

# CHAPTER VI CONCLUSION AND CONJECTURE

## 6.1 Conclusions

1. Terzaghi's bearing capacity is used in designing a spread footing foundation. For the shape factors a ratio of length per width of foundation is put into consideration. The value of  $N_\gamma$  is calculated without dependency on  $K_{p\gamma}$  to simplify calculations using a computer. The bearing capacity of a finished foundation does also put into consideration the possible shear failure of the soil it rests upon. More specifically, the punching shear.
2. Part of designing a foundation is the control. The ACI (SNI for Indonesia) is used to ensure the design's safety. More specifically, ACI chapters 15 of spread footing foundations and chapter 11 for shear strength calculations.
3. Reinforced concrete is generally used when constructing a rectangular spread footing foundation. The reinforcement is used for bending actions that might occur in the foundation's structure. Shrinkage reinforcements are used and designed according to the minimum ratio. Transferring load from the column to the footing is done by adding dowels (minimum number of dowels is 4).
4. By using an application such as the *Foundation Information System*, a foundation designer can calculate the dimensions of a foundation and its controls faster and easier.
5. Putting the calculations of designing a foundation does speed up the process of designing it. The consultant (user) only has to input values required for the calculation and run it and the application would do all the computations. Trial and error is no longer a tedious and long method.

6. The *Foundation Information System* presents its calculation results in a text form explaining the numbers of important values and its effect on the design. A drawing of the finished foundation complete with its dimensions is also presented.
7. The information kept in the system is a consultant's client, project, and foundation designs and soil data associated with it.
8. By keeping a database of foundations, the consultant is able to view past foundation designs for future references.

## **6.2 Conjecture**

1. Theory of designing a foundation is always applied but not always executed in the field. Experience is always prioritized in the design of a foundation.
2. The application should offer a more organized report of a project and its foundation designs.
3. Another method for calculating bearing capacity of soil should be added for comparison.