

POTENTIAL DURABILITY AND QUALITY ASSESSMENT OF BUILT CONCRETE: AN ONSITE INVESTIGATION

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ABSTRACT

Durability and quality assessment of existing infrastructure is gaining importance before taking up repair and re-strengthening a structure to satisfy the requirements of the recent codes for seismic design. Concrete strength is considered a key factor for the durability performance and quality assessment of built concrete. Non-destructive testing (NDT) offers an interesting approach to evaluating the compressive strength of concrete. The quality of workmanship and structural integrity can also be assessed by NDT. The NDT has great technical importance for the quality assessment of built concrete structures and evolved in great savings of cost and time. In this study, four school buildings were selected and assessed the quality of concrete through several NDT. The reinforcement details (rebar diameter, quantity & spacing) of column, beam & slab were evaluated by Ferro-scanning. Rebound hammer (RH) test and ultrasonic pulse velocity (UPV) test were also performed at 8 points in different locations of the selected structures to evaluate the elastic properties as well as strength of concrete. From the results, the quality of concrete was found to be fair to the poor. Results also revealed that the selected structures had sufficient deficiency in structural strength to resist recent loadings and load combinations specified by Bangladesh National Building Code (BNBC)

Keywords: *Durability, Structural Integrity, NDT, UPV, Ferro-Scanning.*