PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE
(Approved by AICTE & Affiliated to Anna University, Chennai)
Madurai - Sivagangai Highway, Arasanoor, Thirumansolai Post, Sivagangai Dt. - 630 561, Tamilnadu
Mobile : 9842102628, 7373002628 Email: info@psyec.edu.in Website : www.psyec.edu.in
City Office : 10, Pandian Saraswathi St, Sivagami Nagar, Narayanapuram, Madurai - 625 014. Telefax- 0452 2682338, Mobile : 98423-02628

Number of Civil Engineering Student Undertaking Projects/Field Work/ Internship for the Academic Year 2022-23

Programme Name &Code: Civil&103

SL.NO	REGISTER NUMBER	NAME OF THE STUDENTS	PROJECT TITLE
1	912019103001	Abimanyu V	Experimental Investigation on Concrete Partial Replacement of Cement by Wood Ash
2	912019103004	Balaji G	
3	912019103015	Prabu P	
4	912019103002	Arunkumar K	Eco-Friendly Stabilized Earth Block Using Lime and Black Cotton Soil
5	912019103005	Chandra Bose S	
6	912019103025	Vasanth L	
7	912019103007	Gautham M	Experimental Study on Bio Derived Carbon Fibre for Beam Strengthening Using Coconut Shell
8	912019103018	Rajesh G	
9	912019103021	Seeman T	
10	912019103014	Nagaraj M	Experimental Study on Concrete by Partial Replacement of coarse Aggregrate with Waste Kadappa Stones
11	912019103016	Ragul S	
12	912019103501	Arunkumar N	
13	912019103017	Rahul P	Experimental Investigation on Permeable Concrete Pavement by Adding Fly Ash
14	912019103022	Thirukkuralarasan D	
15	912019103701	Kathiravan B	
16	912019103019	Rathineshwaran R	Utilisation of Coconut Shell with Capping of Rapid Sand Filter
17	912019103012	Kavin Kumar.S	
18	912019103301	Priyadharshini M	
19	912019103702	Siva B	
20	912019103002	Allan Jones.A	Experimental Study on Granite Dust as Partial Replacement of Fine Aggregrate in Concrete
21	912019103009	Gurunathan.K	
22	912019103020	Sakthi Sundar C	

R RAJA Digitally signed by R RAJA Date: 2024.06.29 19:35:42 +05'30'

EXPERIMENTAL INVESTIGATION ON CONCRETE PARTIAL REPLACEMENT OF CEMENT BY WOOD ASH

APROJECTREPORT

Submittedby

ABIMANYU V — 912019103001

BALAJI G — 912019103004

PRABU P — 912019103015

In partial fulfilment for the award of

the degree of

BACHELOR OF ENGINEERING

IN

CIVIL ENGINEERING

PANDIAN SARASWATHI YADAV ENGINEERING

COLLEGE,SIVAGANGAI-630561

ANNA UNIVERSITY:CHENNAI600025

MAY 2023

R RAJA

Digitally signed by R RAJA
Date: 2024.07.01 15:46:57 +05'30'

ANNAUNIVERSITY:CHENNAI600 025

BONAFITE CERTIFICATE

Certified that is titled "**EXPERIMENTAL INVESTIGATION ON CONCRETE PARTIAL REPLACEMENT OF CEMENT BY WOOD ASH**"is the bonafide work of"**ABIMANYU V (912019103001)BALAJI G (912019103004) PRABU P (912019103015)** who carried outtheprojectoutttheprojectworkundermySupervision

Dr. 16/5/2023
SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI.,ME,PhD
HEADOFTHEDEPARTMENT,
Department of civilEngineering
,Pandian Saraswathi yadav
Engineering. College,Arasanoor,
Sivagangai-630561.

M. 16/5/2023
SIGNATURE

Mrs.M.KASTHURI ME.,
ASSISTANTPROFESSOR,
Department of civilEngineering
,PandianSaraswathiyadav
EngineeringCollege,Arasanoor,
Sivagangai630-561.

Submitted to the viva-voce examination held at Pandian Saraswathi yadavEngineeringcollege,Arasanoor,sivangangai-630561on..17.05.2023

Dr. 17/5/23
INTERNAL EXAMINER

17/5/23
EXTERNAL EXAMINER

ABSTRACT

Concrete is the most usually utilized construction material because it's easy availability of materials, strength and durability. Cement is the main binding material in concrete. Concrete is a mixer of various materials. These materials include water, cement, and aggregates respectively. The making of cement produces enormous quantity of greenhouse emissions. There is a need to develop substitute materials for cement. The one ton manufacturing of cement produces 0.9 ton of CO? to the atmosphere. About 5%-7% of green house gases are from the cement plants. To fight against the high cost of cement and to reduce co2emission and cement cost. Here we partially substitute cement by woodash Eucalyptus and Prosopis juliflora. Mix ratio of 1:1.2:2 in which specimens are prepared and cured. Compressive strength of specimens are tested after 7 days and 28 days of curing. Eucalyptus wood ash is replaced by cement of 5%, 10%, 20%, SW 30%. Prosopis juliflora wood ash is replaced by cement of 5%, 10%, 40% of cement is replaced by 30% of Eucalyptus wood ash and 10% of Prosopis juliflora wood ash. Cubes are casted and compressive strength of cubes are calculated 7 daysand 28 days for the above 7 mix designs. In M, cement is replaced by 5% of Prosopis juliflora shows greater compressive strength among the all mix designs compressive strength in 7 days. In Mo cement is replaced by 30% of Eucalyptus wood ash shows greater compressive strength among the all mix designs.

CHAPTER 7

CONCLUSION

The goal of our project is to investigate the effect of wood ash as a substitute f cement on the strength of concretes, based on test results the following conclusions were made:

- M1 shows greater compressive strength among the all mix designs compressive strength in 7 days.
- M6 shows greater compressive strength in 28 days among the all mix designs
- Replacement of cement by prosopis juliflora wood ash decreases the compressive strength with increasing the percentage of replacement .
- Replacement of cement by Eucalyptus wood ash increases the compressive strength with increasing the percentage of replacement up to 30%.
- Replacement of cement by prosopis juliflora wood ash in 10% started to decrease the compressive strength.
- Replacement of cement by Eucalyptus wood ash in 40% started to decrease the compressive strength.

ECO-FRIENDLY STABILIZED EARTH BLOCK USING LIME AND BLACK COTTON SOIL

A PROJECT REPORT

Submitted By

K.ARUN KUMAR (912019103002)
S.CHANDRA BOSE (912019103005)
L.VASANTH (912019103023)

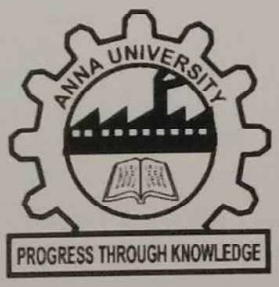
In partial fulfillment of the award of the degree

Of

BACHELOR OF

ENGINEERINGING

CIVIL ENGINEERING



R RAJA

Digitally signed by R RAJA
Date: 2024.07.01 15:48:11 +05'30'

PANDIAN SARASWATHI YADAV ENGINEERING

COLLEGE,SIVAGANGA-630561

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "**ECO-FRIENDLY STABILIZED EARTH BLOCK USING LIME AND BLACK COTTON SOIL**" is the bonafide work of **ARUN.K(912019103002),CHANDRABOSE.S(912019103006),VASANTH.L(912019103023)**,-who carried out the project work under my supervision.

SIGNATURE

Mrs.Dr.S.MEENAKSHISUDARVIZHI.,
HEAD OF THE DEPARTMENT,
Department of civil Engineering, Pandian Saraswathi yadav Engineering. College , Arasanoor,
Sivagangai-630 561.

SIGNATURE

Mr.D.SELVAGANESH ME.,
ASSISTANT PROFESSOR,
Department of civil Engineering, Pandian Saraswathi yadav Engineering College, Arasanoor,
Sivagangai 630-561.

Submitted to the viva-voce examination held at Pandian Saraswathi yadav Engineering college, Arasanoor, sivangangai-630 561 on ...17.05.2023

INTERNAL EXAMINER.

EXTERNALEXAMINER

ABSTRACT

Lime can be used as a cement replacement in concrete. There are, as there have always been, two critical issues with this type of cement replacement: the change in physical properties with respect to compressive strength and the cost analysis of the alternatives. The first stage of this research looks at the change in physical properties of a standard concrete mix when lime is substituted for cement with respect to compressive strength. The results from this research show a linear decline in strength with a linear increase in the relative percentage of lime to cement. A traditional cost analysis looks only at the first or construction cost, without considering the long term cost to mitigate for the increased global warming emissions resulting from the manufacturing process of Portland cement. A typical example of the traditional form of the cost analysis can be found in Baker's 1912 book on masonry construction. Future research will address the cost issues and other physical properties. Soil is the basic foundation for any civil engineering structures.It is required tobear the loads without failure.In some places, soil may be weak which cannot resist the oncoming loads.In such cases,soil stabilization is needeed.Numerous methods are available in the literature for soil stabilization.But sometimes,some of the methods like chemical stabilization,lime stabilization etc. adversly affects the chemical composition of the soil. In this study,fly ash and lime were mixed with black soil to investigate the relative strength gain in terms of unconfined compression,bearing capacity and compaction.The effect of lime on the geotechnical characteristics of clay-fly ash and clay-lime mixtures was investigated by conductiung standard Proctor compaction tests,unconfined compression tests,CBR tests and permeabilitytest

CHAPTER 5

CONCLUSION

In the recent past, cement-based mortars have often been used for repair and renovation work and the hard, brittle and impermeable nature of these materials has resulted in damage to historic buildings and structures. Damage is caused by issues including trapped moisture and additional stresses through the incompatibility of the unmatched repair materials It is now more widely appreciated that compatible mortars should be used in the repair and renovation of buildings. A thorough investigation of the building or structure is needed before repair and renovation materials are specified, and appropriate advice should be sought

- lime I*/O with changing level of cement, The unconfirmed compressive property y of this filth increases from 10.8kg/cm2, I2.12kg/crn2 and II.22kg/cm2 with an expansion of 5°/MMD and I°/slime ideal and for 5°/MMD, with a fluctuating level of 1*/clim concrete (0.25* /c,0.5* /c and 0.75*/c), compressive quality y increased from 10.8Kg/crn2 to I 3.28kg/cm2, 32.93kg/cm2 and individually to 12.22kg/crn2, The best UCS respect is achieved with a mixture of marble dust (5°/c), lime (4°/c) and cement (0.5°/c), eg 32.93kg/cm2. t, as the lime percentage of total pozzalon is increased the measured compression strength decreases in a linear fashion.
- Second, as the lime content is increased the water content must also be increased to maintain an acceptable level of workability and finally the batch 4 strength result suggests that an increase in the water content may increase the strength properties of the lime rich mixes without significant reduction in workability as measured by slump. With respect to cost, as carbon trading becomes included in evaluating project costs and returns, the decrease in strength of the lime rich concrete can be measured against the total cost of the concrete to determine the optimal ratio of lime to cement to achieve the desired strength for least cost.
- This is an area of future research. The other areas of future research are to investigate other physical changes in durability of reinforced concrete made with lime rich mixes when compared to normal Portland cement based concrete, such as permeability and crack propagation. The strength of hydrated lime-OPC composite varies with both percentage replacement of OPC with hydrated lime and water cement ratio.
- Optimum replacement of OPC with hydrated lime was recorded at 13.83% for 28 days of curing. Maximum strengths recorded were 5.03N/mm2 for flexural strength and 3.725N/mm2 for split tensile strength

EXPERIMENTAL STUDY ON BIO DERIVED CARBON FIBRE FOR BEAM STRENGTHENING USING COCONUT SHELL

A PROJECT REPORT

Submitted By

M.GAUTHAM (912019103007)
G.RAJESH (912019103018)
T.SEEMAN (912019103021)

In partial fulfillment of the award of the degree

Of

BACHELOR OF ENGINEERING

IN

CIVIL ENGINEERING

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE,

SIVAGANGA-630561

ANNA UNIVERSITY: CHENNAI 600 025

R RAJA Digitally signed by R RAJA Date: 2024.07.01 15:48:57 +05'30'

BONAFIDE CERTIFICATE

Certified that this project report "EXPERIMENTAL STUDY ON BIO DERIVED CARBON FIBRE FOR BEAM STRENGTHENING USING COCONUT SHELL" is the bonafide work of GAUTHAM.M (912019103007), RAJESH.G (912019103018), SEEMAN.T (912019103021),who carried out the project work under my supervision.

SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI,M.E.,Ph.D.,
Prof & Head of the Department,
Department of Civil Engineering,
Pandian Saraswathi Yadav Engineering College

SIGNATURE

Mr.S.SASTHA ARUMUGA PANDI M.E.,
Assistant Professor,
Department of Civil Engineering,
Pandian Saraswathi Yadav Engineering College

Submitted to the Viva-Voce Examination Held at Pandian Saraswathi Yadav Engineering College, Arasanoor ,Sivaganga - 630561 on 17/05/23

INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

Composite materials are emerging as a vital entity for the sustainable development of both humans and the environment. Poly Lactic acid (PLA) has been recognized as a potential polymer finds application in many fields due its non-toxic, eco-friendliness, having good mechanical and physical properties. In the present work, two composite PLA based materials were prepared *viz:* (i) PLA with commercial carbon powder and (ii) PLA with carbon powder derived from bio-waste coconut shell. The optical and electrochemical characterizations were carried out and the results were compared. The results demonstrated that composite material prepared using carbon powder derived from bio-waste coconut shell possesses superior qualities such as higher visible light absorbance, narrow band gap and higher corrosion resistance.

CONCLUSION

In the present work, two composite PLA based materials were prepared *viz.* (i) PLA with commercial carbon powder and (ii) PLA with carbon powder derived from bio-waste coconut shell. The optical and electrochemical characterizations were carried out and the results were compared. The results demonstrated that when compared to the composite material prepared with commercial carbon black powder, the composite material prepared using carbon powder derived from bio-waste coconut shell possesses narrow band gap, so it can be used as photocatalyst. Also, it possesses high corrosion resistance, so it can be highly useful when coated over various types of bodies including pumps, piping, and valves associated with industrial equipment.

EXPERIMENTAL STUDY ON CONCRETE BY PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH WASTE KADAPPA STONES

A PROJECT REPORT

Submitted By

M.NAGARAJ	**(912019103014)**
S.RAGUL	**(912019103016)**
N.ARUNKUMAR	**(912019103501)**

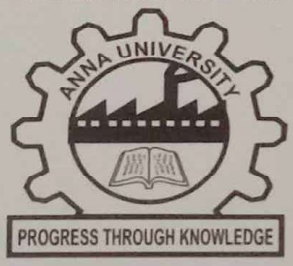
In partial fulfillment of the award of the degree

Of

BACHELOR OF ENGINEERING

IN

CIVIL ENGINEERING



PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE,

SIVAGANGA-630561

ANNA UNIVERSITY: CHENNAI 600 025

R RAJA Digitally signed by R RAJA
Date: 2024.07.01 15:49:39 +05'30'

BONAFIDE CERTIFICATE

ertified that this project report "EXPERIMENTAL STUDY ON CONCRETE BY PARTIAL EPLACEMENT OF COARSE AGGREGATE WITH WASTE KADAPPA STONES"is the nafide work of M.NAGARAJ (912019103014),S.RAGUL(912019103016), ARUNKUMAR(912019103501), who carried out the project work under my supervision.

SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI,M.E.,Ph.D.,
Prof & Head of the Department,
Department of Civil Engineering
Pandian Saraswathi Yadav Engineering College

SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI,M.E.,Ph.D.,
Assistant Professor,
Department of Civil Engineering,
Pandian Saraswathi Yadav Engineering College

Submitted to the Viva-Voce Examination Held at Pandian Saraswathi Yadav Engineering College, Arasanoor ,Sivaganga - 630561 held on 17.05.2023

INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

Coarse aggregate is an important constitutes of concrete which are obtained naturally. Here, I can eplace new material with the coarse aggregate by using kadappa stone. Kadappa stones were partial eplaced as coarse aggregates in 10%,20%,30% respectively and tested for 7 and 28 days. Fresh and ardened concrete properties are evaluated by compressive strength test ,split tensile test and flexural est with a fixed water cement ratio 0.45.and also .The test results were compared with the conventional oncrete properties .M20 grade concrete is used. Kadappa stones are famous for their multifaceted sages. This stone is available in various forms Slabs are usually installed in the kitchen as latforms.Tiles of this stone are used for flooring both inside and outside the house.Cladding material of isstonewhen used for walls, provides a quintessential look.Bricks of Kadappa material are used by uilders for the driveway.Curb stones of Kadappa or black limestone provide good looks and quality hen used for pavements.Cobbles are usually used with cement to build roads and pavements. Apart om this, they are used in gardens and in pots for good looks.

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ONCLUSION

ased on the results obtained from the experiment the following conclusions are drawn

mpared to conventional concrete, the compressive strength of KADAPPA STONE placed coarse aggregate concrete was gradually increased up to 4.45% and 9% in 20% d 40% of coarse aggregate by CWS was replaced.

nce, replacement of coarse aggregate with kadappa stone achieved excellent strength. fect on compression with 40% replacement of aggregate has been found to be achieving gher compressive strength. Again the strength decreased when 60% of CWS were placed by coarse aggregate. Using kadappa stones as paver aggregate is most suitable for ilding paver blocks. This method can also be used in heavy weight concrete as it gives tter strength than natural aggregate.

R RAJA Digitally signed by R RAJA Date: 2024.07.01 15:50:09 +05'30'

EXPERIMENTAL INVESTIGATION ON PERMEABLE CONCRETE PAVEMENT BY ADDING FLY ASH

A PROJECT REPORT

Submitted by

RAGUL P 912019103017

THIRUKKURALARASAN D 912019103022

KATHIRAVAN B 912019103701

In partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

IN

CIVIL ENGINEERING

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE,SIVAGANGAI- 630 561

ANNA UNIVERSITY:CHENNAI 600 025

MAY 2023

ANNA UNIVERSITY: CHENNAI 600 025

BONAFITE CERTIFICATE

Certified that this thesis titled "EXPERIMENTAL INVESTIGATION ON PERMEABLE CONCRETE PAVEMENT BY ADDING FLY ASH" is the bonafide work of "RAGUL P (912019103017) THIRUKKURALARASAN D (912019103022) KATHIRAVAN B (912019103701) who carried out the project work under my Supervision.

Dr. S.M.
16/5/2023

SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI .,
HEAD OF THE DEPARTMENT,
Department of civil Engineering,
Pandian Saraswathi yadav Engineering.
College , Arasanoor,
Sivagangai-630 561.

SIGNATURE

Mrs.G.RAGHA DHARANI ME.,
ASSISTANT PROFESSOR,
Department of civil Engineering,
Pandian Saraswathi yadav
Engineering College, Arasanoor,
Sivagangai 630-561.

Submitted to the viva-voce examination held at Pandian Saraswathi yadav Engineering college, Arasanoor, sivangangai-630 561 on 17/05/2023

R RAJA Digitally signed by R RAJA Date: 2024.07.01 15:50:28 +05'30'

Dr. 12/5/23
INTERNAL EXAMINER

17/5/23
EXTERNAL EXAMINER

ABSTRACT

Pervious concrete is a special type of concrete, which consists of cement, coarse aggregates, water and if required, admixtures and other cementitious materials. As there are no fine aggregates used in the concrete matrix, the void content is more which allows the water to flow through its body. So the pervious concrete is also called as Permeable concrete and Porous concrete. There is lot of research work is going in the field of pervious concrete. The compressive strength of pervious concrete is less when compared to the conventional concrete due to its porosity and voids. Hence, the usage of pervious concrete is limited even though it has lot of advantages. If the compressive strength and flexural strength of pervious concrete is increased, then it can be used for more number of applications. For now, the usage of pervious concrete is mostly limited to light traffic roads only. If the properties are improved, then it can also be used for medium and heavy traffic rigid pavements also. Along with that, the pervious concrete eliminates surface runoff of storm water, facilitates the ground water recharge and makes the effective usage of available land. The main aim of our project is to improve the strength characteristics of pervious concrete. But it can be noted that with increase in strength, the permeability of pervious concrete will be reduced. Hence, the improvement of strength should not affect the permeability property because it is the property which serves its purpose.

Chapter-5

CONCLUSION AND SCOPE FOR FUTURE WORK

5.1 Conclusion:

- The size of coarse aggregates, water to cement ratio and aggregate to cement ratio plays a crucial role in strength of pervious concrete.
- The void ratio and unit weight are two important parameters of pervious concrete in the context of mix design.
- The compressive strength and co-efficient of permeability of pervious concrete are inversely proportional to each other up to addition of 8% of fines.
- Among the two methods of increasing compressive strength of pervious concrete, the addition of fines has gave more value when compared to replacement of cementitious materials.
- The addition of fines and replacement of Cementitious will reduce the permeability capacity of pervious concrete.
- The compressive strength of pervious concrete is increased by 4.36% when 5% fine aggregates were added to the standard pervious concrete.
- The compressive strength of pervious concrete is increased by 6.69% when 6% fine aggregates were added to the standard pervious concrete.
- The compressive strength of pervious concrete is increased by 12.96% when 7% fine aggregates were added to the standard pervious concrete.
- The compressive strength of pervious concrete is increased by a maximum of 14.57% when 8% fines were added to standard pervious concrete.
- The compressive strength of pervious concrete is increased by 11.44% when 9% fine aggregates were added to the standard pervious concrete.
- The compressive strength of pervious concrete is increased by 8.59% when 10% fine aggregates were added to the standard pervious concrete.
- The compressive strength of pervious concrete is increased by 8.59% when 10% fly ash was replaced in the place of cement.

UTILISATION OF COCONUT SHELL WITH CAPPING OF RAPID SAND FILTER

A PROJECT REPORT

Submitted by

RATHINESHWARAN.R (912019103019)

KAVIN KUMAR.S (912019103012)

PRIYADHARSHINI.M (912019103301)

SIVA.B (912019103702)

in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

CIVIL ENGINEERING

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE
SIVAGANGAI

ANNA UNIVERSITY::CHENNAI 600 025

MAY 2023

ANNA UNIVERSITY::CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report **"USE OF COCONUT SHELL WITH CAPPING OF RAPID SAND FILTER"** is the bonafide work of **"RATHINESHWARAN.R (912019103019), KAVIN KUMAR.S (912019103012), PRIYADHARSHINI.M (912019103301), SIVA.B (912019103702)"** Who carried out the project work under my supervision.

SIGNATURE

Mrs.Dr.M.MEENAKSHI SUDARVIZHI, M.E.,Ph.d.,

HEAD OF THE DEPARTMENT,

Department Of Civil Engineering,

Pandian Saraswathi Yadav

Engineering College

Sivagangai- 630 561

SIGNATURE

Mr.M.APPU SRIRAM, M.E.,

ASSISTANT PROFESSOR,

Department Of Civil Engineering,

Pandian Saraswathi Yadav

Engineering College

Sivagangai-630 561

Submitted To The Viva-Voce Examination Held At Pandian Saraswathi Yadav Engineering College, Arasanoor, Sivagangai – 630 561 on 17/06/23

INTERNAL EXAMINER 12/6/23

EXTERNAL EXAMINER 17/6/23

R RAJA Digitally signed by R RAJA Date: 2024.07.01 15:52:23 +05'30'

ABSTRACT

A study was carried out to determine about the rapid sand filter which are very commonly used in Conventional water treatment plants. The rapid sand filter beds are suffering by the problems like Mud ball formation, unsatisfactory effluent, etc. Dual media and multimedia filters can overcome the limitations of RSF. Capping of crushed coconut shell is used as a Dual Media. Designing Dual media filter capped with crushed coconut shell proves to be more efficient, economical and durable. The sample was collected from nearby lake which was highly turbid and having high amount of total solids. A fabricated model was prepared having dimensions 0.5 x 0.5 x 0.9m. Gravel, Sand, Coconut Shell was filled in the model in the layer of size 20cm, 15cm, and 20cm respectively. The tests which are conducted on the sample are pH, Turbidity, BOD and Total solids. It improves the performance of filter in the terms of high filtration rate, high turbidity removal and high decrease in percentage of total solids and thus making it more applicable. This filter media reduces about 90% of turbidity. The amount of total solids was decreased about 89%.

CHAPTER 5

CONCLUSION

The coconut shell as a capping material for filter media, it had given very good efficiency during the filtration process. Even there was a considerable reduction in the colour intensity. The pH was also changed during this filtration process. The coconut shell usage also helped in removing the considerable BOD in water sample efficiently. Higher rate of filtration can be obtained after capping without much effect on the filter quality. Capping of conventional Rapid sand filter can be very effective tool in case of overload conventional plants where higher rate of filtration can be possible without much modification. Using a coconut shell is giving a teste to water. The coconut shell as a capping material for filter media, it had given very good efficiency during the filtration process. Even there was a considerable reduction in the colour intensity. The pH was also changed during this filtration process. The coconut shell usage also helped in removing the considerable BOD in water sample efficiently. Higher rate of filtration can be obtained after capping without much effect on the filter quality. Capping of conventional Rapid sand filter can be very effective tool in case of overload conventional plants where higher rate of filtration can be possible without much modification. Using a coconut shell is giving a teste to water.

EXPERIMENTAL STUDY ON GRANITE DUST AS PARTIAL REPLACEMENT OF FINE AGGREGATE IN CONCRETE

A PROJECT REPORT

Submitted By

A. ALLAN JONES (912019103002)

K. GURUNATHAN (912019103009)

C. SAKTHI SUNDAR (912019103020)

In partial fulfillment of the award of the degree

Of

BACHELOR OF ENGINEERING
IN
CIVIL ENGINEERING

PANDIAN SARASWATHI YADAV ENGINEERING COLLEGE,
SIVAGANGA – 630561

ANNA UNIVERSITY: CHENNAI - 600 025

BONAFIDE CERTIFICATE

Certified that this project report **"EXPERIMENTAL STUDY ON GRANITE DUST AS PARTIAL REPLACEMENT OF FINE AGGREGATE IN CONCRETE"** is the bonafide work of A. ALLAN JONES (912019103002), K.GURUNATHAN (912019103009), C. SAKTHI SUNDAR (912019103020), who carried out of the project work under my supervision.

SIGNATURE

Mrs.Dr.S.MEENAKSHI SUDARVIZHI,M.E.,Ph.D.,
Prof & Head of the Department, Department of Civil Engineering, Pandian Saraswathi Yadav Engineering College

SIGNATURE

A. SULTHAN, M.E.,
Assistant Professor,
Department of Civil Engineering,
Pandian Saraswathi Yadav Engineering College

Submitted to the Viva-Voce Examination Held at Pandian Saraswathi Yadav Engineering College, Arasanoor, Sivaganga - 630561 on 17.05.2023

INTERNAL EXAMINER

EXTERNAL EXAMINER

R RAJA Digitally signed by R RAJA
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ABSTRACT

Concrete is the main construction material in the world. It consist of cement, fine aggregate, coarse aggregate and water as main ingredients. Now days due to high global consumption of natural sand, sand deposit are being depleted and causing serious threat to environment as well as society. River sand is becoming a scarce commodity and hence an exploration alternative to it has become imminent. Manufactured sand is the good alternative to river sand and it is purposely made, fine crushed aggregate produced under controlled conditions from a suitable sand source rock. Plastics are non-biodegradable common environmental polluting materials. These are going to affect the fertility of soil. In present study the detailed characteristic studies of concrete is carried out by partial replacement of natural sand by waste granite powder in concrete composition with different percentages (0%, 10%, 20%, 30%).The mechanical properties of concrete like compressive strength, tensile strength are carried out by replacing the quantity of sand with waste granite powder with different percentages as mentioned above. Hence an attempt is made to find the optimum strength properties at which percentage of replacement it will gives better strength properties.

Keywords: Concrete, Granite powder, compressive strength.

CHAPTER 8

CONCLUSION

- Comparing the compressive strength of concrete various replacement of granite for fine aggregate.
- The granite is mixed at individually 10% combination for the replacement of fine aggregate.
- The results reveals up to 30% of replacement of granite did not affect the compressive strength of the concrete and also increased the strength compare conventional concrete.
- The cost of concrete is less than conventional concrete. The concrete becomes environment friendly, due to use of waste industrial material.
- There is an increase of 17% compressive strength for 30% replacement of fine aggregate compare with normal concrete for 7-days and 8.74% increase in strength for 28-days.
- The split tensile strength also follows the similar pattern compare with the compressive strength that is at 30% replacement of fine aggregate with waste granite fines it shows the maximum split tensile strength.
- Hence, we can conclude from the above results that the maximum compressive and split tensile strength is obtained at 30% replacement of fine aggregate with waste granite fines