

Monitoring rock and soil mass performance

871139

Cordless geo-data link

Teal, D L E

Int Water Power Dam Constr V38, N9, Sept 1986, P13-15

A cordless digital data transmission system, suitable for monitoring the condition of earthworks, has been developed. It is free from problems caused by disruption of or damage to the structure, which can effect normal umbilical systems. Conventional radio based systems cannot be used because of the high power needed to overcome signal attenuation, so a compact system has been developed with data transmitted on an electrical field of alternating polarity, analogous to that used for electrical resistivity surveys. Battery power gives the system a 10 year working life, sufficient to cover the critical period until equilibrium conditions are achieved.

871140

Borehole television for geotechnical investigations

Beyer, R; Jacobs, A M

Int Water Power Dam Constr V38, N9, Sept 1986, P16-18

Conventional methods of observing subsurface conditions at geotechnical projects include drilling, core logging and sampling, backed by surface mapping, geophysical surveying and groundwater studies. The development of miniaturised television cameras now allows in situ inspection of, and permanent recording of, subsurface walls and boreholes, below and above the water table. Additional information from these relatively undisturbed surfaces can be of importance in such fields as dam safety inspection, subsidence control, pollution abatement and mine fire control.

871141

Monitoring pore water pressures in an embankment slope.

Technical note

Crabb, I

Proc Symposium on Failures in Earthworks, London, 6-7 March 1985 P406-410. Publ London: Thomas Telford, 1985

A 7m high Gault clay embankment was instrumented with automatically recording piezometers to monitor pore water pressure, an automatic rain gauge, and automatic stereo-cameras to record the slope profile. Results of one winter and spring period are presented, but unusually dry weather was found, and the likelihood of slope failure was low. In this case seepage was mainly into the slope and not down it.

871142

Control and readout system of underground hydroelectric power station - a review

Kaluchev, K; Slavov, P

Proc International Symposium on Large Rock Caverns, Helsinki, 25-28 August 1986 V1, P139-146. Publ Oxford: Pergamon Press, 1986

Two parallel caverns have been excavated in medium grained fissured granite at the Chaira pumped storage project in Bulgaria. Deep prestressed cable anchors, short concrete anchors and a sprayed reinforced concrete lining were used as the support. Extensometers, elongation meters, and anchor dynamometers to measure displacements, vibrating wire piezometers to monitor piezometric head, flowmeters to measure water ingress and crack meters to monitor movement of small fissures of the lining have been installed. Initial results are presented.

871143

Data acquisition system for longwall support monitoring at Ellalong Colliery

Dean, A; Bride, J

CSIRO Division of Geomechanics GCM report N61, Feb 1986, 18P

A data acquisition system is described (type DL001), which was designed to meet the New South Wales Department of Industrial Relations requirements for intrinsic safety, and is used to monitor hydraulic pressure in 8 legs of the newly installed longwall support system. It comprises three main components: (1) pressure transducers on selected supports; (2) 12V DC intrinsically safe power supply; and (3) 16 channel data logger. The logistical requirements for installation at Ellalong Colliery are described.

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871144

System for automatic monitoring of longwall supports at Angus Place Colliery

Dean, A; Bride, J

CSIRO Division of Geomechanics GCM report N64, March 1986, 15P

The type DL001 data acquisition system previously described (CSIRO Division of Geomechanics GCM report N61, 1986) has been installed in Angus Place Colliery, NSW, Australia. This intrinsically safe monitoring system records hydraulic pressures in selected legs of the longwall support system. It is comprised of three parts: pressure transducers; a 12V power supply; and a 16 channel data logger. The logistical requirements for installation and operation at Angus Place are described.

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Analysis Techniques and Design Methods

See: 871015, 871054, 871063, 871064, 871077, 871078, 871091.

Rock block analysis

871145

Hybrid distinct element-boundary element analysis of jointed rock

Lorig, L J; Brady, B H G; Cundall, P A

Int J Rock Mech Min Sci V23, N4, Aug 1986, P303-312

A computational scheme is presented for analysis of stresses and displacements in highly jointed rock surrounding underground excavations. The near-field rock is modelled as a set of distinct element blocks defined by joints. The explicit formulation of the distinct element method is well suited for considering large displacements and rotations, complex joint constitutive behaviour, rock support and reinforcement, and body forces. The far-field rock is modelled as a transversely isotropic continuum through a boundary element scheme. The two methods are coupled together by satisfying the equilibrium conditions of traction equilibrium and continuity of displacement at the interface between the two domains, at each