CHAPTER 5. CONCLUSSION AND RECOMMENDATION

5.1 Conclussion

The purpose of this study, "Shear Capacity of Hollow Circular Reinforced Concrete Members Without Stirrups," is to determine the effect of hole percentage on the shear capacity of a circular reinforced concrete structure. Planning the specimens, experimental work, and analysis process have all been carried out on 12 specimens constructed with different longitudinal reinforcement ratios as part of the research. So, based on the discussion, the following conclusion can be drawn:

1. The formulation from ACI 318-19 about shear capacity of hollow reinforced concrete circular cross-section extremely conservatively predict shear capacity for both solid and hollow specimens. The average comparison ratio of experimental and theoretical is 1.812.
2. The higher the percentage of holes in the specimen, the greater the decrease in capacity, and the smaller the deflection. The largest decrease in the shear capacity of the specimen for the percentage of hole area is (2.32%, 6.45%, and 9.3%), respectively, for diameters of 13 mm about 4.29%–27.8%, 16 mm about 5.47%–38.77%, and 19 mm about 8.53%–32.05%.
3. The higher the longitudinal reinforcement ratio, the greater the shear capacity and the smaller the deflection. Shear capacity values increased about 16%–20% for SC, 19%–32% for H-1, 9%–30% for H-2, and 2%–9% for H-3 specimens.
4. The crack pattern is nearly identical in all specimens. The initial loading of the crack that occurs is a flexural crack. More flexural cracks form and propagate to the shear zone as the load increases, forming diagonal cracks. Diagonal cracks grow until sudden shear failure occurs.

5.2 Recommendation

Regarding the conclusion of this study, the authors make the following recommendations for future research to achieve better results in the future:

1. In future research, a greater number of variations of influencing factors can be used, so that the conclusions drawn are more accurate
2. In the next experimental test, it can be continued by providing a different loading arrangement
3. More research on the effect of holes in reinforced concrete structural elements is required so that it can contribute to the formula development in regulations.