THESIS TITLE: IMPROVEMENT OF THE PROPERTIES OF MASONRY MORTAR

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ABSTRACT

The objective of this thesis is to improve the engineering properties of the masonry mortar, especially for brick wall without render plastering or commonly called brick-showed wall.

The tested compositions of masonry are mixed cement, sand, fine crushed rock and mortar plasticizer. All components were tested for their basic properties. The properties of cement paste with and without fine crushed rock were tested. The basic engineering properties of mortar containing fine crushed rock and mortar plasticizer were then tested. Finally some mortar mixes were chosen to make masonry prisms and tested for the compressive strength.

From the tests of cement paste, it was found that increases in fine crushed rock and mortar plasticizer had tendency to marginally decrease the normal consistency but had no significant effect on initial and final setting time.

The testing of basic engineering properties of mortar includes compressive strength, splitting tensile strength, chemical resistance, expansion and drying shrinkage. From the test, it was found that an increase of fine crushed rock and mortar plasticizer decreased the compressive strength, splitting tensile strength, drying shrinkage and weight loss of mortar cured in air but increased the chemical resistance and weight of mortar when cured in water and had no significant effect on the expansions of mortar cured in water. An increase in the flow of mortar decreased the compressive strength.

For the test of the compressive strength of masonry prisms, it was found that an increase in the amount of fine crushed rock, mortar plasticizer and water resulted in a decrease in the strength of masonry prisms. Depending on the size and weight of the bricks, the mixes with the flow of 35 and 60 % had reasonable workability and strength and were suitable for the masonry work.