STRUCTURAL DESIGN OF ABUTMENT USING GEO 5 PROGRAM

Final Project

In partial fulfillment for the award of
Bachelor of Engineering Degree in Civil Engineering

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APPROVAL SHEET

STRUCTURAL DESIGN OF ABUTMENT USING GEO 5 PROGRAM

Final Project

Submitted and defended in Final Examination of
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PREFACE

Assalamu'alaikum Wr. Wb.

Alhamdulillah, all praise to Allah azza wa jalla who has given blessing and mercies until this Final Project can be completed. This Final Project to complete most the requirement to achieve S-1 graduate degree in Civil Engineering Department, Engineering Faculty, Universitas Muhammadiyah Surakarta. The author also says thanks for all parties who give any support for arrangement this Final Project until it can be completed.

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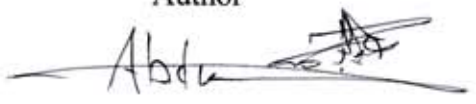
The author realize that the arrangement this Final Project is not a perfect one. Because of that, the author hope there are any suggestion and criticism to make this Final Project better and can be useful for us. Aminnn

Wassalamu`alaikum Wr.Wb.

Surakarta, July 2015

Author



DECLARATION OF AUTHORSHIP

Bismillahirrahmanirrahim

Herewith me,

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Declare that this Final Project is made and presented by mine, except the quotations and summaries that I have explained from all of the sources. If at a later it is found that this Final Project is a product of plagiarism, I am willing to accept any legal consequences that may be imposed to me.

Surakarta, July 2015

Person responsible,

ABDULRAHMAN YASIN HUSEIN

MOTTO

"And whenever you give your word, say the truth"
(al-An`aam 6:152)

"The only way to have the greatest work in your life
is love what you do first"
(Anonim)

"You are creator for your own future "
(Anonim)

"Idza shodaqol 'azmu wadhohas sabil"
(Mahfudzot)

"Do your own thinking independently
Be the chess player, not the chess piece"
(Anonim)

"Make up one idea. Make that idea on your life
– think of it, dream of it, live on that idea.
Let the brain, muscles, nerves, every part
of your body, be full of that idea,

and just leave
every other idea alone.
This is the way to success.
(Swami Vivekananda)

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ABSTRACTION

Structure Design of Abutment by Geo5 Program

The soil mechanics and designing technique got the revolution quickly in the 2000's, especially in Indonesia which has many types of soil. By the developing technology era of construction building, it is also in the geotechnical technology. To make easy in the designing of foundation, especially; abutment, the using of software is also needed. Based on the problem above, the writer want to investigate the usage of program in designing the abutment, the program is Geo5. In this designing, the data is taken from Pagotan Bridge Rehabilitation, Pacitan. Central Java. The abutment with concrete as the structure, controlling the stability of sliding, overturning, soil weight volume (γ) 1,424 gr/cm^3; cohesion (c) 0 kN/cm^2; friction angle (φ) 30^o.

The geology condition of soil layer in the field is sand; the high of abutment is 5.8 m. The calculation method is done twice; manual calculation and Geo5 program calculation.

After the calculation, the writer got the result of stability manual factor of sliding with 3.04>2 (safety), stability of overturning 3.07>2 (safety. The differences result between manual calculation and Geo5 program is because the calculation of lateral earth pressure is difference. The manual calculation used Rankine while Geo5 program used modification Rankie, it is Mazindrani.

Keywords: abutment, stability of abutment, geo5 program