CHAPTER VII

CONCLUSIONS AND SUGGESTIONS

7.1. Conclusions

After analyzing and designing “PPM Building” based on Indonesian Concrete Code SNI 03 - 2847 – 2002 and Indonesian Earthquake Code SNI 03 - 1726 - 2002, some conclusions can be taken:

- The entire slab has the thickness 120 mm and using reinforcement bar 10 mm, all of them are designed as two-way slab.
- Thickness of Stair and landing is 120 mm, for stair use P10-100 of tension and compression reinforcement and P8-150 of shrinkage reinforcement, for landing use P10-250 of tension and P8-150 of shrinkage reinforcement.
- Floor and roof slabs use thickness equal to 120 mm and calculated using two-way slabs method. There are 4 types of slabs in this building and the calculation example in chapter 6 uses type A slabs that has the reinforcement in X and Y direction uses P10-150, as for the shrinkage reinforcement uses P10-250.
- In the design of main beams, use there are 2 types, 400mm x 800mm and 400mm x 900mm, as for secondary beams; there is 1 types, 250mm x 500mm. The example in chapter 6 uses 400mm x 900mm main beam in which the details are, left and right support reinforcement: 9D25 for top reinforcement, 5D25 for bottom reinforcement, 3P12-90 for shear reinforcement and 4D12
for torsion reinforcement at left and right side. As for midspan reinforcement: 4D25 for top reinforcement, 5D25 for bottom reinforcement, 3P12-90 for shear reinforcement and 4D12 for torsion reinforcement at left and right side.

- In the design of columns, there are 4 types of column, 1100mm x 1100mm, 1000mm x 1000mm, 900mm x 900mm, 800mm x 800mm. In the example of chapter 6, uses 1100mm x 1100mm which located in Column C28 3rd story. The longitudinal reinforcement for 1100mm x 1100mm is using 52D25 (14 bars at each sides) and also using shear reinforcement: 6D13-200 at $\lambda_o = 1100$ mm and at outside $\lambda_o$.

### 7.2. Suggestions

- Before designing a structure that is very important if we have understand about the codes in SNI 03 - 2847 - 2002, SNI 03 - 1729 - 2002 and SNI 03 - 1726 – 2002,

- Input data in ETABS carefully so the output that will be used for design will be correct,

- Understanding about civil engineering philosophy is very important in solving some problems.

- Make sure that the data input in ETABS is correct so that the output used for design will be precise.
REFERENCES

Arfiadi, Y., 2005, Lecture Notes on Reinforced Concrete Structures 1, Department of Civil Engineering – Faculty of Engineering, Atma Jaya Yogyakarta University.
Arfiadi, Y., 2005, Lecture Notes on Reinforced Concrete Structures 2, Department of Civil Engineering – Faculty of Engineering, Atma Jaya Yogyakarta University.
Bares, 1971, Tables for the Analysis of Plates, Slabs and Diaphragms Based on the Elastic Theory, Bauverlag GmbH., Wiesbaden und Berlin (Germany).
Building Layout
(1st FLOOR, LIBRARY)
On ETABS 9.7
Building Layout
(2\textsuperscript{nd} and 3\textsuperscript{rd} FLOOR, MULTIFUNCTION ROOM)
On ETABS 9.7
Building Layout
(4th until 7th FLOOR, CLASS ROOM)
On ETABS 9.7

: beam
: column
Building Layout
(8th FLOOR, DIRECTORATE SUPPORT)
On ETABS 9.7
Building Layout
(9th FLOOR, BAR/LOUNGE)
On ETABS 9.7

: beam
: column
Building Layout
(10th FLOOR, ROOF)
On ETABS 9.7

: beam
: column
3D Building Layout 1
On ETABS 9.7
3D Building Layout 2
On ETABS 9.7
3D Building Layout 3
On ETABS 9.7
3D Building Layout 4
On ETABS 9.7
STAIR REINFORCEMENT DETAIL
**COLUMN REINFORCEMENT DETAIL**

1100 mm x 1100 mm

C28

3rd FLOOR
SLAB REINFORCEMENT DETAIL
TYPE A
3rd FLOOR

Section B-B
LOCATION BEAM AND COLUMN:
B134, B122, B124, C28
ON 3rd FLOOR
FROM ETABS 9.7
EARTHQUAKE SPECTRUM RESPONSE

Wilayah Gempa 3

\[ C = \frac{0.75}{T} \] (Tanah lunak)

\[ C = \frac{0.33}{T} \] (Tanah sedang)

\[ C = \frac{0.23}{T} \] (Tanah keras)

C

0.75
0.55
0.45
0.30
0.23
0.18

T

0 0.2 0.5 0.6 1.0 2.0 3.0