SUMMARY

Muhammad Arby, Register Number. 105060407111021, Department of Watering, Faculty of Engineering, University of Brawijaya, August 2016, *Study on the Engineering of Sub-Surface Drainage System with Geotextile for Football Field at ASIFA Football Academy in Karangploso District, Malang Regency, East Java*. Advisors: Dr. Ir. Ussy Andawayanti, MS and Dr. Eng. Andre Primantyo H, ST., MT.

Aji Santoso International Football Academy (ASIFA) was the first international football academy ever founded in Indonesia, and the recent address was in Malang City. ASIFA was about constructing its football field at the Education Center of Air Defense Artillery, Karangploso, Malang Regency. The academy has good curriculum and decent education facilities and therefore, it was important to ensure that new field was designed properly with *sub-surface* drainage system. This system could cope with rain overflow on surface despite high intensity of field usage. This system also facilitated the utilization of water excess more optimally.

Early step that must be done in engineering *sub-surface* drainage was hydrology analysis. Structure of soil in football field was then estimated. *Sub-surface* pipeline was arranged and final step was the engineering for *water tank* installation. The function of this tank was to contain the water from *sub-surface* drainage. Water was filtered by geotextile and coral stones, and the water was feasible for reuse to shower the grasses of the field.

Result of the Log Pearson III distribution rainfall design with 10 years period is 117,388 mm. The engineering of soil structure beneath football field involved some layers such as the mixture of earthwork and dung, pure sand, *non-woven* geotextile, and coral stones. Pipe HDPE with 20 cm diameter was installed between each layer with pipe interval of 2.5 m. The engineering of surface drainage system was using *interceptor drain* channel to capture overflow debit from the field, athletic track and green area around the field. Dimension of this channel was 0.4 m width and 0.5 m height. *Water tank* was engineered on the demand of showering the grasses, and the dimension was 2.5 m width, 3 m length and 4 m height.

Keywords: Drainage system, sub-surface, geotextile.