DESIGN OF PPM BUILDING IN ACCORDANCE WITH SNI 03 – 2847 – 2002 AND SNI 03 – 1726 – 2002

Final Project

By:

LUKAS NUGROHO WICAKSONO
Student Number: 03 13 11502

ATMA JAYA YOGYAKARTA UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
INTERNATIONAL S1 PROGRAM
JULY 2011

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(Lukas Nugroho Wicaksono)

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Final Project

DESIGN OF PPM BUILDING IN ACCORDANCE WITH SNI 03 – 2847 – 2002 AND SNI 03 – 1726 – 2002

By:

LUKAS NUGROHO WICAKSONO
Student Number: 03 13 11502

has been examined and approved by the examination committee

		Signature	*Date*
Chairperson	**: Prof. Ir. Yoyong Arfiadi, M.Eng., Ph.D.**	………………	July 7, 2011
Member	**: DR. Ir. AM. Ade Lisantono, M.Eng**	………………	July 07, 2011
Member	**: Ir. Junaedi Utomo, M.Eng.**	………………	July 11, 2011

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has been approved

Yogyakarta, July 11, 2011

Advisor

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

Head of Civil Engineering Department

UNIVERSITAS ATMA JAYA YOGYAKARTA
FAKULTAS TEKNIK

(Ir. Junaedi Utomo, M.Eng)

PREFACE

First and foremost, I would like to thank God for His blessing that has been given to me, so that I could prepare and finish this final project report. This report was arranged, due to finish the S1 degree at Faculty of Engineering, Department of Civil Engineering, Atma Jaya University Yogyakarta.

In this final project, I design “PPM Building” by using software ETABS non linier version 9.7 and design based on SNI 2002.

I would like express my appreciation to:

1. **DR. Ir. AM Ade Lisantono, M.Eng,** as the Dean of Engineering Faculty, University of Atma Jaya Yogyakarta.
2. **Prof. Yoyong Arfiadi, M. Eng, PhD** as the advisor of final project who has given guidance, knowledge and philosopy of civil engineering and also motivation during this final project was arranged.
3. **Ir. Y. Lulie, MT.** as the coordinator of Civil Engineering International Program, University of Atma Jaya Yogyakarta
4. **Ir. Junaedi Utomo, M.Eng.,** as the head of Civil Engineering Department, University of Atma Jaya Yogyakarta.
5. **Mas Wiko,** as the administration staff of Civil Engineering International Program, University of Atma Jaya Yogyakarta who has given information about the administration requirements.
6. **My Family** who always supports, praises and gives motivation with unlimited time and conditions.
7. **All of my friends** who have supported and given motivation to the author.

I realized that, this report has some mistakes maybe, but I trust all critics from all of you can make it better. Finally I hope this report could give advantages for the readers.

Yogyakarta, July 2011

Lukas Nugroho Wicaksono

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ABSTRACT

DESIGN OF PPM BUILDING IN ACCORDANCE WITH SNI 03 – 2847 – 2002 AND SNI 03 – 1726 – 2002, Lukas Nugroho Wicaksono, Student Number: 11502, International Civil Engineering, Atma Jaya Yogyakarta University.

In earthquake prone area, buildings have to be designed according to the criteria specified based on earthquake loading code. This final project will consider PPM building which is located in Menteng Raya Streer. This building will be designed based on SNI 03 2847 - 2002 and SNI 03 1729 -2002. This building will be considered as Intermediate Moment Resisting Frame (IMRF) system and using concrete quality f_c' = 25MPa and steel quality f_y = 400MPa for steel that has more than 12mm diameter in size and fy = 240MPa for steel that has less or equal 12mm diameter in size.

In analyzing PPM building, ETABS non linear were used to obtain internal forces of the structure and stairs. For columns design interaction diagram of was used in order to obtain the longitudinal reinforcement. For designing the shear reinforcement of beams, ETABS was used by setting all of the structure to Frame Moment Release at the start and the end to simulate plasric hinge occurred at both ends of beam.

For the seismic design, the natural period fulfill the requirement, considering the story drift and the T-rayleigh are okay, so the building is considered okay. V static is used because V dynamic is less than 0.8 x V static.

From structural design result, the entire slab are designed as two-way slab with thickness =120 mm and reinforcement bar 10 mm. Stair has the thickness 150 mm, with reinforcement bar 10 mm. Dimension of beam B134 at story 3 is 400x900, longitudinal reinforcement for support area are 9D25 (top reinforcement), 5D25 (bottom reinforcement), longitudinal reinforcement for midspan area are 4D25 (top reinforcement), 5D25 (bottom reinforcement). Dimension of column C28 at story 3 is 1100x1100 mm, longitudinal reinforcement has 52D25.

Keywords: design, intermediate moment resisting frame, reinforcement