應用透地雷達量測乾/濕混凝土相對介電常數之研究

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摘要

The ground penetrating radar (GPR) techniques have been widely used in civil and geotechnical engineering. Due to the complex boundary of concrete and environment conditions, the scanning-image of cross-sectional profile identification of GPR depends on whether experienced engineers can precisely interpret it. This paper describes a series of experiments in characterizing the relative permittivity of mature and hardened dry/wet concrete specimens. Moreover, this paper used numeric-code image processing method for GPR scanning-image of the different dry/wet concrete specimens by transmitting electromagnetic waves that reflect back associate with the electrical properties and geometry of the concrete component. The response of the reflection waves are processed with digital numeric-code processing and numerical operation. A comparison of results shows that the scanning profiles of GPR can be confidently interpreted from different detection objects (dry/wet concrete).

關鍵字：Ground Penetrating Radar, Electromagnetic Waves, Relative Permittivity, Reflection Coefficient