DESIGN OF RIGID PAVEMENT OF GEJAYAN INTERSECTION

Final Project Report
as a requirement to obtain Bachelor degree from
Universitas Atma Jaya Yogyakarta

by:

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DEPARTMENT OF CIVIL ENGINEERING
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UNIVERSITAS ATMA JAYA YOGYAKARTA
YOGYAKARTA
2018

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

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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 directly derived from the writings or ideas of others 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, April 24th 2018

Who made the remarks,

Alpin Roy Batubara

APPROVAL

Final Project Report

DESIGN OF RIGID PAVEMENT OF GEJAYAN INTERSECTION

by:

ALPIN ROY BATUBARA
Student ID Number: 13 13 14997

has been approved

Yogyakarta, April 18, 2018

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Head of Civil Engineering Department

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APPROVAL

Final Project Report

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Has been examinated and approved by the examination committee

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PREFACE

First of all, the author would like to say thanks to Jesus Christ for His blessings so that the author could prepare and finish this Final Project report.

This Final Project was arranged as requirement to complete the S1 Degree at International Civil Engineering Program, Department of Civil Engineering, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

The author would like to say thank you for:

1. Ir. Y. Lulie, M.T. as the advisor of author.
2. Johan Ardianto, S.T., M.Eng., as head of International Civil Engineering Program.
3. Ir. A. Y. Harijanto Setiawan, M.Eng., P.hD., as head of Civil Engineering Department.
4. Sushardjanti Felasari, S.T., M.sc., CAED., P.hD., as the Dean of Engineering Faculty in Atma Jaya Yogyakarta University.
5. My parents who always supports, prays and give motivation to me.
6. My old sister Nini who always support me in doing the final project.
7. Hary, Brenna, Dea, Nathan, Tiwi, Edwin and all other friends of International Civil Engineering Program who support and give motivation to the author.

8. My Friends from Beringin 55 Sona, Oka, Olan, Evie, Moan, Abed, Ondi, Budi, Yuda, Thea, Tino, Marinus, Dion who always on there up all night.

9. Ricardy, Devis, Anto and Charles who always give me spirit and support.

10. My friend from KKN 70 KEPEK who always support and give me advice for doing the final project.

Finally, the author hopes this could give advantages for the readers and thank you for reading this Final Project

Yogyakarta, January 2018

Alpin Roy Batubara

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ABSTRACT

DESIGN OF RIGID PAVEMENT OF GEJAYAN INTERSECTION,
Alpin Roy Batubara, Student ID 13 13 14997, 2018, Transportation Engineering, International Civil Engineering Program, Civil Engineering Department, Faculty of Engineering, Universitas Atma Jaya Yogyakarta.

Transportation is an important sector in supporting society's economic activities, because it provides access for the society. This is generally known as road. Road conditions are expected to provide best performance of security and comfort for users. *Jalan Ringroad Utara* is one of crowded road in Yogyakarta, because *Jalan Ringroad Utara* is the main road for people to do activities and also a inter-provincial route. This may cause the defect. Especially in traffic light, because when the vehicle is stop and start to run, it will increase load to the pavement. Therefore, road performance may decrease. In this study, it will review and investigate existing pavement and replace with rigid pavement layer, but still using, rigid pavement layer above existing pavement.

After surveying, Alligator cracking, patch and potholes are the cause of the decrease of road performance. Therefore rigid pavement is designed to improve this by Continuously Reinforced Concrete Pavement (CRCP). For this designing method, the calculation will be done from designing the slab thickness. The slab thickness must fulfill the requirement (the fatigue and erosion ≤ 100 %). After that, designing the reinforcement. For this designing method, there are two types of reinforcement that used in Continuously Reinforced Concrete Pavement (CRCP). (1) Transverse reinforcement, (2) longitudinal reinforcement, but for longitudinal reinforcement must fulfill the checking of theoretical distance between cracking.

This designing is following the Pd T-14-2003, the data for designing of rigid pavement came from survey in the research location. There are 3 types of road damage: Alligator Cracking, Potholes and Patch. From the calculation, the author got slab thickness = 220 mm, base foundation = 150 mm, the subgrade will adjust the elevation. The transverse reinforcement used ϕ12 - 250 mm and longitudinal reinforcement used ϕ16 - 120 mm.

Keywords: Transportation, Road Damage, Continuously Reinforced Concrete Pavement