA mixed concrete.

The compressive strength of concrete having 20% replacement was found to be more than the other levels of replacements. (I.e. 0%, 10%).

For the desired workability and strength, the water content required in case of RHA mixed concrete was more than in normal concrete. This is because RHA is finer than cement & the fact is that RHA particles being finer it has more surface area and hence water required is comparatively more.

The addition of RHA increases the degree of hydration of cement at the later period. This positive effect of RHA on the hydration of cement is possibly attributed to the pozzolanic reaction and the absorbed water in the porous structure of RHA. Thus, such a concrete is very useful in conditions of hot weather & in Mass concreting.

By using this Rice husk ash in concrete as replacement the emission of greenhouse gases can be decreased. As a result, there is greater possibility to gain a greater number of carbon credits.

The technical and economic advantages of incorporating Rice Husk Ash in concrete should be exploited by the construction and rice industries.

Strength and cost savings (as shown above) of Rice Husk Ash concrete proves it to be a better material than various other supplementary materials which involve higher transport cost.

By using this Rice husk ash in concrete as replacement the emission of greenhouse gases can be decreased to a greater extent. As a result there is greater possibility to gain more number of carbon credits.

The technical and economic advantages of incorporating Rice Husk Ash in concrete should be exploited by the construction and rice industries, more so for the rice growing nations of Asia.

This study is relevant in the global scenario towards attaining sustainable development.

The technical and economic advantages of incorporating Rice Husk Ash inconcrete should be exploited by the construction and rice industries, more so forthe rice growing nations of Asia.

STUDY ON FRESH AND HARDENED PROPERTIES OF SELF COMPACTING CONCRETE BY USING MINERAL ADMIXTURE AND PLASTIC WASTE

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted by

SHAREEF AHMED	15E11A0164
B.PRADEEP KUMAR	15E11A0172
B.NAVEEN	16E15A0104
V.RADHA MEENAKSHI	16E15A0126

Under the guidance of

V.SAI NEERAJA

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2015-2019

Bharat Institute of Engineering and Technology

(Affiliated to JNTUH, Approved by AICTE and Accredited by NAAC) Ibrahimpatnam-501510, Hyderabad

Department of Civil Engineering

Certificate

This is to certify that the project work entitled "**STUDY ON FRESH AND HARDENED PROPERTIES OF SELF COMPACTING CONCRETE BY USING MINERAL ADMIXTURE AND PLASTIC WASTE**" is done by

SHAREEF AHMED	15E11A0164
B.PRADEEP KUMAR	15E11A0172
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V.RADHA MEENAKSHI	16E15A0126

In the department of Civil Engineering, **BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY**, Ibrahimpatnam, is submitted to **JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY** Hyderabad. In partial fulfillment of the requirements for the award of B.Tech degree in Civil Engineering during 2015-19.

EXTERNAL EXAMINAR

V. Sai neeraja 2/5/19

INTERNAL GUIDE:
Ms.V.SAI NEERAJA (Ph .D)
ASST. PROFESSOR
(DEPT. Of CIVIL)

HOD /In – Charge:

PRINCIPAL

BHARAT INSTITUTE OF ENGEERING AND TECHNOLOGY
Mangalpally(V),
Ibhrahipatanam,
R. R. District
E1

ABSTRACT

Self-compacting concrete is the most extensively used material in civil engineering construction. So that considerable attention is taken for improving the properties of concrete with respect to strength and durability.

Self-compacting Concrete has its own advantages and applications in the field of civil engineering. This project is dealing with the behaviour of SCC incorporated with different types of filler materials which replaces fine aggregate and cement partially in M40 mix. Plastic waste granules (pvc) for replacement of fine aggregate and Fly ash is used as cement replacement.

The effect of self-compacting concrete containing waste plastic granules on the fresh, mechanical and water absorption properties.

The effect of self-compacting concrete containing waste plastic granules on the fresh, mechanical and water absorption properties. Fine aggregates were replaced by plastic granules (pvc) from 0% to 9% of mix interval (3%,6%,9%). Cement were replaced by fly ash from 0% to 30% of mix interval (10%,20%,30%). And the super plasticizers of 'conplast SP430' dosage is added to the mix to get flowability. Totally the 3 different mix proportions of SCC were designed and tested, for further fresh properties will checked using slump cone, U-box, V-funnel and L box tests. For hardened properties such as compressive strength and split tensile strength are to be done to analyse strength parameters. These all tests are done at the time of 7,14 and 28 days & we will Compare the results between the nominal mix concrete and self-compacting concrete properties.

KEYWORDS: **SELF COMPACTING CONCRETE, FLYASH, PLASTIC GRANULES (PVC), SUPER PLASTICIZER SP430, FRESH PROPERTIES AND HARDEND PROPERTIES**

CHAPTER-8

CONCLUSIONS

Based on the investigation conducted for the study of behavior of self-compacting concrete the following conclusions are arrived.

1. Use of Fly ash as cement replacement increases consistency & a substantial improvement in the flow and strength properties of concrete was achieved.
2. With the use of super plasticizer it possible to get a mix with low water to cement ratio to get the desired strength.
3. The fresh properties of concrete with 20% fly ash & 6%PVC (Mix 2) shows good results when compared to normal concrete.
4. The compressive strength of normal concrete is almost equal to the strength of 10% fly ash & 3%PVC concrete (Mix 1).
5. The compressive strength of normal concrete is more when compared with 20% fly ash & 6%PVC concrete (Mix 2).
6. Tensile strength of concrete also increases with increase in Fly ash content up to the 20% fly ash & 6%PVC concrete (Mix 2).
7. The maximum compressive strength and tensile strength attained at the age of 28 days of curing were found to be 46.5 N/mm^2 and 4 N/mm^2 respectively, irrespective of the replacement levels for the fly ash& PVC based SCC, which can be used as a structural concrete.

Therefore SCC is recommended in complicated frameworks which have narrow places and congested steel bars, because it can flow throw this places very smoothly and without vibration and give the best compaction and surface finishes.

A PROJECT REPORT ON

"ANALYSIS OF SHALLOW FOUNDATIONS ON UNEVEN SLOPES"

Submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

Submitted by

DONDA TEJASRI	15E11A0103
N. SRAVANTHI	15E11A0105
V.BHAGYA LAXMI	15E11A0108
MD. ANSAR	15E11A0134

Under the Esteemed guidance of

Mr.T.Kanakeswara rao -Assistant professor, BIET

DEPARTMENT OF CIVIL ENGINEERING

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mangalpally(V), Ibrahimpatnam(M), RR District, 501510, Telangana.

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE-Affiliated to JUNTUH)

Mangalpally (V), Ibrahimapatnam (M), RR District – 501510

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

This is to certify that this is a bonafide report of the project entitled

"ANALYSIS OF SHALLOW FOUNDATIONS ON UNEVEN SLOPES" is being presented by

D. TEJASH	15E11A0103
N. SRAVANTHI	15E11A0105
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MD. ANSAR	15E11A0134

During the year 2015-2019 in partial fulfillment for the award of the degree of **Bachelor of Technology** in **Civil Engineering** from **Jawaharlal Nehru Technological University, Hyderabad.**

EXTERNAL EXAMINER | **MR.T. KANAKESWARA RAO** | **PROJECT GUIDE** | **PRINCIPAL** | **BIET**

02/05/19

ABSTRACT

In developing countries like India, with the tremendous increase in population and scarcity of plain land, development in hilly regions turns out to be a major issue. With the vast development of infrastructure in hilly region the safety of the buildings on slopes has to be given more importance because there are no BIS guidelines for designing foundations resting on slopes. It is necessary to distinguish between the behavior of foundation on slope and on plain ground.

Estimation of bearing capacity of foundation is an important parameter in any design of any structures. Construction of foundation on slope is different from the plain ground. A few research works had been carried out for the estimation of bearing capacity on the slope and near slope.

The method for bearing capacity estimation on sloping ground was first proposed by Meyerhof and later on many researches had contributed. In this topic, the methods available for the estimation of bearing capacity of foundation on slope and near slope are discussed. The formation of different failure surfaces and the bearing capacity of foundation are obtained considering the geometry of foundation, slope and soil properties. From the study, it is found that the method which gives the minimum bearing capacity for shallow foundation on slope is considered for conservative design.

KEYWORDS:-ULTIMATE BEARING CAPACITY, TERZAGI'S METHOD, VESIC METHOD, AND MERYARHOLF'S METHOD.

CONCLUSION

- Throughout the development of civil construction there has been a continuous problem of footings on slopes, thus this project aims to create a comprehensive and qualitative set of design charts and tables that are user friendly and that could aid in the preparation of preliminary designs for the age old problem of footings on or near a slope.
- The major focus of this study was to conduct analysis of the foundation model, whilst taking in real life foundation characteristic, to develop a qualitative set of results that could be used within the validation of previous simplified numerical models.
- The smooth soil structure interface model, with a weight foundation, produced more conservative values for the ultimate bearing capacity of the foundation.
- The conclusions from the study of D/B were that increased earthquake magnitude reduces the capacity, while increasing the footing distance ratio D/B increases the capacity.
- The conclusions from the H/B ratio study were that again increased earthquake magnitude reduced the foundation capacities. But increases of H/B ratio reduced the capacity as the foundation transitioned from flat ground failure to local shear failure at the slope toe.
- It was concluded that soil strength ratio has a linear relationship with normalized bearing capacity, thus as the soil strength was increased the ultimate bearing capacity within the foundation increased.

A Project Report On

AN EXPERIMENTAL INVESTIGATION ON MECHANICAL PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH FLYASH ANDFINE AGGREGATE WITH QUARTZ SAND

Submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

BY

M.SAITEJA	**- 15E11A0131**
M.SREEKANTH REDDY	**- 15E11A0132**
P.PRANAY REDDY	**- 15E11A0138**
P.NAVEEN KUMAR	**- 14E11A0136**

Under the esteemed guidance of

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(Assistant Professor)

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Mangapally (V), Ibrahimpatnam (m), R.R. Dist, Hyderabad -501 510.

CERTIFICATE

This is to certify that the project entitled **"AN EXPERIMENTAL INVESTIGATION ON MECHANICAL PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH FLYASH ANDFINE AGGREGATE WITH QUARTZ SAND"** is being submitted by

M.SAITEJA	**- 15E11A0131**
M.SREEKANTH REDDY	**- 15E11A0132**
P.PRANAY REDDY	**- 15E11A0138**
P.NAVEEN KUMAR	**- 14E11A0136**

in partial fulfillment of the requirements for the award of the degree of BACHELOR OF TECHNOLOGY CIVIL ENGINEERING, JNTU-Hyderabad. This record is a bonafide work carried out by them under my guidance and supervision

SIGNATURE OF THE GUIDE:

G.S.V.S CHAITANYA. M. Tech, (Ph.D)

Assistant Professor

SIGNATURE OF HOD

BHARAT INSTITUTE OF ENGEERING AND TECHNOLOGY
Mangalpally(V),
Ibhrahipatanam,
R. R. District
E1

EXTERNAL EXAMINER

ABSTRACT

Concrete is that pourable mix of cement, water, sand, and gravel that hardens into a super-strong building material. Aggregates are the important constituents in the concrete composite that help in reducing shrinkage and impart economy to concrete production. River Sand used as fine aggregate in concrete is derived from river banks. River sand has been the most popular choice for the fine aggregate component of concrete in the past, but overuse of the material has led to environmental concerns, the depleting of river sand deposits and an increase in the price of the material, Therefore, construction industries of developing countries are in stress to identify alternative materials to replace the demand for river sand. Hence, partial or full replacement of river sand by the other compatible materials likes Quartz Sand.

The use of quartz sand as replacement for sand is an economical solution for making the concrete resistant to weathering. Present method was performed to evaluate the additional compressive, split tensile strength and flexural strength over conventional concrete in which sand is replaced with 0%, 10%, 20%, 30%, 50% and 100% of quartz sand by weight and cement is replaced with 30% fly ash. This project also revealed that there is possibility of replacing fine aggregate with quartz sand in the production of structural concrete. The mix proportion adopted was M30 as per 10262:2009. Compressive, split tensile and flexural strength tests were carried out to evaluate the strength properties of concrete at the age of 7,14 and 28 days.

Key Words: Compressive Strength, Flexural Strength, Tensile Strength, Workability, Fly ash, Quartz Sand.

CHAPTER-6

CONCLUSIONS

6.1 Conclusions:

Based on experimental research for concrete made with partial replacement of fine aggregate by quartz sand with different percentage (0%,10%,20%,30%,50% and 100%) and 30% fly ash with cement are conducted, the test results show clearly that 50%quartz sand as a partial replacement of fine aggregate has beneficial effects of the mechanical properties concrete & the following conclusions are drawn at 28 days.

- Compressive strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash and 100%QS+Flyash increased by2.03%, 3.29%, 5.06%, 9.27% and 12.25% at 7 days.
- Compressive strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash, and 100%QS+Flyash increased by2.63%, 6.04%, 11.02%, 16.23% and 22.56% at 14 days.
- Compressive strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash and 100%QS+Flyash increased by1.8%,5.09%,11.03%,15.69%, and 19.30% at 28 days.
- Split Tensile strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash and 100%QS+Flyash increased by1.01%, 1.63%, 2.50%, 4.53% and 5.95% at7 days.
- Split Tensile strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash, and 100%QS+Flyash increased by1.30%, 2.98%, 5.37%, 7.81% and 10.71% at 14 days.
- Split Tensile for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash and 100%QS+Flyash increased by0.9%, 2.52%, 5.38%, 7.56% and 9.22% at 28 days.
- Flexural strength for specimens 10%QS+Flyash, 20%QS+Flyash, 30%QS+Flyash 50%QS+Flyash and 100%QS+Flyash increased by1.01%, 1.63%, 2.50%, 4.53% and 5.95% at 7 days.

A MAJOR PROJECT ON

A CASE STUDY ON OLD BUILDING BY USING REHABILITATION METHOD

Submitted to

Jawaharlal Nehru Technological University Hyderabad

In partial fulfillment of the requirements for

the award of the degree of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

BY

P. SHIVA SAI	**(16E15A0118)**
K. THIRUPATAIAH	**(16E15A0114)**
S. BHARATH REDDY	**(15E11A0165)**
V. PRASHANTH	**(15E11A0168)**

Under The Guidance Of

Mrs. V. Aparna, Asst Professor

DEPARTMENT OF CIVIL ENGINEERING

BHARAT INISTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTUH Hyderabad, Approved by AICTE and Accredited by NBA)

Mangalpally(V) ,Ibrahimpatnam – 501510, Hyderabad.

2015-2019

BHARAT INSTITUTE OF ENGINEERING &TECHNOLOGY

(Approved by AICTE , Affiliated to J.N.T.University,HYD)
Mangalpally (V) Ibrahimpatnam-501510 (R.R. Dist) T.S.

CERTIFICATE

This is to certify that the project report entitled" **A CASE STUDY ON OLD BUILDING BY USING REHABILITATION METHOD** "is being submitted by" **P. SHIVA SAI, K. THIRUPATAIAH, S. BHARATH REDDY, V. PRASHANTH**" bearing roll numbers **16E15A0118, 16E15A0114, 15E11A0165, 15E11A0168** respectively in partial fulfillment for the award of degree of bachelor of technology in Civil engineering of Bharat institute of engineering, affiliated to Jawaharlal Nehru technological university, and is a bonafide work carried out by them under the guidance of **Mrs. V. APARNA** department of Civil engineering, biet, hyderabad. the result embodied in this thesis has not been submitted to any other institute or university for the award of any other degree or diploma.

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EXTERNAL EXAMINER

ABSTRACT

Buildings and other structures have a certain useful life, which depends on the specifications adopted. The large numbers of monuments, which are cherished heritage structures have stood well over a period. But some of these have shown signs of distress due to age, aggressive natural environment/industrial pollution etc. Further, distress gets aggravated due to overloading and misuse of buildings. A few Buildings have also failed due to faulty design or construction. The various causes of structural failure and the principles of rehabilitation of structures are discussed. In the structures, the cracks are generated due to different causes e.g. in some cases cracks are caused after the structure has been completed for a few years which results in shortening of life and strength of structure. The main criteria are how to repair a reinforced concrete element of structures and for this the skills, knowledge, and experience required to repair damaged or deteriorated structures are decidedly different from those required to build new structures.

It has become a major challenge to select right techniques, materials, and procedures for the repair of a building structure. Recently developed innovative techniques of the structural repairs have many advantages. Some guidelines for the selection of materials for repair work like fiber reinforced polymer, Epoxy resins, Quick-setting cement mortar has been discussed in this project. The selection of materials for the repair is generally depend on many factors like requirement of repair and the financial resources, the suitability of materials and their applicability in the repair of damaged part of structures. For the successful repair, strengthening and restoration of damaged structures use of innovative and standard repair materials with good workmanship and appropriate technique, and proper control on quality during implementation are the only key factors.

CONCLUSIONS

The detailed investigation of the buildings with rebound hammer test, ultra sound pulse velocity test and core tests, carbonation test and chloride tests have indicated that there is lot of variation in the compressive strengths of concrete in beams as well as columns. At certain locations, the strengths were found around 10 N/mm2 only indicated poor quality of concrete practices adopted in the original construction. Lower value of compressive strengths also indicates higher permeability of the concrete leading to ingress of harmful agents like carbon dioxide gas, chlorides etc from the environment resulting in corrosion of steel bars and disintegration of concrete covers. From this case study, following recommendations / conclusions are drawn for durable concrete constructions requiring minimum structural rehabilitation at later stages of life.

1. There is no substitute for good quality concrete construction practices for durability of reinforced concrete structures. The quality control of materials and workmanship viz. watercement ratio, concrete cover, compaction and curing etc. which are prerequisites for good quality construction are very important parameters and must be strictly observed at site. Poor quality concrete construction done cannot be rectified later except repeated costly repairs to keep the structure functional

2. To achieve the quality at site, the role of manpower is very significant. The engineers and workers responsible for construction should be well experienced, quality conscious and must be fully aware of the repercussions of poor quality work. Also sufficient technical staff should be deputed for achievement of quality construction with full support and encouragement from top management.

3. The early deterioration of concrete structure is also due to poor maintenance practices. The water supply and drainage system should be kept intact so that there is no leakage/ seepage on the walls and no stagnated water on roofs due to overflow of water tanks or rains which acts as an enemy to the structural integrity of the buildings.

4. The repair/ rehabilitation of damaged structure should be carried out urgently to avoid further deterioration with time so that the life of the structure and the occupants is not jeopardized.

STUDY ON PARTIAL REPLACEMENT OF CEMENT WITH METAKAOLIN AND GLASS FIBRE

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

In

CIVIL ENGINEERING

Submitted by

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ABSTRACT

Among many mineral admixtures available, Metakaolin (MK) is a mineral admixture, whose potential is not yet fully tested and only limited studies have been carried out in India on the use of MK for the development of high strength concrete. METAKAOLIN is a supplementary cementetious material derived from heat treatment of natural deposits of kaolin. METAKAOLIN shows high pozzolana reactivity due to their amorphous structure and high surface area. The experimental work has been carried out as partial replacement of cement with METAKAOLIN in M40 grade of concrete at 0%, 10%, 15%, and 20% of replacements. The mix design was made making the use of Indian standards method. Cubes are being kept for curing for 7,14 and 28 days. Cubes, cylinders and are tested for temperature study at 10%,15% and 20% replacement. Conclusions are made from the various results and the discussions there on to identify the effect of partial replacement of cement by METAKAOLIN in the design concrete mix. The results conclude that, the use of Metakaolin Concrete (MKC) has improved the performance of concrete under various conditions and therefore it can be used in heavy constructions.

CONCLUSIONS

The following conclusions were made by observing the test results of this experimental study:

- The replacement of cement with 15% metakaolin and 0.5% of glass fibre, give better results better for strength
- Compressive strength at 28 days decreased with increase in addition of metakaolin by 20% and Glass fibre with (0.5%).
- Compressive strength increased by more than 13% by addition of 15%metakaolin and 0.5% glass fibre.
- Use of metakaolin and Glass fibre save our environment, since during the production of METAKAOLINK &GLASS FIBER there is no emission of carbon dioxide.

A PROJECT REPORT

ON

SOIL STABILIZATION BY USING INDUSTRIAL WASTES

Submitted in partial fulfillment of the requirement for the award of degree of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

BY

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partial fulfillment for the award of the Degree of Bachelor of Technology in Civil Engineering to the arat Institute of Engineering & Technology is a record of bonafied work carried out under my guidance l supervision.

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ABSTRACT

Soil stabilization can be explained as the alteration of the soil properties by chemical or physical means in order to enhance the engineering quality of the soil. The main objectives of the soil stabilization is to increase the bearing capacity of the soil, it's resistance to weathering process and soil permeability. The long-term performance of any construction project depends on the soundness of the underlying soils. Unstable clay soils can create significant problems for pavements or structures, Therefore soil stabilization techniques are necessary to ensure the good stability of clay soil so that it can successfully sustain the load of the superstructure especially in case of clay soil which are highly active, also it saves a lot of time and millions of money when compared to the method of cutting out and replacing the unstable soil. This project deals with the complete analysis of the improvement of clay soil properties and its stabilization using industrial waste fly ash and GGBS. Disposal of these waste materials is essential as these are causing hazardous effects on the environment.. In the present study, using fly ash obtained from NTPC Ramagundam, Karimnagar, Telangana ,stabilization of black cotton soil obtained from Mangalpally, Ibrahimpatnam, Telangana is attempted. With various proportions of this additive i.e. 10%, 20%, 30%, 40% & 50%. expansive soils is stabilized. Owing to the fact that fly ash possess no plastic property, plasticity index (P.I.) of clay-fly ash mixes show a decrease in value with increasing fly ash content. In conclusion, addition of fly ash results in decrease in plasticity of the expansive soil, and increase in workability by changing its grain size and colloidal reaction. Tested under both soaked and un-soaked conditions, the CBR values of clay with fly ash mixes were observed. Analysis of the formerly found result exposes the potential of fly ash as an additive that could be used for improving the engineering properties of expansive soils.Utilization of industrial waste materials in the improvement of problematic soils is a cost efficient and also environmental friendly method in the sense that it helps in reducing disposal problems caused by the various industrial wastes. The main objective of the present study is to improve various engineering properties of the soil by using waste material Ground Granulated Blast Furnace Slag (GGBS) as an alternative to lime or cement, so as to make it capable of taking more loads from the foundation structures. This paper reports the findings of laboratory tests carried out on local Indian expansive black cotton soil with GGBS mixed with the expansive soil in different proportions. The specimens compacted to their respective Proctor's optimum moisture content and dry density (which varied from mixture to mixture) were cured for a period of 7, 14 and 28 days and their unconfined compression strengths were determined. It is observed that the strength improvement depends on the amount of GGBS used and the effect of curing period is less pronounced. Further it was shown that the initial tangent modulus values generally increases with increase in GGBS content.

Chapter 9

CONCLUSION

FLY ASH

Based on the results obtained and comparisons made in the present study, the following conclusions can be drawn:

- The Maximum Dry Density (MDD) value of the black cotton soil initially decreased with the addition of fly ash. Then, it showed increment with increasing fly ash content in the soil-fly ash mixture. The maximum value of MDD was observed for a mixture of soil and 30% of fly ash content by weight. The MDD values consistently decreased thereafter.
- The Unconfined Compressive Strength (UCS) of the soil with variation of fly ash content showed similar trend as that of the MDD values, except the fact that the peak value was observed for a fly ash content of 20% by weight.
- In un-soaked California Bearing Ratio (CBR) tests of soil conducted with varying fly ash content, the CBR increased gradually with the increase in fly ash content till its valuation was 20% by weight of the total mixture; it decreased thereafter.
- The change in case of soaked California Bearing Ratio (CBR) tests of soil with varying fly ash content was, however, uneven. It decreased with the initial addition of fly ash (10% by weight of total mixture), and then increased till fly ash content reached 30% by weight of total mixture. The values decreased thereafter.
- With the increasing fly ash content in the soil-fly ash mixture, the decrease in value of free swell ratio was remarked. This decrease was also reciprocated by the plasticity index values. Plasticity index values are directly proportional to percent swell in an expansive soil, thus affecting the swelling behavior of the soil-fly ash mixture.
- Thus, fly ash as an additive decreases the swelling, and increases the strength of the black cotton soil.

ANALYSIS AND DESIGN OF PRE-ENGINEERED BUILDING USING STAAD-PRO

A project report submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

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

BACHELOR OF TECHNOLOGY

IN

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ABSTRACT

Pre-Engineered buildings are the buildings which are engineered at a factory and assembled at site. The quality is high and it is light weight and economically constructed. The concept includes the technique of providing the best possible section according to optimum requirement. The cost involved is lower. There is a surplus production of steel in our country, which helps in more effective employing of PEB as it involves steel as major construction material.

STAAD or structural analysis and design software application is used to analyze the structure and helps in designing based on requirements. It will be perfect for the analysis and design of a Pre-Engineered structure. By employing this practice we can increase the use and establishment of PEB over the old conventional steel buildings and develop the society advancement.

In our project, we will be using the STAAD software for the analysis and design of a Pre-Engineered residential building with optimal design conditions for all the structural members. By the end of our project we will be able to explain the PEB requirements in construction with help of the structure we designed and analysis of all the structural conditions to be known.

CHAPTER – 5 DISCUSSION & CONCLUSION

SP 16 is accessible for solid segment however there is no any SP for steel section. Some communication bend is created for steel section for real pivot bowing and hub stack which it can convey. Additionally biaxial connection charts are produced for major and minor pivot bowing and hub stack which the segment can convey.

The heaviness of Pre-built entrance outline is less if configuration is finished by IS 800:2007 as thought about AISC. There is a sparing of weight of 20% if the plan is finished as IS 800:2007 when contrasted with AISC. The explanation for this is as far as possible have been expanded in IS 800:2007 (not for all condition). On the off chance that the direction of the casing is to oppose all things considered is administered by the avoidance criteria all things considered section ought to be settled set up of pivot.

On the off chance that the outline of pre-built building entrance outline is finished by utilizing the standard moved area there is a sparing of 15-20% steel by weight by utilizing IS 800:2007. In the event that the plans of pre-built building entry way outline by utilizing the standard moved segment there is a sparing of 5-10% steel by weight by utilizing AISC. In the event that the pre-designed building entryway outline is finished by utilizing the profile segment according to IS 800-2007 and additionally AISC we have a sparing of 15% by weight. There is a further decrease in weight of the Pre-designed if multi-span rigid frame are utilized rather than single span rigid frame.

A STUDY ON MECHANICAL PROPERTIES OF BACTERIAL CONCRETE

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

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ABSTRACT

Concrete is the most widely used construction material. Despite its Versatility in construction, it is known to have several limitations. It is Weak in tension, has limited ductility and little resistance to cracking. Based on the continuous research carried out around the globe, various modifications have been made from time to time to overcome the deficiencies of cement concrete. The ongoing research in the field of concrete technology has lead to the development of special concrete considering the speed of construction, the strength of concrete, the durability of concrete and the environmental friendliness with industrial material like fly ash, blast furnace slag, silica fume, Metakeolin etc.

Microorganisms (MO's) are capable of exhibiting numerous application potential in various fields of science and engineering. The development of bacterial concrete is one of the eco-friendly technique for the self-healing of concrete cracks. This technique is based on microbially induced calcium carbonate precipitation.In this project an attempt has been made first time to study the feasibility of Escherichia coli (E.coli), non-alkaliphilic and non-sporulating bacteria in the development of bacterial concrete. The culture was grown in nutrient broth at various alkali pH (11, 12, 12.5), and incubated for 24hrs at 37°C. The bacteria survived at a pH of 12.5 was selected which is more prevalent in various types of concrete and used for further studies. The culture was produced on a bulk scale and centrifused. The collected bacterial fraction was inoculated into concrete to test its viability. From this studies conducted on growth of E.coli at various pH of nutrient broth, it has been concluded that bacteria can be grown at alkali pH of 12.5. The growth of the culture was confirmed by the plate count method in broth and concrete. The research can be further progressed to test the ability of *E.coli* in self healing of bioconcrete. In this study we tested for Mechanical Properties of Concrete, like compression test, tensile test at 7days, 14days and 28days.

Key words:

Microorganisms, Escherichia coli , Bio Concrete, Non-Alkalophilic, Non-Sporulating, Plate count method, Compression strength test, Tesile strength test.

CHAPTER -7

7. CONCLUSION

The following conclusions are drawn from the detailed experimental investigations conducted on the behaviour of ordinary and standard grade conventional and bacterial concrete.

7.1 CULTURE OF BACTERIA

- E coli is a soil bacterium.
- E coli can be produced in the laboratory which is proved to be safe and cost effective.

7.2 STRENGTH STUDIES

Studies on compressive strength and split tensile strength of concrete:

- The addition of E coli bacteria improves the compressive strength of concrete.
- At a particular cell concentration **i.e, at 10^5 cell/ml** of mixing water the compressive strength of concrete is maximum.
- The addition of E.coli bacteria improves the hydrated structure of cement mortar.
- As the compressive strength of concrete is maximum with the addition of E.coli bacteria for a cell concentration of 10^5 cells per ml of mixing water, bacteria with a cell concentration of 10^5 cells per ml of mixing water is used for further investigation.
- In ordinary grade concrete the compressive strength is increased by **37 % at 28 days** by addition of E.coli bacteria when compared to conventional concrete.
- In ordinary grade concrete, with the addition of bacteria the percentage of improvement in the compressive strength is in the order of 35% to 37% as the age of concrete varies.
- In ordinary grade concrete the split tensile strength is increased up to 12.60% at 28 days by addition of E.coli bacteria when compared to conventional concrete.
- In ordinary grade concrete, with the addition of bacteria the percentage of improvement in the split tensile strength is in the order of **12.6% to 14.62%** at different ages.

EXPERIMENTAL INVESTIGATION ON BLACK COTTON SOIL BY USING GLASS POWDER

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

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ABSTRACT

In our India Black cotton soils are covers more than 20% of the geographical area of the country with dominance in the states of Madhya Pradesh, Maharashtra, Andhra Pradesh, Gujarat and Tamil Nadu. Black cotton soils have poor shear strength and are prone to swelling and shrinkage when exposed to increase and decrease in moisture content, they pose severe engineering problems such as foundation heaving, unequal settlements and cracks in super structures post construction as they contain high clay content which imparts a low strength to the soil and leads to unfavourable volume changes. For these reasons, certain ground improvement techniques such as soil stabilization or reinforcements are required for improving the behaviour and the reliability of the black cotton soil. Since waste glass consists of a high fraction of siliceous material, they can be utilized for stabilizing such soils.. Traditional methods of stabilizing these soils through in-situ ground improvement or replacement techniques are costly. By the utilizations of such waste glass in different proportions and thereby optimization of usage of waste glass for stabilization of black cotton soil by checking the engineering properties of the stabilized soil like Atterberg limits, compaction parameters, CBR values and swelling potential. Experimental analysis showed that addition of waste glass leads to an increase in plastic limit of black cotton soil by 5%, 10% and 15% respectively after which a decreasing Liquid limit continuously increased with the addition of waste glass. The effect of varying percentages (5, 10 and 15%) of the crushed glass was investigated. Physical properties, strength parameters and consolidation behaviour of cohesive soil were obtained for composite specimen (soil + waste glass). The glass was crushed manually by hammer and sieved to suit the particle size of cohesive soil. The results obtained from the testing program showed that addition of crushed glass in cohesive soils causes an increase in the soil shear strength and load bearing capacity.

Keywords: BC soil, Glass powder, Atterberg limits, Compaction, UCS, CBR

CONCLUSIONS

1. By study and experimental investigations, it was observed that the property of black cotton soil effectively improved by use of different percentage of Glass powder contents. In this study varying percentage (5%, 10% and 15% of Glass powder) was used to stabilize the black cotton soil. Points which drawn from this study are listed below-
2. It is observe, that Liquid limit values are decreases from 80% to 56% by adding of Glass Powder that means soil property changes from highly compressible to low compressibility.
3. Plastic index values are decreases from 21% to 15% on addition of glass powder that means highly plastic to medium plastic.
4. Free swell index values decreases that means swelling of the soil also decreases.
5. The C.B.R. values of black cotton soil raised from 1.94 to 9 % on addition of Glass Powder
6. The UCS values of black cotton soil raised from 2.1 to 4.41 Kg/cm^2 on addition of Glass Powder

Hence, it can be concluded from this investigation that properties of black cotton soil can be improved by addition of 10 to 15 % of Glass Powder.

EXPERIMENTAL STUDIES ON SILICA FUME CONCRETE

Project report

Submitted in partial fulfillment of the

Requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

IN CIVIL ENGINEERING

BY

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25/5/19

SIGNATURE OF THE GUIDE:

G. MADHAVA KRISHNA REDDY

Assistant Professor

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Abstract

The use of silica fume had major impact on industries, ability to routinely and commercially produce silica fume modified concrete of flow able in nature but yet remain cohesive, which in turn produce high early and later age strength including resistant to aggressive environment and it will show resistance against chemical attacks like carbonation, chloride penetration sulphate attacks. This is an experimental study on the properties of fresh and hardened concrete by partially replacement of cement by silica fume.

The strength parameters of concrete have been studied with and without replacement of silica fume in cement and the comparison were made between control concrete and blended concrete. It will show that partial replacement of cement with silica fume has significant effect on the compressive strength of cube and split tensile strength of cylinder.

Silica fume is used to replace 0% to 20% of cement, by weight at increment of 5% for both cube and cylinder by using M30 grade concrete. The results showed that partial replacement of cement with silica fume had significant effect on the compressive strength of cube and split tensile strength of cylinder. The strength of concrete increases rapidly as we increase the silica fume content and the optimum value of compressive strength is obtained at 10% replacement. After 10% its start decreasing under uniform load condition of 140 kg/cm^2 per min and similarly the split tensile strength increases up to 10% and then start decreasing under the uniform load condition of 1.2 to 2.4 MPa/min based on the IS 5816 :1999

KEY WORDS: -

Silica fume, M30 grade blended concrete, compressive strength and split tensile strength.

Chapter 7

7. Conclusion: -

The strength and durability characteristics of concrete mixtures have been computed in the present work by replacing 5%, 10%, 15% and 20% silica fume with the cement. Particle size is inversely proportional to water absorption On the basis of present study, following conclusions are drawn:

7.1 Compressive strength: -

- After adding 5% silica fume in the mix, there is an increase in the strength of cube after 7 days as compared to concrete without replacement. And after 14 days and 28 days there is enormous increase in strength as compared to the control mix.
- By adding 10% silica fume, there is large amount of increase in strength after 7, 14 and 28 days respectively. The Compressive strength tends to increase with increase percentages of silica fume in the mix and decreases after 10% replacement.
- The optimum strength of cube is gain at 10% replacement for all 7, 14 and 28 days respectively.

7.2 Split tensile strength: -

- After adding 5% silica fume in the mix, there is an increase in the strength of cylinder after 7 days as compared to concrete without replacement and after 14 days and 28 days there is enormous increase in strength as compared to the control mix.
- By adding 10% silica fume, there is large amount of increase in strength after 7, 14 and 28 days respectively. The split tensile strength tends to increase with increase percentages of silica fume in the mix and decreases after 10% replacement.
- The optimum strength of cylinder is gain at 10% replacement for all 7, 14 and 28 days respectively.

A

PROJECT REPORT ON

COMPARATIVE STUDY ON CONCRETE PROPERTIES OF BINARY BLEND SELF COMPACTING CONCRETE

Submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

IN CIVIL ENGINEERING

BY

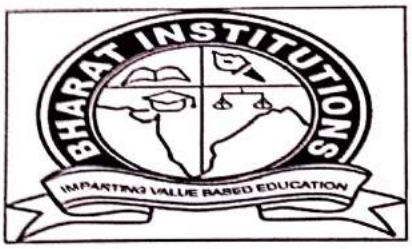
P.SANJAY BHARGHAV (15E11A0139)

B.POORNIMA JAIN (15E11A0102)

B.SAI RAM (15E11A0113)

Under the Esteemed guidance of

Ms. P VISHNU PRIYA - Assistant Professor, BIET



DEPARTMENT OF CIVIL ENGINEERING,

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

MANGALPALLY, IBRAHIMPATNAM, R.R.DISTRICT, TELANGANA.

APRIL-2019

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, GOVT.OF TS& Affiliated to JNTU)

Mangalpally (v), Ibrahimpatnam (M), R.R.District, 501510.

CERTIFICATE

This is to certify that the technical report entitles **"COMPARATIVE STUDY ON CONCRETE PROPERTIES OF BINARY BLEND SELF COMPACTING CONCRETE"** that is being submitted by

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During the year 2018-2019 in partial fulfilment for the award of degree of **Bachelor of Technology** in **Civil Engineering** from **Jawaharlal Nehru Technological University, HYDERABAD.**

03/05/19

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ABSTRACT

Self compacting concrete is one type of special concrete. Now a day it became most popular to its specialization. In SCC, super plasticizer is used to increase the ease and rate of flow. This type of concrete doesn't require any kind of compaction because concrete flows under its own weight and fills completely all over the mould and settles without any compaction. This concrete strength is similar to normal concrete, due to its self compaction it does not require compaction finally reduce the labor work and cost of the construction. In self-compacting concrete we are adding mineral admixtures such as ground granulated burnt furnace slag and fly ash in different percentages to replace cement content which in directly reduces the cost of the construction and also making the utilization of industrial waste.

Concrete cubes and cylinders are casted and tested for determining the properties of the concrete at 7days, 14days, and 28days. Workability of concrete determined by few SCC test such as L-box, U-box, V-funnel, J-ring during its plastic state and properties of the concrete like compressive strength test, split tensile strength, flexural strength tests are carried on hardened concrete. The results of all tests are compared and tabulated.

Keywords-Self compacting concrete, fly ash, ground granulated burnt furnace.

6.3 CONCLUSION

Based on the systematic and detailed experimental study conducted on SCC mixes with an aim to develop performance mixes, the following are the conclusions arrived

1. The design method based on absolute volume concept can be successfully employed for achieving SCC. The method is simple and reduces the number of trials for achieving SCC.
2. The mixes designed using the lower size of aggregate yielded better fresh properties than higher size of aggregate
3. The workability of SCC is high and all the mixes satisfied the SCC characteristics such as segregation resistance, flow ability and passing ability as per Indian standards. This mineral admixture can be used in the production of binary and ternary mix blends for SCC.
4. Compressive strength for 28 days is more for nominal mix and for binary mix (both fly ash and GGBS) results are comparatively near to nominal mix. These can be achieved more by proper mix, placing and curing conditions.
5. Split Tensile strength values for all mixes are nearby values at the age of 28 days

A PROJECT REPORT ON

DESIGN OF DRAINAGE NETWORK USING SWMM FOR BHARAT INSTITUE OF ENGINEERING AND TECHNOLOGY

A project report submitted to faculty of Civil Engineering in partial fullfillment of the requirement for award of the degree of

BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

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Mangalpally (V), Ibrahimpatnam (M), R.R.District- 501510

2015-19

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

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in partial fulfillment for the award of the Degree of Bachelor of Technology in Civil Engineering to the Bharat Institute of Engineering & Technology is a record of bonafied work carried out under my guidance and supervision.

Signature of Internal guide

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ABSTRACT

Understanding the rainfall-runoff process in urban catchment is very essential to design the drainage network. In urban areas, Surface runoff mainly depend upon rainfall, infiltration, slope, percent of imperviousness and land use. Butland use and rainfall are two major factors which influence the runoff process greatly. The objective of this paper is to estimate the runoff and to check the adequacy of the existing drainage system by the storm water management model (SWMM), SWMM is a dynamic rainfall–runoff simulation model that computes runoff quantity and quality from primarily urban areas. The hydrology component of SWMM operates on a collection of sub-catchment areas divided into impervious and pervious areas with and without depression storage to predict runoff and pollutant loads from precipitation, evaporation and infiltration losses from each of the sub-catchment. The result shows that the directly connected impervious area which covers 45% of the catchment,contributes 77% of the total runoff volume during 14 years. Few studies have actually measured the DCIA (Directly connected impervious area) with a high level of accuracy for residential areas that constitute the largest proportion of urban land. Hydrologic analysis was performed to evaluate long-term impacts from an area BHARAT INSTITUE OF ENGINEERING & TECNOLOGY (BIET) campus CONSTRUCTION BLOCK in MANGALPALLY. A detailed analysis of urban imperviousness was performed using geographic information systems and field investigations on a 5 acres of BIET campus area in MANGALPALLY ,RANGAREDDY .

CHAPTER -6

CONCLUSION

6.1 GENERAL

Attempts have been made to simulate the rainfall – runoff process in an urban catchment to check the adequacy of the existing drainage system. SWMM model were adopted to simulate the rainfall runoff process in the adopted sub catchments and manning roughness coefficient to derive the design capacity of existing channels. For SWMM input parameters, field survey has been conducted to collect the basic parameters like, slope, elevation, soil type, infiltration rate. From the results it is clear that SWMM model predict the reasonably accurate results for the adopted sub catchments, and since the peak discharge value from SWMM model is less than design capacity of existing drainage system. So it can be said that existing drainage system is adequate for existing conditions but if in future the impervious cover increases or rainfall intensity increases, the peak discharge may exceed the design capacity of existing channel

6.2 OVERALL CONCLUSIONS

- From the study of rainfall characteristics, highest annual maximum 1 day rainfall occurred in 2007, where in all the remaining period, it showed no significant change with respect to time.
- From the SWMM, high runoff occurred in sub-catchment 5 in the range of 0.41 - 0.63 m^3/s where, low runoff occurred in sub –catchment 4 in the range of 0.07 -0.10 m^3/s.
- From the manning's equation, high runoff occurred in sub-catchments1 to 6 is 0.82 m^3/s.
- By result of six sub-catchments it can be said that existing drainage system is adequate for existing conditions but if in future the impervious cover increases above 60% or rainfall intensity increases, the peak discharge may exceed the design capacity of existing channel.

Comparative Study of Multi-storeyed building by Equivalent Static nalysis and Response Spectrum Analysis with Shear Walls Using E-Tabs

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

In

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Project Guide:

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ABSTRACT

This is final year project on Comparative Study of multi-storeyed building with Equivalent static Analysis and Response spectral Analysis on shear walls using ETABS

In structural engineering, a shear wall is a structural system composed of braced panels (also known as shear panels) to counter the effects of lateral load acting on a structure. Wind and seismic loads are the most common loads that shear walls are designed to carry. Vibrations, which are caused under the earth's surface, generate waves, which disturb the earth's surface, termed as earthquakes. It was said that earthquakes would not kill human but structures, which are not constructed with considering the earthquake forces do. Shear walls are built to resist the lateral forces produced during earthquake or wind. Shear walls behavior depends upon the material used, wall thickness, wall length, wall positioning in building frame.

KEY WORDS: EQUIVALENT STATIC ANALYSIS, RESPONSE SPECTRAL ANALYSIS, SHEAR WALLS, BASE SHEAR, STOREY SHEAR, STOREY ACCELERATION, TIME PERIOD, ETABS.

CHAPTER-7

SUMMARY AND CONCLUSIONS

7.1 SUMMARY

The present work attempts to study the seismic response RC buildings located in seismic zone-2. In this study all important components of the building that influence the mass, strength, stiffness and deformability of the structure are included in the analytical model. To study the effect of infill wall and different shapes of concrete shear wall in building models. The fundamental time period, seismic base shear, storey displacement and storey drifts are compared by performing Time history analysis. The study leads to the following conclusions.

7.2 CONCLUSIONS

1. Bare frame model and model with ground and top service soft storey have got highest dominant time period when compared to different models.
2. H-type shear wall is giving very less time period due to more stiffness at corners.
3. Drift is maximum at bottom and top due to soft storeys.
4. If stiffness is more than displacement is less.
5. Models with soft stories have got highest story drift values at soft stories levels, which leads to dangerous sway mechanism. Therefore, providing shear wall is essential so as to avoid soft storey failure.
6. As the number of soft stories increases, the fundamental time period of the structure also increases hence existence of soft stories can make the structure to be flexible in nature.
7. Fundamental time period decreases when the stiffness of masonry infill and concrete shear wall is considered.
8. Maximum reduction in storey displacement observed by introduction of different types of shear wall.
9. L shaped shear wall shows considerably lesser storey displacement.
10. Providing shear wall at all end corners of the building in X and Y direction significantly improves all parameters in the analysis.

STUDY ON PERVIOUS CONCRETE MADE WITH DIFFERENT SIZED AGGREGATES

A Project Report Submitted to

awaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

In

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PCB, May 2nd 2019

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Abstract .

The pervious concrete is a special type of concrete consists of a gap-graded system, generally contains cement, coarse aggregate, little or no sand, admixtures, and water. it has been found to be a reliable storm water management tool. The combination of these components will produce a hardened material that allows water to pass through the concrete easily. pervious concrete could be more considered as environment friendly concrete for sustainable construction. Pervious concrete is generally used in sidewalks, for low-traffic volume roads and for parking this special class of concrete has several other environmental benefits such as reduce tire pavement interaction noise, improved road safety because it is able to enhance the skid resistance, and reduce urban heat-island effects.

Pervious concrete it has been increasing during recent years. It is made different sized aggregate shows different void ratio 20%made using aggregate three size ranges, like 4.75-6mm,10-12mm,16-20mm.used to maintain the identical void ratio. The smaller size of aggregate enhanced the strength of PC was absorbed and packing aggregates. as the permeable capacity of pc gets reduce to the clogging tendency, the life of pc will also reduce. Pervious concrete larger size aggregates showed higher efficiency to de clogging procedure It also used to improve water quality by capturing of surface runoff reduce temperature rise in receiving water increasing base flow and reducing flooding potential by creating short term storage detention of rainfall

CHAPTER 7

CONCLUSION

Following conclusions are drawn within the range of materials and parameters investigated:

Size of aggregate used in the PC mix has an indirect relation with strength. Smaller sized aggregate (4.75-10mm) enhanced the strength of Pervious Concrete and this was observed due to the dense packing of aggregates we take 20 percentage. 10-12.5mm size aggregate had shown lower strength when compared to other two sizes of aggregates are taken 20 percentage. 12.5-20mm size aggregate are 40 percentage taken . shown a strength almost equal to 10-12.5mm size aggregate. This was observed due to the dense packing of different sizes of aggregates ranging in between 12.5-20mm. The mixes prepared with different aggregate sizes at identical void ratio showed similar permeability.

The clogging of PC majorly depends on the size of clog materials. It was observed that larger size clog particles have a greater impact in clogging the pores when PC is made with smaller sized aggregates. In PC is made with larger size aggregates, clogging behavior for both types of clog particles is observed to be similar.

It was observed that smaller size clog particles took five to seven cycles to clog the pores and then major decrease in permeability was observed, whereas larger size particles took only three cycles for which significant drop in permeability was observed.

De-clogging of Pervious Concrete specimens is found efficient under pressure washing followed by vacuum suction. PC made with larger size aggregates showed higher efficiency to de-clogging procedure.

Comparative Study of Multi-storeyed building by Equivalent Static nalysis and Response Spectrum Analysis with Shear Walls Using E-Tabs

A Project Report Submitted to

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10. Providing shear wall at all end corners of the building in X and Y direction significantly improves all parameters in the analysis.

EXPERIMENTAL STUDIES ON UTILIZATION OF RECYCLED AGGREGATES

A Project Report Submitted to

Jawaharlal Nehru Technological University, Hyderabad

In partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

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ABSTRACT

Recycled aggregates are comprised of crushed, graded inorganic particles processed from the materials that have been used in the constructions and demolition debris. The aim for this project is to determine the strength characteristic of recycled aggregates for different ages, application in high strength structural concrete, which will give a better understanding on the properties of concrete with recycled aggregates, as an alternative material to coarse aggregate in structural concrete. The scope of this project is to determine and compare the high strength concrete by using different percentage of recycled aggregates.

The investigation was carried out using workability test, compressive test, indirect tensile test and modulus of elasticity test. There were total of eight batches of concrete mixes, consists of every 20% increment of recycled aggregate replacement from 0% to 100%. Moreover, 100% of recycled aggregate mix batches, water/cement ratio of 0.36 and 0.43. The workability of concrete considerably reduced as the amount of recycled aggregate increased. This was evaluated through standard slump test and compacting factor test. For strength characteristics, the results showed that a gradually decreasing in compressive strength, tensile strength and modulus of elasticity as the percentage of recycled aggregate used in the specimens increased.

Key words : Recycled Aggregates (10 years, 20 years), Natural Aggregates

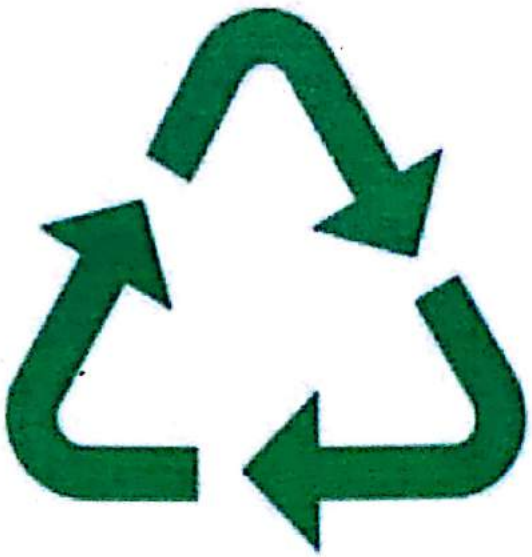
5.4 CONCLUSION

Recycling and reuse of building wastes have been found to be an appropriate solution to the problems of dumping thousands tons of debris accompanied with shortage of natural aggregates. The use of recycled aggregates in concrete proves to be valuable building material in technical, environmental and economical respect.

Recycled aggregate posses relatively lower bulk density, crushing and impact values and higher water absorption as compared to natural aggregate. The compressive strength of recycled aggregate concrete is relatively higher to 35% than natural aggregate concrete.

Recycled Aggregate Concrete RCA can replaces the conventional concrete as strength values are high for **RCA .**

RCA Can replace in structures like Pavements , Concrete pipes , Shear walls , Concrete flooring , Residential buildings & Culverts.



A

PROJECT REPORT

ON

"COMPARATIVE ANALYSIS AND DESIGN OF RESIDENTIAL BUILDING"

BY

"MANUALLY" and "STAAD PRO"

Submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

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BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to JNTU Hyderabad, Approved by AICTE and Accredited by NBA)
Mangalpally (V), Ibrahimpatnam (M), RR Dist. 501510, Telangana.

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DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE

This is to certify that this is bonafide report of the project entitled "COMPARATIVE ANALYSIS AND DESIGN OF RESIDENTIAL BUILDING by MANUALLY AND STAAD PRO" is being presented by

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During the year of 2015-2019 in partial fulfillment of the requirement for the award of the degree of BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING from Jawaharlal Nehru Technological University, Hyderabad.

Mr. J. Naresh

PROJECT GUIDE

HOD / PRINCIPAL

(Vineela)

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY Mangalpally (V), Ibrahimpatnam, R. R. District E1

EXTERNAL EXAMINER

ABSTRACT:

All structures are analyzed & designed according codal requirements using manual calculations or by the use of many different analysis and design software like STAAD PRO, ETABS etc. used in various design offices. But it has been found that analysis & design procedure becomes very tedious and time taking process when performed manually.

So to overcome this problem these days most of the analysis and designing work are done by the use of software meant for this work. Different softwares are based on different methods of analysis and design, due to which final results may vary from actual results.

This study will check the degree of variations between the results of those obtained by two different design methods i.e. MANUALLY and STAAD PRO. An appropriate and economical way of analysis and design of the structure will also be discussed in this study with the help of an example of a residential building.

Conclusions:

1.Designing using Software's like Staad reduces lot of time in design work.

2.Details of each and every member can be obtained using staad pro.

3.All the List of failed beams can be Obtained and also Better Section is given by the software.

4.Accuracy is Improved by using software.

References:

1.Theory of Structures by Ramamrutham for literature review on kani,s method

2.Structural Analysis 2 by S.S Bhavikatti for literature on moment distribution method.

3.Reinforced Concrete Structures by M.R. Dheerendra Babu for design of beams, columns and slab.

4.Fundamentals of Reinforced concrete structure by N. C. Sinha.

Code Books:

1.IS 456-2000 code book for design of beams, columns and slabs.

2.SP-16 for design of columns.

A PROJECT REPORT

ON

STABILIZATION OF BLACK COTTON SOIL USING EGG SHELLS POWDER

Submitted in partial fulfilment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

BY

SWEEYA SANKURU	**15E11A0107**
KAMA RANADEEPAK	**15E11A0127**
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BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

MANGALPALLY (V), IBRAHIMPATNAM (M), R.R.DISTRICT- 501510

2015-2019

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mangalpally (V), Ibrahimpatnam(M), Ranga Reddy District-501510

Department of Civil Engineering

CERTIFICATE

This is to certify that the project report entitled **"STABILIZATION OF BLACK COTTON SOIL USING EGG SHELLS POWDER"** that is being submitted by SWEEYA SANKURU (15E11A0107), K.RANADEEPAK (15E11A0127), P.ROHITH (15E11A0143), CH.VISHNU (13E11A0180) in partial fulfilment for the award of the Degree of Bachelor of technology in civil engineering to Jawaharlal Nehru Technological University is a record of bonafide work carried out by him under my guidance and supervision.

Signature of Internal Guide

P. Nagaraju

Mr.P.Nagaraju

Assistant Professor,

Dept. of Civil Engineering.

External Examiner

S. Vinay

Head of the Department

BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
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PRINCIPAL

ABSTRACT

Nowadays, considerable attention has been paid to the utilization of alternative materials, which bear higher engineering quality than traditional materials and are financially affordable. Soil is one of the most important materials used in a variety of construction projects including earth canals and earth dams. The fact that soil may provide all the resistance characteristics necessary for a project illustrates the importance of various methods used to improve soil quality. Clay soil is widely used in most of the construction projects. Clay soils, particularly soft clay soils, have good plastic properties so that increased moisture results in their decreased shear strength, compressive strength and volume changes. These damages typically take an irreparable toll on structures, which further clarifies the importance of soil improvement. Considering millions of tons of waste produced annually across the country, which not only poses the problem of disposal but also adds to environmental contamination and health risks, utilization of such refuse and industrial wastes and their subsidiary products as alternatives to construction materials may effectively contribute to environmental preservation and minimization of their adverse effects on the Environment. In the present study, eggshell powder was used as a waste to combine with soil so that index properties compaction and shear strength properties of clay soil were investigated at different mixture proportions. Then the shear strength of soils already measured, were compared with those of the experimental specimens mixed with eggshell powder at different proportions.

CHAPTER - 5

CONCLUSION

The following conclusions were made from this experimental Study-

1. By study and experimental investigations, it was observed that the property of black cotton soil effectively improved by use of different percentage of ESP contents. In this study varying percentage (5%, 10% and 15% of ESP) was used to stabilize the black cottonsoil. Points which drawn from this study are listed below-
2. It is observe, that Liquid limit values are decreases from 80% to 62% by adding of ESP that means soil property changes from highly compressible to low compressibility.
3. Plastic index values are decreases from 21% to 15% on addition of ESP that meanshighly plastic to medium plastic.
4. Free swell index values decreases that means swelling of the soil also decreases.
5. The C.B.R. values of black cotton soil raised from 1.94 to 9 % on addition of ESP.
6.The UCS values of black cotton soil raised from 2.1 to 4.41 Kg/cm2 on addition of ESP.

Hence, it can be concluded from this investigation that properties of black cotton soil can be improved by addition of 10 to 15 % of ESP.