UPPER STRUCTURE DESIGN OF COLLEGE BUILDING E6 AND E7 TWIN TOWER UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

Final report

as one of the requirements to obtain a Bachelor's degree from

Universitas Atma Jaya Yogyakarta

By :

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INTERNATIONAL CIVIL ENGINEERING PROGRAM

DEPARTMENT OF CIVIL ENGINEERING

FACULTY OF ENGINEERING

UNIVERSITAS ATMA JAYA YOGYAKARTA

YOGYAKARTA

JUNE 2017

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has been evaluated and aproved to be presented

Yogyakarta, June 8th, 2017

Supervisor,

(Prof.Ir Yoyong Arfiadi, M.Eng.,Ph.D)

Department of international civil engineering
Chairman,

(Dr.Eng Luky Handoko)

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Has been tested and approved by

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Member	:Dr. AM Ade Lisantono	June 8, 2017	

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PREFACE

Praise and Gratitude author presence of God Almighty forany guidance, opportunity, and everything that accompanies until completion this final report. Sometimes, hard to finish this, buteverything could be resolved slowly over wisdom.

On this occasion, the authors are grateful to everyone present

and given its own color, both those who are near and far. Thanks to:

1. Prof. Ir. Yoyong Arfiadi, M.Eng., Ph.D., As dean of the Faculty of Engineering Universitas Atma Jaya Yogyakarta.
2. Dr. Eng. Luky Handoko , As Department of international civil engineering chairman.
3. Prof. Ir. Yoyong Arfiadi, M. Eng., Ph.D., As Supervisor who is willing provide guidance and take the time during the process final report.
4. The Lectures Faculty of Engineering, University of Atma Jaya Yogyakarta has been guiding for the author of study.
5. The entire staff of Administration Faculty of Engineering, University of Atma Jaya Yogyakarta.
6. Parents, brother, and sister for the trust and opportunity be given.
7. Friends who support, pray, and help during the final preparation of this report.
8. All that cannot be mentioned one by one.

Writers receive when there is criticism or suggestions regarding this final report. Final words of gratitude and hope this final report could be useful for all readers.

Yogyakarta, June 2017

Maria Oktaviana Toring

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ABSTRACT

UPPER STRUCTURE DESIGN OF COLLEGE BUILDING E6 AND E7 TWIN TOWER UNIVERSITAS ATMA JAYA YOGYAKARTA, Maria Oktaviana Toring, Student Number 121314459, 2012, Specialization Field of Structural Engineering, Department of Civil Engineering International, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

All universities strive to provide quality in teaching with supporting facilities. Likewise with the Universitas Muhammadiyah Yogyakarta, this provides various facilities to support the teaching process for students in Universitas Muhammadiyah Yogyakarta. So University of Muhammadiyah Yogyakarta build a new building with the concept of twin buildings. In the case of a construction project engineers must uphold the security and safety of humans. (1) The problem of this final project is how to design building structure five floors with two basements covering planning dimensions of the structure, analysis structures, reinforcement beams, columns, plates, according with SNI 2847:2013 and SNI 1726:2012. The design of the structure of the upper structures. The structure above includes design of floor slabs, beams, columns using the structure reinforced concrete. (2) The structure of the building is designed with a number of level 5 floors plus 2basements. (3) The structure was designed using bearer Special Moment Frame (SMF). (4) The location of the building in the West Ring Road Yogyakarta to soil typeis the ground of being. (5) Analysis of lateral load (earthquake) using a static analysis of seismic load equivalent.

Plates roof and floor slabs are designed using a plate one-way and two-way. Thick roof plate of 120 mm, with reinforcement of staple P10 - 200 mm and reinforcement shrinkage P8 - 200 mm. Designed with a thick slab of 200 mm, base reinforcement P10 - 200 mm, and shrinkage reinforcement P10 - 300 mm.

IIA stairs with a height of 3.5 m using a staple reinforcement D13 – 250 mm on the stairs and landing, for shrinkage reinforcement used P10 – 300 mm. IIB stairs with a height of 4 m using a staple reinforcement D13 – 75 mm on the stairs and landing, for shrinkage reinforcement used P10 – 200 mm. Beam landing for all types of ladders used dimension 400 x 700 mm^2, Using longitudinal steel pedestal on 2D22, under 6D22, 4D22 longitudinal reinforcement upper field, under 4D22. Reinforcement transversal 2P10 - 100 mm in the staging area and 2P10 - 200 mm in field. Columns that are reviewed are the middle column on the ground floor with dimensions 800 x 800 mm as follows:

Longitudinal reinforcement using 24D25 (A_{st} = 6872.2339 mm^2)

Transversal reinforcement is calculated by reviewing from 2 directions

So, High building needs design that is based on appropriates the applicable provisions,namely in terms of strength, stability, security,comfort and economic factors. Its has been shown in this final report how about strength if the design depent on SNI.

Keywords: design structure, analysis structure, planning dimensions, design reinforcement, earthquake analysis, special moment frame, static analysis.

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