

Dome Jantaphat 2011: Reuse of Cracked Concrete Test Cubes in Masonry Structure by Using Cement Paste Strengthening. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Assistant Professor Wanchai Yodsudjai, D.Eng. 109 pages.

The objectives of this research are to determine the optimum water-cement ratio of cement paste in the strengthening of cracked concrete test cubes, to study the use of strengthened cracked cubes as a main element in masonry structure and to compare the cost, weight, strength and aspect of construction of masonry structure constructed by strengthened cracked cubes with other masonry building. All concrete test cubes in the strengthening were derived from testing in laboratory at the highway construction project (Bypass Saraburi, east side, section 1) of the Department of Highways. After concrete test cubes were tested for compressive strength, cracked concrete test cubes at the age of 14 and 28 days were soaked in Portland cement type I paste for 30 minutes and continuously stirred simultaneously. Then they were reshaped by using cement paste from both Portland cement type I and mixed cement for comparison and cured in water for 14 and 28 days. In the part of construction and comparison, one story house is used as the case study.

As a result, it can be concluded that cement paste can be used for strengthening of cracked concrete test cube, and in addition 28 days of curing time in the strengthening gives higher enhancement of the ultimate compressive strength than 14 days of curing time. Also the most appropriate method for the strengthening of cracked concrete test cube at both 14 and 28 days of age is the soaking in 1.25:1 of w/c of cement paste and reshaped by Portland cement. Furthermore, the one story house constructed by concrete cubes is better than that constructed by conventional masonry units in terms of economy and strength capacity. However the factors that are of especial concern are foundations and soil because of weight of concrete cubes.

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