

884325

Impedances of embedded rigid strip foundations

Rajapakse, R K N D; Shah, A H

Earthq Engng Struct Dynam V16, N2, Feb 1988, P255-273

The dynamic response of an arbitrarily shaped, rigid embedded foundation has been analysed using the body force model. A parametric study has examined the influence of foundation embedment ratio and geometry, excitation frequency, and Poisson's ratio of the surrounding half space on the vertical, horizontal, rocking and coupled impedances of the foundation. The influence of the presence of an adjacent massless rigid foundation is also evaluated.

884326

Comparison of soil-structure interaction calculations with results of full-scale forced vibration tests

Wong, H L; Trifunac, M D; Luco, J E

Soil Dynam Earthq Engng V7, N1, Jan 1988, P22-31

The capability of simple mathematical soil structure interaction models to reproduce the experimental response of full scale forced vibration tests on a 9 storey building is examined, with particular interest in the ability of simple foundation and soil models to reasonably estimate foundation impedance. For rigid foundations, simple models gave excellent results, but more complex models are necessary in the case of highly flexible foundations.

Stresses around underground openings

884329

Rheological stresses and stress relaxation at underground excavations in yielding rock (In German)

Borm, G

Felsbau V5, N4, Nov 1987, P175-181

Creep closure of underground structures and time dependent stressary importance to support design. Deviatoric stresses at the cavity walls relax with time, whilst tangential stresses increase. Increase in the tangential stress in the cavity lining can be predicted by retardation functions. Behaviour of discontinuous rock masses can be modelled using rheological joint elements. Slipping and weakening of the rock must be avoided by use of rock bolts and flexible linings.

884330

Application of analytical and graphical calculation models for underground openings (In German)

Seeber, G; Schwarz, J

Felsbau V5, N4, Nov 1987, P182-186

The method of characteristic lines for the design of a lining for an underground structure with high rock cover, and a new analytical program system for stress analysis of pressure tunnels, applicable for all lining systems, and their reaction with the surrounding rock are presented.

Underground Excavations

884327

Analysis of underground excavations incorporating the strain softening of rock masses

Gumusoglu, M C; Bray, J W; Watson, J O

Proc 6th International Conference on Rock Mechanics, Montreal, 30 Aug-10 Sept 1987 V2, P923-928. Publ Rotterdam: A A Balkema, 1987

A finite element program incorporating a rock mass behaviour model based on the Hoek-Brown failure criterion, and which is able to account for post-failure behaviour such as strain-softening, is developed. The program is verified against a semi-closed form analysis of the St. Gotthard tunnel, Switzerland and its safety gallery. Results indicate the program can be used to aid design of support for non-axisymmetric underground excavations.

Geological factors of importance in underground excavations

884328

Transition of mining methods at Anderson Lake Mine Haapamaki, S*CIM Bulletin* V81, N909, Jan 1988, P38-43

The copper orebody is in the form of a single elongated lens. Production in 1970 began with longhole stoping, but as dilution reduced longhole drawpoints, three cut and fill stopes were developed. By 1980 problems with hydraulic backfill and ground control became severe, and the vertical crater retreat method was adopted. Productivity, ground conditions and economics of the methods are compared.

884331

Factors influencing the stability of deep boreholes

Kaiser, P K; Malony, S

Proc 6th International Conference on Rock Mechanics, Montreal, 30 Aug-10 Sept 1987 V1, P675-680. Publ Rotterdam: A A Balkema, 1987

Wellbore instability has been examined. Numerical studies suggest compressive stress concentration arising from non-uniform compressive stress fields is a major factor in breakout in homogeneous rocks. In addition, temperature gradients caused by circulation of drilling fluids, and the presence of discontinuities are seen to be of importance. Stress field effects were confirmed by laboratory testing. The importance of this work to the prediction, prevention and back analysis of breakout is discussed.

884332

Application of stress control methods to underground coal mine design in high lateral stress fields

Gale, W J; Nemcik, J A; Upfold, R W

Proc 6th International Conference on Rock Mechanics, Montreal, 30 Aug-10 Sept 1987 V2, P897-900. Publ Rotterdam: A A Balkema, 1987

Stress control methods for high lateral stress fields include orientation of roadways with respect to in situ stress field geometry and lateral ground destressing. The effectiveness of lateral destressing is dependent on the surrounding strata and is most effective in heterogeneous materials where bedding planes or thin bands exhibit low shear stiffness. It can provide stress relief over 40m from a roadway.