

THESIS TITLE : A STUDY OF COMPRESSIVE STRENGTH OF ROLLER

COMPACTED CONCRETE CONTAINING MAE-MOH FLY ASH

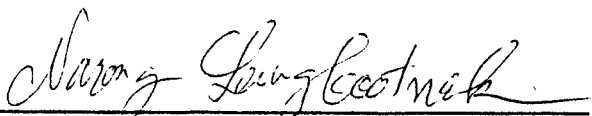
AUTHOR : MR. KASEM T. SRIWONG

THESIS ADVISORY COMMITTEE



Chairman

(Assoc. Prof. Dr. Prinya Chindaprasirt)



(Assist. Prof. Narong Leungbootnak)

ABSTRACT

The use of Roller Compacted Concrete (RCC) in construction of dams, roads and other mass concrete construction is very attractive because it enables the construction to provide quickly and continuously and it also lower costs of labors and materials as compared to other conventional mass concrete construction. The utilization of fly ash which is a waste material as a partial replacement for cement reduces the cost of RCC, improves some properties of RCC and reduces the heat generated in mass concrete.

The objective of this research was to study application of the Modified Proctor soil compaction technique to RCC in order to evaluate the optimum moisture content as a guide line in RCC mix proportioning. Further more, test was carried

out to find compressive strength of RCC using Portland Cement Type 1 and fly ash from Mae Moh.

It was found that during compaction test of RCC, its water content was lost owing to cement hydration, evaporation absorption and others. So that, the results of compaction test should be presented by the relation of dry density and mixing water content rather than the wet density and mixing water content or dry density and oven dry water content.

Futhermore, it was found that the replacement of Portland Cement by fly ash had no significant effect on optimum water content. RCC mixes at the ratio of Portland Cement : fly ash at 100 : 0, 80 : 20 and 60 : 40 had the same optimum water content around 7%. The replacement of Portland Cement with an appropriate amount of fly ash about 20% produced RCC with a higher density. The compressive strength at early age of RCC was dependent the content of Portland Cement and it decreased when cement was replaced by fly ash. However pozzolanic reaction increased the compressive strength at a later age of RCC containing fly ash. RCC made from amount of fly ash about 20% gave the higher compressive than RCC made from normal Portland Cement.

The 7 % optimum moisture content obtained from the modified proctor test was not the water content for maximum compressive strength of RCC. The water content for maximum compressive strength was less than the optimum moisture content. It was found that the moisture content for maximum compressive strength was less than 6%. The RCC compressive

strength depends on the compaction and the hydration of cement. Although RCC is best compacted at the optimum water content. Its compressive strength owing to cement hydration increased when its water content was decreased. However, the decrease of water cement ratio must result in sufficient water and paste content to fill the aggregate voids.