



Standard Guide for Geotechnical Mapping of Large Underground Openings in Rock¹

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€¹ NOTE—Paragraph 1.9 was added editorially October 1998.

INTRODUCTION

This guide is intended for use in both civil and mining underground excavations, whether new or existing, which may be either regular or irregular in section, large enough to be accessible to a person, and for which a record of encountered conditions and features is desired. The details of the geotechnical mapping will be dependent upon the features being mapped, and the proposed use of the information. The information covered in this guide will be based upon observations and measurements at the surface of the excavation; geophysical measurements are not included. In general, sufficient information should be collected about features of interest to define uncertainty and facilitate consistent interpretation. Mapping in accordance with this guide is useful to provide a data base for design, for stability analyses, for confirmation of geotechnical predictions, for maintenance and monitoring, and as a permanent record of construction. This guide is not intended to provide, of itself, the methodology for rigorous collection of sufficient local, detailed, data for model development or verification, for in situ testing, or for ore search.

1. Scope

1.1 This guide recommends procedures for mapping large subsurface openings made for either civil or mining purposes.

1.2 The mapping provides characterization and documentation of the condition of the rock mass at the excavation surface.

1.3 The mapping may be accomplished during or after excavation; however, the mapping must be completed before construction activity modifies or obscures the surface condition.

1.4 The mapping level of detail shall be appropriate for its intended use. This mapping does not replace rigorous investigations to develop physical or mathematical models of behavior.

1.5 When soil or soil-like materials are encountered in the excavation, they should also be appropriately mapped and described in accordance with applicable ASTM standards.

1.6 Many of the procedures presented in this guide may be used, as well, to map surface excavations.

1.7 The mapping does not replace the surveying of excavation geometry.

1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

1.9 *This guide offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this guide may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 ASTM Standards:

D 653 Terminology Relating to Soil, Rock, and Contained Fluids²

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)²

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *adit*—a horizontal or nearly horizontal passage driven

¹ This guide is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.12 on Rock Mechanics. Current edition approved Feb. 8, 1989. Published April 1989.

² Annual Book of ASTM Standards, Vol 04.08.