

FINAL PROJECT

UTILIZATION OF COCONUT FIBER ASH WASTE AS AN ADDED MATERIAL IN MORTAR



By :

FERIANSYAH MAULANA AHSAN
1431800119

**CIVIL ENGINEERING STUDY PROGRAM
FACULTY OF ENGINEERING
UNIVERSITAS 17 AGUSTUS 1945 SURABAYA**

2023

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**Prepared as a Requirement for Obtaining a Bachelor of Engineering
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UNIVERSITY OF 17 AGUSTUS 1945 SURABAYA
2023

**VALIDITY OF CIVIL ENGINEERING STUDY
ENGINEERING DEPARTEMENT
UNIVERSITAS 17 AGUSTUS 1945 SURABAYA**

**VALIDITY SHEET
FINAL PROJECT**

Name : Feriansyah Maulana Ahsan
NBI : 1431800119
Study Program : Civil Engineering
Departement : Engineering
Title : Utilization of Coconut Fiber Ash Waste as
an Added Material in Mortar

Approved By :
Lecturer



Nurul Rochmah, S.T., M.T., M. Sc
NPP. 20430.15.0644

Knowing :

**Dean of Engineering Departement
Universitas 17 Agustus 1945**

Surabaya


Dr. Ir. Sajiyo, M. Kes. IPU., ASEAN Eng.
NPP. 20410.90.0197

**Head of Civil Engineering Study Program
Universitas 17 Agustus 1945
Surabaya**



Faradillah Saves, S.T., M.T.
NPP. 20430.15.0674



UNIVERSITAS
17 AGUSTUS 1945
SURABAYA

BADAN PERPUSTAKAAN
Jl. SEMOLOWARU 45 SURABAYA
TELP. 031 593 1800 (Ext. 311)
e-mail : perpus@untag-sby.ac.id

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I am the undersigned,

Name : Feriansyah Maulana Ahsan
Nbi : 1431800119
Address : St. Taman Gunung Anyar Timur Blok V Number 14
Phone : 08883063468

State that the **“FINAL PROJECT”** that I made to complete the graduation requirements of Strata (S1) Civil Engineering - Bachelor Program – Universitas 17 Agustus 1945 Surabaya with the title:

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Feriansyah Maulana A.

UTILIZATION OF COCONUT FIBER ASH WASTE AS AN ADDED MATERIAL IN MORTAR

Name of Study : Feriansyah Maulana Ahsan
NBI : 1431800119
Lecturer : Nurul Rochmah, ST, MT., M.Sc

ABSTRACT

Mortar is a combination of materials consisting of fine aggregate (sand), adhesives like clay, lime, and Portland cement, and water with specific proportions. Various factors can affect mortar specifications, including density, age of the mortar, type of bonding material, and aggregate properties. In this study, coconut fiber ash was incorporated as an additive in mortar to enhance its compressive strength. Coconut fiber ash contains silica compounds, which play a vital role in increasing the compressive strength of mortar. The objective of the study was to investigate the impact of adding coconut fiber ash on the compressive strength of mortar, using varying percentages of 0%, 2.5%, 5%, 7.5%, and 10%. The research findings revealed a compressive strength of 253 MPa at a 10% percentage composition after 7 days, and a compressive strength of 253 MPa at a 2.5% percentage composition after 7 days

Keywords: mortar, compressive strength, coconut fiber ash

FOREWORD

All praise and thanks be to God Almighty who has bestowed all His Grace and Guidance so that we can complete the final project proposal with the title **"UTILIZATION OF COCONUT FIBER ASH WASTE AS ADDITIONAL MATERIALS IN MORTAR"**.

The final project proposal is a report preparation starting from chapter 1-chapter 3. This proposal will also be used as material for the requirements to take part in the final project. We have prepared this final project proposal optimally and received assistance from journal references, books, the internet, articles, and other sources.

This Final Project Proposal was prepared by going through several stages which would not have been completed without guidance, advice and guidance from various parties. For that I thank:

1. Mr. Dr. Mulyanto Nugroho, MM. CMA., CPA. as Chancellor of the Faculty of Engineering Civil Engineering Study Program, University of 17 August 1945 Surabaya.
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3. Mrs. Faradlillah Saves, ST, MT as Head of the Civil Engineering Study Program, University of 17 August 1945 Surabaya
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Finally, I thank you and may God always bestow His Grace and Guidance on all of us so that we can become useful people for Religion, Nation, Country and benefit others and ourselves.

Surabaya, 18 June 2023

Author

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LIST OF NOTATIONS

A	= cross-sectional area (cm ³)
SiO ₂	= silica
Al	= aluminum
Fe	= iron (Ferro)
Ca(OH) ₂	= Calcium Hydroxide / Lime
cm	= centimeters
mm	= millimeter
f _c	= mortar compressive strength (MPa)
f _t	= tensile strength
kg/m ³	= kilograms per cubic meter
m ³	= cubic meters
Mpa	= megapascals
N	= newtons
P	= maximum load (kg)
sd	= Standard deviation (Mpa)
V	= volumes
D	= Weight of mortar content (Kg/m ³)
SSD	= Saturated Surface-Dry
C	= amount of fine aggregate
WA	= Water absorption capacity (%)