

**THE EFFECT OF ARALDITE, COAL TAR, AND EPOXY RESIN
SURFACE COATING ON BAMBOO REINFORCED BEAM**

Final Project Report

As one of the requirements to receive a bachelor degree

from Universitas Atma Jaya Yogyakarta

By :

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INTERNATIONAL CIVIL ENGINEERING PROGRAM

FACULTY OF ENGINEERING

UNIVERSITAS ATMA JAYA YOGYAKARTA

YOGYAKARTA

2021

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Final Project

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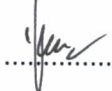


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STATEMENT

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Declare that the research which title is written below is original and does not a copy or refer to any plagiarism action:

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Yogyakarta, July 2021

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ACKNOWLEDGEMENTS

First, I would like to thank God Almighty for His mercy, I was able to complete this final project smoothly. The purpose of the final project entitled “The Effect of Araldite, Coal Tar, and Epoxy Resin Surface Coating on Bamboo Reinforced Beam” is to complete the graduation requirements for the undergraduate program at the International Civil Engineering Program, Department of Civil Engineering, Faculty of Engineering, Atma University, Jaya Yogyakarta. I realized that the final project could not be completed without the help of others. For that, I would like to thank these people mentioned below:

1. AM. Ade Lisantono, Ir., M.Eng., Dr. Prof as my supervisor, for the guidance, advice, patience, and kindness given during the making of the final report.
2. Yoyong Arfiadi, Ir., M.Eng., Ph.D. Prof. as my examiner lecturer when I conduct a seminar on results and final defense.
3. Agustina Kiky A., S.T., M.Eng., Dr.Ing. as my examiner lecturer when I conduct a seminar on results and final defense.
4. Mr. Sukar and Mr. Benny, who always help me when I'm in the laboratory.
5. My parents and family who always support and pray for me during the making of the final project
6. My friends who helped me in the process of making the final project, Peter Cantona, Olga Martinus, Artia Dio, Kurniawan Handaya, Bonifasius Dwi, Ignasius, Fernando Abel, Yoseph Trilaksono, Jacky Surya, Vincentia Herawati, Eklisia Hanani, Randy Mamola, Nanda, William Gauwan, and friends that I cannot mention one by one.

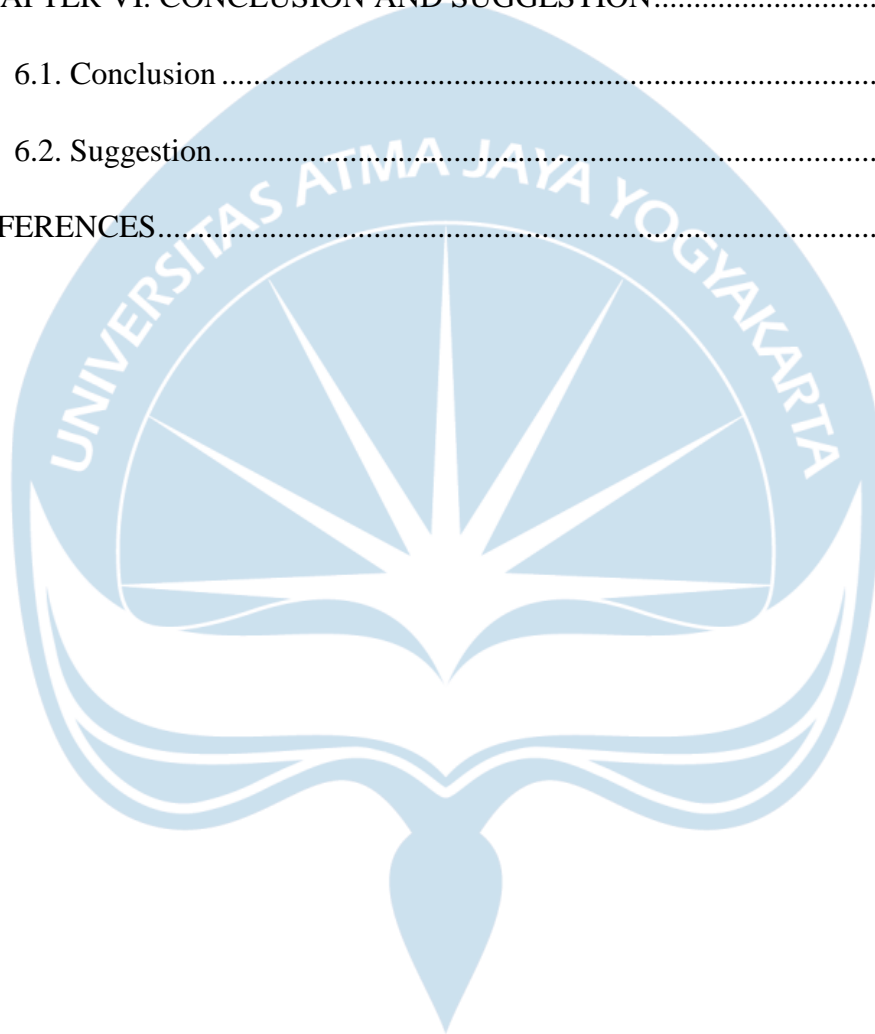
Finally, as the author of this report, I realize that this report contains many mistakes. I hope that this final project that I am working on can bring benefits to all sides and readers.

TABLE OF CONTENT

TITLE PAGE	i
APPROVAL SHEET	ii
EXAMINERS SHEET	iii
STATEMENT	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENT	vi
LIST OF FIGURE	ix
LIST OF TABLE	xi
ABSTRAC	xii
CHAPTER I: INTRODUCTION	1
1.1. Background	1
1.2. Problem Statement	2
1.3. Limitation	3
1.4. Objective	3
1.5. Research Benefit	4
1.6. Originality	4
CHAPTER II: LITERATURE REVIEW	5
CHAPTER III: BASIC THEORY	7
3.1. Bamboo Petung	7
3.2. Coal Tar	8
3.3. Araldite	9

3.4. Epoxy Resin	9
3.5. Compressive Strength	10
3.6. Tensile Strength	10
3.7. Modulus of Elasticity	11
3.8. Flexural Strength.....	12
CHAPTER IV: METHODOLOGY	13
4.1. Research Methodology	13
4.2. Research Framework	14
4.3. Materials	15
4.4. Tools	20
4.5. Work Procedures.....	24
4.5.1. Mix Design	24
4.5.2. Bamboo Preparation	24
4.5.3. Sample Molding and Curing	25
4.5.4. Compressive Strength Testing.....	26
4.5.5. Tensile Strength Testing.....	27
4.5.6. Modulus of Elasticity Testing	28
4.5.7. Flexural Strength Testing	29
4.5.8. Data Analysis	30
CHAPTER V: RESULT AND DISCUSSION	31
5.1. Compressive Strength of the Concrete	31
5.2. Tensile Strength of the Concrete	32

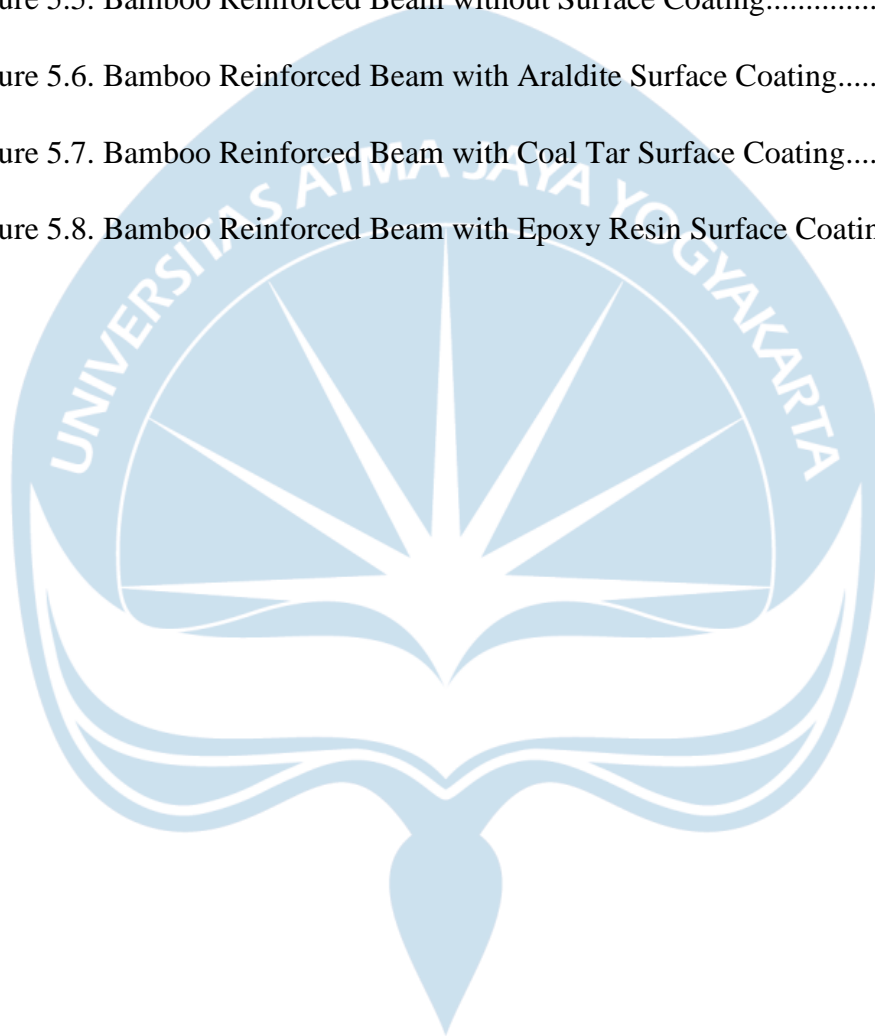
5.3. Modulus of Elasticity of the Concrete	33
5.4. Flexural Strength of the Bamboo Reinforced Concrete.....	34
5.5. Crack Pattern of the Bamboo Reinforced Concrete.....	37
CHAPTER VI: CONCLUSION AND SUGGESTION.....	39
6.1. Conclusion	39
6.2. Suggestion.....	40
REFERENCES.....	41



LIST OF FIGURE

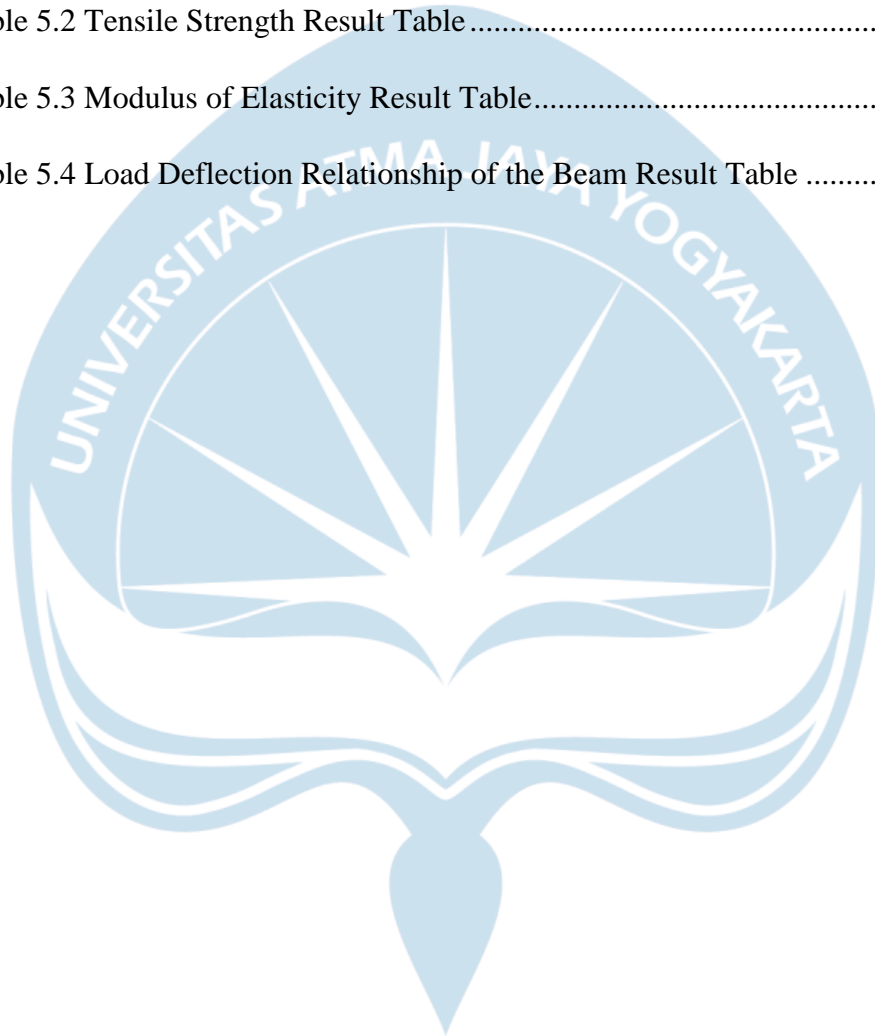
Figure 4.1 Flowchart of Research Framework.....	14
Figure 4.2 Ordinary Portland Cement (Semen Gresik).....	15
Figure 4.3 Fine Aggregate (Progo Sand)	15
Figure 4.4. Coarse Aggregate (Split)	16
Figure 4.5 Water.....	16
Figure 4.6 Bamboo Petung (Dendrocalamus asper)	17
Figure 4.7. Plywood	17
Figure 4.8. Nail	18
Figure 4.9. Steel	18
Figure 4.10. Rebar Tie Wire	18
Figure 4.11. Araldite	19
Figure 4.12. Epoxy Resin.....	19
Figure 4.13. Coal Tar	20
Figure 4.14. Hammer	20
Figure 4.15. Woodsaw	21
Figure 4.16. Hacksaw.....	21
Figure 4.17. Brush.....	22
Figure 4.18 Shovel	22
Figure 4.19. Bekisting	23
Figure 4.20. Molen.....	23
Figure 5.1 Compressive Strength Line Chart.....	31

Figure 5.2 Tensile Strength Line Chart.....	32
Figure 5.3 Modulus of Elasticity Line Chart	33
Figure 5.4 Load Deflection Relationship of Beam Line Chart	34
Figure 5.5. Bamboo Reinforced Beam without Surface Coating.....	37
Figure 5.6. Bamboo Reinforced Beam with Araldite Surface Coating.....	37
Figure 5.7. Bamboo Reinforced Beam with Coal Tar Surface Coating.....	37
Figure 5.8. Bamboo Reinforced Beam with Epoxy Resin Surface Coating	38



LIST OF TABLE

Table 5.1. Compressive Strength Result Table	45
Table 5.2 Tensile Strength Result Table	46
Table 5.3 Modulus of Elasticity Result Table.....	47
Table 5.4 Load Deflection Relationship of the Beam Result Table	48



ABSTRACT

THE EFFECT OF ARALDITE, COAL TAR, AND EPOXY RESIN SURFACE COATING ON BAMBOO REINFORCED BEAM, Xenia Adelynn Satmoko, Student Number 171317119, the Year 2021, Structural and Material Engineering, International Civil Engineering Program, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

Steel is one of the main materials that are often used for reinforced concrete, but lately, steel has had an expensive price. Also, the use of steel is very limited in the construction industry. Therefore, the selection of alternative materials was carried out. One of the interesting materials to use is bamboo. Bamboo is one of the natural materials that is often used as a construction material in developing countries. With low prices and the availability of bamboo which is easily found in Indonesia, bamboo can be an alternative to reinforced concrete.

For make bamboo stronger, admixture or special treatment for bamboo can be done. One of the methods used in this research is to apply a surface coating to bamboo. The surface coating that is used for this research consists of araldite, coal tar, and epoxy resin. In this research, a flexural strength test was carried out for each bamboo reinforced beam.

From the test, the result obtained for the deflection and the loads up to the first crack, for bamboo reinforced beams without surface coating or plain can withstand 43.145 kN with a deflection of 165 mm, for bamboo reinforced beams with araldite surface coating can withstand 54.912 kN with a deflection of 192 mm, for bamboo reinforced beams with epoxy resin coating can withstand 49.028 kN with a deflection of 165 mm, and for bamboo reinforced beams with coal tar coating it can only withstand 25.495 kN with a deflection of 64 mm.

Keywords: Bamboo, Bamboo Reinforced Beam, Surface Coating, Flexural Strength