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Standard Guide for Format of Computerized Exchange of Soil and Rock Test Data[1]

This standard is issued under the fixed designation D 6453; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers recommended data formats for the exchange of mechanical test data for soils and rocks. From this guide, a standardized file of data can be prepared that can be read by others who use this guide.

1.2 The format specified in this guide is used for the exchange of data between computer programs, users, agencies, etc. It is not necessary that test data for internal use be stored in this format, only that a program adhering to this guide have the capability to read, or write test data in this format, or both.

1.3 This guide does not cover digital geospacial data which is treated Specification D 5714.

1.4 *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 appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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 Fluids[2]

D 5714 Specification for Content of Digital Geospatial Metadata[3]

E 1013 Terminology Relating to Computerized Systems[4]

2.2 *ANSI Standards:*

ANSI X3.30 Representation for Calendar Date and Ordinal Date for Information Interchange[5]

ANSI X3.43 Representation for Time for Information Interchange[5]

2.3 *NIST Standard:*

Federal Information Processing Standard 173 in SDTS 70–1, Spatial Data Transfer Standard, U.S. Department of Commerce, NIST[6]

3. Terminology

3.1 *Definitions:*

3.1.1 Definitions follow those in Terminology D 653. Computer related terms are defined in Terminology E 1013.

3.2 Definitions of Terms Specific to This Standard—The following definitions apply to their use in this guide:

3.2.1 *data element, n*—a logically basic item of data.

3.2.2 *data group, n*—a collection of data elements which are related.

3.2.3 *group, n*—a collection of related information about a test.

4. Significance and Use

4.1 Computers are becoming an integral part of each testing laboratory. A variety of automated test devices which collect and store data now exist. A variety of software programs to perform calculations and produce reported results are used. There is no consistency in the formats used to store data. Consequently, it is time consuming and expensive to exchange computerized test data files among organizations.

4.2 This guide presents a standard yet versatile format that can be used to exchange data across systems.

4.3 This guide defines the principal data elements that are considered important and worth recording and storing permanently in a computerized data storage system from which larger databases may be prepared. These data elements are not intended to be requirements of any specific or single database. The format permits only those elements that a specific user may require. Additional data elements may be added using the general outline of this guide. Those elements must be added in

[1] This guide is under the jurisdiction of ASTM Committee D-18 on Boil and Rock and is the direct responsibility of Subcommittee D18.95 on Information Retrieval and Data Automation.

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

[3] *Annual Book of ASTM Standards*, Vol 04.09.

[4] *Annual Book of ASTM Standards*, Vol 14.01.

[5] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

[6] Available from NIST, Gaithersburg, MD 20899

a manner consistent with the definitions in this guide, such that a computer program written to follow this guide can successfully read the entire data file, including one that contains data elements not identified in this guide.

4.4 This guide does not define how to obtain and record specific data. That activity is covered by each specific test method.

4.5 This guide may be incomplete for some applications. It is intended that additions to the formats will be made as requests come from each ASTM subcommittee responsible for a particular standard. Those additions will be made without rendering older files unreadable.

4.6 The recommended format in this guide does not require that all data elements be included in the data base. A user may elect to omit any data element without affecting the ability of the file format structure to work. However, those elements that are required in the report section of the relevant ASTM standard should be included in the standardized data file.

4.7 Following ASTM recommended practice, all data are stored in SI units.

5. Data Types

5.1 Four types of data are recognized in this format: numerical, date, time, and character.

5.1.1 Numerical data are data consisting only of the symbols 0–9 and a decimal point. A decimal point is not required for a whole number.

5.1.2 Date data consist of ten characters in the format YYYY/MM/DD where YYYY is the year, MM is the numerical value of the month from 01 to 12, and DD is the numerical value of the day of the day from 01 to 31 (see ANSI X3.30)(adopted as Federal Information Processing Standard 4–1). Date data must contain two slash marks to distinguish the data as date data.

5.1.3 Time data consist of at least eight characters in the format HR:MM:SS.xxx where HR is the hour of the day from 00 to 24, MM is the minute from 00 to 59, and SS.xxx is the second from 00 to 59 with fractions of a second added as a decimal value (ANSI X3.43). Any number of digits may follow the decimal point for fractions of a second. Time values must contain two colons as shown to distinguish the data as time data.

5.1.4 Character data consist of any ASCII standard keyboard characters.

5.1.5 Multiple spaces and tabs are acceptable in the data. Spaces and tabs may be used to store data in columns to make them more readable.

5.1.6 Commas should be avoided in the data fields except for the Test Data and Test Results fields where commas are used to delineate data.

5.1.7 All numeric data are given in SI units.

6. Start and End Identifiers

6.1 The first two lines of any file written to this standard shall contain a line that indicates the version of this standard used to create that file. The lines shall be of the following form:

**Format_Identification

Format_Id=ASTM-D XXXX— YY

where xxxx is the standard number assigned by ASTM and yy is the last two digits of the year of adoption of this version.

6.2 The last line for a set of test data shall contain the identifier, **End_Test. Additional sets of test data may be placed in the same file by starting again with the standard format information given in 6.1

7. Recommended Formats for Standard Data Groups

7.1 The following groups of information are included in the recommended format. The name in parentheses is the assigned group name.

7.1.1 *Test Identification* (Test_Identification)—This group covers information about the type of test and test standard used to run the test. Table 1 gives the recommended standardized data format for Test Identification.

7.1.2 *Laboratory Information* (Lab_Information)—This group covers information about the laboratory performing the test. Table 2 gives the recommended standardized data format for Laboratory Information.

7.1.3 *Sample Information* (Sample_Information)—This group covers information about the site, client and location of the sample. Table 3 gives the recommended standardized data format for Sample Information

7.1.4 *Specimen Information* (Specimen_Information)—This group covers information about the specimen used for the test. Table 4 give the recommended standardized data format for Specimen Information.

7.1.5 *Test Parameters and Procedures* (Test_Parameters)—This group covers information about the test specific parameters and procedures. Table 5 give the recommended standardized data format for Test Parameters.

7.1.6 *Test Data* (Test_Data)—This group covers data taken for the test in its most elemental form. Table 6 gives the recommended standardized data format for Test Data.

7.1.7 *Test Results* (Test_Results)—This group covers test results, that is, the reduced and corrected final value(s) obtained by the test method. Table 7 gives the recommended standardized data format for Test Results.

7.1.8 *Test Validation* (Test_Validation)—This group covers information relevant to quality control for the test. Table 8 gives the recommended standardized data format for Test Validation.

7.2 The start of a data group is indicated with a ** followed by the assigned group name. For example, the start of sample information is indicated by: **Sample_Information

7.2.1 Any group information may be left out.

7.3 Groups may appear in any order.

TABLE 1 Standardized Data Format for Test Identification

**Test_Identification				
Data Description	Data Element Name	Data Type	Units	Example
Type of Test	Test_Type	CHAR	none	Unconfined Compression
Test Method Number	Test_Method	CHAR	none	ASTM-D 2166-90
Unique Identification Number	Test_Numbers	CHAR	none	UC-0098
Remarks about Test	Test_Remarks	CHAR	none	Test_Remarks=QA Test

TABLE 2 Standardized Data Format for Laboratory Information

**Lab_Information				
Data Description	Data Element Name	Data Type	Units	Example
Name of Laboratory	Lab_Name	CHAR	none	ABC Testing Services
Location of Laboratory	Lab_Location	CHAR	none	Any Place, AA
Remarks about Laboratory	Lab_Remarks	CHAR	none	Lab_Remarks=In room 3

8. Recommended Formats for Standard Data Elements Except for Test Data and Test Results

8.1 Tables 1-8 identify the standard data elements within each data group. Data for data elements, except for Test Data and Test Results, are defined by the data element name followed by an equals sign (=) followed by the value for the data. Spaces and tabs may be used before and after the equal sign and before the data element name. For example, the test method is given within the Group Name, Test Identification as follows:

**Test_Identification
Test_Method=ASTM D 2166–90

or alternatively:

**Test_Identification
Test_Method= ASTM D 2166–90

Spaces and tabs may not be used within the data element name or the Group Name or within certain identifying information such as the ASTM designation. Commas may not be used in the data value field.

9. Recommended Formats for Standard Data Elements for Test Data

9.1 Table 6 identifies the standard data elements within the Test Data group. This group includes the basic data recorded for the test and calibration factors to convert that data to test results.

9.2 The number of data values per set of readings in the Test Data group (number of columns of readings) must be identified using the Number_Data_Values parameter. Date counts as a data value, if included. Time counts as a data value, if included. This parameter must appear before any data are given. It tells the software how many data elements to read from each line of data.

9.3 Titles for the data may be given with the Data_Title_n parameter.

9.4 Calibration information to convert test data to test results may be given with the Offset_m and Calibration_m parameters. If no Offset_m is given, it is assumed to be zero. If no Calibration_m is given, it is assumed to be 1.

9.5 All data related to one set of readings are placed on the same line. Each line must contain the same number of entries which must equal Number_Data_Values. Each line must start with the label, DATA=. A comma is required between each data entry. A null value can be indicated by placing two commas together with no information between the commas. Extra spaces or tabs, or both, may be used between data values to make the data easier to read. Any line containing more or fewer values than Number_Data_Values is ignored. An error message is printed displaying the line and the message that its contents are ignored.

9.6 A data set is ended by any line that starts with characters other than DATA=. A test may consist of multiple sets of data that represent different phases or steps of a test.

10. Recommended Formats for Standard Data Elements for Test Results

10.1 Table 7 identifies the standard data elements within the Test Results group. This group includes the final test results obtained for the test.

10.2 The number of data results per set of readings in the Test Results group (number of columns of data) must be identified using the Number_Results_Values parameter. Date counts as a value, if included. Time counts as a value, if included. This parameter must appear before any results are given. It tells the software how many results elements to read from each line of data.

10.3 Titles for the results may be given with the Results-_Title_n parameter.

10.4 All results related to one set of readings are placed on the same line. Each line must contain the same number of entries which must equal Number_Results_Values. Each line must start with the label, RESULT=. A comma is required between each data entry. A null value can be indicated by placing two commas together with no information between the commas. Extra spaces or tabs, or both, may be used between data values to make the data easier to read. Any line containing more or fewer values than Number_Results_Values is ignored. An error message is printed displaying the line and the message that its contents are ignored.

10.5 A set of results is ended by a line that starts with any characters other than RESULTS=. A test may consist of multiple sets of results that represent different phases or steps of a test.

11. Rules for Writing Exchange Files

11.1 Contents of exchange files should follow this guide as closely as possible to minimize inconsistencies with other software.

11.2 If the user must include a parameter not provided for in this guide, that may be done by defining a user specific parameter that follows the general format established in this guide. However, that parameter and its associated data will not be recognized by programs which adhere to this standard. Its contents will be ignored by any programs which adhere to this guide.

11.3 A comma is required between each data entry for Test_Data and Test_Results. A null value can be indicated by placing two commas together with no information between the commas.

11.4 Tabs and spaces may be added to the before data element names and data to enhance the visual appearance of the information in the file.

11.5 Users may add additional information to the file using their own names. The standard identifier for such information shall be to place a $ at the beginning of any line of non-standard information and to follow the general format defined by this guide for the added information. Software

TABLE 3 Standardized Data Format for Sample Information

**Sample_Information				
Data Description	Data Element Name	Data Type	Units	Example
Name of Site	Site_Name	CHAR	none	Site_Name=Local High Rise-Phase II
Location of Site	Site_Location	CHAR	none	Site_Location=AnyPlace-USA
Owner of Site	Site_Owner	CHAR	none	Site_Owner=Bo Jangles
Project Identification Number	Project_Id	CHAR	none	Project_Id=97-1934
Name of Client	Client_Name	CHAR	none	Client_Name=Development Inc.
Hole Number for Sample	Hole_Id	CHAR	none	Hole_Id=B9A
Type of Hole	Hole_Type	CHAR	see Table 9	Hole_Type=R
Coordinate System	Coordinate_System	CHAR	none	Coordinate_System=USGS Datum
Coordinate Units	Coordinate_Units	CHAR	none	Coordinate_Units=meters
X Location of Top of Hole	Hole_X	CHAR	none	Hole_X=179002.12
Y Location of Top of Hole	Hole_Y	CHAR	none	Hole_Y=65430.21
Z Location of Top of Hole	Hole_Z	CHAR	none	Hole_Z=123.556
Sample Identification	Sample_Id	CHAR	none	Sample_Id=ST-5
Type of Sample	Sample_Type	CHAR	see Table 10	Sample_Type=U
Depth to Sample	Sample_Depth	NUM	m	Sample_Depth=12.54
Vertical Effective Stress at Sample Depth	Sample_Sigv	NUM	kPa	Sample_Sigv=112.76
Description of Sample	Sample_Description	CHAR	none	Sample_Description=Brown Varved Clay
Remarks about Sample	Sample_Remarks	CHAR	none	Sample_Remarks=Bottom of tube bent

TABLE 4 Standardized Data Format for Specimen Information

**Specimen_Information				
Data Description	Data Element	Data	Units	Example
Specimen Number	Specimen_Number	CHAR	none	Specimen_Number=3
Type of Specimen	Specimen_Type	CHAR	See Table 11	Specimen_Type=T
Condition of Specimen	Specimen_Condition	CHAR	See Table 12	Specimen_Condition=A
Orientation of Specimen	Specimen_Orientation	NUM	Degrees	Specimen_Orientation=0 0 for vertical, 90 for hor.
Specific Gravity	Specific_Gravity	NUM	none	Specific_Gravity=2.67
Initial Height of Specimen	Height_Initial	NUM	mm	Height_Initial=156.4
Initial Diameter of Specimen	Diameter_Initial	NUM	mm	Diameter_Initial=70.12
Initial Width of Specimen	Width_Initial	NUM	mm	Width_Initial=76.4
Initial Volume of Specimen	Volume_Initial	NUM	mm^3	Volume_Initial=603618
Initial Mass of Specimen	Mass_Initial	NUM	g	Mass_Initial=765.34
Initial Dry Unit Weight	Density_Initial	NUM	g/cm^3	Density_Initial=1.83
Initial Water Content	Water_Content_Initial	NUM	none	Water_Content_Initial=.156
Consolidated Height of Specimen	Height_Cons	NUM	mm	Height_Cons=154.2
Consolidated Diameter of Specimen	Diameter_Cons	NUM	mm	Diameter_Cons=69.5
Consolidated Width of Specimen	Width_Cons	NUM	mm	Width_Cons=76.4
Consolidated Volume of Specimen	Volume_Cons	NUM	mm^3	Volume_Cons=584983
Consolidated Mass of Specimen	Mass_Cons	NUM	g	Mass_Cons=1085
Consolidated Dry Unit Weight	Density_Cons	NUM	g/cm^3	Density_Cons=1.83
Consolidated Water Content	Water_Content_Cons	NUM	none	Water_Content_Cons=.148
Final Height of Specimen	Height_Final	NUM	mm	Height_Final=142.1
Final Diameter of Specimen	Diameter_Final	NUM	mm	Diameter_Final=72.3
Final Width of Specimen	Width_Final	NUM	mm	Width_Final=76.4
Final Volume of Specimen	Volume_Final	NUM	mm^3	Volume_Final=583391
Final Mass of Specimen	Mass_Final	NUM	g	Mass_Final=1085
Final Dry Unit Weight	Density_Final	NUM	g/cm^3	Density_Final=1.86
Final Water Content	Water_Content_Final	NUM	none	Water_Content_Final=.148
Specimen Description	Specimen_Description	CHAR	none	Specimen_Description=gray silty clay
Remarks about the Specimen	Specimen_Remarks	CHAR	none	Specimen_Remarks=small clay stone near top

reading a file may ignore any line of information beginning with a $ as containing non-standard information.

12. Rules for Reading Exchange Files

12.1 Software to read a file written to this guide should be capable of recognizing all of the data parameters defined by this guide, to the extent that those parameters relate to the intended function of the software.

12.2 Software to read a file written to this guide must be able to read an entire file written by this guide. It must be able to read lines of data not used by the software and continue.

12.3 Software which does not recognize a line of data written to this guide must provide the user with a message that a line of unprocessed information was encountered and display the contents of that line.

12.4 Software must be able to recognize the presence of a

TABLE 5 Standardized Data Format for Test Parameters

**Test_Parameters				
Data Description	Data Element Name	Data Type	Units	Example
Testing machine	Machine_Id	CHAR	none	Machine_Id=04567
Testing cell	Cell_Id	CHAR	none	Cell_Id=#9
Start date of test	Start_Date	DATE	none	Start_Date=1997/12/02
Finish date of test	Finish_Date	DATE	none	Finish_Date=1997/12/02
Displacement Rate	Displacement_Rate	NUM	mm/minute	Displacement_Rate=1.5
Technician	Technician	CHAR	none	Technician=JHT
Remarks about test procedures	Procedures_Remarks	CHAR	none	Procedures_Remarks=Sample open to air for 15 min

TABLE 6 Standardized Data Format for Test Data

**Test_Data				
Data Description	Data Element Name	Data Type	Units	Example
Number of Date Values per line	Number_Data_Values	NUM	none	Number_Data_Values = 4
Titles for Data Values (one for each type of data)	Date_Title_n	CHAR	none	Data_Title_1= Date Data_Title_2= Time Data_Title_3= Load Data_Title_4= Displacement See Table 13 for standard data titles
Units for Data Values	Data_Units_n	CHAR	none	Data_Unit_3= mV Data_Unit_4= V
Calibration Type	Calibration_Type_m	NUM	none	Calibration_Type_3= 1 Calibration_Type_4= 1 see Table 14 for codes
Calibration Coefficients	Calibration_m_i	NUM	([A])	Calibration_3_A= 1.2 Calibration_3_B= 0.02 Calibration_4_A= 1.002 Calibration_4_B= 0.504
Test Phase	Test_Phase	CHAR	none	Test_Phase= Shearing See Table 15 for acceptable names
Test Step	Test_Step	NUM	none	Test_Step= 1
On same line for each set of readings	DATA=	DATE TIME	none none	DATA= 1997/12/02, 06:08:35,
Date of Reading		NUM	([A])	45.1,
Time of Reading		NUM	([A])	0.12
Reading 1		NUM	([A])	
Reading 2		NUM	([A])	
— — — — —				
Reading n				

[A] Units are those required to convert the raw data to the appropriate SI unit

format error in a line of information, provide the user with a message that the line contains format errors and display the contents of the line.

12.5 Leading and trailing spaces and tabs are to be ignored when interpreting data element names and data.

12.6 Software to read a file written to this guide shall be capable of ignoring any information on a line which starts with the $ character.

13. Example Exchange File

13.1 Table 15 gives an example of a complete computer exchange file for an unconfined compression test.

14. Procedure for Data Not Included in This Guide

14.1 This guide may not cover all of the Standard Data Groups and Standard Data Elements required for D 18 standards. Anyone who identifies an element not covered by this guide should contact the chairman of ASTM Subcommittee D18.95 and request a provisional Standard Data Group name or Standard Data Element Name, or both. Provisional names will be added to this guide with the next balloting.

14.2 Users may add additional information to the file using their own names. The standard identifier for such information shall be to place a $ at the beginning of any line of non-standard information and to follow the general format defined by this guide for the added information. Software reading a file may ignore any line of information beginning with a $ as a line which contains non-standard information.

15. Keywords

15.1 computer; data acquisition; database; geotechnical testing

TABLE 7 Standardized Data Format for Test Results

**Test_Results				
Data Description	Data Element Name	Data Type	Units	Example
Number of Result Values per line	Number_Result_Values	NUM	none	Number_Result_Values=4
Titles for Result Values (one for each type of result)	Result_Title_n	CHAR	none	Result_Title_1=Date Resul_Title_2=Time Result_Title_3=Load Result_Title_4=Displacement Table 13 for standard titles
Units for Result Values	Result_Units_n	CHAR	none	Result_Unit_3=kN Result_Unit_3=mm
Test Phase	Test_Phase	CHAR	none	Test_Phase=Shearing see Table 15 for acceptable phase names
Test Step	Test_Step	NUM	none	Test_Step=1
On same line for each set of results	RESULT=	DATE	none	RESULT= 1997/12/01, 06:08:35, 43.1, 0.0504
Date of Reading		TIME	none	
Time of Reading		NUM	none	
Result 1		NUM	none	
Result 2		NUM	none	
— — — — —		NUM	none	
Result n				

TABLE 8 Standardized Data Format for Test Validation

**Test_Validation				
Data Description	Data Element Name	Data Type	Units	Example
Reviewer	Reviewer_Id	CHAR	none	Reviewer_Id= Dot I.
Checker	Checker_Id	CHAR	. . .	Checker_Id= Cross T.
QA	QA_Id	CHAR	. . .	QA_Id= Mo Same
Review Remarks	Review_Remarks	CHAR	. . .	Review_Remarks= ISO9000 not applicable

TABLE 9 Hole Type Codes

Symbol	Description
W	wash boring
A	auger boring
R	rotary drilled boring
P	rotary percussion boring
D	driven
V	vibrated
S	surface sample
T	test pit
O	other

TABLE 10 Sample Type Codes

Symbol	Description
U	undisturbed Shelby tube
P	undisturbed Piston
S	split spoon
B	block
C	core
D	disturbed
R	reconstituted
O	other

TABLE 11 Specimen Type Codes

Symbol	Description
U	direct from sample
T	trimmed from sample
C	static compaction
K	kneaded or tamped
W	water sedimented
S	slurry sedimented
P	pluviated in water
A	pluviated in air

TABLE 12 Specimen Condition

Symbol	Description
A	excellent
B	very good
C	good
D	fair
E	poor

TABLE 13 Standard Names for Data and Result Titles

Full Name	Substitute Abbreviated Name
Date	Date
Displacement	Disp
Force	Force
Load	Load
Strain	Strn
Stress	Stress
Temperature	Temp
Time	Time
Back_Pressure	BacPres
Cell_Pressure	CelPres
Elapsed_Time	ElapTim
Horizontal_Displacement	HorDisp
Horizontal_Force	HorFor
Horizontal_Strain	HorStrn
Horizontal_Stress	HorStrs
Inflow_Pressure	InPres
Outflow_Pressure	OutPres
Pore_Pressure	PorPres
Radial_Displacement	RadDisp
Radial_Strain	RadStrn
Radial_Stress	RadStrs
Vertical_Displacement	VerDisp
Vertical_Force	VerFor
Vertical_Strain	VerStrn
Vertical_Stress	VerStrs
Volume_Change	VolChg
Volume_Strain	VolStrn

TABLE 14 Codes for Calibration Equations[A]

Code	Form of Calibration Equation	Type of Curve
1	$y = A + Bx$	Linear
2	$y = A + Bx\ x \leq (C-A)/(B-D)$ $y = C + Dx\ x \geq (C-A)/(B-D)$	Bilinear
3	$y = A + Bx + Cx^2 + Dx^3$	Cubic Polynomial
4	$y = A + B \cdot \log(x)$	Semilog on x
5	$y = A \cdot 10^{Bx}$	Semilog on y
6	$y = A \cdot x^B$	Power

[A] Code determines the form of the equation to use to convert readings (x) to engineering units (y). A, B, C and D are the coefficients for the equations.

For example a Code 4 with A=23.4, B=.094 will convert readings to engineering units using the formula:

$$y = 23.4 + 0.094 * \log(x)$$

Default values are A=0, B=1, C=0 and D=0

TABLE 15 Standardized Phase Names

Consolidating
Creeping
Cycling
Initializing
Loading
Permeating
Saturating
Shearing
Swelling

APPENDIXES

(Nonmandatory Information)

X1. INDEX OF STANDARD DATA GROUPS

X1.1 The following list gives all approved Standard Data Group Names in alphabetical order.

TABLE 16 Example of a Computer Exchange File for Unconfined Compression Test

```
**Format_Identification
        Format_Id=              ASTM-D-xxxx-yy
$ These two lines illustrate the addition of nonstandard information to the
standard format.
$ Note that information has been tabbed and spaced for easy reading. Tabs
and spaces are optional.
**Test_Identification
        Test_Type=              Unconfined Compression
        Test_Method=            ASTM-D-2166-94
        Test_Number=            AU03245
        Test_Remarks=           Check Test for ISR Round Robin Testing
                                of Geofoam
**Lab_Information
        Lab_Name=               ABC Testing Services
        Lab_Location=           Everywhere USA
**Sample_Identification
        Site_Name               Local High Rise - Phase II
        Site_Location=          AnyPlace USA
        Project_Id=             97-1934
        Hole_Id=                B9A
        Hole_Type=              Boring
        Hole_X=                 179002.12
        Hole_Y=                 65430.21
        Hole_Z=                 123.546
        Sample_Id               ST-5
        Sample_Depth=           12.34
        Sample_Sigv=            112.76
        Sample_Description=     Brown Varved Clay
        Sample_Remarks=         Bottom of tube bent
**Specimen_Information
        Specimen_Type=          U
        Specimen_Orientation=   0
        Height_Initial=         156.4
        Diameter_Initial=       70.12
        Mass_Initial=           765.34
        Water_Content_Initial=  23.45
        Specimen_Remarks=       Contains shells at bottom end
**Test_Parameters
        Machine_Id=             #2
        Finish_Date=            1997/12/02
        Strain_Rate=            .10
**Test_Data
        Number_Data_Values=     3
        Data_Title_1=           Time
        Data_Title_2=           Load
        Data_Title_3=           Displacement
        Data_Unit_2=            mV
        Data_Unit_3=            V
        Calibration_2=          1
        Calibration_3=          1
        Calibration_2_A=        -5.26
        Calibration_2_B=        2.63
        Calibration_3_A=        -0.0151
        Calibration_3_B=        0.1256
        Test_Phase=             Shearing
        DATA= 10:01:32, 2,      0.12
        DATA= 10:02:32, 12,     1.62
        DATA= 10:03:32, 22,     2.12
        DATA= 10:04:32, 31,     2.62
        DATA= 10:05:32, 41,     3.12
        DATA= 10:06:32, 50,     3.62
        DATA= 10:07:32, 59      4.12
        DATA= 10:08:32, 67,     4.62
        DATA= 10:09:32, 76,     5.12
        DATA= 10:10:32, 84,     5.62
        DATA= 10:11:32, 92,     6.12
**Test_Validation
        Reviewer_Id=            WY
**End_Test
```

Lab_Information
Sample_Information
Specimen_Information
Test_Data
Test_Identification
Test_Parameters
Test_Results
Test_Validation

End_Test
Format_Information

X2. INDEX OF STANDARD DATA ELEMENTS

X2.1 The following list gives all approved Standard Data Element Names in alphabetical order and the Standard Data Group to which the Data Element belongs:

Standard Data Element Name	Standard Data Group
Calibration_m_i	Test_Data
Calibration_Type_m	Test_Data
Cell_Id	Test_Parameters
Checker_Id	Test_Validation
Client_Name	Sample_Information
Data_Title_n	Test_Data
Data_Units_n	Test_Data
Density_Cons	Specimen_Information
Density_Final	Specimen_Information
Density_Initial	Specimen_Information
Diameter_Cons	Specimen_Information
Diameter_Final	Specimen_Information
Diameter_Initial	Specimen_Information
Finish_Date	Test_Parameters
Format_Id	Format_Information
Height_Cons	Specimen_Information
Height_Final	Specimen_Information
Height_Initial	Specimen_Information
Hole_Id	Sample_Information
Hole_Type	Sample_Information
Hole_X	Sample_Information
Hole_Y	Sample_Information
Hole_Z	Sample_Information
Lab_Location	Lab_Information
Lab_Name	Lab_Information
Lab_Remarks	Lab_Information
Machine_Id	Test_Parameters
Mass_Cons	Specimen_Information
Mass_Final	Specimen_Information
Mass_Initial	Specimen_Information
Number_Data_Values	Test_Data
Number_Result_Values	Test_Results
Procedures_Remarks	Test-Parameters
Project_Id	Sample_Information
QA_Id	Test_Validation
Result_Title_n	Test_Results
Result_Units_n	Test_Results
Review_Remarks	Test_Validation
Reviewer_Id	Test_Validation
Sample_Depth	Sample_Information
Sample_Description	Sample_Information
Sample_Id	Sample_Information
Sample_Remarks	Sample_Information
Sample_Sigv	Sample_Information
Sample_Type	Sample_Information
Site_Location	Sample_Information
Site_Name	Sample_Information
Site_Owner	Sample_Information
Specific_Gravity	Specimen_Information
Specimen_Condition	Specimen_Information
Specimen_Description	Specimen_Information
Specimen_Number	Specimen_Information
Specimen_Orientation	Specimen_Information
Specimen_Remarks	Specimen_Information
Specimen_Type	Specimen_Information
Start_Date	Test_Parameters
Strain_Rate	Test_Parameters
Technician	Test_Parameters
Test_Method	Test_Identification
Test_Number	Test_Identification
Test_Phase	Test_Data, Test_Results
Test_Remarks	Test_Identification
Test_Type	Test_Identification
Volume_Cons	Specimen_Information
Volume_Final	Specimen_Information
Volume_Initial	Specimen_Information
Water_Content_Cons	Specimen_Information
Water_Content_Final	Specimen_Information
Water_Content_Initial	Specimen_Information
Width_Cons	Specimen_Information
Width_Final	Specimen_Information
Width_Initial	Specimen_Information