SUMMARY

***I Nengah Gandi Wirotama**, Department of Civil Engineering, Faculty of Engineering, University of Brawijaya, February 2018, Correlation of Strong Value of Concrete Pressure by Using Non-Destructive Test and Destructive Test. Supervisor: Ir. Siti Nurlina, MT. and Ananda Insan Firdausy, ST., MT., M.Sc.*

Concrete is formed by mixing of hardening material between cement, water, fine aggregate (sand), and coarse aggregates (pebble) by a certain ratio. Sometimes are added also another mixture to improve the quality of concrete. Test methods which is used of determine the compressive strength of concrete in general can be divided into three parts, namely; the method with non destructive test, semi destructive test and and destructive test components. From the three methods, the destructive test method is the closest test to the actual compressive strength value of the concrete. In its development, testing of using non-destructive test can be conducted directly in the field. The most commonly used NDT test in Indonesia is hammer test and UPV (Ultrasonic Pulse Velocity), but the result of this non-destructive test has not been able to represent the strength of a structure, so it is needed relation/correlation with some other compressive testing.

This research was conducted to determine correlation value of concrete compressive strength test in laboratotium by using compression strength machine (destructive test) and non-destructive test using hammer test and UPV test. The test was conducted on cylindrical and cube specimen with different variation of concrete quality namely; 20 Mpa, 25 Mpa, 30 Mpa, and 35 Mpa.

The result of this study aims at obtaining the coefficient of determination and regression equation is $Y = a + bX_1 + cX_2$, where a, b, c are constants, Y is the compressive strength value of the compression test, X1 is the compressive strength value of the hammer test and X_2 is value of compressive strength of UPV test. For cylindrical test object with combining concrete quality got value of coefficient of determination equal to 71,9% with regressing equation that is $Y = -80{,}142 + 0{,}340X_1 + 0{,}021X_2$. Meanwhile, for cube test object with combined concrete quality, the determination coefficient value of 63.2% with regressing equation is $Y = -132{,}711 + 0{,}408X_1 + 0{,}033X_2$. From the regressing equation above, it can be seen that there are variables which is not influencing so significant that is the value of UPV test. From this correlation value is expected can be used of determining the value of compressive strength of concrete, if destructive test can not be conducted so as to improve the application of NDT (non-destructive test) method in Indonesia.

Keywords: *Strong of Concrete Press, Non-Destructive Test, Destructive Test, Hammer Test, UPV Test, and Compression Test.*

Halaman ini sengaja dikosongkan