

A Study of Optimum Concrete Mix Proportions for Hollow Core Precast Concrete Slab

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ABSTRACT: Among concrete providers, severe competition to share construction market has been obviously seen. With the situation, some techniques including modular prefabrication of concrete elements has been widely adopted. This paper presents a study of concrete mix proportion leading to optimum concrete proportions for the production of hollow core precast concrete slab (HC slab). The optimum proportions mean equally at the cost attractive, the strength required based on the Thai Industrial Standard, and the curing time that casting facilities could be productively manageable. The study was stepped into 3 parts as (1) investigation of compressive strength in laboratory in which parameters affecting concrete strength were defined, (2) study of compressive strength in factory and selection of optimum concrete mix proportion and (3) casting and testing of HC slabs made with a series of the studied mix proportions. The results of the study have shown that concrete proportions with use of fly ash of 25-35 percents of binder and keeping w/b ratio at 0.23-0.25 could be effectively optimized. The full load tests of HC slabs made with those recommended proportions has indicated the adoptable of the proportions.

KEYWORDS: No-slump concrete, Fly ash, Optimum mix proportion