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MEASUREMENT OF PHREATIC SURFACE IN RIVER EMBANKMENT USING METALLIC TIME DOMAIN REFLECTOMETRY

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ABSTRACT

Recently, Metallic Time Domain Reflectometry(MTDR) is actively being studied in the geotechnical instrumentation field. This study is to propose a new geotechnical measurement method using MTDR. MTDR is an electric measurement device which measures echo time of electric signal of probe installed on the ground by using conducting property of electric signal of MTDR. Considering the fact that the electronic conducting property in the embankment is changing according to the change of phreatic surface of river embankment, the correlation between the variation of measured signal using MTDR and that of phreatic surface was analyzed. Research contents are as follows. First, MTDR signal according to the underground water level was analyzed through laboratory test. Second, by applying to Nak-dong river embankment of South Korea, the variation of phreatic surface according to lateral seepage were measured using standpipe piezometer and MTDR. As a result of the study, monitoring method using MTDR can confirm in realtime phreatic surface according to river water level and secure the safety of river embankment using the measured data.

KEYWORD: MTDR, River Embankment, Phreatic Surface, Measurement, Lateral Seepage