WEBINAR

"DETECTION OF REBAR AND FLOOR THICKNESS ESTIMATION IN REINFORCED CONCRETE STRUCTURE BY USING THE GROUND PENETRATING RADAR"

Monday I 10 August 2020 I 2.30 p.m. – 4.30 p.m.

SYNOPSIS

Floor structure, typically made from reinforced concrete material, has been increasingly used in building and infrastructure application to carry designed dead and imposed loads acting on it. The need for quality and condition assessment monitoring of such structure after its construction is a vital issue with the engineers. Monitoring parameters such as floor thickness evaluation and the mapping of rebar detailing are the interest of the assessment.

Commonly, the floor thickness evaluation is done by using ultrasonic pulse-echo, and the embedded rebar detailing was detected using the cover meter. This evaluation practice is subject to time- consuming operation, involved point-wise measurements, and finally arrived at a higher cost method, especially for large and long slab areas. The Ground Penetrating Radar (GPR) is an extremely efficient and fast technology able to scan and mark the required concrete structures in large areas with ease. It has potentially reduced the manpower requirements, time, money, and traffic disturbances. The surveyors give this method more preference as it does not involve destructive testing to the concrete structures. The accuracy of thickness evaluation by GPR is typically in range of ± 10% of the actual data.

In principle, concrete scanning with GPR exploits the transmitted and the reflected electromagnetic pulse from its antennae to determine the wave reflection strength of objects in concrete, i.e., rebar. The amount of GPR wave reflection is quantified and represented by specific radargrams showing the rebar position and the reinforced concrete structure's thickness. This technology requires to send an electromagnetic pulse and the reflected pulse from a surface or layer; thus, it only needs one side scanning of the concrete. The central frequency of the GPR antennae influences the smallest detectable dimension of the rebar and ability to distinctly differentiate two closely spaced objects (slab thickness, rebar position), the amount of moisture, and free chloride in the concrete material.

SPEAKER

Ts. SYAHRUL FITHRY BIN SENIN

Ts. Syahrul Fithry Bin Senin, is a Senior Lecturer at Faculty of Civil Engineering, Universiti Teknologi MARA, Pulau Pinang. Started his career in 2004, he has been involved in Non-Destructive Test (NDT) academic works on reinforced concrete structures for 9 years. He had obtained his Degree in Civil Engineering from University of Malaya (1997) and Master of Science from University Science of Malaysia (2000).

His main expertise is on detecting and quantifying concrete damage features by using NDT equipment such as Ground Penetrating Radar, Cover meter, Rebound Hammer etc. His main current research work is to identify and classify the reinforced concrete damage features by Artificial Neural Network based on damage and undamaged concrete imaging based on GPR data.

Registration Fees (effective 1st August 2020)

IEM Members : RM 15.00 I IEM Non Members : RM 50.00

CPD Hours : 2.0   CPD Ref No : IEM20/HQ/0108/T(w)

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