

LIFE CYCLE COST OF AN OFFICE BUILDING AT JAYAPURA

Final Project Report

Made by:

SINTIKHE ANDRIANNITHA MABRUWARU

STUDENT ID : 15 13 15890



INTERNATIONAL CIVIL ENGINEERING PROGRAM

FACULTY OF ENGINEERING

UNIVERSITAS ATMA JAYA YOGYAKARTA

YOGYAKARTA

2021

STATEMENT

I signed below stating that the final project with the title:

“LIFE CYCLE COST OF AN OFFICE BUILDING AT JAYAPURA”

It is the result of my own work and not a result of plagiarism of other people's work. Ideas, research data, and quotes directly or indirectly derived from the writings or ideas of other expressly provided in this Final Project. If it is proven later that this Final Project is the result of plagiarism, the graduation certificate that I received will be canceled and returned to Universitas Atma Jaya Yogyakarta.

Yogyakarta, July 14th 2021

Who made the remarks,


Sintukne Anantamitha Mambuwaru

APPROVAL

Final Project Report

LIFE CYCLE COST OF AN OFFICE BUILDING AT JAYAPURA

Made by:

Sintikhe Andriannitha Mabruwaru

Student ID Number: 15 13 15890

has been corrected and agreed by

Yogyakarta,

Supervisor



Ir. Peter F. Kaming, M.Eng., Ph.D.

Approved by:

Department of International Civil Engineering Chairman,



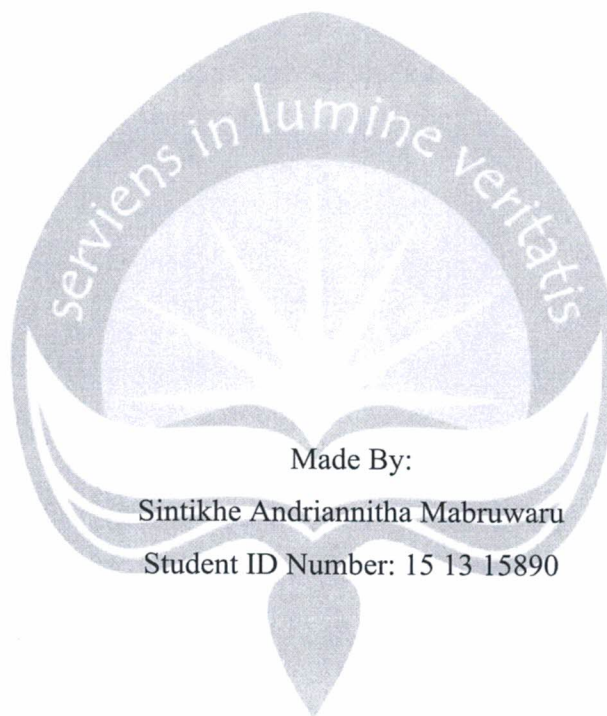
UNIVERSITAS JEMBER
Jember
VERITAS
FAKULTAS
TEKNIK

AY. Harijanto Setiawan, Ir., M.Eng., Ph.D.

APPROVAL

Final Project Report

LIFE CYCLE COST OF AN OFFICE BUILDING AT JAYAPURA






Made By:

Sintikhe Andriannitha Mabruwaru

Student ID Number: 15 13 15890

has been examined and approved by the examination committee

	Supervisor	Signature	Date
Chairman	: Ir. Peter F. Kaming, M.Eng., Ph.D.		July 2, 2021
Secretary	: Ir. AY. Harijanto Setiawan, M.Eng., Ph.D.		
Member	: Prof. Dr. Ir. AM. Ade Lisantono, M.Eng.		July 2, 2021

PREFACE

First of all, the author would like to thank Jesus for all His blessings that the author could finish this final project report. Final project is a requirement to obtain bachelor's degree for students of Universitas Atma Jaya Yogyakarta. For the completion of this final project, the author would like to express her gratitude towards:

1. Ir. Peter F. Kaming, M.Eng.,Ph.D. as the final project supervisor who had guided the author during the processing of this report.
2. Dr. Eng. Luky Handoko, ST., M.Eng. as the dean of Engineering Department in Universitas Atma Jaya Yogyakarta.
3. Dr. Ir. Imam Basuki, M.T. as the head of Civil Engineering Department in Universitas Atma Jaya Yogyakarta.
4. Johan Ardianto, S.T., M.Eng., as the coordinator of International Civil Engineering Program in Universitas Atma Jaya Yogyakarta.
5. All the lectures in the civil engineering department, especially in International Civil Engineering Program.
6. The author's family members for their support and prayers that helped the author to finish the final project report.
7. All the students from International Civil Engineering Program, especially from batch 2015, who helped the author during his study period.
8. All parties that cannot be mentioned one by one, thank you for all your support.

The author realize that this report has many mistakes and still have room for further improvement. Based on that fact, any suggestion and critics will be gladly accepted.

Yogyakarta, 19th June 2021

The Author

Sintikhe Andriannitha Mabrwaru

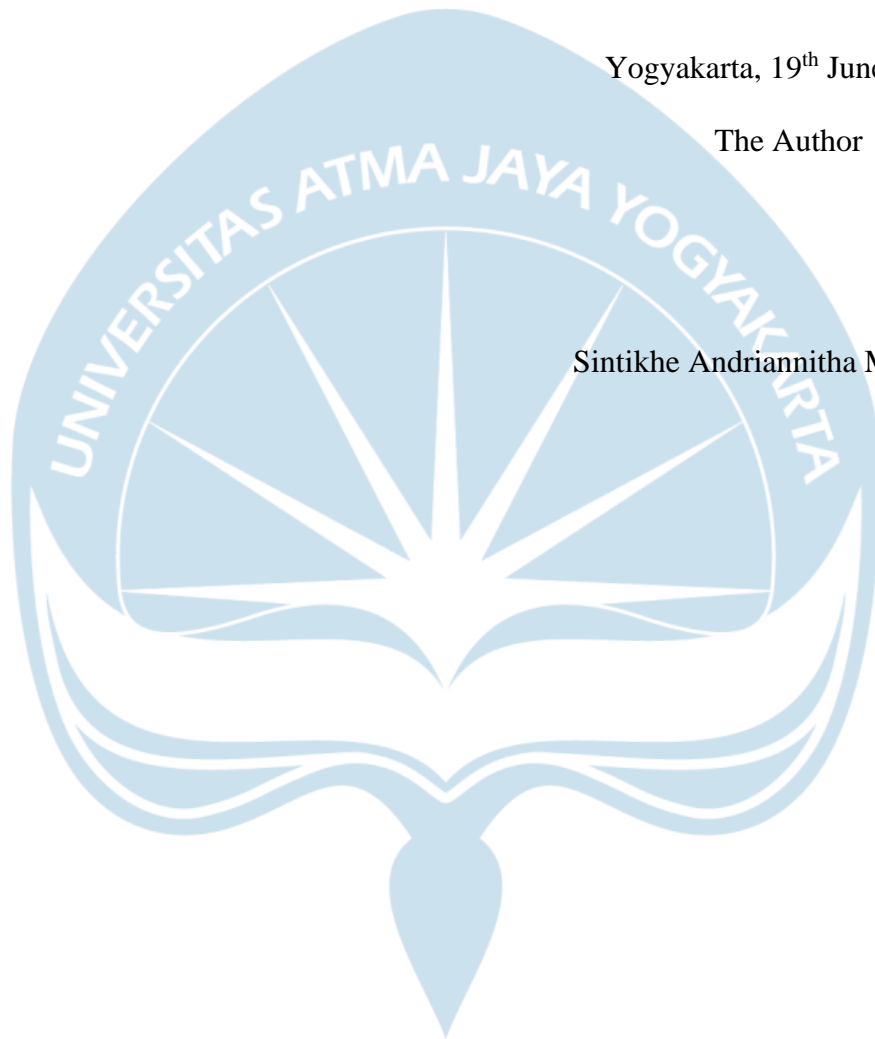


TABLE OF CONTENT

COVER PAGE	i
STATEMENT	ii
APPROVAL	iii
PREFACE	v
TABLE OF CONTENT	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF APPENDICES	xii
ABSTRACT	xiii
 CHAPTER I : INTRODUCTION	
1.1. Background	1
1.2. Statement of Problem	3
1.3. Research Objectives	4
1.4. Research Scope	4
 CHAPTER II : LITERATURE RIVIEW	
2.1. Building Structure	5
2.2. Builiding Maintanance and Maintanance Guidance	5

2.2.1. Architecture.....	7
2.2.2. Structure.....	7
2.2.3. Mechanical.....	8
2.2.4. Electrical.....	8
2.2.5. Outer Spatial Planning.....	9
2.2.6. Housekeeping.....	9
2.3. Service life	10
2.4. Definition of LCC.....	10
2.6.1. LCC for Campus Center Building ITB.....	12
2.6.2. LCC Hostel Bulding at Kediri, Eastern Jawa, Indonesia	13

CHAPTER III : RESEARCH METHOD

3.1 Data Collection and Analysis	14
3.2 The Building under Studied	15
3.3 Research Data Management	15
3.3.1. Mean Analysis	15
3.3.2. Cost Model of LCC	16
3.4. Research Data	19
3.5. Research Framework	19

CHAPTER IV : ANALYSIS AND DISCUSSION

4.1 General Information	20
-------------------------------	----

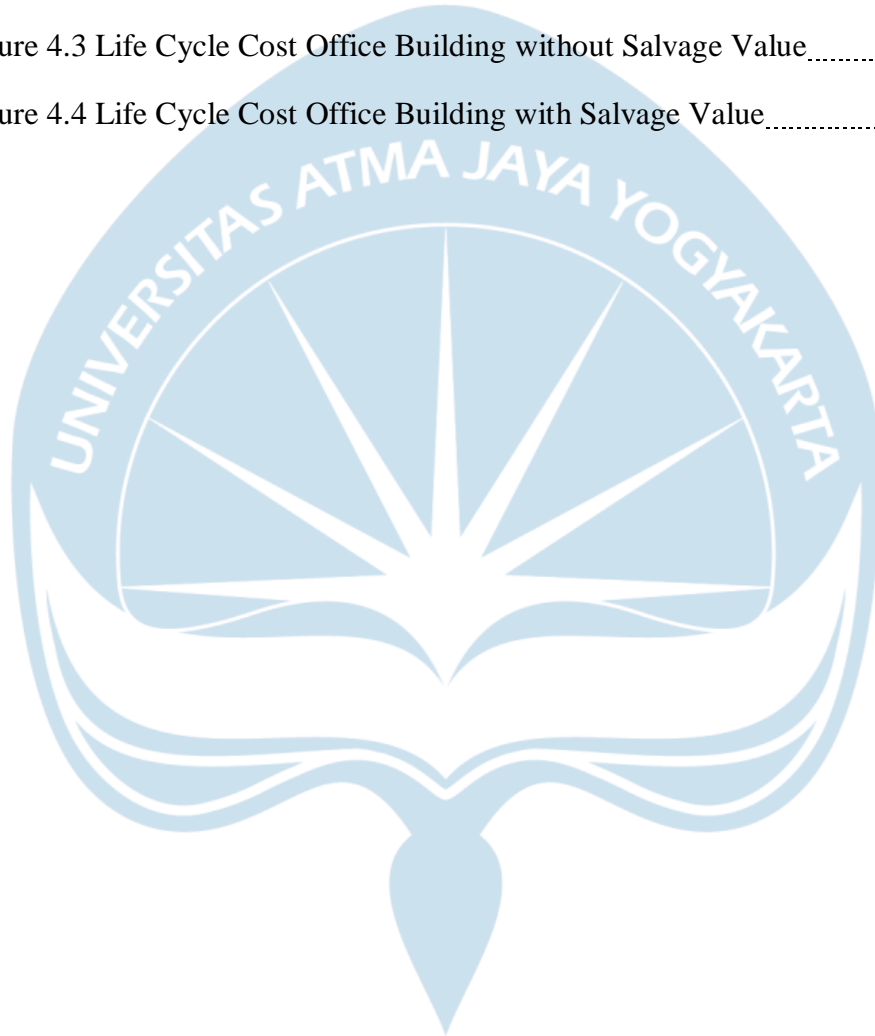
4.1.1. Characteristic of Informants	20
4.1.2. Data Analysis	21
4.2. Life Cycle Cost Analysis	25
4.2.1. Construction Cost	25
4.2.2. Operational Cost	25
4.2.3. Maintanance and Repllacement Cost	29
 CHAPTER V: CONCLUSION AAND SUGGESTION	
5.1 Conclusion	57
5.2 Suggestion	58
 REFERENCES	 60
APPENDICES	61

LIST OF TABLES

Table 4.1 Frequency and Presentation of Employment Background	21
Table 4.2 Frequency and Presentation Educarional Background	21
Table 4.3 Frequency and Presentation of Work Experience	21
Table 4.4 Service Periode, Service Live and Material Description	22
Table 4.5 Cost of Cleaning Section	26
Table 4.6 Cost of Utilities Section	27
Table 4.7 Cost of Admin Section	28
Table 4.8 BI Interest rate of rupiah	30

LIST OF FIGURES

Figure 4.1 Operational Cost Pie Diagram.....	29
Figure 4.2 Maintenance and Replacement Cost.....	54
Figure 4.3 Life Cycle Cost Office Building without Salvage Value.....	55
Figure 4.4 Life Cycle Cost Office Building with Salvage Value.....	56



LIST OF APPENDICES

Appendices.....	61
Questionnaire	62
Total Cost for 25 Year of office building	67



ABSTRACT

LIFE CYCLE COST FOR AN OFFICE BUILDING AT JAYAPURA,
Sintikhe Andriannitha Mabruwaru, Student Number 151315890, Year of 2015,
Construction Management, Civil Engineering International Program, Faculty of
Engineering, Universitas Atma Jaya Yogyakarta

Development is being carried out continuously by developing countries for the prosperity of the people in their country. Good and planned development can be seen from planned infrastructure development. A building such as hospitals, hotels, schools and so on has to be constructed in order to fulfill people needs. Indonesia is a developing country, because the government is working on existing development. Not only in big cities, is development also carried out in various other regions. The purpose of the LCC is to manage the process repeated from the planning to the destruction or replacement of assets, to manage the LCC (long-term) of the short-term savings, to ensure the appropriate consistent quality service of the designed building, to improve sustainability and lowers the risk of failure and maximize the potential and advantages of the provision of services, in order to minimize the associated costs throughout the life of the building itself. Analysis of the LCC of a design process that is important in controlling the cost of initial and future costs in possession of an investment project. Therefore, it is necessary to do a LCC analysis study to determine the cost of any category contained in office building construction project in the office, and also see how much the total costs incurred by a project development a building ranging from the design phase to the technical life of the building.

Keywords: construction developing, life cycle cost analysis, service life, office building