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Getting the Most from Exploration Drillholes: An Introduction to Geotechnical Data Collection

Mark N. Haddock, P.E., R.G.

Abstract

When a mine operator plans an exploration drilling program, the primary purpose of the program is often to further define the resource through detailed lithological descriptions and collection of samples for rock quality/chemistry analyses. Typically, drillhole geotechnical data is not collected from the rock core and a separate drilling program must be mobilized to collect this data for use in underground mine design, pillar sizing, hydrogeological analyses, highwall/pit slope design, and ground support design. Since the major expense associated with such investigations is the cost of the drilling itself, the mine owner/operator's costs can be substantially reduced by collecting geotechnical data during the exploration drilling phase. The relatively small additional effort required for the site geologist to perform detailed geotechnical core logging and collect samples for laboratory geotechnical analyses provides data for engineers to use during the design phase and can reduce the scope of any subsequent geotechnical drilling investigations. The size of sample needed for geotechnical analysis is small and won't greatly impact completeness of the quality sampling.

This presentation includes an overview of these geotechnical rock core logging procedures, including common rock mass classification systems, the collection of geomechanical parameters, discontinuity descriptions, core photography, and sample collection for geotechnical laboratory testing. Other factors to consider in optimizing drillhole data collection include drilling depth considerations, hydrogeological (packer) testing, and downhole geophysics.

Mr. Mark N. Haddock, P.E., R.G. Mr. Haddock is a Geotechnical Practice Leader and Principal at Golder with over 22 years of experience in mining consulting. Mark was awarded the 2017 SME Henry Krumb Lecturer award. He is a Professional Engineer and a Professional Geologist with licensure in several states. He has led siting studies, resource characterization studies, and investigations for design of surface and underground mines and has been responsible for the management and execution of multiple highwall stability evaluations, mine roof support assessments, ground control projects, and geotechnical characterization studies.

When: Thursday, February 7 **Social:** 6 PM, Dinner: 6:30 PM

Where: Andre's Banquet and Catering, 4238 Telegraph Road
Phone: 314 894 2622. (See directions below).

Menu: Buffet to include two entrée choices with Hot Vegetable, Salad, Rolls, and dessert. Open Bar!
(Dietary Restrictions can be accommodated if given advanced notice)

Cost: \$25, \$10 for students Cash, debit or credit card accepted.

RSVP: By Monday, February 4th.

By email to: bob.johnston@earthlink.net or sme.stl.section@gmail.com

By phone: Bob Johnston 314-570-0226

You need not be a member of National SME. Bring a friend!

****Need Professional Development Hours? Each meeting is 1 hour.****

Local section dues of \$10 help to defray supply costs and support our scholarship fund.

Local Associate Membership is also available for \$10/year.

DIRECTIONS TO ANDRE'S SOUTH

From I-55 or I-270: Take to I-255 East in south STL County. Go about 2 miles to Telegraph Road (Exit 2). Turn right (south) and go 0.5 miles. Andre's is on the left.

From Illinois: Take I-255 South to "JB Bridge" in Columbia, IL. Cross into MO and exit at Telegraph Road (Exit 2). Turn left (south) and go 0.7 miles. Andre's is on the left.

