

ABSTRACT

In this investigation, behaviour of post-pillar throughout its formation, has been presented. The work includes both, experiment with model pillars and theoretical analysis using FEM. Detailed numerical results concerning all the parameters of stresses and deformations developed in the post-pillar, have been presented in a graphical form spread over 20 illustrations. Stresses have been presented as a ratio of the normal stress acting on the pillar.

The role of backfill material has been completely brought out. It has been concluded that the backfill does not increase the strength of the post-pillars; it only provides a platform for carrying out various mining operations and prevents violent scattering when they fail.

A rational design procedure for the post-pillars in the stopes, based on the results of the present analysis, has been suggested which takes into account all the three modes of failure, namely, compressive, tensile and shear, contrary to the present day practice of designing only on the basis of compressive strength. A case study from Mosaboni Group of Mines, in India, supplements the rational design procedure suggested.

Key Words : *Pillar design, Laboratory model study, Finite element, Pillar behaviour, Backfill, Post-pillar design.*