

Thickness Measurement and Void Detection in Concrete Elements through Ultrasonic Pulse

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Abstract : This research analyses the accuracy of the ultrasound and the pulse echo ultrasound technic to find voids and to measure thickness of concrete elements. These mentioned air voids are simulated by polystyrene expanded and hollow containers of thin thickness made of plastic or cardboard of different sizes and shapes. These targets are distributed strategically inside concrete at different depths. For this research, a shear wave pulse echo ultrasonic device of 50 KHz is used to scan the concrete elements. Despite the small measurements of the concrete elements and because of voids' size are near the half of the wavelength, pre and post processing steps like voltage, gain, SAFT, envelope and time compensation were made in order to improve imaging results.

Keywords : ultrasonic, concrete, thickness, pulse echo, void

Conference Title : ICNDTCE 2017 : International Conference on Non-Destructive Testing in Civil Engineering

Conference Location : Singapore, Singapore

Conference Dates : November 09-10, 2017