

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.

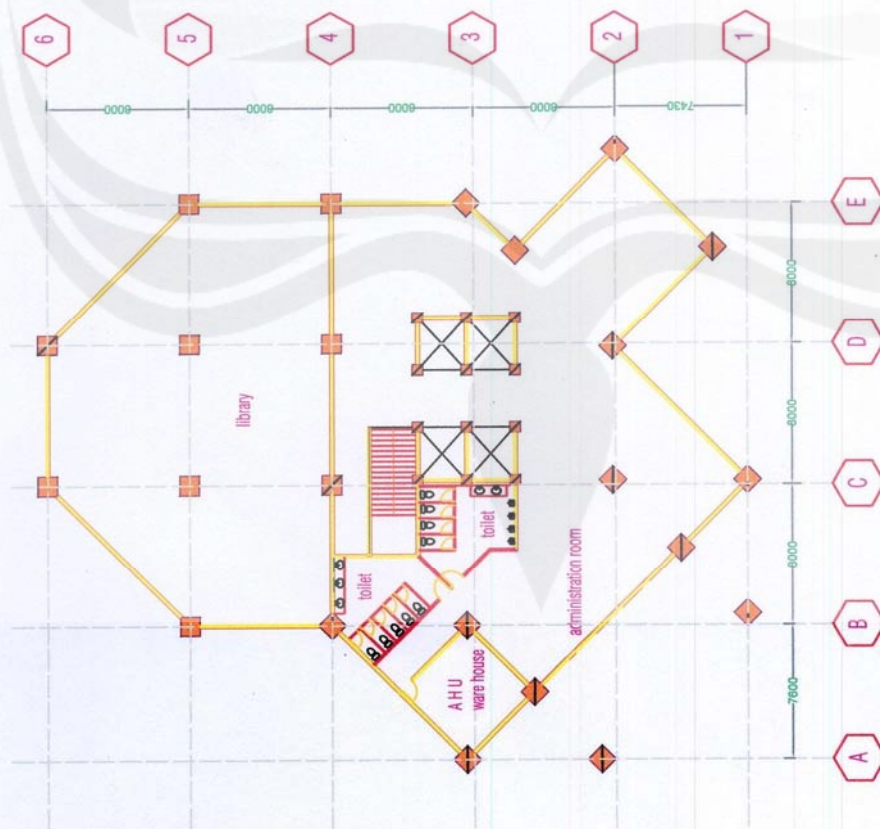
- In the design of columns, there are 4 types of column, 1100mm x 1100mm, 1000mm x 1000mm, 900mm x 900mm, 800mm x 800mm. In the example of chapter 6, uses 1100mm x 1100mm which located in Column C28 3rd story. The longitudinal reinforcement for 1100mm x 1100mm is using 52D25 (14 bars at each sides) and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

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- Paulay, T. and Priestley, M. J. N., 1991, *Seismic Design of Reinforced Concrete and Masonry Buildings*, John Wiley and Sons, Inc.



ARCHITECTURAL BASEMENT PLAN
scale 1:400

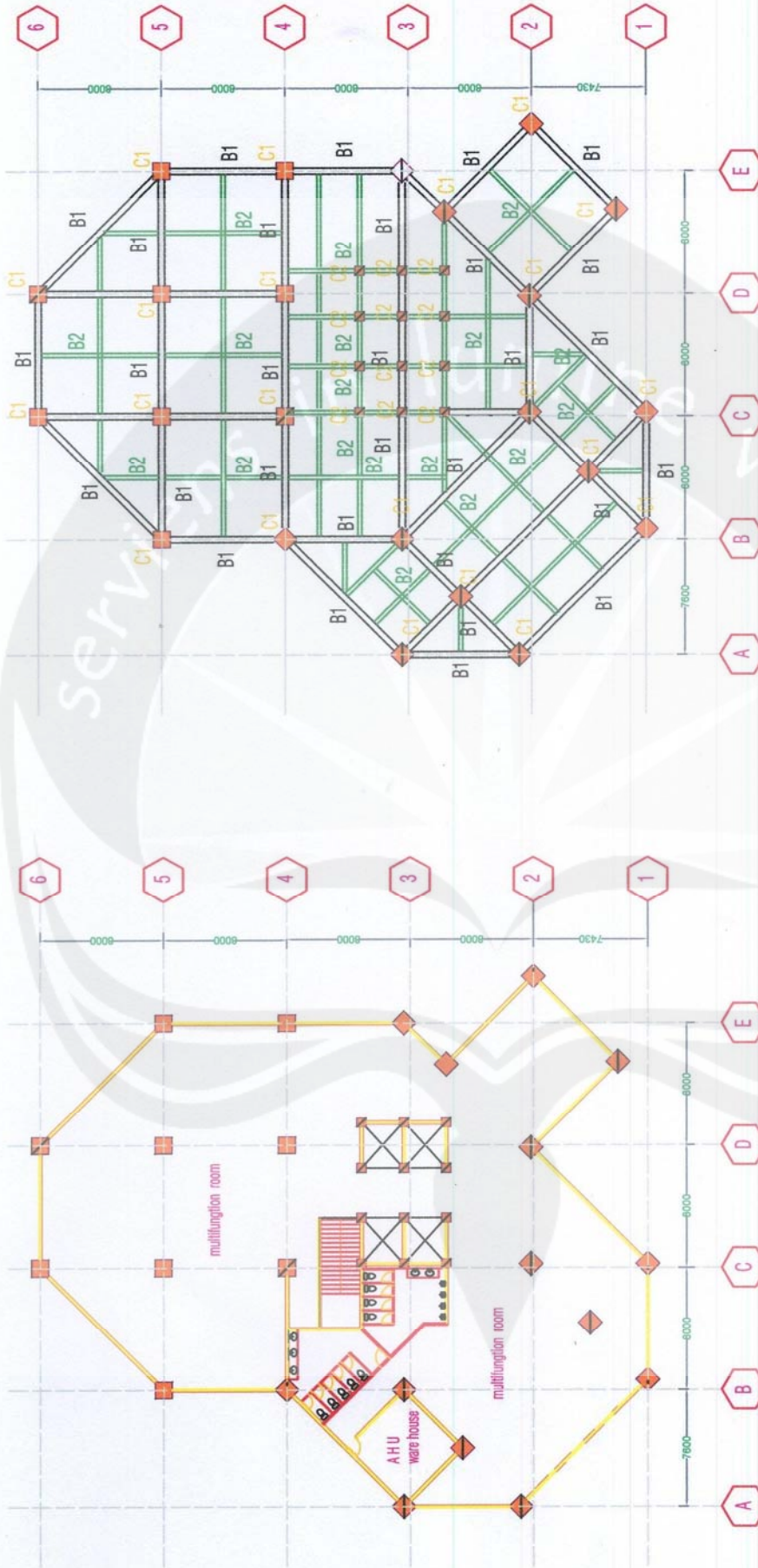
KODE	DIMENSI	KET
B1	BEAM 400 X 900	
B2	BEAM 250 X 500	
C1	COLUMN 1100 X 1100	
C2	COLUMN 600 X 600	



ARCHITECTURAL 1st FLOOR PLAN
scale 1 : 400

BEAM AND COLUMN 1st FLOOR PLAN
scale 1 : 400

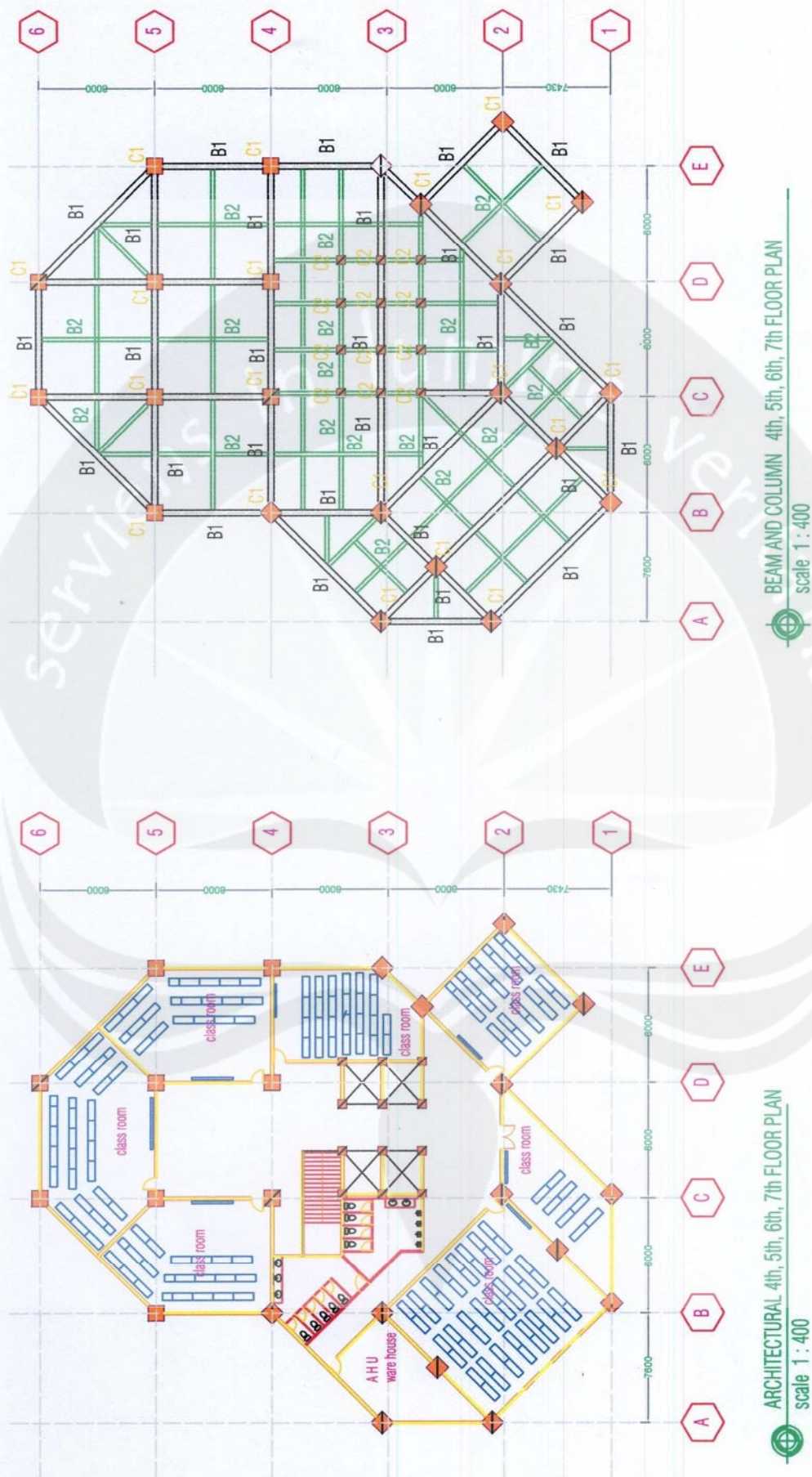
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B2	BEAM 250 X 500	
C1	COLUMN 1100 X 1100	
C2	COLUMN 600 X 600	



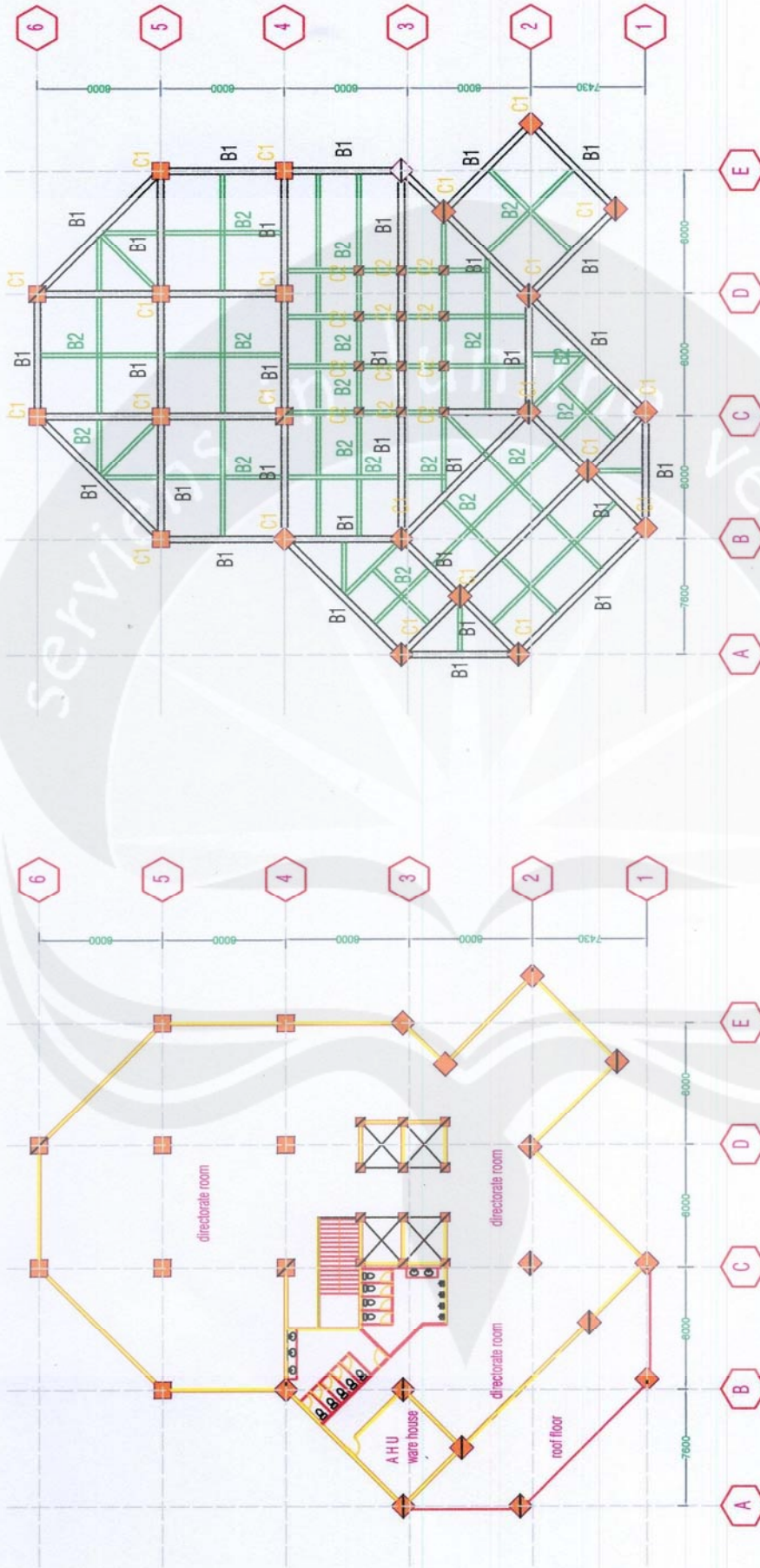
BEAM AND COLUMN 2nd & 3rd FLOOR PLAN
scale 1 : 400

ARCHITECTURAL 2nd & 3rd FLOOR PLAN
scale 1 : 400

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B1	BEAM 400 X 900	
B2	BEAM 250 X 500	
C1	COLUMN 1100 X 1100	
C2	COLUMN 600 X 600	



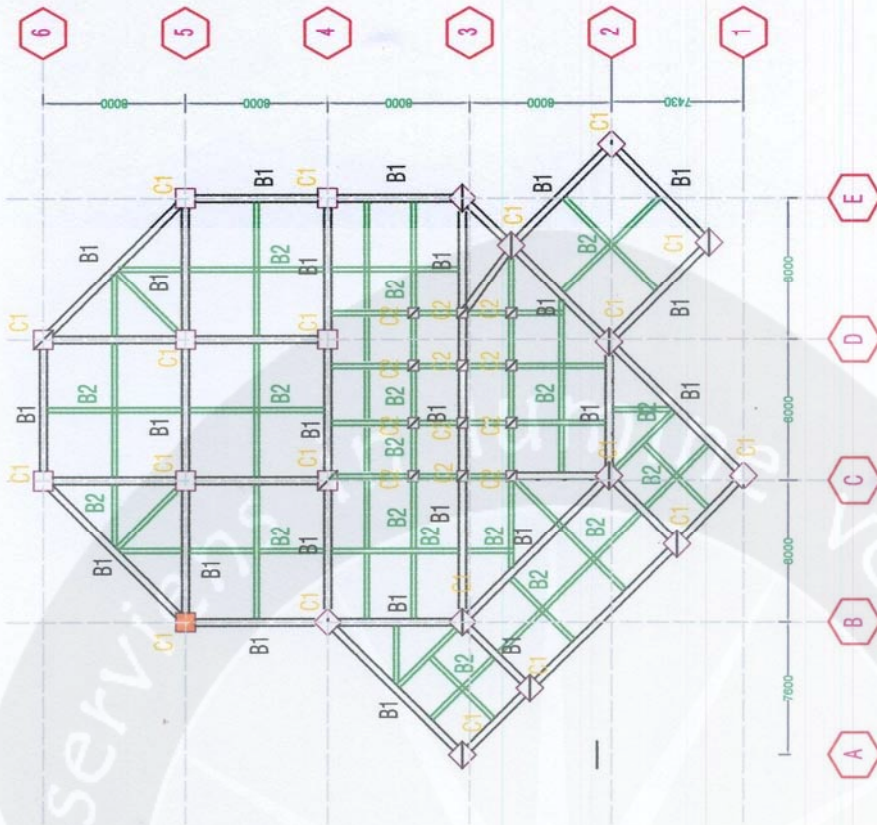
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B2	BEAM 250 X 500	
C1	COLUMN 1000 X 1000	
C2	COLUMN 500 X 500	



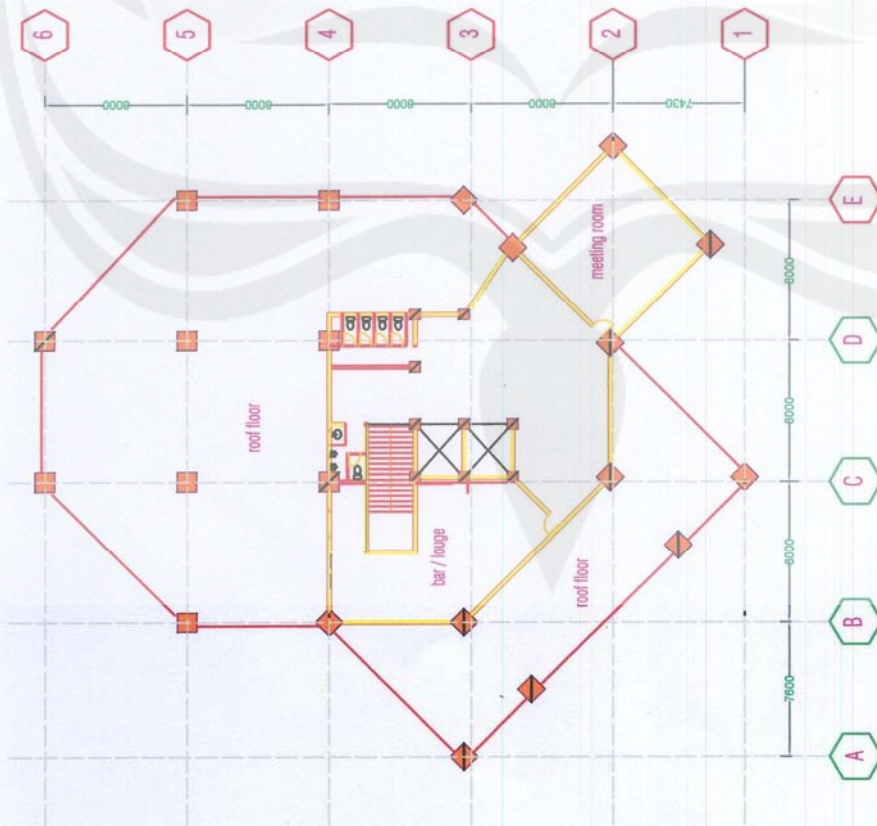
BEAM AND COLUMN 8th FLOOR PLAN
scale 1 : 400

ARCHITECTURAL 8th FLOOR PLAN
scale 1 : 400

KODE	DIMENSI	KET
B1	BEAM 400 X 900	
B2	BEAM 250 X 500	
C1	COLUMN 900 X 900	
C2	COLUMN 500 X 500	

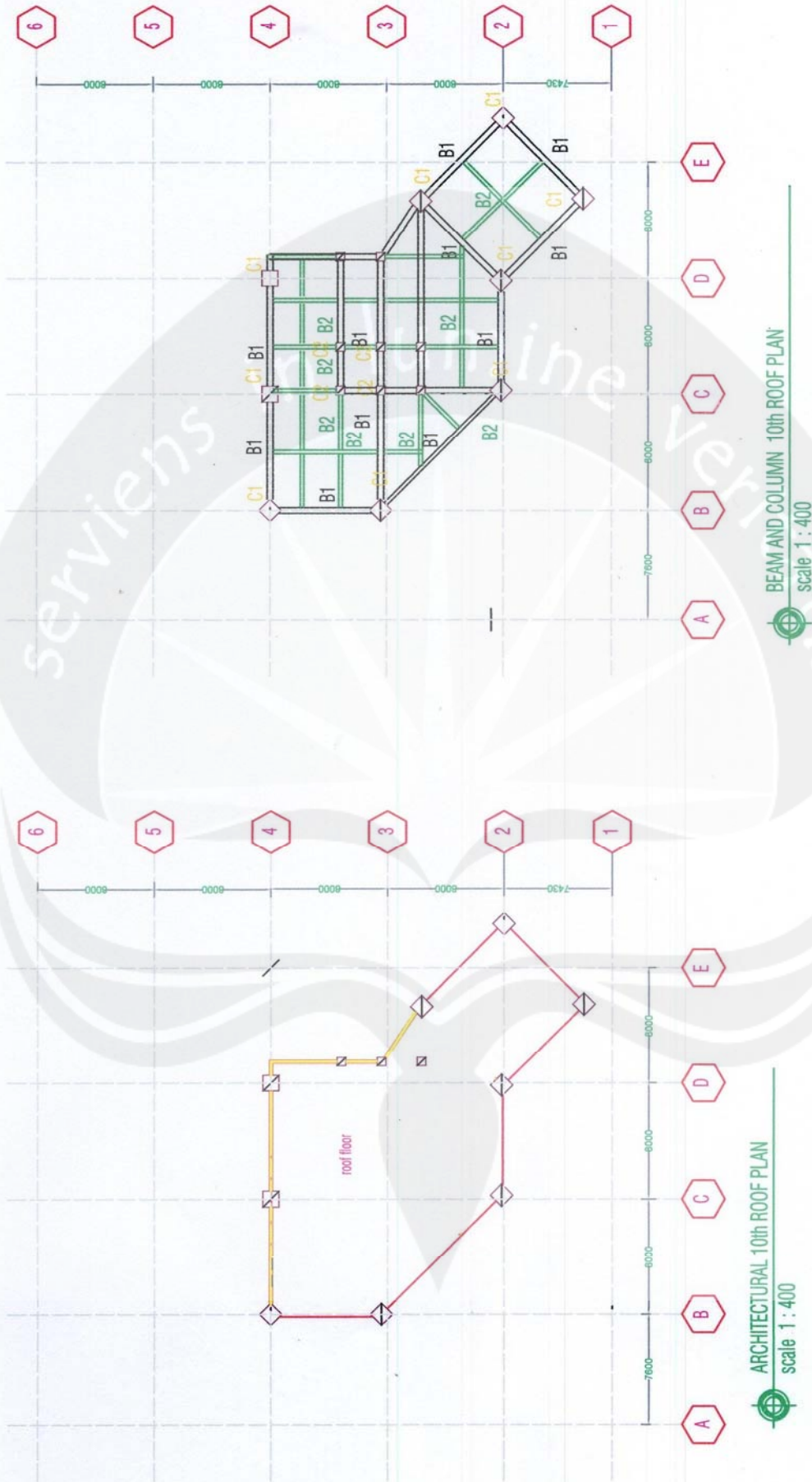


BEAM AND COLUMN 9th FLOOR PLAN
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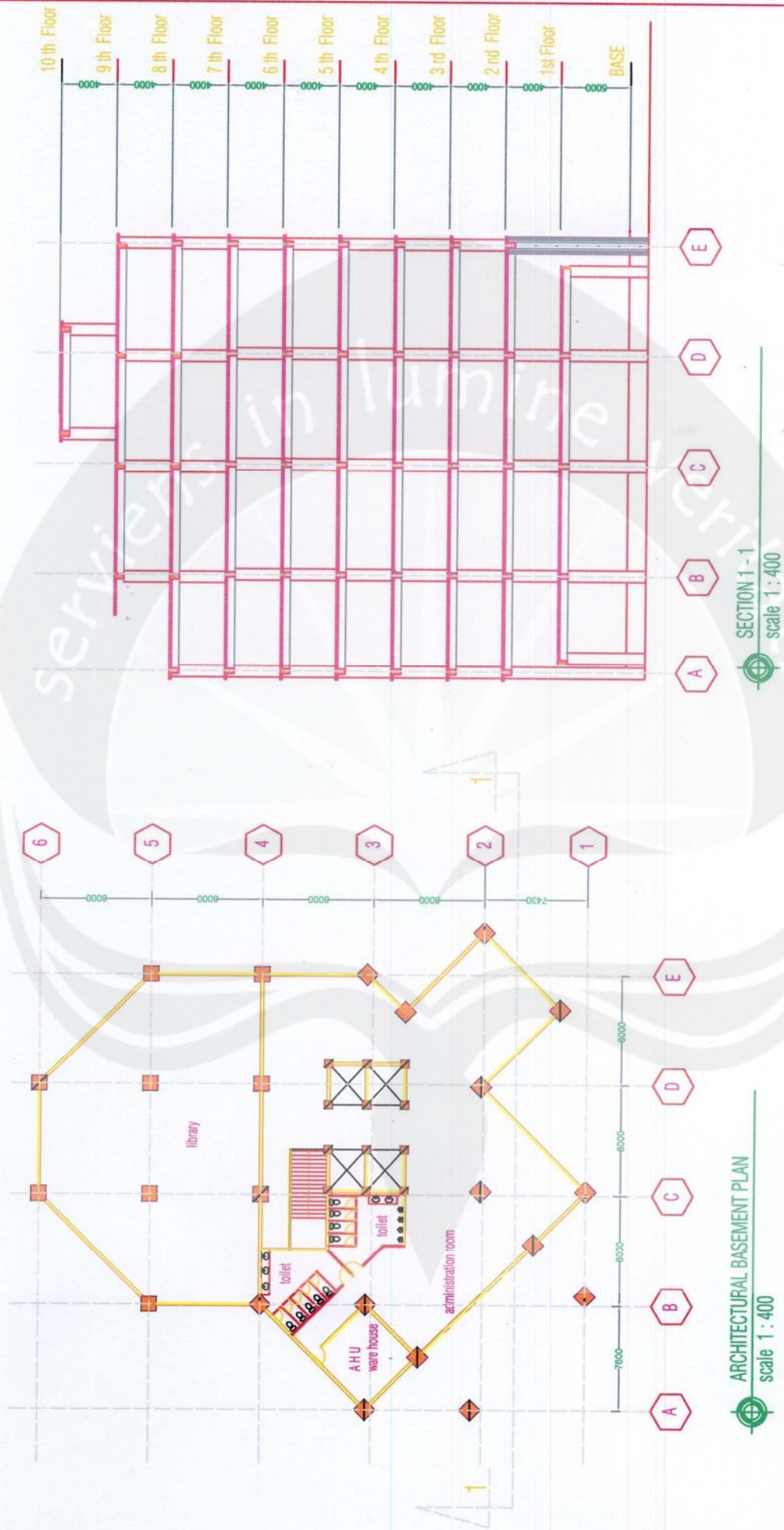


ARCHITECTURAL 9th FLOOR PLAN
scale 1 : 400

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B2	BEAM 250 X 500	
C1	COLUMN 900 X 900	
C2	COLUMN 500 X 500	

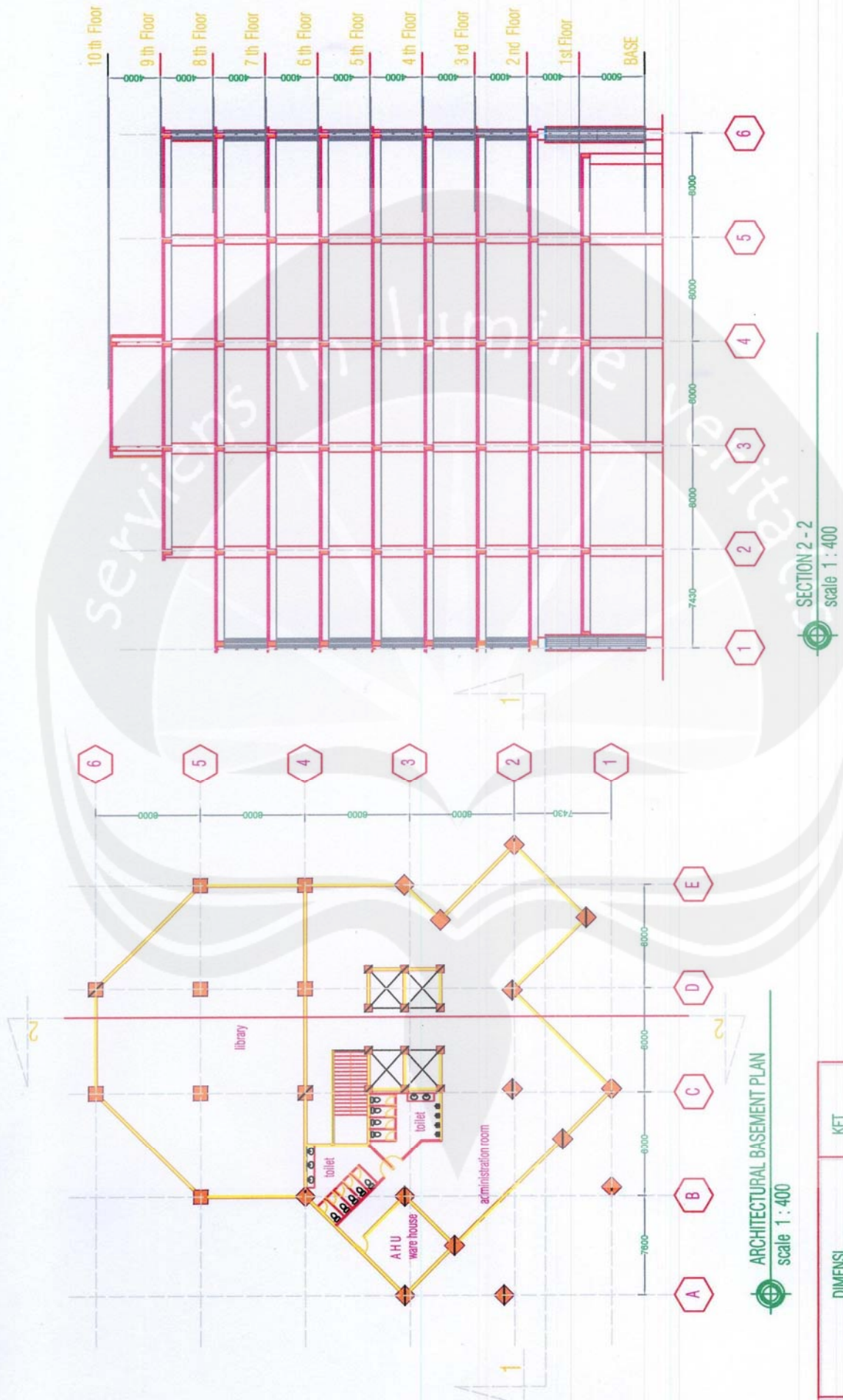


KODE	DIMENSI	KET
B1	BEAM 400 X 900	
B2	BEAM 250 X 500	
C1	COLUMN 800 X 800	
C2	COLUMN 500 X 500	



ARCHITECTURAL BASEMENT PLAN
scale 1 : 400

KODE	DIMENSI	KET
B1	BEAM 400 X 900	
B2	BEAM 250 X 500	
C1	COLUMN 1100 X 1100	
C2	COLUMN 600 X 600	

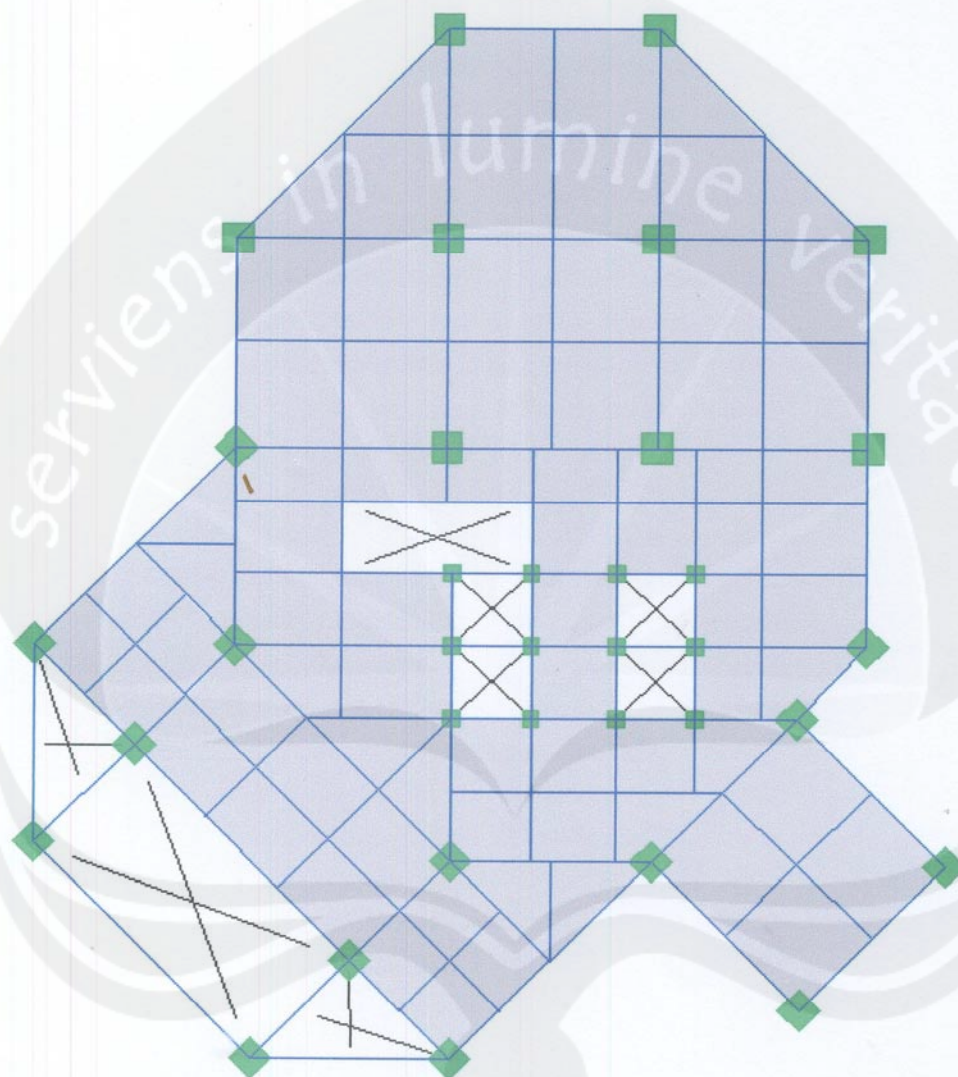


ARCHITECTURAL BASEMENT PLAN
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SECTION 2 - 2
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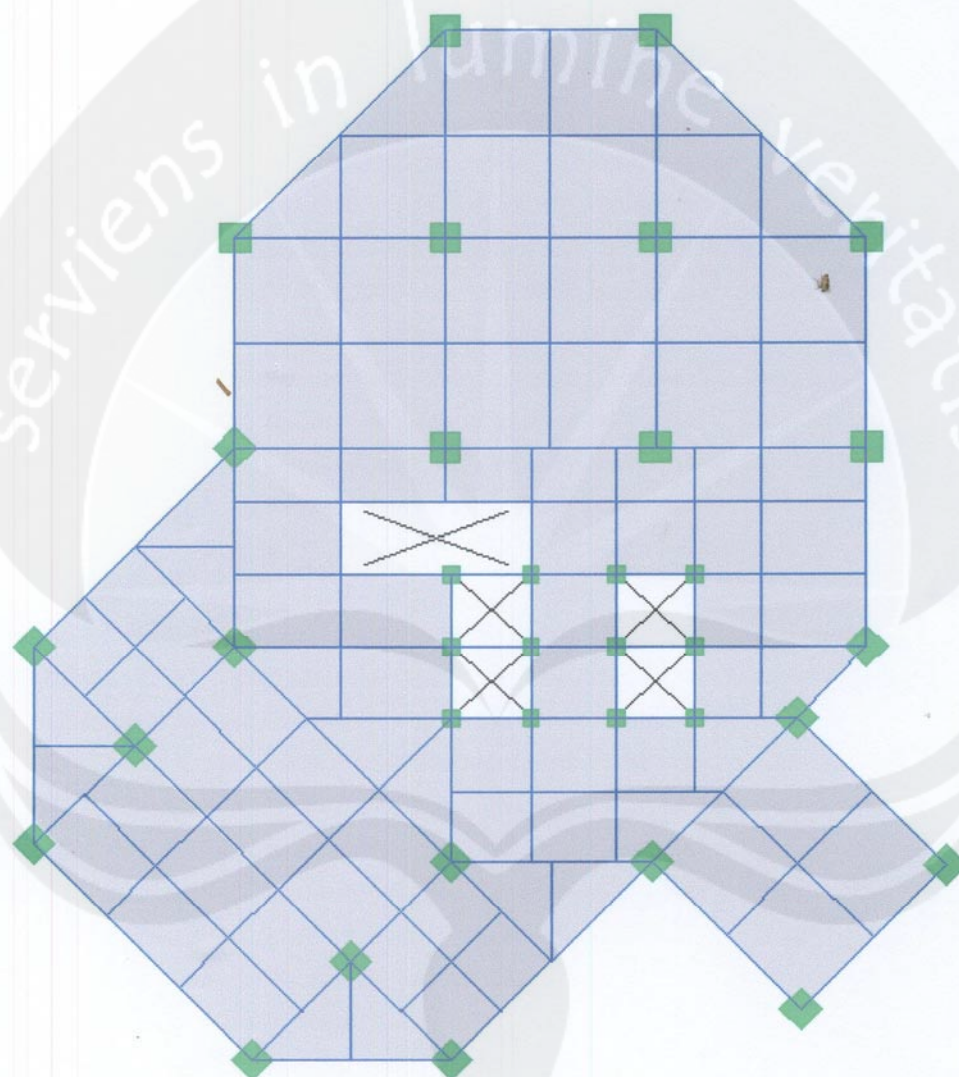
DIMENSI	KET
BEAM 400 X 900	
BEAM 250 X 500	
COLUMN 1100 X 1100	
COLUMN 600 X 600	

Building Layout
(1st FLOOR, LIBRARY)
On ETABS 9.7



: beam
: column

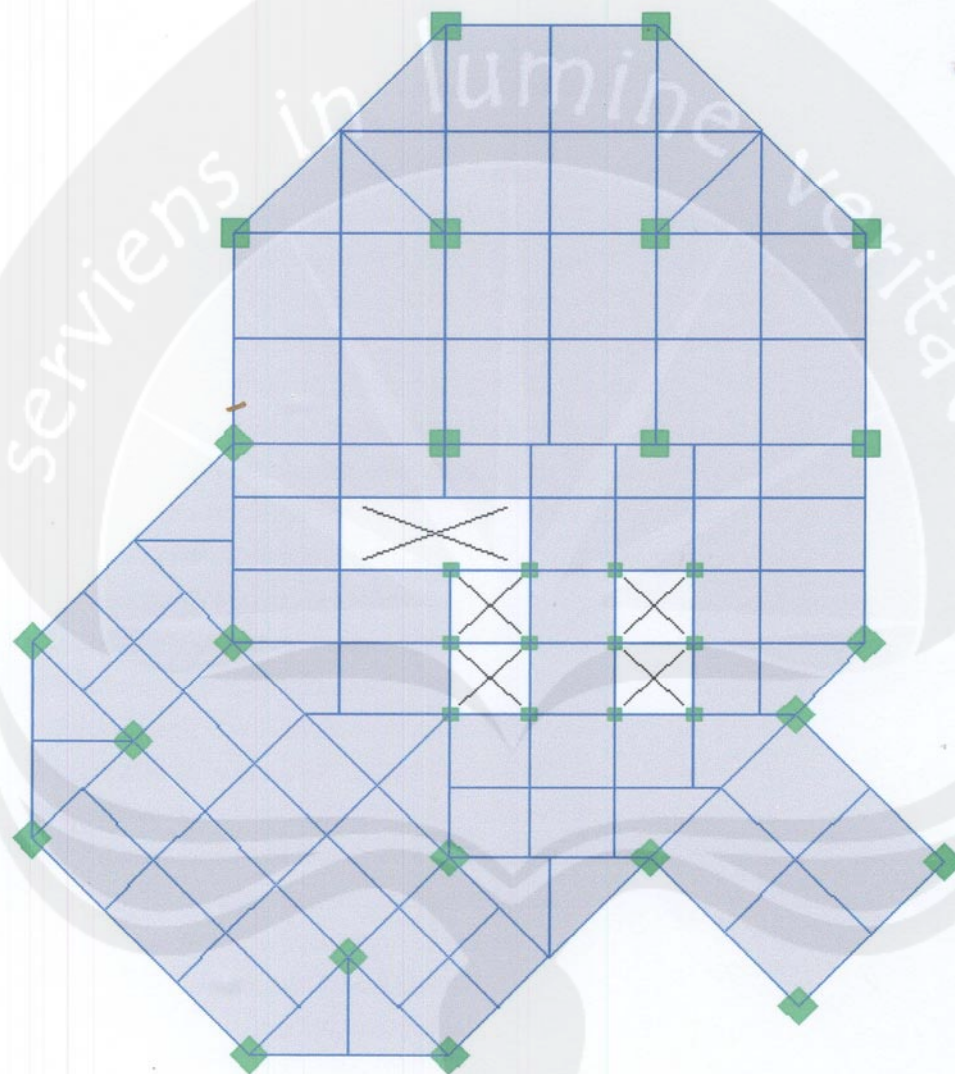
Building Layout
(2nd and 3rd FLOOR, MULTIFUNCTION ROOM)
On ETABS 9.7



: beam
: column



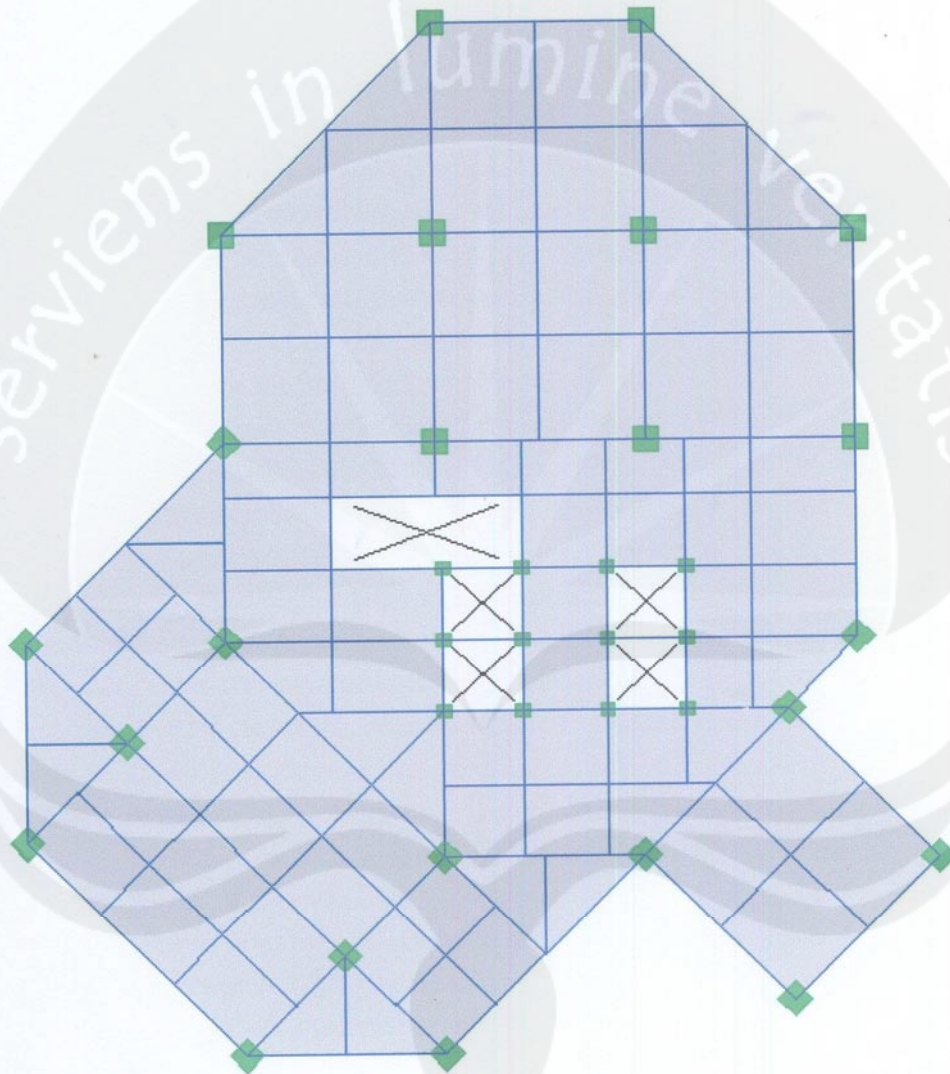
Building Layout
(4th until 7th FLOOR, CLASS ROOM)
On ETABS 9.7



: beam
: column



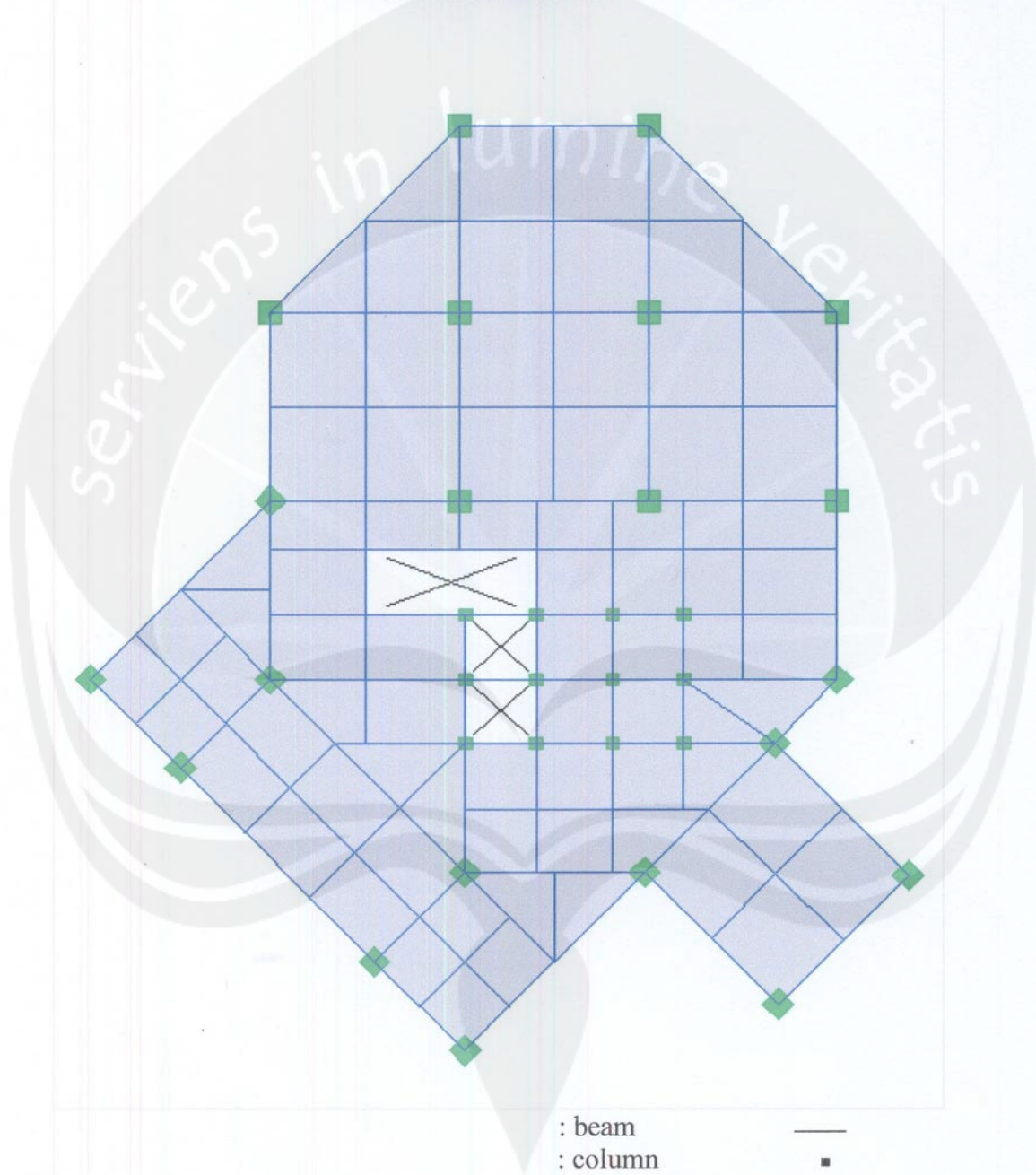
Building Layout
(8th FLOOR, DIRECTORATE SUPPORT)
On ETABS 9.7



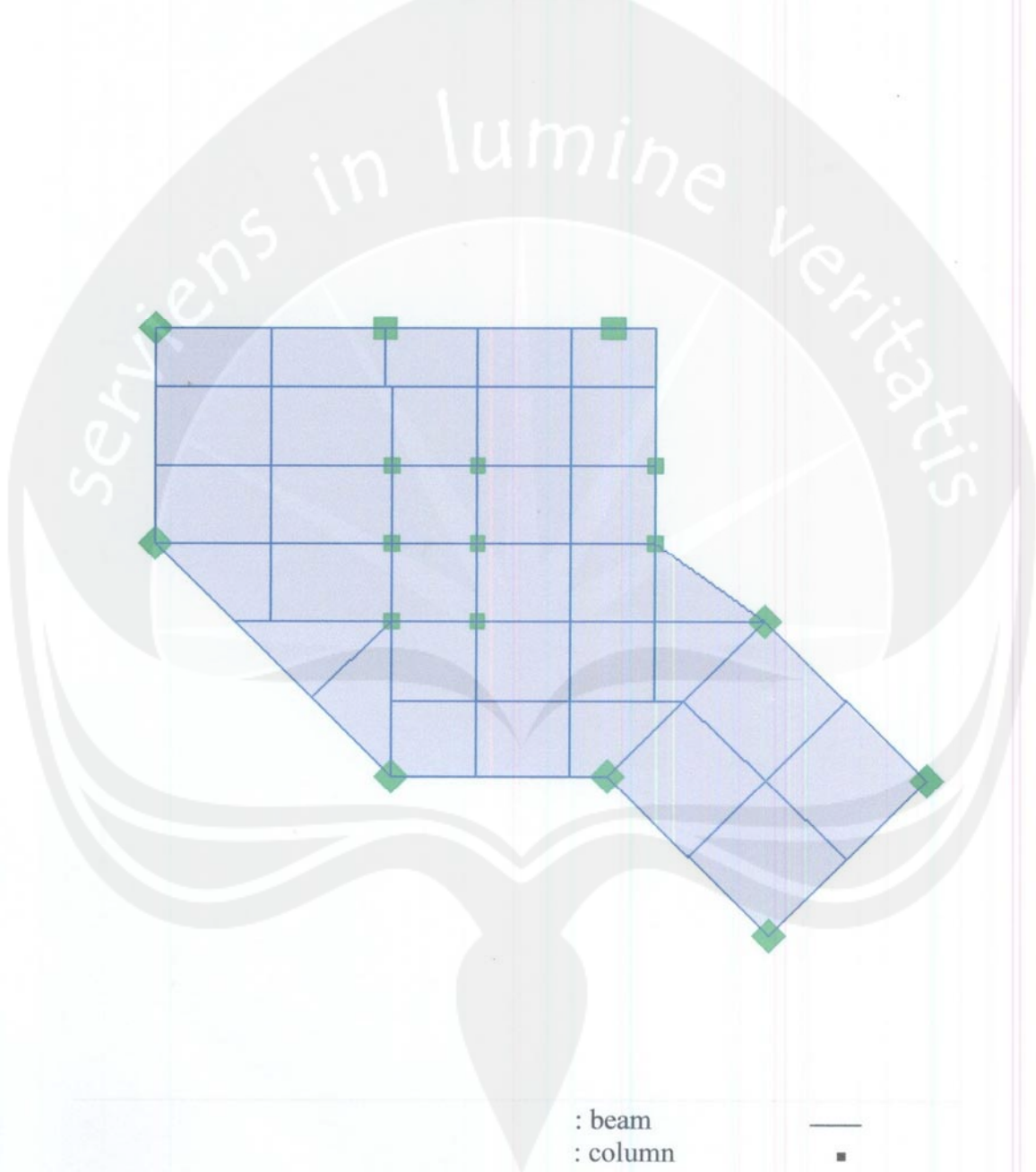
: beam
: column



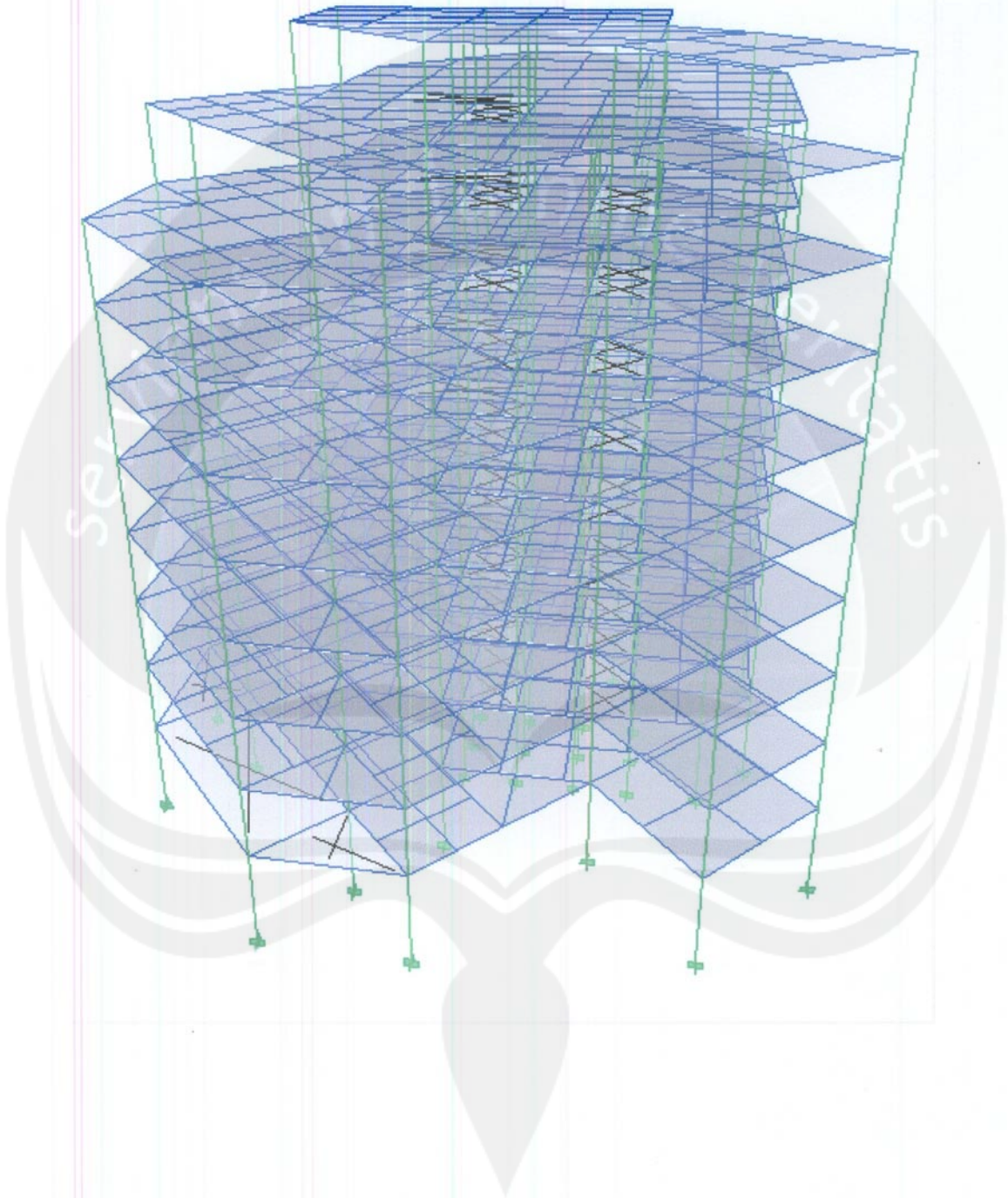
Building Layout
(9th FLOOR, BAR/LOUNGE)
On ETABS 9.7



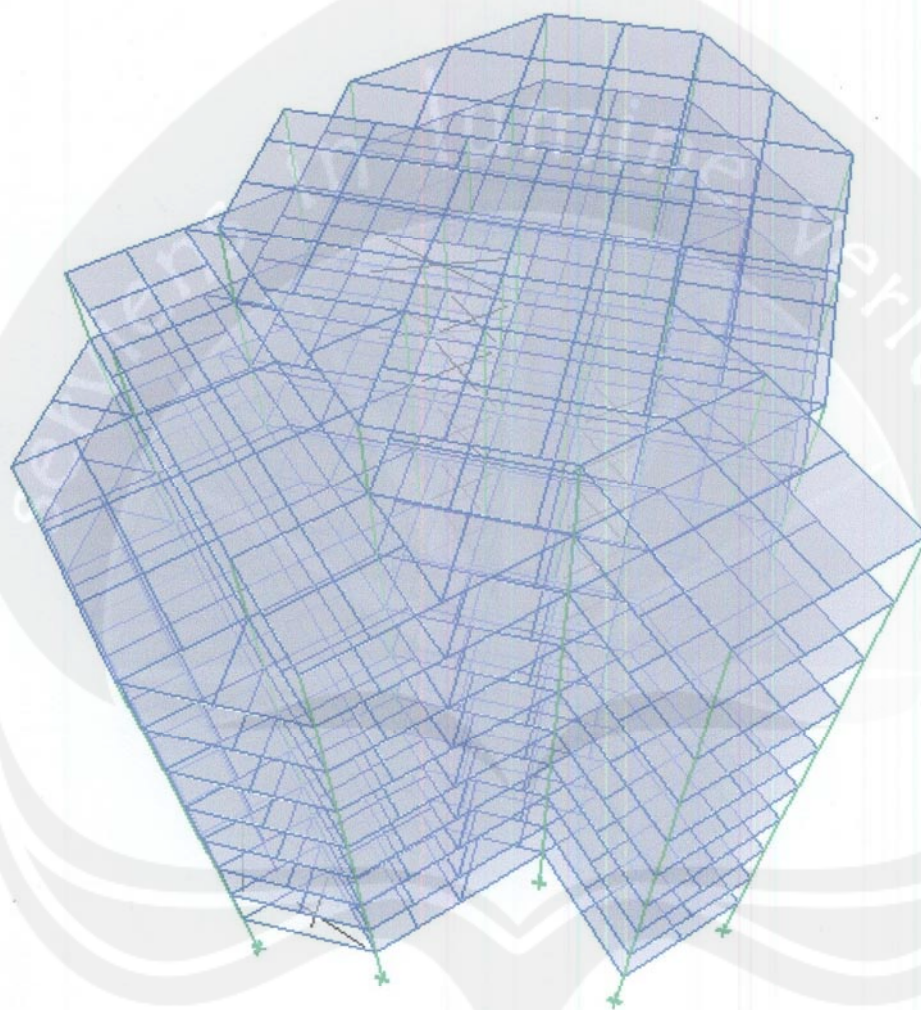
**Building Layout
(10th FLOOR, ROOF)
On ETABS 9.7**



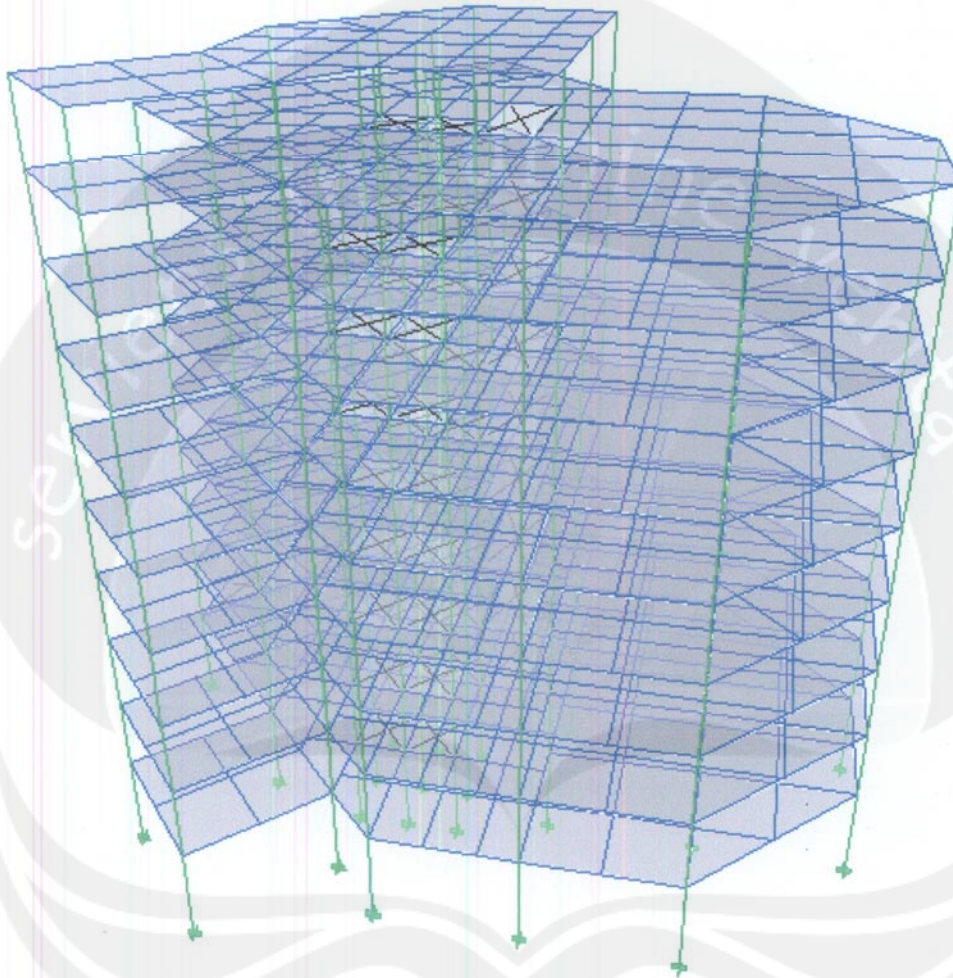
3D Building Layout 1 On ETABS 9.7



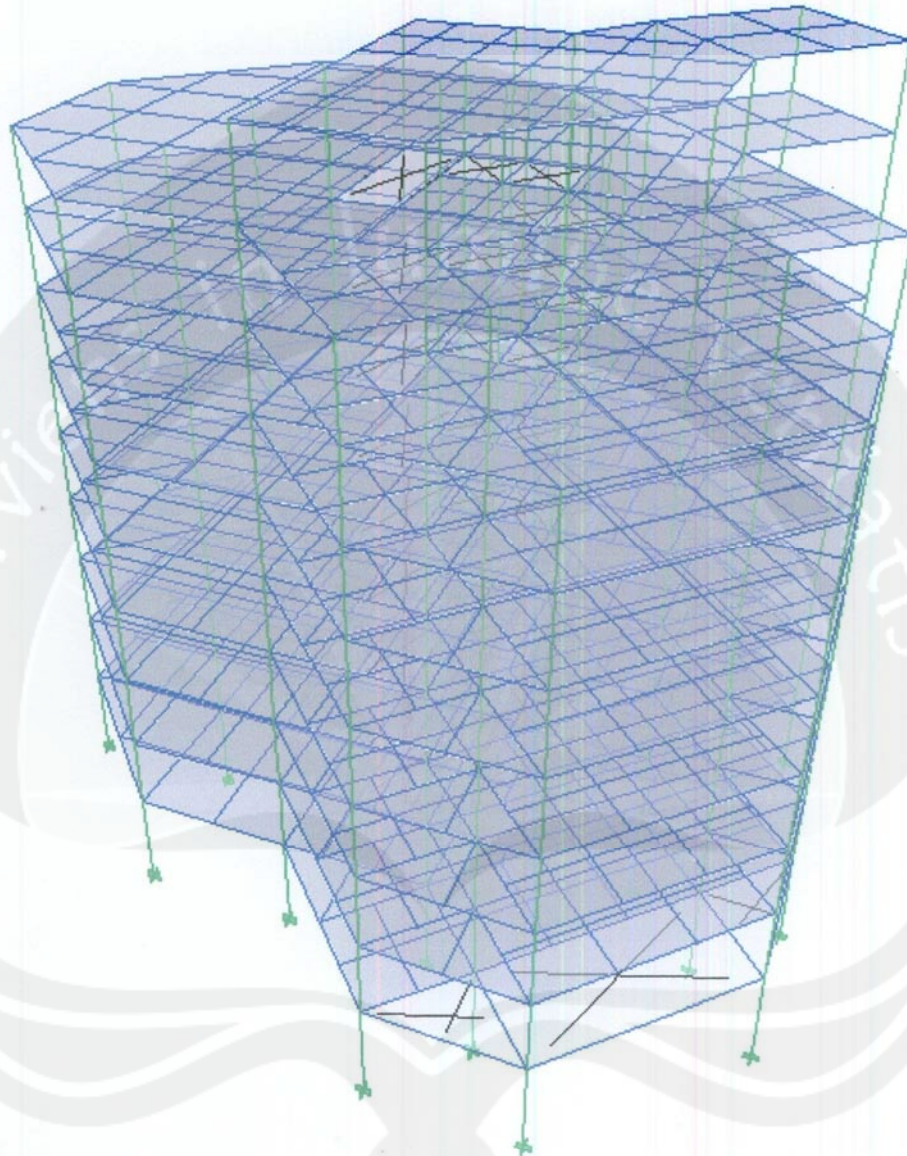
3D Building Layout 2 On ETABS 9.7

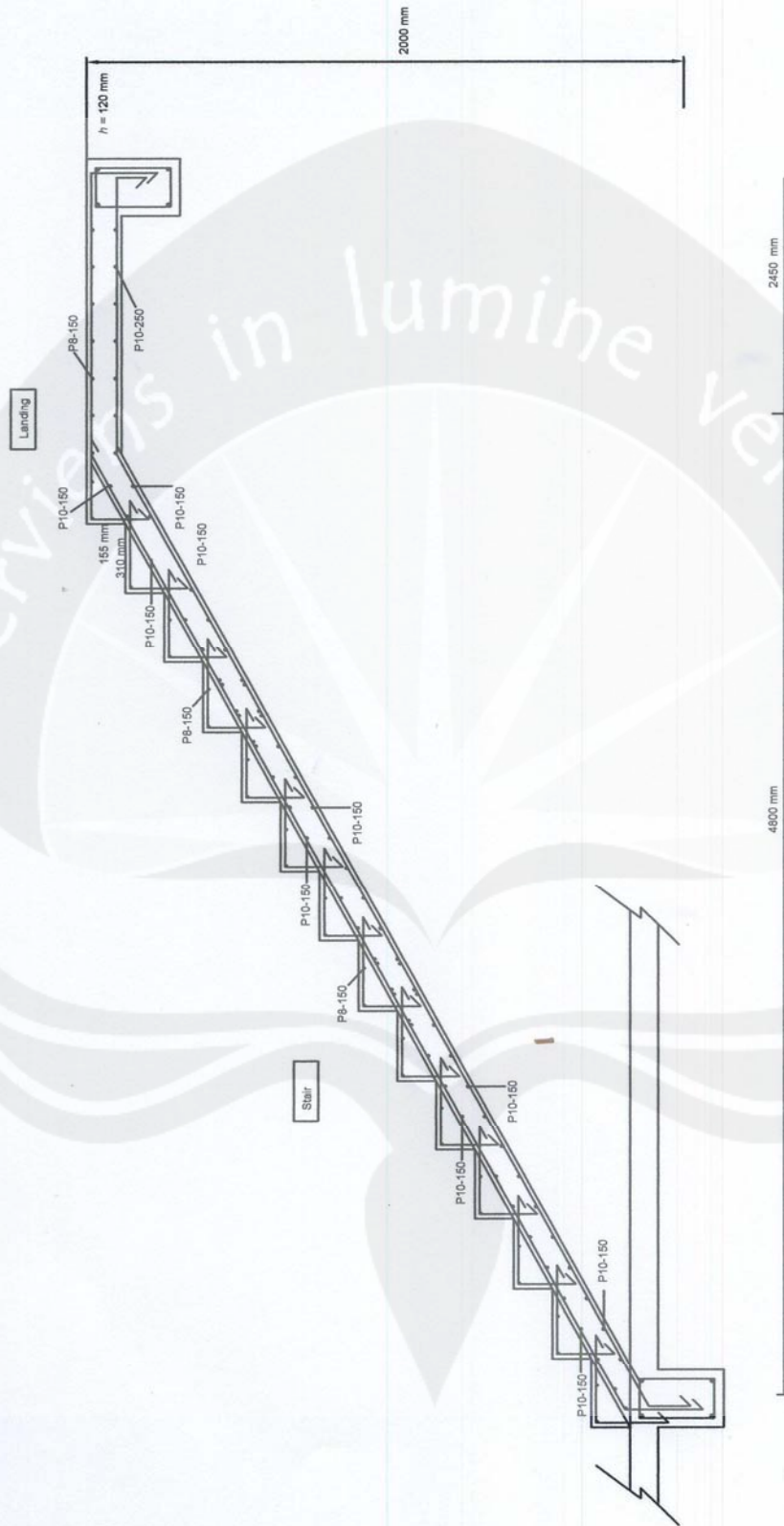


3D Building Layout 3 On ETABS 9.7

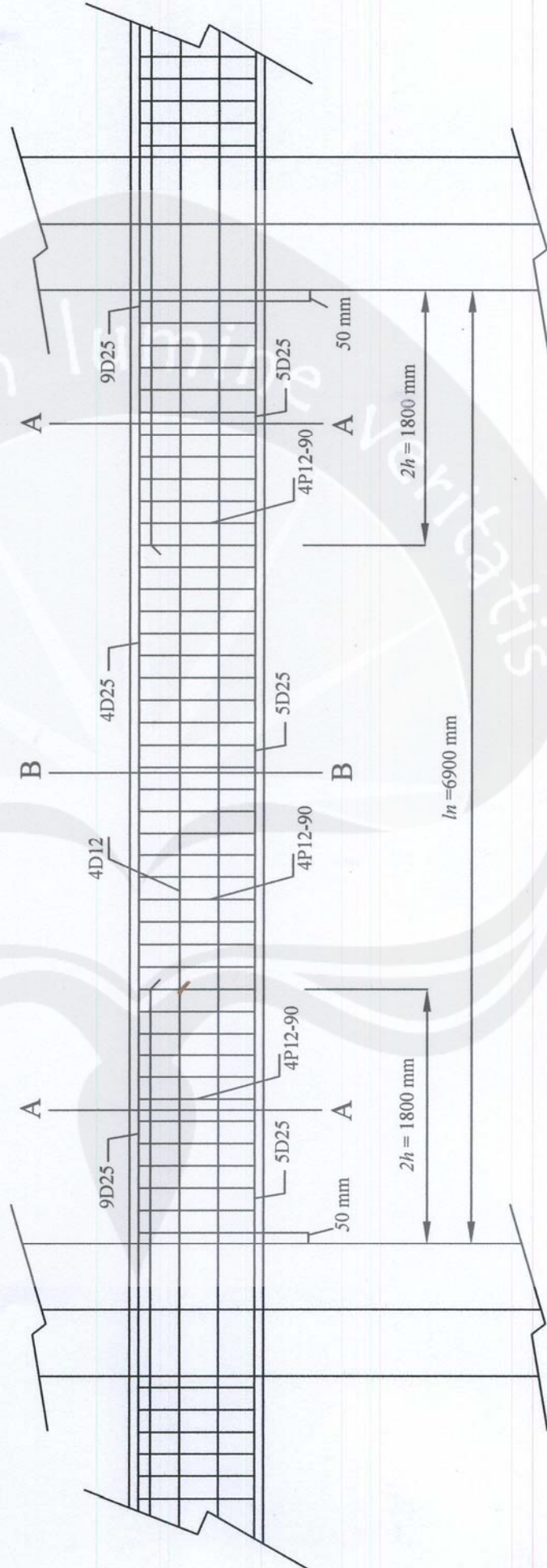
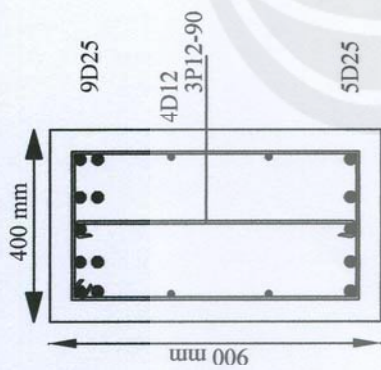
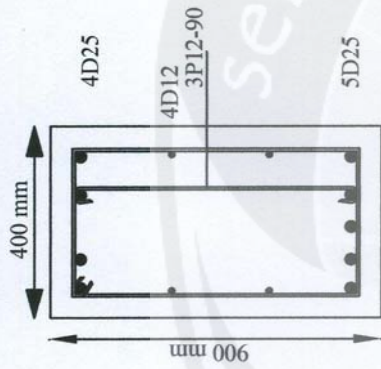
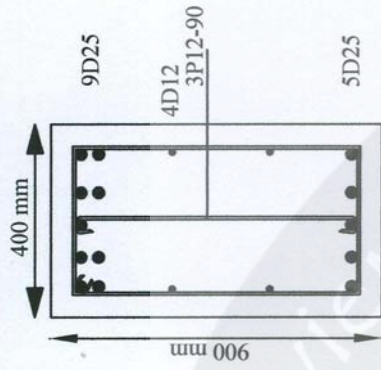


3D Building Layout 4 On ETABS 9.7

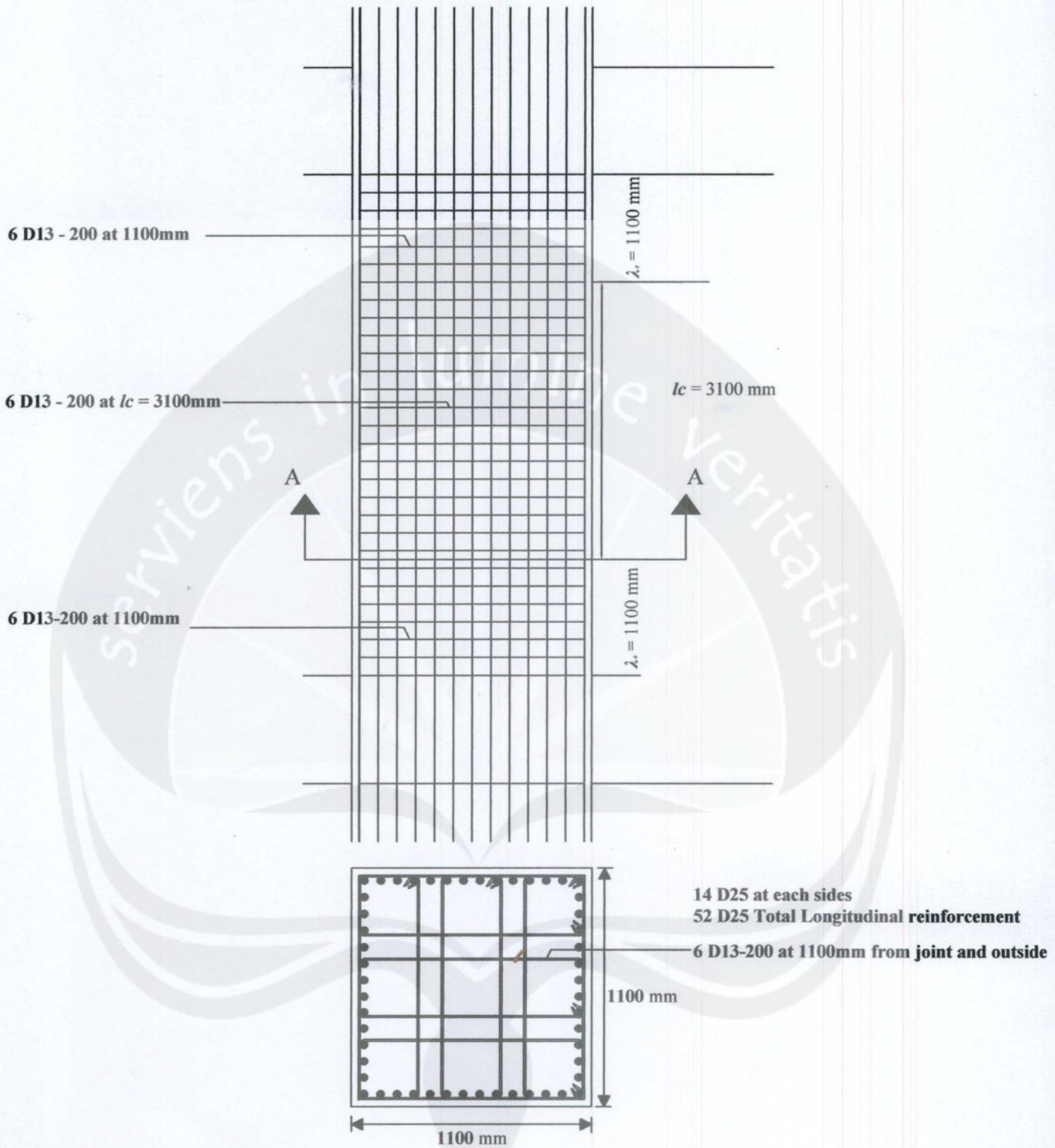




STAIR REINFORCEMENT DETAIL

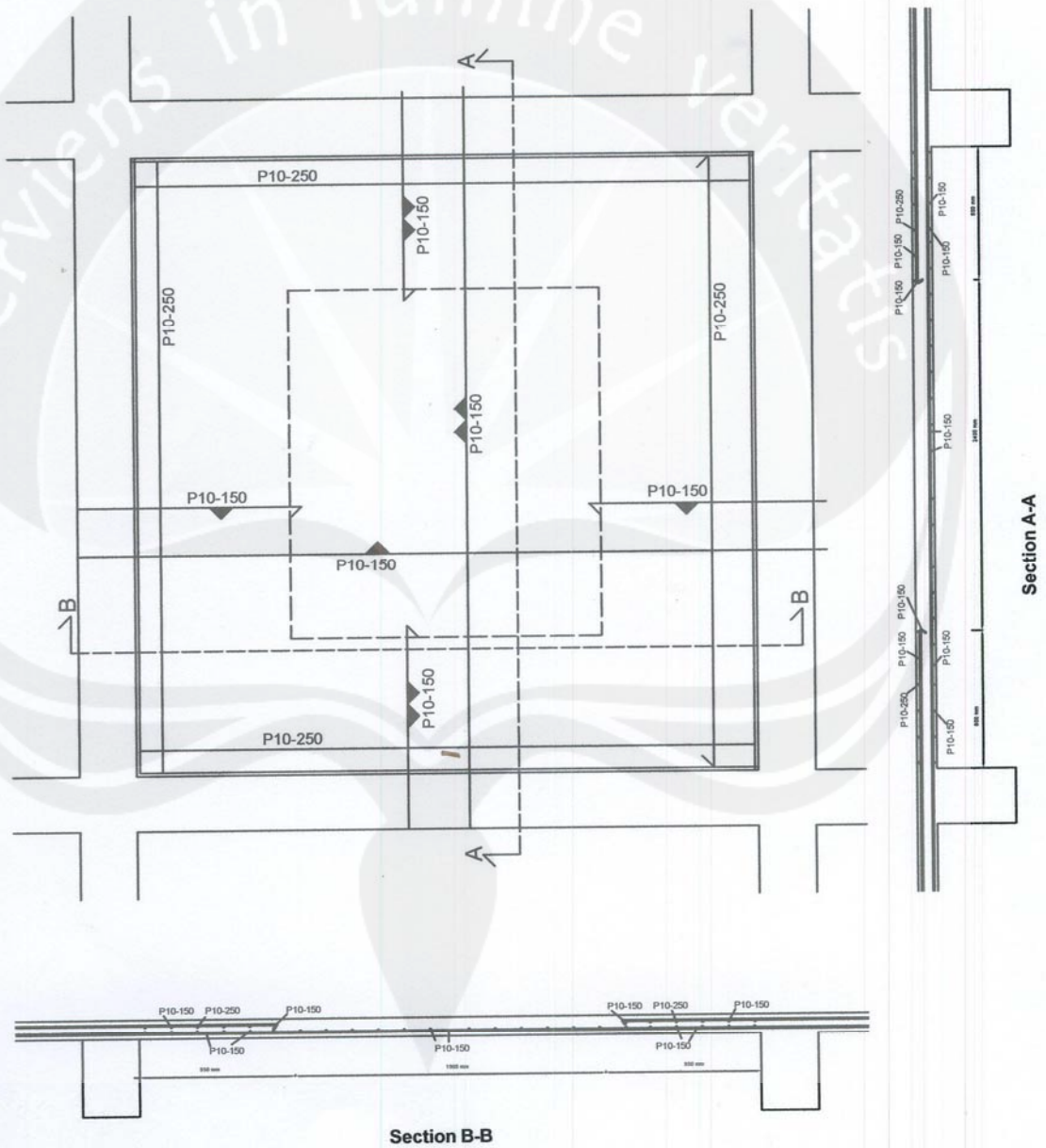


BEAM REINFORCEMENT DETAIL
400 mm x 900 mm
B134
3rd FLOOR

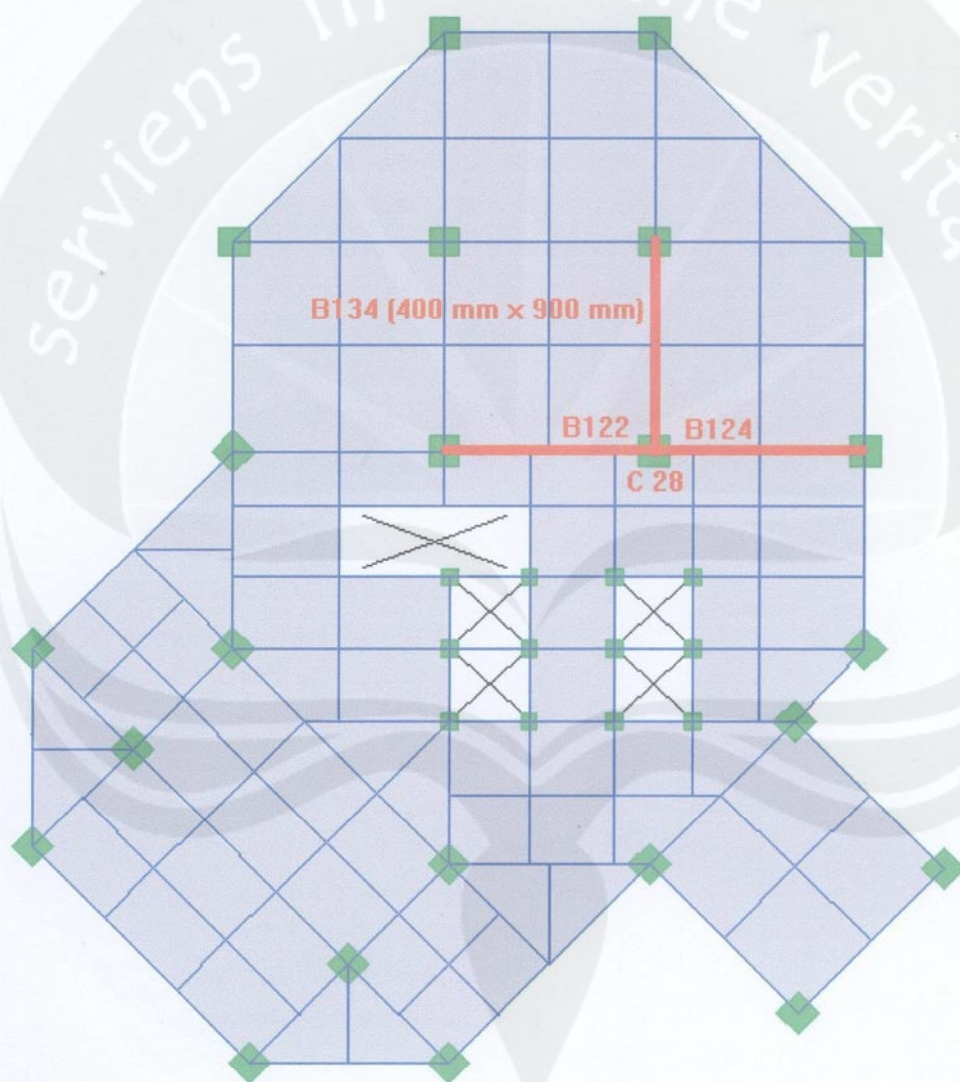


COLUMN REINFORCEMENT DETAIL
1100 mm x 1100 mm
C28
3rd FLOOR

**SLAB REINFORCEMENT DETAIL
TYPE A
3rd FLOOR**



LOCATION BEAM AND COLUMN :
B134, B122, B124, C28
ON 3rd FLOOR
FROM ETABS 9.7



EARTHQUAKE SPECTRUM RESPONSE

