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# ESTIMATION OF CONCRETE STRENGTH IN EXISTING STRUCTURES

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A thesis submitted for the partial fulfilment of the  
Degree of Master of Engineering in  
Structural Engineering Design



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## ABSTRACT

This thesis focuses on estimation of the in-situ strength of concrete in existing structures by means of available data and methods which have been published by various authors from their research and investigations, performed in accordance with recommended codes of practices. Emphasis has been placed on the '**core test method**', scrutinizing the main influencing factors affecting the measured in-situ strength of concrete. In addition previously performed investigations and one of the case study results on specimens tested in several construction projects have been studied in order to produce reliable equations for calculating characteristic strength ( $f_k$ ) of concrete. Finally, the interpretation of strength results has been formalized, using several paths with respect to conversion of in-situ concrete strength to material strength. This report also covers procedures on the 'Ultrasonic Pulse Velocity test' which is less tedious and a non-destructive test, in order to calibrate results with respect to core tests.



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