STRUCTURAL DESIGN OF "ASURANSI ASTRA BUILDING" AT KAV 15 TB SIMATUPANG STREET, CILANDAK BARAT, JAKARTA

Final Project

By:

ANDREAS TRI SETYO N
Student Number: 04 13 11944

ATMA JAYA YOGYAKARTA UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
INTERNATIONAL S1 PROGRAM

AUGUST 2009

APPROVAL

Final Project

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has been examined and approved by the examination committee

		Signature	*Date*
Chairperson	**: DR. Ir. Ade Lisantono., M.Eng.**	**……..**	**...……...**
Member	**: Ir. Junaedi Utomo, M.Eng.**	**……..**	**……..**
Member	**: Ir. Pranawa Widagdo., MT.**	**……..**	**……..**

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Yogyakarta, ……

Advisor

DR. Ir. Ade Lisantono., M.Eng.

Department of Civil Engineering
Head

Ir. Junaedi Utomo, M.Eng.

This final project has been dedicated to:

My amazing parents Mom and Dad at home

For all of their sacrifice how can I thank them enough?

Maybe by saying it in print..

Thanks, Mom and Dad. Thank you very, very much.

And also for my lovely sister, Ida and Lisa.

They always pray and support me

with unlimited time and conditions.

PREFACE

First and foremost, the author would like to thank God for His blessing that has been given to me, so that the final project can be finished on time. This report was arranged, in order to complete the S1 degree at Faculty of Engineering, Department of Civil Engineering, Atma Jaya University Yogyakarta.

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The author realized that, this report maybe has some mistakes, so all critics from the readers can make it better. Finally the author hope that this report could give advantages for the readers.

Yogyakarta, August 2009

Andreas Tri Setyo N

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ABSTRACT

STRUCTURAL DESIGN OF "ASURANSI ASTRA BUILDING" AT KAV 15 TB SIMATUPANG STREET, CILANDAK BARAT, JAKARTA, Andreas Tri Setyo N, Student Number: 11944, International Civil Engineering, Atma Jaya Yogyakarta University.

In earthquake prone area buildings have to be designed according to the criteria specified in earthquake loading code. This final project will consider "Asuransi Astra" building which is located at kav 15 Tb. Simatupang street, Cilandak Barat, Jakarta. This building will be designed based on SNI 03 2847 - 2002, SNI 03 1729 - 2002 and SNI 03 - 1726 - 2002. The building will be considered as dual system.

In analyzing "Asuransi Astra" ETABS non linear was used to obtain internal forces of the structure. For columns and structural walls design the PCACOL version 2.30 was used in order to obtain the longitudinal reinforcement. For irregular building the effect of earthquake should be computed based on dynamic analysis where $V_{dynamic} > 0.8\ V_1$ to satisfy SNI 03 - 1726 – 2002.

From building simulation, the first mode and the second mode of seismic response were dominant in translation so its satisfy the requirement of SNI 03 – 1726 – 2002 section 7.1. From analysis was found that the service story drift Δ_s = 6.4 mm < Δ_s drift required = 14.12 mm, ultimate story drift Δ_m drift = 38.08 mm < Δ_m drift required = 80 mm, so that both service story drift and ultimate story drift have satisfy SNI 03 - 1726 – 2002. For designing truss, the author use WF 300 x 150 for beam and H 300 x 300 for column. The entire slab has the thickness 120 mm and designed as two way slab with reinforcement bar P10 mm. Except for skew pararellogram, it will use D13. Stair has the thickness 120 mm, with reinforcement bar D13 mm. Dimension of concrete beam is 800 mm x 400 mm, longitudinal reinforcement for support area are 5D25 (top reinforcement), 3D25 (bottom reinforcement), longitudinal reinforcement for midspan area are 2D25 (top reinforcement), 3D25 (bottom reinforcement). Size of square column is 1000 mm x 1000 mm, longitudinal reinforcement has 24D25, and transversal reinforcement has 4D16.

Keywords: design, internal forces, dual system, reinforcement