
Departmental Seminar

Seminar Title	: Assessment of Impact of Dirt Bands on Coal Pillar Strength at Different Depths of Cover - A Numerical Simulation Study
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Supervisor	: Dr. Sahendra Ram
Venue	: Seminar Room of Mining Engineering Department
Date and Time	: 21 Mar 2025 (4:30PM)
Abstract	: Stability of coal pillars in underground mining is critically affected by geological discontinuities such as dirt bands, which are often inadequately addressed by traditional empirical approaches. The influence of thickness and positional variations of dirt band on coal pillar strength has been evaluated at varying depths of cover through field investigations, laboratory analyses, and numerical simulations. Results reveal that the pillar strength is significantly weakened due to presence of dirt bands, particularly at greater depths, with roof-positioned dirt bands exerting the most adverse effects. The accuracy of strength estimations can be enhanced with the help of a correction factor, derived by aligning empirical predictions with numerical simulation results, provides a practical framework for discontinuity-aware design methodologies. These findings are chiefly relevant to Indian geo-mining conditions, where geological complexities and deep mining operations are dominant, and have broader implications for global mining settings. This study advances the development of depth-sensitive, reliable coal pillar design approaches to ensure safer and more efficient mining practices.