

**DETERMINING AN EFFECTIVE LOCATION OF TOWER CRANE ON  
PROJECT SITE**

Final Project Report

As one of the requirement to receive the bachelor's degree

of Universitas Atma Jaya Yogyakarta

by:

**Felix Salvino Dharmawan**

**161316606**



**INTERNATIONAL CIVIL ENGINEERING PROGRAM**

**FACULTY OF ENGINEERING**

**UNIVERSITAS ATMA JAYA YOGYAKARTA**

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**APPROVAL SHEET**

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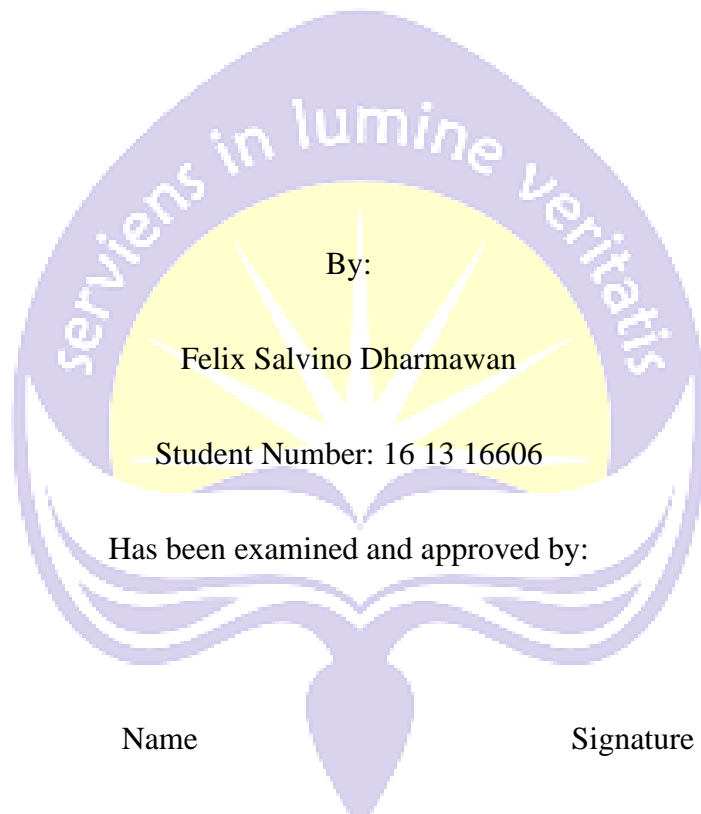
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Pekanbaru, October 2020

Author,

Felix Salvino Dharmawan

## **PREFACE**

The thesis is one of the requirements to fulfill a bachelor's degree in the Civil Engineering Program, Universitas Atma Jaya Yogyakarta. The thesis's research is carried out in August 2019 while the author is doing an internship in TOTAL Bangun Persada Construction. This research aims to find an effective position for a tower crane in the construction site. The study's topic was found during the internship when the author saw the significant effect of the position of a tower crane on many aspects of project success.

This thesis consists of five chapters; the content of each chapter briefly explains as follows. Chapter I contains background, research question, research limitation, and research purpose. Chapter II contains a literature review of basic knowledge related to the research topic. Chapter III contains the methodology of this research and research data. Chapter IV contains results and discussion of determining an effective location of a tower crane. Chapter V contains the conclusion of this study and a suggestion for the next research related to this study.

Pekanbaru, October 8<sup>th</sup>, 2020

Author

## **ACKNOWLEDGEMENTS**

Sincerely authors give the praises, and thanks to Jesus Christ, with all of His Graces and Blessings, the author finished this final report without any problems promptly. The authors realize that this final report would not be done without support from the others. The author would like to thank the people who have provided significant contributions to the author to finish this thesis, as mentioned below:

1. Ir. Harijanto Setiawan, M.Eng., Ph.D. as thesis supervisor who has guided the author to complete this thesis
2. The Project Team of Smith Project from PT. TOTAL Bangun Persada provides author guidance and the data needed for this thesis.
3. Family, especially my Mom, for her everlasting support to the author to finish this thesis
4. All the lecturers and staff in the Civil Engineering Department for all support to the author during the study in Universitas Atma Jaya Yogyakarta.
5. All of my friends in the International Civil Engineering Program, Batch 2016, for friendship and support at all moments that we spend together.

As the author of this report, the author realized that this report has many limitations. Therefore the author expects further improvement of this thesis. The author will accept any suggestions and critics on this thesis.

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## **ABSTRACT**

**DETERMINING AN EFFECTIVE LOCATION OF TOWER CRANE ON PROJECT SITE**, Felix Salvino Dharmawan, Student number 161316606, the year of 2020, Field of Engineering Management, International Civil Engineering Program, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

A Tower crane is one of the heavy equipment often used in the construction of multi-story buildings. The problem that is always associated with tower cranes is the high cost. Mostly it is caused by the improper placement of the tower crane so that the material transportation takes longer. Therefore, in site planning, the contractor must plan the tower crane placement and supply as well as possible. Moreover, this thesis discusses the effective placement of Tower Crane on the smith project so that the contractor can lower the operational costs.

This research was conducted at the Smith Project and used site maps and tower crane specifications to find effective locations. There will be 5 points defined within the radius of the feasible area. The location is declared effective if the resulting cost is the lowest among the other points. Moreover, in this research, point 4, located with coordinates (21.58;42.14), is an effective location. According to the result, we can conclude that the effective location is located in the middle between supply and demand, reducing unnecessary movement of hook.

Keywords: Tower Crane, Tower Crane Location, Heavy Equipment, Effective Location