



Designation: D 6026 – 99

Standard Practice for Using Significant Digits in Geotechnical Data¹

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1. Scope *

1.1 This practice is intended to promote uniformity in recording significant digits for measured and calculated values involving geotechnical data. The guidelines presented are industry standard, and are representative of the significant digits that should generally be retained. The guidelines do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to commensurate with these considerations. It is beyond the scope of this practice to consider significant digits used in analysis methods for engineering design.

1.1.1 Using significant digits in geotechnical data involves the processes of collecting, calculating, and recording either measured values or calculated values (results), or both.

1.2 This practice uses a variation of the traditional rounding method (see Practice E 29) that recognizes the algorithm common to most hand-held calculators.

1.3 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice 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 2905 Practice for Statements on Number of Specimens for Textiles³

D 4356 Practice for Establishing Consistent Test Method Tolerances⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁴

E 344 Terminology Relating to Thermometry and Hydrometry⁵

E 456 Terminology Relating to Quality and Statistics²

E 833 Terminology of Building Economics⁶

IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): *The Modern Metric System*⁴

3. Terminology

3.1 Definitions:

3.1.1 For common definitions of soil and rock terms in this standard, refer to Terminology D 653.

3.1.2 *accuracy, n*—the degree of agreement of an individual measurement or average of measurements with an accepted reference value, or level. See Terminology E 344 - 97

3.1.3 *calculated value, n*—the resulting value determined by processing measured value(s) using an equation. See Practice D 4356 - 84(Reapproved 1996).

3.1.3.1 *Discussion*—In many cases the calculated value(s) is considered a determination value(s).

3.1.4 *determination value, n*—the numerical quantity calculated by means of the test method equation from the measurement values obtained as directed in a test method. See Practice D 4356 - 84(Reapproved 1996).

3.1.5 *measurement value, n*—the resulting value determined by measuring a dimension, quantity, or property.

3.1.5.1 *Discussion*—In many cases the term "measured value(s)" is also referred to as "measurement value(s)". See Practice D 4356 - 84(Reapproved 1996).

3.1.6 *precision, n*—the closeness of agreement between independent test results obtained under stipulated conditions. See Terminology E 456 - 96.

3.1.6.1 *Discussion*—Precision depends on random errors and does not relate to the true or specified value.

3.1.6.2 *Discussion*—The measure of precision usually is expressed in terms of imprecision and computed as a standard deviation of the test results. Less precision is reflected by a larger standard deviation.

¹ This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.91 on Standards Development and Review.

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² *Annual Book of ASTM Standards*, Vol 04.08.

³ *Annual Book of ASTM Standards*, Vol 07.01.

⁴ *Annual Book of ASTM Standards*, Vol 14.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.03.

⁶ *Annual Book of ASTM Standards*, Vol 04.07.

*A Summary of Changes section appears at the end of this standard.