◆Research Paper◆

Simplify the Structure of The Surface Mining and Analytic Calculation

Zhang Mei[1], Meng Da[2]

1.*Agricultural University of Hebei, College of Urban and Rural Construction, Baoding, 071000, China*
2.*China Academy of   Building Research, Beijing,100190, China*

Abstract: Based on the NATM, established the mechanical model of the mining surface structures, researched the forming of the non-hinged arch during the coal seam mining. Using elasticity center method calculated the internal forces of the non-hinged arch, got the strength, rigidity and stability of the surrounding rock and supporting structure. With analytic calculation, Analyzed the rock stress evolution of the adjacent coal seam mining and the stress distribution of the stope roof rock evolution. Based on the stress field evolution of the stope, analyzed the force and the crack development in different regions of the rock mass, studied the distribution of the strain and shear stress in the rock mass and the impaction of mining velocity on rock stress distribution. Verified the rationality of the surface structure of the model adopted in this paper.

Keywords: mining face structure; mechanical model; no hinged arch; adjacent coal seam; elasticity center method