

REGISTRATION FORM

If attending convention, please use the registration form received in the convention packet. **Or**

If attending Short Course only, complete this form and return to:

RMCMCI
8057 S. Yukon Way
Littleton, Colorado 80128-5510

You may go on line at www.rmcmci.org and go to meetings to find the Convention Registration Brochure.

Name _____

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State, Zip _____

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Enclosed is fee for Short Course:

\$550 if attending RMCMCI convention

(Return with RMCMCI registration form.)

\$595 if not convention registered.

TOTAL

CHECK # _____ VISA MC AMEX

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ABOUT THE SHORT COURSE

Geologic conditions play a key role in stability of mine openings. Among other factors, stability of highwalls, road cuts, and construction excavations in rock depends on the location and orientation of discontinuities such as faults, joints, bedding and other structural details. Stability of embankments and cuts in unconsolidated soil and alluvium depends on material properties, slope angles and hydrologic conditions. The ability to predict behavior of slopes with defined orientations, configurations, and heights provides a valuable tool to assess safety and economic consequences of proposed highwall and spoil designs. Similarly, the ability to predict performance of underground pillars provides a tool for optimizing pillar sizes and layout. This, too, impacts safety and economic evaluation of mine plans.

In recognition of the importance of the stability of mine openings and related construction, the Rocky Mountain Coal Mining Institute has developed a short course for the 2005 annual meeting that is designed to provide an introduction to stability analysis of slopes and underground pillar design for those who are not familiar with the concepts and also a refresher for those who are more experienced in these areas. Those involved in surface mining of coal should be familiar with design of underground pillars to properly assess when transition from surface mining to highwall or underground mining is warranted. The fundamentals will be presented in a practical and user-friendly approach. In addition, available software will be presented which can be used to explore possible design alternatives. The intention is not to replace the need for experts in this field, but to provide tools which engineers and operators can use to identify possible improvements in safety and

economy that would justify a more in depth analysis by consultants or others with specialized expertise.

Those who plan on attending the short course will need a personal laptop computer with a Windows® operating system. In order to participate in this short course, individuals must register by June 6, 2005. This lead time is necessary to provide instructions for downloading software that will be used during the course. Dips® and Slide®, products of Rocscience will be presented the first day. A temporary license will be issued to each participant which will cover the short course period and a few weeks beyond. In addition, the software that will be presented the second day includes LAMPRE, LAMODEL, and LAMPLT produced by NIOSH. This software will continue to function beyond the short course period.

The short course will focus on both surface and underground applications. It is recommended that participants complete both days to gain an appreciation for concepts of rock and soil mechanics and the advantages and limitations of the software that will be introduced. The course will begin Friday, June 24 and conclude Saturday, June 25. The first day will concentrate on the fundamentals of rock and soil mechanics with applications in surface mining and the second day will concentrate on fundamentals of pillar design and underground mining. A brief synopsis and instructor qualifications are as follows:

Friday Morning Session

Slope Stability in Surface Mines

Instructor: M. K. McCarter

Overview and Presentation of Basic Concepts

Introduction to Dips® and Slide®

Dips® is designed for analysis of geologic data. It allows the user to analyze and visualize geologic discontinuities using the same concepts employed by manual stereonet. Furthermore, the software will allow evaluation of clustering thus providing important information on most likely orientation of discontinuities. It also allows statistical analysis of variation in orientation and solution to three-dimensional problems.

Slide® is a comprehensive two-dimensional slope stability package which will allow a wide range of modeling and data interpretation. It can be used to assess probability of failure and test sensitivity to changes in the values of parameters such as density, cohesion, friction, and interior distribution of various material types. In this way, it can be used to determine which parameters have the greatest effect on overall stability. Once this is known, it is possible to optimize slope remediation efforts.

Friday Afternoon Session

Slope Stability in Surface Mines

Instructor: M. K. McCarter

Practical applications and practice problems

Kim McCarter, *Professor of Mining Engineering at the University of Utah* will review basic concepts and demonstrate the use of computer software. The morning session will be devoted to this task with the afternoon reserved for hands-on practice by the participants. Prof. McCarter has a Ph.D. from the University of Utah and is a registered professional engineer in Utah. He worked in industry for approximately nine years as a slope stability and mine planning engineer prior to accepting his current faculty appointment. At the University of Utah, he teaches surface mining and has served as the head of the mining depart-

ment for the past 23 years. He has published several papers in the area of slope stability and was the editor for two books dealing with design of non-impounding rock embankments.

Saturday Morning Session

Design of Underground Pillars

Instructor: Michael G. Nelson

Overview and Presentation of Basic Concepts

Introduction to LAMPRE, LAMODEL, LAMPLT

LAMODEL is a set of PC-based software packages that operate in a Windows® environment. It is useful in calculating the stresses and displacements in coal mine pillars. It can be used to investigate and optimize pillar sizes and layout. It is amenable to single or multiple seam deposits. The underlying assumption is that the overburden can be modeled as a stack of homogeneous and isotropic layers with frictionless interfaces. Each layer is assumed to have the same material properties. Even though this may be an oversimplification, it does provide realistic results and can be used to identify major design advantages and disadvantages in various mine planning scenarios. Participants will see how results from LAMODEL compare with those from conventional pillar sizing methods.

Saturday Afternoon Session

Design of Underground Pillars

Instructor: Michael G. Nelson

Practical applications and practice problems

Mike Nelson. *Associate Professor of Mining Engineering at the University of Utah* will review basic concepts in pillar sizing and layout. He will also demonstrate creation of input files for LAMODEL, execution of the modeling and calculation programs and presentation of data. The morning session will be devoted to this task with the afternoon reserved for hands-on practice by the participants. Prof. Nelson has a Ph.D. from the West Virginia University and extensive experience as an educator and consultant to the mining industry. He worked for CONSOL for approximately six years in design of automated controls for long-wall machines before accepting his first faculty position at the University of Alaska. He joined the University of Utah in 1999. At the University of Utah, he teaches underground mining and senior courses dealing with design of underground coal mines.

To derive full benefit and continuing education credit, each participant must attend both the morning and afternoon sessions on a given day. Attendance for one day will provide eight professional development hours or equivalent Continuing Education Units (CEUs). Attendance for two days will provide sixteen professional development hours or equivalent CEUs. Hours for fractional days will not be awarded nor is there a reduced cost for participants who wish to attend only one day. Register early to assure a seat in the course. Attendance may be limited due to the one-on-one instruction format.

Visit our web site at www.rmcmi.org for more information on the convention. You may also register on the web and receive a credit card receipt immediately.



THE ROCKY MOUNTAIN
COAL MINING INSTITUTE
8057 S. Yukon Way
Littleton, CO 80128-5510
303/948-3300 303/948-1132 Fax
mail@rmcmi.org www.rmcmi.org



THE ROCKY MOUNTAIN
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2005 SHORT COURSE

Prior to the RMCMI
101st Regular Meeting and Convention

STABILITY ANALYSIS OF
SLOPES AND
UNDERGROUND
PILLAR DESIGN

Friday and Saturday
June 24-25, 2005
Keystone Resort
Keystone, Colorado
7:30 a.m. to 5:00 p.m.

