SUMMARY

***Desi Budiawati**, Department of Civil Engineering, Faculty of Engineering, Brawijaya University, May 2018, The Effect of Silica Fume and Fly Ash as Cement Replacement on Pervious Concrete Abrasion Using Recycled Coarse Aggregates (RCA), Supervisor: Dr.Eng. Eva Arifi, ST.,MT. dan Christin Remayanti Nainggolan, ST., MT.*

Utilization of recycled concrete aggregate has been widely developed to reduce natural coarse aggregate utilization, and road pavement is one of its application. Problems on road pavement that easily broken is caused by surface runoff since it can not be absorbed by soil, therefore pervious concrete is a solution of this problem. Pervious concrete is a lightweight and high porosity concrete that could be passed through the water easily. Pervious concrete materials consist of cement, water, coarse aggregate with small amount of or without fine aggregate. This causes pervious concrete has abrasion weakness and its strength depend on bonding between aggregate which form cement paste.

The purpose of this study is to find the optimum abrasion durability on composition using RCA with variation of substance mix of 0%, 10%, 25% fly ash and 0%, 7% silica fume to cement substitute. These substances is expected to repair bonding of aggregate especially when using RCA. The RCA variations used in this experiment are 0%, 50%, and 100%. The aggregate used is uniform graded which 1-2 cm and 0,3 of w/c. The proportion between cement and aggregate used in this experiment is 1:4. The abrasion test was conducted at age 28th day with Cantabro Loss method that used Los Angeles abrasion machine test to rotate the sample until 300 without steel ball. Samples used in the experiment was cylinder with 15 cm in diameter and 10 cm on its high.

Based on the test results, the optimum abrasion durability obtained from variation of FA 25% with composition of RCA 0%,50%, and 100% significantly reduce the value of Cantabro Loss Percentage 47,24%; 54,37%; and 51,37% respectively. In confirmated that the addition of fly ash and silica fume can increase abrasion durability. While the addition of RCA resulted varying abrasion durability depend on cement substitution variation.

***Keyword** : pervious concrete, RCA, fly ash, silica fume, abrasion*