

# **Electronic Transfer of Geotechnical and Geoenvironmental Data**

## **AGS4**

**Edition 4.2 – December 2025**

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Comment and feedback from the wider geotechnical and geoenvironmental industry has also been fundamental to the ongoing evolution of the AGS Format, ensuring that the needs of the industry and its clients continue to be met.

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Although every effort has been made to check the accuracy of the information and validity of the guidance given in this document, neither the members of the Working Party nor the Association of Geotechnical and Geoenvironmental Specialists accept any responsibility for misstatements contained herein or misunderstanding arising here from.

## FOREWORD

The AGS Data Management Working Group continues to monitor the use of the AGS Format within the industry and strives to ensure its relevance to current working practice.

**This document shall be known as “AGS 4.2”.** The AGS 4 Rules remain unchanged and can be found in section 4.1.1.

AGS 4.2 changes summarised:

- Static Cone Penetration and Dissipation test data - the existing groups ‘SCPx / SCTx’ series have been deprecated, the new data groups are located in ‘CPDx / CPTx’ series
- Pressuremeter Test - new data groups for Ménard Tests (PMMx) and new data group extensions for parameters (PMTP) and zeros (PMTZ). Pressuremeter Test Data (PMTD) has some revised data types.
- Flat Dilatometer / Dissipation Test - new data groups ‘DMDx / DMTx’ series
- In situ Seismic Testing - new data groups ‘ISTx’ series
- Monitoring installations and instruments status - new data group (MONS)
- Test operator included in all in situ groups
- In situ thermal conductivity - new data group (ITCH)
- California Bearing Test Readings – new data group (CBRP)
- ERES has been *removed* from AGS 4.2; ELRG should be used instead
- IPRG/IPRT groups have been *removed* from AGS 4.2; FGHx groups should be used instead
- Advanced testing groups ‘CTRx / RESx’ series have been deprecated in this document. The AGS document ‘AGS-L’ should be referred (publish in 2026).

For a full list of changes please see the Change Log <https://www.ags.org.uk/data-format/ags4-data-format/ags-4-2/ags-4-2-0/change-log/> on the AGS website.

Whilst the AGS Format is used throughout the world, this document is specifically written for use in accordance with UK practice.

BS 8574:2014 should be used to support the consistent and transparent use of the AGS Format in ground engineering projects.

**Jackie Bland**  
**Working Party Chair 2010-Present**

## PUBLICATION HISTORY

Edition Reference	Date of issue	Amendments
4.2	December 2025	New minor version For amendments see Change Log at <a href="https://www.ags.org.uk/data-format/ags4-data-format/ags-4-2/ags-4-2-0/change-log/">https://www.ags.org.uk/data-format/ags4-data-format/ags-4-2/ags-4-2-0/change-log/</a>
4.1.1	March 2022	Addendum to 4.1 For amendments see Change Log at <a href="https://www.ags.org.uk/data-format/ags4-data-format/ags-4-1/ags-4-1-1/change-log/">https://www.ags.org.uk/data-format/ags4-data-format/ags-4-1/ags-4-1-1/change-log/</a>
4.1	December 2020	New minor version For amendments see Change Log at <a href="https://www.ags.org.uk/data-format/ags4-data-format/ags-4-1/ags-4-1-data-format/changelog/">https://www.ags.org.uk/data-format/ags4-data-format/ags-4-1/ags-4-1-data-format/changelog/</a>
4.0.4	February 2017	Addendum to 4.0.3
4.0.3	October 2011	Addendum to 4.0.2
4.0.2	May 2011	Addendum to 4.0.1
4.0.1	March 2011	Addendum to 4.0
4.0	May 2010	New major version
3.1a	March 2005	Addendum to 3.1
3.1	December 2004	Incorporated AGS-M
AGS-M	March 2002	Standalone document for monitoring
3	November 1999	New major version
07/94 (AGS2)	July 1994	Changes to Rules and Appendices
03/92 (AGS1)	March 1992	Original Issue

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# 1 INTRODUCTION

The AGS Format has been accepted by many in ground engineering as being appropriate for electronic data transfer and storage of ground investigation and monitoring data. Prior to this there was a proliferation of software systems and associated data formats that differed both in form and purpose even though much of their content was common. This was recognised by the Association of Geotechnical and Geoenvironmental Specialists (AGS) in 1991 and led to the setting up of a Working Party to establish an interchange format which allowed transfer of data between systems with minimal change to the systems themselves. The outcome of this work was embodied in the First Edition of this document published in 1992. The Second, Third and Fourth Editions, published in 1994, 1999 and 2010 respectively, contained a series of updates and developments reflecting the ongoing needs of the industry. The most recent updates of the Fourth Edition were 2017, 2020 and 2022.

The producers of geotechnical and geoenvironmental data have adopted systems for the efficient preparation and presentation of reports in printed format and the receivers for its analysis. The transfer of data by electronic means to the receiver's systems, without the need for a printed interface, helps to minimise costs, time and the potential for error.

The capability of a geotechnical and geoenvironmental data system to accept or produce AGS Format data allows the data system operator to continue to use their own individual and bespoke processes and working methods, such as familiar data capture or processing forms, without compromising the ability to exchange data with clients, partners or suppliers. This aids the implementation and continual improvement of quality assurance procedures within data producers and receivers. Storage and access to the data is rendered far more efficient and the format also facilitates the establishment of data archives by producers, receivers and national bodies.

This document describes an update of the AGS Format and continues the trend of updating the Format in response to industry requirements. The Data Dictionary has been updated to extend the range of data that can be transferred and reflect the requirements of the implementation of Eurocodes, accreditation and quality assurance.

## 1.1 Terms and Definitions

For the purposes of this Document the following terms and definitions apply.

Note that the word Data can be both singular and plural (think “sheep”)

Note that where the word geotechnical is used throughout this document, it is intended to encompass both geotechnical and geoenvironmental aspects

### Data Dictionary

a set of information describing the contents, format, and structure of a data and the relationship between its elements, used to control access to and manipulation of the data.

### Data File

a digital file containing ground investigation data

### AGS Format

combination of data dictionary, file transfer format and rules as described in this document

### Data Field

the heading and data variable

### Data Field Heading

the heading in a data group

### Data Group

a collection of related data items as defined in the data dictionary

### Data Item

The heading, the unit, the data type and the data variable

### Data Variable

the value inside a data field (or the quotes)

### Keyset

The collection of data items in a data group with the status marked as key (\*)

### Organization

company, institution, government department and/or project team

## 1.2 Downloading This Publication

The document may be downloaded in PDF format from the AGS website free of charge.

## 1.3 AGS Format Registration

Organizations that submit or receive the AGS Format to exchange data electronically shall register with the AGS.

Registration forms and information on current charges can be found on the website.

A list of Registered Organizations is on the AGS website at [www.agsdataformat.com](http://www.agsdataformat.com).

## 1.4 Registration Benefits

Registered Organizations / users of the format will:

- Be authorised to transfer and receive AGS Data.
- Be able to use the AGS Format Logo on their reports (see below).

- Be able to download abbreviation lists from the AGS website.
- Be included on the list of registered organisations.
- Make suggestions for future editions of the AGS Format or additional abbreviations.
- Be able to submit new posts onto the discussion forum.

The AGS wishes to encourage Data Providers to declare on their reports when the data contained within the report is also available in AGS Format. To this end the AGS provides the following AGS Format logo to Registered Organizations of the Format.



The logo is only to be used by Registered Organizations of the AGS Format and should be included on the relevant report sheets.

The logo represents a 3½" floppy disc in homage to the origin of the AGS Format.



## 2 SCOPE

The AGS Format enables the electronic transfer of data recorded during ground investigations and ground engineering construction related activities. Typically, the data transmitted is that presented on forms such as exploratory hole records (e.g. boreholes and trial pits), in situ/field test datasheets, monitoring and laboratory test results.

The transmission of report texts (introductory text, summaries, discussions and interpretations) is not within this scope. The transfer is limited to data without typographic or rendering information, such as font, underline or paragraph format. Typically these documents would be transmitted in standard file formats such as Adobe Portable Document Format (PDF) that retain the published format of the documents. Similarly, the format of the transmission of drawings and photographs, if required, is covered by other standards. AGS4, however, includes the transmittal of these documents within an AGS submission using the FILE Group, such that reports, drawings and photographs may also be transferred in a coordinated manner by electronic means.

### 3 DATA DICTIONARY

The data dictionary is a structured list of data items that may be recorded during geotechnical and geoenvironmental investigations (including testing, construction and monitoring). The data dictionary is maintained by the AGS Data Management Working Group. The data items are those which are required to be reported by the standards and specifications used for carrying out the work; for example BS 5930, BS 1377, BS EN ISO 17892 etc. The data dictionary organises these items into Groups, each Group is for a specific part of the investigation such as the location of an investigation point, the description of excavation of the borehole, a laboratory test or an in situ test.

Each Group contains a list of data Headings which contain the individual data variables and data items (such as data types, units and descriptions).

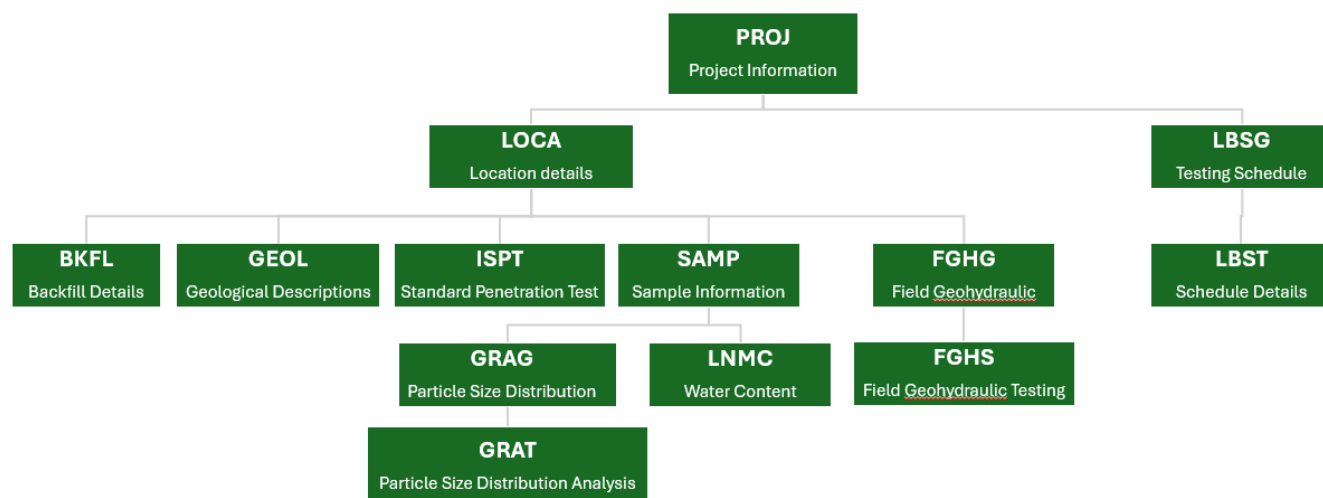
For a specific project it may be practical to extract a limited set of Groups if many of the other Groups are not needed.

Additions to the data dictionary for the project must be clearly included in the specification and agreed between data providers and receivers at the outset of the project.

#### 3.1 Data Format Schema (Group Hierarchy)

AGS4 Groups are organised in a hierarchy. At the top of the hierarchy is the PROJ Group, with the majority of other Groups below this.

One of the Groups immediately below PROJ is Location Details (LOCA). All of the in situ testing data lies directly below LOCA; for example SPT results in the ISPT Group. LOCA is termed the 'parent' Group of ISPT and ISPT is termed a 'child' Group of LOCA. The parent group of all the laboratory testing is sample information (SAMP).



A Group has only one parent defined in the Hierarchy, but there can be many child Groups below each parent. Each child Group is linked to its parent Group by the Key Fields.

The table in section 3.6 defines the Group hierarchy by indicating the parent for each Group. The Key Fields that create the link between these Groups are indicated in the Data Dictionary.

There are ten Groups that are not part of this hierarchy and relate to the data file submission and description. The PROJ, TRAN, ABBR, TYPE, DICT, FILE, UNIT, LBSG, PREM and STND Groups each have a general purpose to describe the content of the data file as follows:

- The PROJ, TRAN, ABBR, TYPE and UNIT Groups shall always be included in an AGS file as they define the project, the submission details and the abbreviations, data types and units used within the data file (see rules 13,14,15,16,17).
- The DICT Group shall be included if any user defined Groups or Headings are present. (Rule 18)
- The STND Group should be used to list the various standards and specifications that define the methods

by which the data has been collected.

- The LBSG Group should be used to transfer laboratory test scheduling.
- The PREM Group should be used to give time-related remarks that refer to the project as a whole and not to any specific location or test.
- The FILE Group should be used if any associated files (non-AGS Format files) are included in the submission (Rule 20).

### 3.2 Heading Status

Each heading has a defined status as listed below:

Status Indicator	Description	Example / Notes
*	<b>KEY</b> All KEY Headings shall be included in the group. The combination of data recorded within the KEY Headings of each group shall be unique.	Rule 10a refers.
R	<b>REQUIRED</b> Data under these headings shall not be null.	Rule 10b & Rule 12 refers.  The AGS Edition Reference shall be included under the TRAN_AGS Heading to associate the file to the document that contains the specification of Headings.
	<b>OTHER</b> The presence of these Headings and data under these Headings are dictated by the scope of the project specification.	

### 3.3 Data Types

The TYPE and UNIT selected for a heading are inter-linked.

The data types for each heading are provided in the Data Dictionary. The types in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

Type	Description	Example / Notes
ID	Unique Identifier	An ID is a unique identifier used across the project.  The ID shall be unique in the parent group but may be repeated in child groups i.e. SAMP (parent) vs ELRG (child), LOCA (parent) vs SAMP (child).
PA	Text listed in ABBR Group	Abbreviations listed in ABBR group. Rule 16 refers.  The list of standard abbreviations and descriptions are presented on the AGS website and shall not be redefined.  Other abbreviations may be defined as required within a project, but shall not match/impersonate existing standard abbreviations  e.g. "CP" for 'Cable percussion' in LOCA_TYPE shall not be given a non-standard abbreviation defined as "CH" for 'Cable hole'; likewise "SCP" (Static cone penetrometer) shall not be replaced by a non-standard abbreviation of "CPT" (Cone penetration test).  Multiple abbreviations can be used in a data VARIABLE. Where this occurs, abbreviations are joined using the concatenation character defined in TRAN_RCON (a "+" character by default).  This list is not case sensitive (see section 6.2).
PT	Text listed in TYPE Group	Abbreviations listed in TYPE group. Rule 17 refers.  This list is case sensitive (see section 6.2).
PU	Text listed in UNIT Group	Abbreviations listed in UNIT group. Rule 15 refers.  The list of standard units and descriptions are presented on the AGS website and shall not be redefined.  This list is case sensitive (see section 6.2).
X	Text	Abbreviations used in text data shall be listed in the ABBR group. Rule 16 refers.
XN	Text / numeric	There are some measured parameters that are typically numeric but can have a valid result that is text; examples include plastic limit (34 or NP) and depth of water in a borehole (2.34 or dry).  Abbreviations used in text data shall be listed in the ABBR group. Rule 16 refers.
T	Elapsed Time	e.g. hh:mm:ss

Type	Description	Example / Notes
DT	Date time in international format	yyyy-mm-ddThh:mm:ss.sssZ(+hh:mm) or yyyy-mm-dd or hh:mm:ss or yyyy  This format may be used in full or part based on user requirements
MC	British Standard BS1377 : Part 2 reported moisture content	<i>This data type is included for legacy reasons and not used in AGS 4.2</i>
nDP	Value with required number of decimal places	e.g. 2DP = 2 decimal places = 2.34
nSF	Value with required number of significant figures	e.g. 2SF = 2 significant figures = 1.2, 10
nSCI	Scientific Notation with required number of decimal places	e.g. 73100 as 2SCI = 7.31E4; 73100 as 1SCI = 7.3E4
U	Value with a variable format	This is used for fields that contain values with differing accuracy; e.g. AGS 4.1/4.2 = ELRG_RVAL.
DMS	Degrees:Minutes:Seconds	e.g. 51:28:52.498
YN	Yes or No	Data in the file will be either a Y or N or Null (see Rule 12) e.g. Y
RL	Record Link	Rule 11 refers.  Text in specified format that refers to one or more records in other Groups by Key headings.

### 3.4 Units of Measurement

The units for each heading are provided in the Data Dictionary. The units should be in accordance with the specifications and standards used in the UK. The units in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

### 3.5 Heading Examples

Typical examples are given against most of the data Headings to indicate the type of information that might be expected. They are intended to be representative but might not be mutually compatible. Where no example is given, check the website to see if one has been proffered since publication of this document.

### 3.6 Groups and Headings

Deprecated groups and headings are removed in the next version of an AGS revision. Deprecated groups and headings are denoted by strike-through, e.g. ~~SCPG~~.

Group Name	Contents	Parent Group
<a href="#">PROJ</a>	Project Information	-
<a href="#">ABBR</a>	Abbreviation Definitions	-
<a href="#">DICT</a>	User Defined Groups and Headings	-
<a href="#">FILE</a>	Associated Files	-
<a href="#">TRAN</a>	Data File Transmission Information / Data Status	-
<a href="#">TYPE</a>	Definition of Data Types	-
<a href="#">UNIT</a>	Definition of Units	-
<a href="#">AAVT</a>	Aggregate Abrasion Tests	SAMP
<a href="#">ACVT</a>	Aggregate Crushing Value Tests	SAMP
<a href="#">AELO</a>	Aggregate Elongation Index Tests	SAMP
<a href="#">AFLK</a>	Aggregate Flakiness Tests	SAMP
<a href="#">AIVT</a>	Aggregate Impact Value Tests	SAMP
<a href="#">ALOS</a>	Los Angeles Abrasion Tests	SAMP
<a href="#">APSV</a>	Aggregate Polished Stone Tests	SAMP
<a href="#">ARTW</a>	Aggregate Determination of the Resistance to Wear (micro-Deval)	SAMP
<a href="#">ASDI</a>	Slake Durability Index Tests	SAMP
<a href="#">ASNS</a>	Aggregate Soundness Tests	SAMP
<a href="#">AWAD</a>	Aggregate Water Absorption Tests	SAMP
<a href="#">BKFL</a>	Exploratory Hole Backfill Details	LOCA
<a href="#">CBRG</a>	California Bearing Ratio Tests - General	SAMP
<a href="#">CBRP</a>	California Bearing Ratio Tests - Readings	CBRT
<a href="#">CBRT</a>	California Bearing Ratio Tests - Data	CBRG
<a href="#">CDIA</a>	Casing Diameter by Depth	LOCA
<a href="#">CHIS</a>	Chiselling Details	LOCA
<a href="#">CHOC</a>	Chain of Custody Information	SAMP
<a href="#">CMPG</a>	Compaction Tests - General	SAMP
<a href="#">CMPT</a>	Compaction Tests - Data	CMPG
<a href="#">CONG</a>	Consolidation Tests - General	SAMP
<a href="#">CONS</a>	Consolidation Tests - Data	CONG
<a href="#">CORE</a>	Coring Information	LOCA
<a href="#">CPDG</a>	Pore Pressure Dissipation Tests (PPDT) - General	CPTG
<a href="#">CPDT</a>	Pore Pressure Dissipation Tests (PPDT) - Data	CPDG
<a href="#">CPTG</a>	Cone Penetration Test (CPT/CPTu) - General	LOCA
<a href="#">CPTM</a>	Cone Penetration Test (CPT/CPTu) - Methods/references for Correlated Parameters	LOCA
<a href="#">CPTP</a>	Cone Penetration Test (CPT/CPTu) - Correlated Parameters	LOCA
<a href="#">CPTT</a>	Cone Penetration Test (CPT/CPTu) - Data	CPTG
<a href="#">CPTY</a>	Cone Penetration Test (CPT/CPTu) - Cyclic Tests	CPTG
<a href="#">CPTZ</a>	Cone Penetration Test (CPT/CPTu) - Zeros	CPTG
<del><a href="#">GTRG</a></del>	<del>Cyclic Triaxial Tests—Consolidation</del>	<del>GTRG</del>
<del><a href="#">GTRD</a></del>	<del>Cyclic Triaxial Tests—Data</del>	<del>GTRP</del>
<del><a href="#">GTRG</a></del>	<del>Cyclic Triaxial Test—General</del>	SAMP

Group Name	Contents	Parent Group
<a href="#">GTRP</a>	<del>Cyclic Triaxial Test – Derived Parameters</del>	GTRG
<a href="#">GTRS</a>	<del>Cyclic Triaxial Tests – Saturation</del>	GTRG
<a href="#">DCPG</a>	Dynamic Cone Penetrometer Tests - General	LOCA
<a href="#">DCPT</a>	Dynamic Cone Penetrometer Tests - Data	DCPG
<a href="#">DETL</a>	Stratum Detail Descriptions	LOCA
<a href="#">DISC</a>	Discontinuity Data	LOCA
<a href="#">DLOG</a>	Driller Geological Description	LOCA
<a href="#">DMDG</a>	Flat Dilatometer Dissipation Test - General	DMTG
<a href="#">DMDT</a>	Flat Dilatometer Dissipation Test - Data	DMDG
<a href="#">DMTG</a>	Flat Dilatometer Test - General	LOCA
<a href="#">DMTP</a>	Flat Dilatometer Test - Derived Parameters	DMTT
<a href="#">DMTT</a>	Flat Dilatometer Test - Data	DMTG
<a href="#">DMTZ</a>	Flat Dilatometer Test - Zeros	DMTG
<a href="#">DOBS</a>	Drilling/Advancement Observations & Parameters	LOCA
<a href="#">DPRB</a>	Dynamic Probe Tests - Data	DPRG
<a href="#">DPRG</a>	Dynamic Probe Tests - General	LOCA
<a href="#">DREM</a>	Depth Related Remarks	LOCA
<a href="#">ECTN</a>	Sample Container Details	SAMP
<a href="#">ELRG</a>	Environmental Laboratory Reporting	SAMP
<a href="#">ESCG</a>	Effective Stress Consolidation Tests - General	SAMP
<a href="#">ESCT</a>	Effective Stress Consolidation Tests - Data	ESCG
<a href="#">FGHG</a>	Field Geohydraulic Testing - General	LOCA
<a href="#">FGHI</a>	Field Geohydraulic Testing - Instrumentation Details	FGHG
<a href="#">FGHS</a>	Field Geohydraulic Testing - Test Results (per stage)	FGHG
<a href="#">FGHT</a>	Field Geohydraulic Testing - Data	FGHI
<a href="#">FLSH</a>	Drilling Flush Details	LOCA
<a href="#">FRAC</a>	Fracture Spacing	LOCA
<a href="#">FRST</a>	Frost Susceptibility Tests	SAMP
<a href="#">GCHM</a>	Geotechnical Chemistry Testing	SAMP
<a href="#">GEOL</a>	Field Geological Descriptions	LOCA
<a href="#">GRAG</a>	Particle Size Distribution Analysis - General	SAMP
<a href="#">GRAT</a>	Particle Size Distribution Analysis - Data	GRAG
<a href="#">HDIA</a>	Hole Diameter by Depth	LOCA
<a href="#">HDPH</a>	Depth Related Exploratory Hole Construction Information	LOCA
<a href="#">HORN</a>	Exploratory Hole Orientation and Inclination	LOCA
<a href="#">ICBR</a>	In Situ California Bearing Ratio Tests	LOCA
<a href="#">IDEN</a>	In Situ Density Tests	LOCA
<a href="#">IFID</a>	On Site Volatile Headspace Testing Using Flame Ionisation Detector	LOCA
<a href="#">IPEN</a>	In Situ Hand Penetrometer Tests	LOCA
<a href="#">IPID</a>	On Site Volatile Headspace Testing by Photo Ionisation Detector	LOCA
<a href="#">IRDX</a>	In Situ Redox Tests	LOCA
<a href="#">IRES</a>	In Situ Resistivity Tests	LOCA
<a href="#">ISAG</a>	Soakaway Tests - General	LOCA
<a href="#">ISAT</a>	Soakaway Tests - Data	ISAG
<a href="#">ISPT</a>	Standard Penetration Test Results	LOCA
<a href="#">ISTA</a>	In Situ Seismic Test - Analysis	ISTG

Group Name	Contents	Parent Group
<a href="#">ISTG</a>	In Situ Seismic Test - General	LOCA
<a href="#">ISTR</a>	In Situ Seismic Test - Signal Receiver	ISTS
<a href="#">ISTS</a>	In Situ Seismic Test - Signal	ISTG
<a href="#">ITCH</a>	In Situ Thermal Conductivity	LOCA
<a href="#">IVAN</a>	In Situ Vane Tests	LOCA
<a href="#">LBSG</a>	Testing Schedule	-
<a href="#">LBST</a>	Testing Schedule Details	LBSG
<a href="#">LDEN</a>	Density Tests	SAMP
<a href="#">LDYN</a>	Dynamic Testing	SAMP
<a href="#">LFCN</a>	Laboratory Fall Cone Test	SAMP
<a href="#">LLIN</a>	Linear Shrinkage Tests	SAMP
<a href="#">LLPL</a>	Liquid and Plastic Limit Tests	SAMP
<a href="#">LNMC</a>	Water/moisture Content Tests	SAMP
<a href="#">LOCA</a>	Location Details	PROJ
<a href="#">LPDN</a>	Particle Density Tests	SAMP
<a href="#">LPEN</a>	Laboratory Hand Penetrometer Tests	SAMP
<a href="#">LRES</a>	Laboratory Resistivity Tests	SAMP
<a href="#">LSLT</a>	Shrinkage Limit Tests	SAMP
<a href="#">LSTG</a>	Initial Consumption of Lime Tests - General	SAMP
<a href="#">LSTT</a>	Initial Consumption of Lime Tests - Data	LSTG
<a href="#">LSWL</a>	Swelling Index Testing	SAMP
<a href="#">LTCH</a>	Laboratory Thermal Conductivity	SAMP
<a href="#">LUCT</a>	Laboratory Unconfined Compression Test	SAMP
<a href="#">LVAN</a>	Laboratory Vane Tests	SAMP
<a href="#">MCVG</a>	MCV Tests - General	SAMP
<a href="#">MCVT</a>	MCV Tests - Data	MCVG
<a href="#">MOND</a>	Monitoring Readings	MONG
<a href="#">MONG</a>	Monitoring Installations and Instruments	LOCA
<a href="#">MONS</a>	Monitoring Installations and Instruments Status	MONG
<a href="#">PIPE</a>	Monitoring Installation Pipe Work	LOCA
<a href="#">PLTG</a>	Plate Loading Tests - General	LOCA
<a href="#">PLTT</a>	Plate Loading Tests - Data	PLTG
<a href="#">PMMC</a>	Menard Pressuremeter Test Results - Unload/Reload Cycles	PMMG
<a href="#">PMMD</a>	Menard Pressuremeter Test Results - Data	PMMG
<a href="#">PMMG</a>	Menard Pressuremeter Test Results - General	LOCA
<a href="#">PMTD</a>	Pressuremeter Test Data	PMTG
<a href="#">PMTG</a>	Pressuremeter Test Results - General	LOCA
<a href="#">PMTL</a>	Pressuremeter Test Results - Individual Loops	PMTG
<a href="#">PMTTP</a>	Pressuremeter Test Results - Parameters	PMTG
<a href="#">PMTZ</a>	Pressuremeter Test Results - Zeros	PMTG
<a href="#">PREM</a>	Project Specific Time Related Remarks	-
<a href="#">PTIM</a>	Boring/Drilling Progress by Time	LOCA
<a href="#">PTST</a>	Laboratory Permeability Tests	SAMP
<a href="#">PUMG</a>	Pumping Tests - General	LOCA
<a href="#">PUMT</a>	Pumping Tests - Data	PUMG
<a href="#">RCAG</a>	Rock Abrasiveness Tests - General	SAMP



Group Name	Contents	Parent Group
<a href="#">RCAT</a>	Rock Abrasiveness Tests - Data	RCAG
<a href="#">RCCV</a>	Chalk Crushing Value Tests	SAMP
<a href="#">RDEN</a>	Rock Porosity and Density Tests	SAMP
<a href="#">RELD</a>	Relative Density Tests	SAMP
<a href="#">RESC</a>	<del>Resonant Column Test – Consolidation</del>	<del>RESG</del>
<a href="#">RESD</a>	<del>Resonant Column Test – Data</del>	<del>RESG</del>
<a href="#">RESG</a>	<del>Resonant Column Test – General</del>	<del>SAMP</del>
<a href="#">RESP</a>	<del>Resonant Column Test – Derived Parameters</del>	<del>RESG</del>
<a href="#">RESS</a>	<del>Resonant Column Test – Saturation</del>	<del>RESG</del>
<a href="#">RPLT</a>	Point Load Testing	SAMP
<a href="#">RSCH</a>	Schmidt Rebound Hardness Tests	SAMP
<a href="#">RSHR</a>	Shore Scleroscope Hardness Tests	SAMP
<a href="#">RTEN</a>	Tensile Strength Testing	SAMP
<a href="#">RUCS</a>	Rock Uniaxial Compressive Strength and Deformability Tests	SAMP
<a href="#">RWCO</a>	Water Content of Rock Tests	SAMP
<a href="#">SAMP</a>	Sample Information	LOCA
<a href="#">SCDG</a>	<del>Static Cone Dissipation Tests – General</del>	<del>SCPG</del>
<a href="#">SCDT</a>	<del>Static Cone Dissipation Tests – Data</del>	<del>SCDG</del>
<a href="#">SCPG</a>	<del>Static Cone Penetration Tests – General</del>	<del>LOCA</del>
<a href="#">SCPP</a>	<del>Static Cone Penetration Tests – Derived Parameters</del>	<del>SCPG</del>
<a href="#">SCPT</a>	<del>Static Cone Penetration Tests – Data</del>	<del>SCPG</del>
<a href="#">SHBG</a>	Shear Box Testing - General	SAMP
<a href="#">SHBT</a>	Shear Box Testing - Data	SHBG
<a href="#">STND</a>	Standards / Specifications	-
<a href="#">SUCT</a>	Suction Tests	SAMP
<a href="#">TNPC</a>	Ten Per Cent Fines	SAMP
<a href="#">TREG</a>	Triaxial Tests - Effective Stress - General	SAMP
<a href="#">TREM</a>	Location Specific Time Related Remarks	LOCA
<a href="#">TRET</a>	Triaxial Tests - Effective Stress - Data	TREG
<a href="#">TRIG</a>	Triaxial Tests - Total Stress - General	SAMP
<a href="#">TRIT</a>	Triaxial Tests - Total Stress - Data	TRIG
<a href="#">WADD</a>	Water Added Records	LOCA
<a href="#">WETH</a>	Weathering	LOCA
<a href="#">WGPG</a>	Wireline Geophysics - General	LOCA
<a href="#">WGPT</a>	Wireline Geophysics - Readings	WGPG
<a href="#">WINS</a>	Window or Windowless Sampling Run Details	LOCA
<a href="#">WSTD</a>	Water Strike - Details	WSTG
<a href="#">WSTG</a>	Water Strike – General	LOCA

Group Name: PROJ - Project Information					
Status	Heading	Suggested Unit / Type		Description	Example
*R	PROJ_ID		ID	Project identifier	121415
	PROJ_NAME		X	Project title	ACME Gas Works Redevelopment
	PROJ_LOC		X	Location of site	High Street, Anytown
	PROJ_CLNT		X	Client organisation name	ACME Enterprises
	PROJ_CONT		X	Contractor organisation name	ACME Drilling Ltd
	PROJ_ENG		X	Project engineer/consultant/designer organisation name	ACME Consulting
	PROJ_MEMO		X	General project comments	Initial investigation for building
	FILE_FSET		X	Associated file reference (e.g. project specification, site location drawings)	FS1

**Group Rules:**

- None

**Group Notes:**

- PROJ is required in all AGS4 files (Rule 13).
- PROJ\_ENG should contain the details of the consultant/designer for the project.

Group Name: ABBR - Abbreviation Definitions					
Status	Heading	Suggested Unit / Type		Description	Example
*R	ABBR_HDNG		X	Field heading in group	LOCA_TYPE
*R	ABBR_CODE		X	Abbreviation used	TP
R	ABBR_DESC		X	Description of abbreviation	Trial Pit
	ABBR_LIST		X	Source of abbreviation	AGS4 or ACME Ltd
	ABBR_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. contract data specification)	FS1

**Group Rules:**

- None

**Group Notes:**

- ABBR is required in all AGS4 data files and describes all abbreviations used in headings defined by the PA data type (Rule 16).
- The AGS Format website ([www.agsdataformat.com](http://www.agsdataformat.com)) lists the standard abbreviations.
- Additional abbreviations, used in any heading in the file, must be defined in this group.
- ABBR\_LIST details the list from which the ABBR\_CODE originates. For standard AGS headings this value would be AGS4 to refer to the AGS website. For user-defined abbreviations, use the organisation identifier in ABBR\_LIST.

Group Name: DICT - User Defined Groups and Headings					
Status	Heading	Suggested Unit / Type		Description	Example
*R	DICT_TYPE		PA	Flag to indicate definition is a GROUP or HEADING (i.e. can be either of GROUP or HEADING)	HEADING
*R	DICT_GRP		X	Group name	NGRP
*	DICT_HDNG		X	Heading name (Note: This data is REQUIRED where DICT_TYPE='HEADING')	NGRP_HED1
	DICT_STAT		PA	Heading status KEY, REQUIRED or OTHER (Note: This data is REQUIRED where DICT_TYPE='HEADING')	OTHER
	DICT_DTYP		PT	Type of data and format (Note: This data is REQUIRED where DICT_TYPE='HEADING')	2DP
R	DICT_DESC		X	Description	New group heading 1
	DICT_UNIT		PU	Units (Note: This data is REQUIRED where DICT_TYPE='HEADING')	mg/kg
	DICT_EXMP		X	Example	20
	DICT_PGRP		X	Parent group name (Note: This data is REQUIRED where DICT_TYPE='GROUP')	LOCA
	DICT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS1

#### Group Rules:

- If the DICT\_TYPE is HEADING, there shall be data variables present for DICT\_GRP, DICT\_HDNG, DICT\_STAT, DICT\_UNIT, DICT\_DTYP and DICT\_DESC.
- If the DICT\_TYPE is GROUP, there shall be data variables present for DICT\_GRP and DICT\_DESC and the DICT\_HDNG, DICT\_STAT, DICT\_DTYP and DICT\_UNIT headings shall contain NULL values.
- Data type for data field heading DICT\_UNIT shall not be changed from PU.

#### Group Notes:

- DICT is required in all AGS4 files where user defined groups and/or headings are specified (Rule 18).
- DICT\_STAT defines the status of the heading. This shall contain the data 'KEY', 'REQUIRED', 'KEY+REQUIRED' or 'OTHER', where OTHER denotes the data field is neither key nor required (Rule 10).
- DICT\_PGRP allows for inclusion of the parent group name when the DICT\_TYPE is 'GROUP'. This permits data integrity checking where data files include user defined groups.

Group Name: FILE - Associated Files					
Status	Heading	Suggested Unit / Type		Description	Example
*R	FILE_FSET		X	File set reference	FS128
*R	FILE_NAME		X	File name	BH1_Core_West.JPG
	FILE_DESC		X	Description of content	BH1 Core photo box 8
	FILE_TYPE		PA	File type	JPG
	FILE_PROG		X	Parent program and version number	Irfanview v4.10
	FILE_DOCT		PA	Document type	PH
	FILE_DATE	yyyy-mm-ddThh:mm	DT	File date	2009-04-01T10:45

Group Name: FILE - Associated Files					
Status	Heading	Suggested Unit / Type		Description	Example
	FILE_REM		X	Comments on file	Additional remarks as required

**Group Rules:**

- None

**Group Notes:**

- Rule 20 defines how associated files are to be included in AGS submissions.
- See Section 5.6 Associated Files for further guidance.

Group Name: TRAN - Data File Transmission Information / Data Status					
Status	Heading	Suggested Unit / Type		Description	Example
*R	TRAN_ISNO		X	Issue sequence reference	1
R	TRAN_DATE	yyyy-mm-dd	DT	Date of production of data file	2009-04-01
R	TRAN_PROD		X	Data file producer	ACME Drilling Ltd
R	TRAN_STAT		X	Status of data within submission	Draft
	TRAN_DESC		X	Description of data transferred	Draft logs only
R	TRAN_AGS		X	AGS Edition Reference	4.2.0
R	TRAN_RECV		X	Data file recipient	ACME Consulting
	TRAN_DLIM		X	Record Link data type Delimiter	
	TRAN_RCON		X	Concatenator	+
	TRAN_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. data file QA check records)	FS1

**Group Rules:**

- None

**Group Notes:**

- TRAN is required in all AGS4 files (Rule 14)
- TRAN\_DLIM shall be included if record linking is used. If TRAN\_DLIM is not defined, the default shall be a | (pipe symbol).
- TRAN\_RCON shall be included if record linking is used. If TRAN\_RCON is not defined, the default shall be a +.
- Delimiter and concatenator characters (TRAN\_DLIM & TRAN\_RCON) need to be defined if Record Link data or multiple concatenated abbreviations are included in the file. These characters cannot be used in IDs and abbreviations that are referred to in data key sets.

Group Name: TYPE - Definition of Data Types					
Status	Heading	Suggested Unit / Type		Description	Example
*R	TYPE_TYPE		X	Data type code	ODP
R	TYPE_DESC		X	Description	Numeric, zero decimal places
	FILE_FSET		X	Associated file reference	FS1

**Group Rules:**

- None

**Group Notes:**

- TYPE is required in all AGS4 files (Rule 17).
- The AGS Data Transfer Format website ([www.agsdataformat.com](http://www.agsdataformat.com)) lists the standard data type definitions.

Group Name: UNIT - Definition of Units					
Status	Heading	Suggested Unit / Type		Description	Example
*R	UNIT_UNIT		X	Unit	ohm m
R	UNIT_DESC		X	Description	ohm metres
	UNIT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS1

**Group Rules:**

- None

**Group Notes:**

- UNIT is required in all AGS4 files (Rule 15) and defines all units used for data headings and within data records (e.g. GCHM, MOND and ELRG).
- The AGS Data Transfer Format website ([www.agsdataformat.com](http://www.agsdataformat.com)) lists the standard unit definitions.

Group Name: AAVT - Aggregate Abrasion Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AAVT_AAV		2SF	Aggregate Abrasion Value	8.3
	AAVT_REM		X	Remarks	Additional remarks as required
	AAVT_METH		X	Test method	BS EN 1097-8:2020
	AAVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AAVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AAVT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ACVT - Aggregate Crushing Value Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ACVT_ACV	%	0DP	Aggregate Crushing Value	17
	ACVT_FRAC		X	Size fraction from which test portion was obtained	10-14mm aggregate
	ACVT_REM		X	Remarks	Additional remarks as required
	ACVT_METH		X	Test method	BS 812: Part 110: 1990
	ACVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ACVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ACVT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: AELO - Aggregate Elongation Index Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone

Group Name: AELO - Aggregate Elongation Index Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AELO_EI		0DP	Aggregate elongation index	9
	AELO_REM		X	Remarks	Additional remarks as required
	AELO_METH		X	Test method	BS 812-105.2:1990
	AELO_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AELO_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AELO_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: AFLK - Aggregate Flakiness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AFLK_FI	%	0DP	Aggregate flakiness index	9
	AFLK_MASS	kg	1DP	Mass of test portion	35.1
	AFLK_REM		X	Remarks	Additional remarks as required
	AFLK_METH		X	Test method	BS EN 933-3:2012
	AFLK_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AFLK_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AFLK_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: AIVT - Aggregate Impact Value Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AIVT_AIV1	%	2DP	Aggregate impact value test 1	15.01
	AIVT_AIV2	%	2DP	Aggregate impact value test 2	15.03
	AIVT_AIV	%	1DP	Mean aggregate impact value	15.0
	AIVT_FRAC		X	Size fraction from which test portion was obtained	50% between 8mm and 10mm, 25% between 10mm and 11.2mm, 25% between 11.2mm and 12.5mm
	AIVT_PDEN	Mg/m3	2DP	Particle density of size fraction between 8 mm and 12.5mm	2.53
	AIVT_REM		X	Remarks	Additional remarks as required
	AIVT_METH		X	Test method	BS EN 1097-2:2020
	AIVT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AIVT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AIVT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None



Group Name: ALOS - Los Angeles Abrasion Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ALOS_LOSA		0DP	Los Angeles coefficient	15
	ALOS_LOPW	%	0DP	Los Angeles percentage wear	10
	ALOS_LOWR		0DP	Los Angeles wear ratio	8
	ALOS_FRAC		X	Size fraction from which test portion was obtained	10-14mm with between 60% and 70% passing a 12.5mm test sieve.
	ALOS_CHAR		X	Ball load or charge grading	11 steel balls 45-49mm, total load 4800g
	ALOS_REM		X	Remarks	Additional remarks as required
	ALOS_METH		X	Test method	BS EN 1097-2:2020
	ALOS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ALOS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ALOS_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Headings are included for both BS1377 and ISRM test specifications.

Group Name: APSV - Aggregate Polished Stone Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55

Group Name: APSV - Aggregate Polished Stone Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	APSV_AAV		0DP	Aggregate polished stone value	67
	APSV_REM		X	Remarks	Additional remarks as required
	APSV_METH		X	Test method	BS EN 1097-8:2020
	APSV_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	APSV_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	APSV_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ARTW - Aggregate Determination of the Resistance to Wear (micro-Deval)					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ARTW_FRAC		X	Size fraction on which sample obtained	10 to 14mm aggregate grading a)
	ARTW_TYPE		PA	Type of test	WET
	ARTW_MD1		1DP	Micro-Deval coefficient for test specimen one	24.3
	ARTW_MD2		1DP	Micro-Deval coefficient for test specimen two	24.3
	ARTW_MDE		0DP	Mean micro-Deval value (dry)	24
	ARTW_MDS		0DP	Mean micro-Deval value (wet)	24
	ARTW_DATE	yyyy-mm-dd	DT	Date control 2 polished stone value first run	2003-02-10
	ARTW_REM		X	Remarks	Additional remarks as required
	ARTW_METH		X	Test method	BS EN 1097-1:2023

Group Name: ARTW - Aggregate Determination of the Resistance to Wear (micro-Deval)					
Status	Heading	Suggested Unit / Type		Description	Example
	ARTW_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ARTW_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ARTW_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ASDI - Slake Durability Index Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ASDI_SDI1	%	1DP	First cycle slake durability index (if ASDI_SDI1 or ASDI_SDI2 is between 0% and 10%)	6.1
	ASDI_SDI2	%	1DP	Second cycle slake durability index	8.6
	ASDI_SOLN		X	Nature and temperature of slaking fluid	Tap water at 20 DegC
	ASDI_INDR		X	Appearance of fragments retained in the drum	All fragments showing partial disintegration
	ASDI_PADR		X	Appearance of fragments passing through the drum	Fine particles in suspension with thin layer of larger particles in base of trough.
	ASDI_REM		X	Remarks	Additional remarks as required
	ASDI_METH		X	Test method	ISRM: Suggested method for determining slake durability index.
	ASDI_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ASDI_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65

Group Name: ASDI - Slake Durability Index Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	ASDI_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ASNS - Aggregate Soundness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ASNS_SOUN	%	0DP	Aggregate soundness test	12
	ASNS_FRAC		X	Size fraction from which test portion was obtained	10-14mm aggregate
	ASNS_REM		X	Remarks	Additional remarks as required
	ASNS_METH		X	Test method	BS EN 1367-2:2009
	ASNS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ASNS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ASNS_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: AWAD - Aggregate Water Absorption Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a

Group Name: AWAD - Aggregate Water Absorption Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	AWAD_WTAB	%	1DP	Aggregate water absorption	2.6
	AWAD_REM		X	Remarks	Additional remarks as required
	AWAD_METH		X	Test method	BS EN 1097-6:2022
	AWAD_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	AWAD_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	AWAD_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: BKFL - Exploratory Hole Backfill Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	BKFL_TOP	m	2DP	Depth to top of section	1.40
	BKFL_BASE	m	2DP	Depth to base of section	11.40
	BKFL_DESC		X	Backfill description	Arising
	BKFL_LEG		PA	Backfill legend abbreviation	901
	BKFL_DATE	yyyy-mm-dd	DT	Date of completion of backfill	2004-04-01
	BKFL_REM		X	Backfill remarks including how it was placed	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS20

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CBRG - California Bearing Ratio Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20 +/- 2 degrees Celsius throughout
	CBRG_COND		PA	Sample condition	UNDISTURBED
	CBRG_NMC	%	X	Natural water/moisture content of specimen prior to test	16.4
	CBRG_200	%	0DP	Weight percent retained on 20mm sieve	10
	CBRG_STAB	%	2SF	Amount of stabiliser added	23
	CBRG_STYP		X	Type of stabiliser added	Cement
	CBRG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Specimen lifted during penetration
	CBRG_METH		X	Test method including remoulding	BS1377-2:2022, Clause 15
	CBRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CBRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS16
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CBRG_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Initial water/moisture content required for each stage of testing, heading added to CBRT group and removed from CBRG.
- New headings added to permit details of test method, laboratory and test accreditation to be included in data.

Group Name: CBRP - California Bearing Ratio Tests - Readings					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010

Group Name: CBRP - California Bearing Ratio Tests - Readings					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CBRT_TESN		X	Test reference	1
*	CBRP_END		PA	Sample end	TOP
	CBRP_PEN	mm	2DP	Penetration	2.00
	CBRP_LOAD	kN	3DP	Force/Load	1.845

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CBRT - California Bearing Ratio Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CBRT_TESN		X	Test reference	1
	CBRT_TOP	%	U	CBR at top	6.4
	CBRT_BASE	%	U	CBR at bottom	5.2
	CBRT_MCT	%	X	Water/moisture content at top after test	15.1
	CBRT_MCBT	%	X	Water/moisture content at bottom after test	14.2
	CBRT_IMC	%	X	Initial water/moisture content	21.3
	CBRT_BDEN	Mg/m3	2DP	Initial bulk density	1.84
	CBRT_DDEN	Mg/m3	2DP	Initial Dry density	1.60
	CBRT_SURC	kPa	0DP	Surcharge pressure applied	10
	CBRT_SKDT		X	Details of soaking	4 days in tap water
	CBRT_SWEL	mm	1DP	Amount of swell recorded during soaking (if applicable)	3.0
	CBRT_REM		X	Test specific remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS16

**Group Rules:**

- None

**Group Notes:**



- CBRT\_SWEL shall be used to report the amount of swelling recorded on the specimen in each test.
- CBRT\_IMC allows the initial water/moisture content of the CBR test sample to be recorded which may differ from the after test water content especially if the sample is pre-soaked.
- CBRT\_REM allows commentary for the addition of test specific remarks. For example, where CBR is tested at natural water/moisture content, natural water content +2% and natural water content -2% or to include details of whether curve correction was applied.

Group Name: CDIA - Casing Diameter by Depth					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CDIA_DPTH	m	2DP	Depth of base of casing recorded in CDIA_DIAM	18.00
*	CDIA_DIAM	mm	0DP	Casing diameter	200
	CDIA_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. casing cement records)	FS20

**Group Rules:**

- None

**Group Notes:**

- CDIA is used to transfer details of casing in the completed hole.

Group Name: CHIS - Chiselling Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CHIS_FROM	m	2DP	Depth at start of chiselling	5.20
	CHIS_TO	m	2DP	Depth at end of chiselling	5.35
	CHIS_TIME	hh:mm	T	Time taken	00:30
	CHIS_STAR	yyyy-mm-ddThh:mm	DT	Start time	2004-04-01T09:00
	CHIS_TOOL		X	Chiselling tool used	Shell
	CHIS_REM		X	Notes on chiselling	Chiselling sandstone boulder
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS20

**Group Rules:**

- None

**Group Notes:**

- CHIS is to be used to transfer details of chiselling carried out when using a cable percussion rig to advance a borehole.

Group Name: CHOC - Chain of Custody Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55

Group Name: CHOC - Chain of Custody Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	CHOC_REF		X	Chain of custody reference	A1241/1
	CHOC_FROM		X	Samples despatched from	ACME Sampling Ltd
	CHOC_TO		X	Samples despatched to	ACME Laboratories plc
	CHOC_DDIS	yyyy-mm-dd	DT	Date dispatched	2009-09-20
	CHOC_BTCH		X	Batch reference	S234-1
	CHOC_REM		X	Remarks	Additional remarks as required
	CHOC_CONT		0DP	Number of sample containers	1
	FILE_FSET		X	Associated file reference (chain of custody sheets)	FS99

**Group Rules:**

- None

**Group Notes:**

- The CHOC group is used to transfer chain of custody information relating to samples.

Group Name: CMPG - Compaction Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CMPG_TESN		X	Test number	1
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20 +/- 2 degrees Celsius throughout
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	CMPG_TYPE		PA	Compaction test type	2.5KG
	CMPG_MOLD		PA	Compaction mould type	1 LITRE
	CMPG_375	%	0DP	Weight percent of material retained on 37.5mm sieve	7
	CMPG_200	%	0DP	Weight percent of material retained on 20mm sieve	15
	CMPG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	CMPG_MAXD	Mg/m3	2DP	Maximum dry density	2.06

Group Name: CMPG - Compaction Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	CMPG_MCOP	%	2SF	Water/moisture content at maximum dry density (Optimum)	14
	CMPG_STAB	%	2SF	Amount of stabiliser added	23
	CMPG_STYP		X	Type of stabiliser added	Cement
	CMPG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Single sample used
	CMPG_METH		X	Test method	BS 1377-2:2022, Clause 11.3
	CMPG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CMPG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS23
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CMPG_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	CMPG_ZONE		X	Grading zone	1

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CMPT - Compaction Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CMPG_TESN		X	Test number	1
*	CMPT_TESN		X	Compaction point number	1
	CMPT_MC	%	X	Water/moisture content	7.8
	CMPT_DDEN	Mg/m3	3DP	Dry density at CMPT_MC water/moisture content	1.852
	CMPT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CONG - Consolidation Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Sample from base of U100 sample, axis vertical
	CONG_TYPE		PA	Type of consolidation test	OEDOMETER
	CONG_COND		PA	Sample condition	UNDISTURBED
	CONG_SDIA	mm	2DP	Test specimen diameter	75.15
	CONG_HIGHT	mm	2DP	Test specimen height	19.25
	CONG_MCI	%	X	Initial water/moisture content	21.1
	CONG_MCF	%	X	Final water/moisture content	18.8
	CONG_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	CONG_DDEN	Mg/m3	2DP	Initial dry density	1.75
	CONG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	CONG_SATR	%	0DP	Initial degree of saturation	98
	CONG_SPRS	kPa	2SF	Swelling pressure	100
	CONG_SATH	%	1DP	Height change of specimen on saturation, or flooding as percentage of original height (BS1377 Settlement on saturation test)	1.1
	CONG_IVR		3DP	Initial voids ratio	0.800
	CONG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Swell test prior to standard Oedometer
	CONG_METH		X	Test method	BS EN ISO 17892-5:2017
	CONG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CONG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CONG_DEV		X	Deviations from the test method	5 increments carried out only.
	CONG_MCIS		X	Initial water/moisture content source	Specimen trimmings
	CONG_CORR		YN	Results corrected for equipment deformation	Y

**Group Rules:**

- None

**Group Notes:**

- CONG\_IVR shall be used to report the initial voids ratio at the start of testing.

Group Name: CONS - Consolidation Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CONS_INCN		X	Oedometer stress increment	3
	CONS_IVR		3DP	Voids ratio at start of increment	0.800
	CONS_INCF	kPa	0DP	Stress at end of stress increment/decrement	400
	CONS_INCE		3DP	Voids ratio at end of stress increment	0.622
	CONS_INMV	m <sup>2</sup> /MN	2SF	Reported coefficient of volume compressibility over stress increment	0.32
	CONS_INSC		2SF	Coefficient of secondary compression over stress increment	0.12
	CONS_CVRT	m <sup>2</sup> /yr	2SF	Coefficient of consolidation over stress increment determined by the root time method	2.1
	CONS_CVLG	m <sup>2</sup> /yr	2SF	Coefficient of consolidation over stress increment determined by the log time method	4.1
	CONS_TEMP	DegC	1DP	Average temperature over stress increment	22.0
	CONS_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS9

**Group Rules:**

- None

**Group Notes:**

- CONS\_IVR description clarified to the voids ratio at the start of the increment rather than repeat the initial voids ratio on each record in the CONS group as listed in previous editions.
- CONS\_TEMP - BS1377 and BS EN ISO 17892-5 requires laboratory temperature at which test was carried out, but since Cv is corrected to 20 DegC from the temperature over the stage, it has to be per stage (but may be same throughout).
- BS allows reporting of either CONS\_CVRT or CONS\_CVLG or both, the laboratory will populate these headings as appropriate.

Group Name: CORE - Coring Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CORE_TOP	m	2DP	Depth to top of core run	2.54
*	CORE_BASE	m	2DP	Depth to base of core run	3.54
	CORE_PREC	%	0DP	Percentage of core recovered in core run (TCR)	32
	CORE_SREC	%	0DP	Percentage of solid core recovered in core run (SCR)	23

Group Name: CORE - Coring Information					
Status	Heading	Suggested Unit / Type		Description	Example
	CORE_RQD	%	0DP	Rock Quality Designation for core run (RQD)	20
	CORE_DIAM	mm	0DP	Core diameter	75
	CORE_DURN	hh:mm	T	Time taken to drill core run	00:05
	CORE_REM		X	Remarks	Rods dropped 200mm at 3.10m
	FILE_FSET		X	Associated file reference (e.g. photographs of rock cores)	FS5

**Group Rules:**

- None

**Group Notes:**

- CORE is used to transfer details of rotary coring in rock and soil materials.
- The data transferred for coring in rock will be more extensive than for soil coring; specifically the SCR and RQD are not determined for soil cores.
- CORE\_DURN permits the inclusion of the time duration for the core run to be drilled if this is a specified additional measured parameter.

Group Name: CPDG - Pore Pressure Dissipation Tests (PPDT) - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
*	CPDG_DPTH	m	2DP	Inclination corrected depth of dissipation test	5.20
	CPDG_IR		1DP	Rigidity index used in analysis	50.1
	CPDG_RCMP		YN	Were the rods clamped during test?	Y
	CPDG_UI	MPa	3DP	Measured, corrected or assumed initial pore water pressure (u <sub>i</sub> )	0.400
	CPDG_UIP		PA	Procedure to define initial pore water pressure	X
	CPDG_M	kPa/s	3DP	Gradient of extrapolation line on square root time graph	-2.468
	CPDG_UEQ	MPa	3DP	Measured or assumed equilibrium pore water pressure (u <sub>o</sub> )	0.035
	CPDG_UEP		PA	Procedure to define equilibrium pore water	GW
	CPDG_DDIS	%	0DP	Degree of dissipation for analysis	50
	CPDG_T	s	1DP	Time to achieve degree of dissipation stated in CPDG_DDIS	258.5
	CPDG_CH	m <sup>2</sup> /yr	2SCI	Coefficient of consolidation (horizontal), c <sub>h</sub>	8.64E-6
	CPDG_CHMT		X	Method(s) used to determine horizontal coefficient of consolidation	Teh and Houlsby 1991
	CPDG_CV	m <sup>2</sup> /yr	2SCI	Coefficient of consolidation (vertical), c <sub>v</sub>	1.33E1
	CPDG_CVMT		X	Method(s) used to determine vertical coefficient of consolidation	c <sub>h</sub> x 5
	CPDG_REM		X	Remarks, note if data is recorded as whole seconds	Additional remarks as required
	CPDG_DATE	yyyy-mm-ddThh:m m:ss	DT	Test date and time	2009-10-01T10:15:15
	CPDG_OPER		X	Name of test operator	ABC

Group Name: CPDG - Pore Pressure Dissipation Tests (PPDT) - General					
Status	Heading	Suggested Unit / Type		Description	Example
	CPDG_ANBY		X	Name(s) of analyser / person responsible for data quality and correctness	ABC/DEF
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS19

**Group Rules:**

- None

**Group Notes:**

- CPDG is to be used to record the general information relating to dissipation tests carried out during static cone penetrometer testing.

Group Name: CPDT - Pore Pressure Dissipation Tests (PPDT) - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
*	CPDG_DPTH	m	2DP	Inclination corrected depth of dissipation test	5.20
*	CPDT_TIME	s	1DP	Elapsed time since start of test	50.5
	CPDT_QC	MPa	3DP	Cone resistance (q <sub>c</sub> )	0.801
	CPDT_TF	kN	3DP	Total force or thrust	15.065
	CPDT_FS	MPa	4DP	Sleeve friction (f <sub>s</sub> )	0.0968
	CPDT_U1	MPa	4DP	Face porewater pressure (u <sub>1</sub> )	0.0814
	CPDT_U2	MPa	4DP	Shoulder porewater pressure (u <sub>2</sub> )	0.0814
	CPDT_U3	MPa	4DP	Top of sleeve porewater pressure (u <sub>3</sub> )	0.0814
	CPDT_TMPI	DegC	1DP	Cone internal temperature. If multiple temperature sensors exist, then the sensor closest to the pore pressure sensors should be used.	8.4
	CPDT_REM		X	Comments	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS19

**Group Rules:**

- None

**Group Notes:**

- CPDT is used to include the dissipation test readings converted from the measurement data using any required calibration factors.

Group Name: CPTG - Cone Penetration Test (CPT/CPTu) - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
	CPTG_TYPE		PA	Cone test type	CPTU

Group Name: CPTG - Cone Penetration Test (CPT/CPTu) - General					
Status	Heading	Suggested Unit / Type		Description	Example
	CPTG_DATE	yyyy-mm-ddThh:mm:ss	DT	Date time at beginning of test or push	2009-10-01T10:15:05
	CPTG_PED	m	2DP	Pre-drilled depth	1.25
	CPTG_RATE	mm/s	0DP	Nominal rate of penetration of the cone	20
	CPTG_ORNT	deg	0DP	Orientation of inclination X from North	012
	CPTG_RLOC		PA	The location where the reference reading (pretest zero) of the test was performed	SB
	CPTG_WAT	m	2DP	Depth to groundwater level, z_w at time of test. Negative for water levels above the location where the reference reading was performed.	3.50
	CPTG_WATA		X	Origin of groundwater level in CPTG_WAT	Assumed from measurements in nearby boreholes
	CPTG_TERM		PA	Termination reason(s)	Rods Buckling+Maximum Cone Value
	CPTG_REF		X	Cone reference	S15.CFIP.A27
	CPTG_MAN		X	Manufacturer of cone penetrometer	GeoPoke
	CPTG_FILL		PA	Filter location(s)	U2
	CPTG_CSA	mm <sup>2</sup>	1DP	Cross sectional area of cone tip, Ball and T-Bar	1001.1
	CPTG_CSAN	mm <sup>2</sup>	0DP	Nominal cross sectional area of cone tip, Ball and T-Bar	1000
	CPTG_CAR		3DP	Cone area ratio used to calculate qt, also use for Ball and T-Bar	0.810
	CPTG_SLA	mm <sup>2</sup>	1DP	Friction sleeve area	14999.5
	CPTG_SLAN	mm <sup>2</sup>	0DP	Nominal friction sleeve area	15000
	CPTG_SHA	mm <sup>2</sup>	0DP	Cross-sectional area of the connecting shaft for Ball and T-Bar	1104
	CPTG_SLAR		3DP	Sleeve area ratio used to calculate ft	1.001
	CPTG_CFOS	mm	0DP	Shoulder of cone to centre of friction sleeve offset (physical measurement)	80
	CPTG_CFOA	mm	0DP	Shoulder of cone to centre of friction sleeve offset used by analysis	100
	CPTG_TBL	mm	1DP	T-Bar length	250.0
	CPTG_TBD	mm	1DP	T-Bar diameter	40.0
	CPTG_CPC	MPa	1DP	Nominal cone maximum tip pressure capacity (assumed zero load on sleeve for subtraction cones and purely axial load)	100.0
	CPTG_FPC	MPa	1DP	Nominal friction maximum pressure capacity	100.0
	CPTG_UPC	MPa	1DP	Nominal porewater pressure maximum pressure capacity	5.0
	CPTG_CPCL		PA	Cone penetrometer class	0
	CPTG_CRDT	yyyy-mm-dd	DT	Date of last calibration of cone	2009-10-01
	CPTG_CDDT	yyyy-mm-dd	DT	Date of last calibration of data logger (applicable to analogue cones)	2009-10-01
	CPTG_LCA		PA	Load cell arrangement	SC
	CPTG_FILT		X	Type of filter material used	HDPE
	CPTG_FRIC		YN	Friction reducer used	Y
	CPTG_FRID	mm	0DP	Friction reducer distance behind the shoulder of the cone tip	400



Group Name: CPTG - Cone Penetration Test (CPT/CPTu) - General					
Status	Heading	Suggested Unit / Type		Description	Example
	CPTG_FRIS	mm	0DP	Friction reducer diameter	43
	CPTG_SAT		X	Method of saturation of pore pressure system and type of fluid used	Secondary saturation with 1000 cSt silicone oil
	CPTG_EQPT		X	Mass, reaction and equipment geometry	40t truck
	CPTG_APCL		PA	Test application class or category described in the standard	1
	CPTG_DAZV		X	Description of application of zero values	Average of pre and post test stabilised zeros applied
	CPTG_CORR		X	Corrections applied during data processing (e.g. depth corrections, removal of rod change spikes, zeros)	fs corrected by +0.005 kPa
	CPTG_REM		X	Comments on testing and basis of any interpreted parameters included in CPTT	Additional remarks as required
	CPTG_OPER		X	Name of test operator	ABC
	CPTG_ANBY		X	Name(s) of analyser / person responsible for data quality and correctness	ABC/DEF
	CPTG_ENV		X	Details of weather and environmental conditions during test	40 DegC and sunny
	CPTG_METH		X	Standard followed for testing	BS EN ISO 22476-1:2023
	CPTG_DEV		X	Deviations from the standard followed	Test continued beyond 15 degrees inclination
	CPTG_CONT		X	Subcontractor name	A Contractor Ltd
	CPTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. cone calibration records)	FS18

#### Group Rules:

- None

#### Group Notes:

- CPTG is used to record the general information about static cone penetration tests.
- Pressuremeter tests using CPT equipment (e.g. cone or driven pressuremeter) shall be recorded in the PMTG and associated groups.
- CPTG\_FILT and CPTG\_FRIC are included as they are reporting requirements of BS1377 and BS EN ISO 22476-1.
- CPTG\_WATA is required to clarify origin of water level recorded in CPTG\_WAT.
- CPTG\_REM is used to transfer comments on the test and any interpreted parameters. CPTG\_REM may refer to the STND group where full information on standards and references could be provided.
- CPT testing is frequently carried out by specialist sub-contractors. CPTG\_CONT is included to record name of specialist sub-contractor.
- CPTG\_CAR and CPTG\_SLAR are included to transfer information used to calculate qt and ft.

Group Name: CPTM - Cone Penetration Test (CPT/CPTu) - Methods/references for Correlated Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTM_DPTH	m	2DP	Depth to top of Method	0.00
	CPTM_BASE	m	2DP	Depth to base of Method, optional, if empty then method applies to maximum depth of LOCA_ID	5.30
	CPTM_SBT1		X	Method for Soil Behaviour Type	Robertson 1990

Group Name: CPTM - Cone Penetration Test (CPT/CPTu) - Methods/references for Correlated Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
	CPTM_SU1		X	Method for Undrained Shear Strength ( $s_u$ ) 1, could be used for lower estimate; fine soils	$s_u = (q_t - \sigma_{vo}) / N_{kt}$ , where $N_{kt} = 20$
	CPTM_SU2		X	Method for Undrained Shear Strength ( $s_u$ ) 2, could be used for upper estimate; fine soils	$s_u = (q_t - \sigma_{vo}) / N_{kt}$ , where $N_{kt} = 15$
	CPTM_DR1		X	Method for Relative density ( $D_r$ ) 1, could be used for lower estimate; coarse soils	Jamiolkowski et al. 2001, $C_2 = -2$
	CPTM_DR2		X	Method for Relative density ( $D_r$ ) 2, could be used for upper estimate; coarse soils	Jamiolkowski et al. 2001, $C_2 = 1$
	CPTM_PHI1		X	Method for Internal Friction Angle; coarse soils	Kulhawy and Mayne 1990
	CPTM_IC1		X	Method for Soil Behaviour Type Index ( $I_c$ )	Jefferies and Davies 1993
	CPTM_N601		X	Method for Equivalent SPT $N_{60}$ value	Robertson and Wride 1998
	CPTM_E1		X	Method for Young's Modulus, E	Elastic Theory, $E_{max} = 2 \cdot G_{max} \cdot (1 + \nu)$
	CPTM_MV1		X	Method for Coefficient of Volume Change, $m_v$	Kulhawy and Mayne 1990
	CPTM_G01		X	Method for Small strain shear modulus, $G_0$	Rix and Stokoe 1992
	CPTM_VS1		X	Method for Shear wave velocity (correlated), $V_s$	Mayne 2006
	CPTM_DUW1		X	Method for Dry unit weight, $\gamma_d$	Mayne 2007
	CPTM_SUW1		X	Method for Saturated unit weight, $\gamma_s$	Mayne 2007
	CPTM_M1		X	Method for Constrained modulus, M	Kulhawy and Mayne 1990
	CPTM_CC1		X	Method for Compression index, $C_c$	$C_c = (2.3 \cdot (1 + e) \cdot \sigma'_{vo}) / M$
	CPTM_P01		X	Method for Preconsolidation stress, $p_0'$	Chen and Mayne 1996
	CPTM_ST1		X	Method for Sensitivity, $S_t$	Rad and Lunne 1986
	CPTM_K01		X	Method for Coefficient of lateral earth pressure, $K_0$	Mayne 2007
	CPTM_IR1		X	Method for Rigidity index, $I_r$	Mayne 2001
	CPTM_K1		X	Method for Permeability, k	Robertson et al. 1986
	CPTM_FC1		X	Method for Fines content, FC	Robertson and Wride 1998
	CPTM_CSR1		X	Method for Cyclic stress ratio, CSR	Idriss & Boulanger 2008
	CPTM_CRR1		X	Method for Cyclic resistance ratio, CRR	Idriss & Boulanger 2008
	CPTM_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS18

#### Group Rules:

- None

#### Group Notes:

- The CPTM group is to be used to define the correlation methods/references for data in the CPTP group.
- It is envisaged additional custom headings shall be specified in CPTM & CPTP if more methods are to be transmitted. For example, a second heading for Constrained modulus, M 2 would be CPTM\_M2 and CPTP\_M2.
- If the method or constant changes with depth, the changes would be documented by a new row in CPTM.

Group Name: CPTP - Cone Penetration Test (CPT/CPTu) - Correlated Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTP_DPTH	m	2DP	Depth of each reading (CPTT_DPTH) or depth to top of layer	5.20
	CPTP_BASE	m	2DP	Depth to base of layer, optional	5.30
	CPTP_SBT1		X	Soil Behaviour Type	3 - Clays
	CPTP_SU1	kPa	1DP	Undrained Shear Strength (s_u) 1, could be used for lower estimate; fine soils	65.2
	CPTP_SU2	kPa	1DP	Undrained Shear Strength (s_u) 2, could be used for upper estimate; fine soils	105.1
	CPTP_DR1	%	1DP	Relative density (D_r) 1, could be used for lower estimate; coarse soils	90.1
	CPTP_DR2	%	1DP	Relative density (D_r) 2, could be used for upper estimate; coarse soils	95.1
	CPTP_PHI1	deg	1DP	Internal Friction Angle; coarse soils	42.7
	CPTP_IC1		1DP	Soil Behaviour Type Index (I_c)	1.5
	CPTP_N601		0DP	Equivalent SPT N_60 value	32
	CPTP_E1	MPa	1DP	Young's Modulus, E	10.1
	CPTP_MV1	m <sup>2</sup> /MN	2SCI	Coefficient of Volume Change, m_v	2.02E-2
	CPTP_G01	MPa	1DP	Small strain shear modulus, G_0	98.1
	CPTP_VS1	m/s	1DP	Shear wave velocity (correlated), V_s	38.5
	CPTP_DUW1	kN/m <sup>3</sup>	1DP	Dry unit weight, gamma_d	8.9
	CPTP_SUW1	kN/m <sup>3</sup>	1DP	Saturated unit weight, gamma_s	15.2
	CPTP_M1	MPa	1DP	Constrained modulus, M	376.2
	CPTP_CC1		2SCI	Compression index, C_c	5.19E-2
	CPTP_P01	kPa	1DP	Preconsolidation stress, p_0'	300.2
	CPTP_ST1		1DP	Sensitivity, S_t	16.7
	CPTP_K01		1DP	Coefficient of lateral earth pressure, K_0	5.1
	CPTP_IR1		1DP	Rigidity index, I_r	55.8
	CPTP_K1	m/s	1SCI	Permeability, k	1.0E-3
	CPTP_FC1	%	1DP	Fines content, FC	5.5
	CPTP_CSR1		3DP	Cyclic stress ratio, CSR	0.195
	CPTP_CRR1		3DP	Cyclic resistance ratio, CRR	0.257
	CPTP_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS18

#### Group Rules:

- None

#### Group Notes:

- CPTP is list of optional headings for correlations, and some are not applicable for all soil types.
- The CPTP group is to be used to transfer derived soil parameters determined from CPT test data. The requirement for this information as part of ground investigation reporting shall be fully specified at the outset of the investigation. The specification may need to detail the interpretative method(s) to be used.
- Details of the standards and methods used to carry out calculations shall be included in CPTM group.
- Where soil type interpretation leading to borehole style stratum descriptions is carried out the information should be entered in GEOL.
- The coefficient of consolidation is calculated from dissipation testing data which is included in CPDG and CPDT.

Group Name: CPTT - Cone Penetration Test (CPT/CPTu) - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
*	CPTT_REDN		0DP	Sequence number, incrementing number defining order of records	1
	CPTT_DPTH	m	2DP	Depth of result corrected for inclination	7.12
	CPTT_PLEN	m	U	Recorded penetration length; Recommend types: 2DP or 3DP	7.127
	CPTT_QC	MPa	3DP	Cone resistance (q_c), or measured Ball and T-Bar resistance (q_m)	18.065
	CPTT_FS	MPa	4DP	Sleeve friction (f_s)	0.0968
	CPTT_U1	MPa	4DP	Face porewater pressure (u_1)	0.0118
	CPTT_U2	MPa	4DP	Shoulder porewater pressure (u_2)	0.0118
	CPTT_U3	MPa	4DP	Top of sleeve porewater pressure (u_3)	0.0118
	CPTT_INCX	deg	1DP	Inclination X	1.7
	CPTT_INCY	deg	1DP	Inclination Y	1.1
	CPTT_TIME	yyyy-mm-ddThh:mm:ss.sss	DT	Clock time during the test	2009-10-01T10:15:05.123
	CPTT_DUR	s	1DP	Duration since start of test	250.0
	CPTT_TF	kN	3DP	Total force or thrust	15.065
	CPTT_RF	%	2DP	Friction ratio (R_f)	5.54
	CPTT_BDEN	Mg/m3	2DP	Bulk density of material (measured or assumed)	2.21
	CPTT_CPO	MPa	4DP	Total vertical stress (based on CPTT_BDEN)	0.2104
	CPTT_ISPP	MPa	4DP	In situ pore pressure (u_o) (measured or assumed where not simple hydrostatic based on CPTG_WAT)	0.2000
	CPTT_CPOD	MPa	4DP	Effective vertical stress (calculated from CPTT_CPO and CPTT_ISPP or CPTG_WAT)	0.1075
	CPTT_QT	MPa	3DP	Corrected cone resistance (q_t) piezocone only	18.066
	CPTT_FT	MPa	4DP	Corrected sleeve resistance (f_t) piezocone only	0.1235
	CPTT_QNET	MPa	3DP	Net cone resistance (q_n), or net Ball and T-bar resistance (q_ball and q_T-bar)	17.856
	CPTT_QE	MPa	3DP	Effective cone resistance (qe) piezocone only	18.053
	CPTT_RFT	%	2DP	Corrected friction ratio (R_ft) piezocone only	2.76
	CPTT_EXPP	MPa	4DP	Excess pore pressure (u-u_o) piezocone only	-0.0911
	CPTT_BQ		4DP	Pore pressure ratio (B_q) piezocone only	-0.0051
	CPTT_NQT		2DP	Normalised cone resistance (Q_t)	166.01
	CPTT_NFR	%	2DP	Normalised friction ratio (F_r)	0.54
	CPTT_MAGX	nT	0DP	Magnetic flux - X	-7707
	CPTT_MAGY	nT	0DP	Magnetic flux - Y	15353
	CPTT_MAGZ	nT	0DP	Magnetic flux - Z	73007
	CPTT_MAGT	nT	1DP	Magnetic flux - Total (calculated)	75000.9
	CPTT_MAGG	nT/cm	1DP	Magnetic flux - Gradient (calculated)	401.3
	CPTT_CON	uS/cm	0DP	Conductivity	2

Group Name: CPTT - Cone Penetration Test (CPT/CPTu) - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	CPTT_TEMP	DegC	1DP	Soil temperature	8.4
	CPTT_TPQC	DegC	1DP	Temperature associated with tip sensor. Use this heading if there is one temperature sensor.	8.4
	CPTT_TPFS	DegC	1DP	Temperature associated with sleeve sensor	8.4
	CPTT_TPU	DegC	1DP	Temperature associated with pore pressure sensor	8.4
	CPTT_PH		1DP	pH reading	6.9
	CPTT_REDX	mV	2DP	Redox potential	1.11
	CPTT_SMP	%	1DP	Soil moisture	1.1
	CPTT_NGAM	counts/s	1DP	Natural gamma radiation	1.1
	CPTT_FFD1	%	0DP	Fluorescence intensity 1	96
	CPTT_FFD2	%	0DP	Fluorescence intensity 2	96
	CPTT_PID	uV	0DP	Photo ionization detector	3650
	CPTT_FID	uV	0DP	Flame ionization detector	151260
	CPTT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. raw field data)	FS18

**Group Rules:**

- None

**Group Notes:**

- CPTT is used to include the readings from the cone converted from the measurement data using any required calibration factors and other mathematical formulae employed by the measurement contractor in accordance with the specification.
- Readings included in group will depend on the test carried out. For example, the ground parameters measured and included in this group will depend on test type / cone.
- The fluorescence intensity, photo-multiplier tube readings, PID, FID and conductivity data require graphic interpretation. These have been removed.
- CPTT\_BDEN and CPTT\_ISPP allow for complex assumptions on density and piezometric profiles. Explanation of these assumptions is required within CPTG\_REM.
- The requirements for transfer of data in CPTT should be fully specified at the outset of testing in the investigation specification.
- Vertical offset corrections shall have been applied, e.g. the cone sleeve offset, so that a row of readings is for the soil at CPTT\_DPTH.
- For T-bar and Ball Penetrometer use CPTT\_QC, CPTT\_QNET and CPTT\_U1, CPTT\_U2 or CPTT\_U3 as applicable

Group Name: CPTY - Cone Penetration Test (CPT/CPTu) - Cyclic Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
*	CPTY_TESN		X	Cyclic test number	1
	CPTY_DPTH	m	2DP	Top depth of cyclic test corrected for inclination	5.20
	CPTY_DINT	m	2DP	Depth Interval of cyclic test	0.25
	CPTY_NUMC		0DP	Number of full cycles in cyclic test	10
	CPTY_REDI		0DP	Initial reading number of cyclic test	50
	CPTY_REDF		0DP	Final reading number of cyclic test	500

Group Name: CPTY - Cone Penetration Test (CPT/CPTu) - Cyclic Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	CPTY_TIMI	s	1DP	Initial elapsed time (CPTT_TIME) of cyclic test	25.5
	CPTY_TIMF	s	1DP	Final elapsed time (CPTT_TIME) of cyclic test	200.3
	CPTY_REM		X	Remarks, including early termination reason	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. raw field data)	FS18

**Group Rules:**

- None

**Group Notes:**

- Relates to cyclic T-bar and ball penetrometer tests

Group Name: CPTZ - Cone Penetration Test (CPT/CPTu) - Zeros					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	CPTG_TESN		X	Test reference or push number	3
*	CPTZ_PARM		PA	Measured Parameter	QC
	CPTZ_ZBD		U	Zero before at deck/surface (for over water testing where CPTG_RLOC is BB or SB)	0.001
	CPTZ_ZB		U	Zero before at reference/test level	0.100
	CPTZ_ZA		U	Zero after at reference/test level	0.019
	CPTZ_ZAD		U	Zero after at deck/surface (for over water testing where CPTG_RLOC is BB or SB)	0.020
	CPTZ_ZAC		U	Zero after test when cone has been cleaned at test level/deck/surface	0.020
	CPTZ_ZD		4DP	Zero drift between reference readings, CPTZ_ZA - CPTZ_ZB	0.0111
	CPTZ_ZDD		4DP	Zero drift between deck/surface readings, CPTZ_ZAD - CPTZ_ZBD	0.0111
	CPTZ_ZDC		4DP	Zero drift between before and cleaned, CPTZ_ZAC - first of CPTZ_ZBD or CPTZ_ZB	0.0111
	CPTZ_CD		4DP	Calibration drift between calibration or first test, and first of CPTZ_ZBD or CPTZ_ZB	0.0111
	CPTZ_ZS		4DP	Zero output stability, the difference between maximum and minimum values recorded for one minute	0.0060
	CPTZ_ZSS		X	Origin of zero output stability	Zero before at deck/surface
	CPTZ_ZVUC		U	Zero value used in calculation	0.100
	CPTZ_EGUT		PU	Engineering unit for CPTZ_ZBD, CPTZ_ZB, CPTZ_ZA, CPTZ_ZAD, CPTZ_ZAC, CPTG_ZD, CPTG_CD and CPTG_ZS	MPa
	CPTZ_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS18

**Group Rules:**

- None

**Group Notes:**

- Referred to as reference readings in ISO standard

- CPTZ\_EGUT should be an engineering unit when practical, such as MPa
- CPTZ\_ZD and CPTZ\_ZDD should have the tip zero drift (in force units) subtracted from the raw friction sleeve zero drift (in force units) for subtraction type cones where the sleeve force is established by subtraction of the tip force.

Group Name: CTRC—Cyclic Triaxial Tests—Consolidation					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CTRC_TESN		X	Test / Stage Number	2
	CTRC_CELL	kPa	1DP	Final cell pressure	350.5
	CTRC_BPWP	kPa	1DP	Base porewater pressure	692.0
	CTRC_MPWP	kPa	1DP	Mid-height porewater pressure	692.0
	CTRC_MPB	%	2DP	Mid-height B value	99.12
	CTRC_BB	%	2DP	Base B value	99.10
	CTRC_TYPE		PA	Type of consolidation	ISOTROPIC
	CTRC_BACF	kPa	1DP	Final back pressure	200.0
	CTRC_ELAP	hh:mm:ss	T	Duration of test/stage number	09:38:23
	CTRC_CHGT	mm	2DP	Specimen height at end of stage	36.98
	CTRC_DIAE	mm	2DP	Specimen diameter at end of stage	75.21
	CTRC_MCE	%	X	Water content at end of stage	21.1
	CTRC_BDE	Mg/m <sup>3</sup>	2DP	Bulk density at end of stage	2.01
	CTRC_DDE	Mg/m <sup>3</sup>	2DP	Dry density at end of stage	1.60
	CTRC_RDE	%	1DP	Relative density index of sand at end of stage	90.1
	CTRC_INCE		3DP	Void ratio at end of stage	0.765
	CTRC_ASE	kPa	1DP	Effective axial stress at end of stage	200.1
	CTRC_RSE	kPa	1DP	Effective radial stress at end of stage	100.1
	CTRC_SSE	kPa	1DP	Shear stress at end of stage	100.1
	CTRC_DEVE	kPa	1DP	Deviatoric stress at end of stage	100.1
	CTRC_MNSE	kPa	1DP	Mean effective stress at end of stage	99.7
	CTRC_RTOE		2DP	Ratio of radial to axial effective stress at end of stage	2.12
	CTRC_EASE	%	3DP	External axial strain at end of stage	0.221
	CTRC_VLSE	%	3DP	Volumetric strain from measured volume change at end of stage	0.271
	CTRC_RDSE	%	3DP	Radial strain from measured volume change at end of stage	0.232
	CTRC_B	%	1DP	B value	99.1
	CTRC_BETS		X	Bender element test sequence	After anisotropic consolidation stage 2
	CTRC_BEAX		PA	Bender element axis of measurement	hv

Group Name: CTRC – Cyclic Triaxial Tests – Consolidation					
Status	Heading	Suggested Unit / Type		Description	Example
	CTRC_BEDS	mm	2DP	Distance between bender elements	1.92
	CTRC_MAT	s	4DP	Measured arrival time of propagated wave	0.4943
	CTRC_MATM		X	Method of measuring arrival time of propagated wave	Peak to peak
	CTRC_SWV	m/s	0DP	Calculated shear wave velocity	395
	CTRC_SMGM	MPa	1DP	Shear modulus Gmax	295.3
	CTRC_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CTRD – Cyclic Triaxial Tests – Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CTRC_TESN		X	Test / Stage Number	2
*	CTRP_CYC		0DP	Cycle number	2
	CTRD_TIME	yyyy-mm-ddThh:mm:ss	DT	Date/time of reading	2017-10-02T00:20:32
	CTRD_COND		PA	Test conditions	DRAINED
	CTRD_SDIA	mm	2DP	Specimen diameter	36.51
	CTRD_HIGH	mm	2DP	Specimen height	73.55
	CTRD_CELL	kPa	1DP	Cell pressure	350.1
	CTRD_BPWP	kPa	1DP	Base porewater pressure	692.0
	CTRD_MPWP	kPa	1DP	Mid-plane porewater pressure	692.0
	CTRD_EAS	%	3DP	External axial strain	0.002
	CTRD_LAS1	%	3DP	Local axial strain 1	0.002
	CTRD_LAS2	%	3DP	Local axial strain 2	0.001
	CTRD_VOL	%	3DP	Volumetric strain	0.005
	CTRD_RAD	%	3DP	Radial strain	0.012
	CTRD_SHSN	%	3DP	Shear strain	0.543



Group Name: CTRD – Cyclic Triaxial Tests – Data					
Status	Heading	Suggested Unit / Type		Description	Example
	CTRD_SHST	kPa	1DP	Shear stress	98.2
	CTRD_DEV	kPa	1DP	Deviatoric stress	80.2
	CTRD_PSD	kPa	1DP	Principal stress difference	150.0
	CTRD_MEES	kPa	1DP	Mean effective stress	510.0
	CTRD_SECE	MPa	1DP	Secant Young's Modulus (Local)	619.4
	CTRD_TANE	MPa	1DP	Tangent Young's Modulus	619.4
	CTRD_FREQ	Hz	2SF	Loading frequency	0.31
	CTRD_CSTS	kPa	1DP	Cyclic amplitude	200.0
	CTRD_ACVS	kPa	1DP	Average cyclic axial stress	200.0
	CTRD_DAVS	%	3DP	Double amplitude axial strain	14.323
	CTRD_CESR		2DP	Compression/Extension stress ratio	0.02
	CTRD_EMPR	%	1DP	Excess mid-plane pore pressure ratio	5.0
	CTRD_EBPR	%	1DP	Excess base pore pressure ratio	9.0
	CTRD_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

**Group Rules:**

- None

**Group Notes:**

- Assumes axial cycles in deviator stress (constant cell pressure, controlled axial load)

Group Name: CTRG – Cyclic Triaxial Test – General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	CLAY
	SPEC_PREP		X	Specimen preparation technique used	Water pluviation
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	CTRG_TYPE		PA	Type of test	CAUC
	CTRG_MCI	%	X	Initial water/moisture content	21.3
	CTRG_MCF	%	X	Final water/moisture content	22.1
	CTRG_H2O		X	Description of type of water used for filter flushing, and salt content if relevant	Salt water 30g/L
	CTRG_SBP	kPa	1DP	Saturation back pressure	102.5

Group Name: CTRG – Cyclic Triaxial Test – General					
Status	Heading	Suggested Unit / Type		Description	Example
	CTRG_SATR	%	0DP	Initial degree of saturation after back pressure	98
	CTRG_IRD	%	1DP	Initial sample relative density	90.1
	CTRG_SDIA	mm	2DP	Initial specimen diameter	38.25
	CTRG_HIGT	mm	2DP	Initial height of specimen	76.51
	CTRG_TMSS	g	2DP	Total mass of installed specimen	102.53
	CTRG_PDEN	Mg/m <sup>3</sup>	XN	Particle density with prefix # if value assumed	#2.65
	CTRG_MADD	Mg/m <sup>3</sup>	2DP	Maximum density of sand	1.89
	CTRG_MIDD	Mg/m <sup>3</sup>	2DP	Minimum density of sand	1.78
	CTRG_DDEN	Mg/m <sup>3</sup>	2DP	Initial dry density	1.84
	CTRG_BDEN	Mg/m <sup>3</sup>	2DP	Initial bulk density	2.12
	CTRG_IVR		3DP	Initial voids ratio	0.987
	CTRG_SAT		X	Method of saturation	Back pressure, none
	CTRG_DURN	day	1DP	Test Duration	2.5
	CTRG_REM		X	Remarks	Additional remarks as required
	CTRG_METH		X	Test method	ASTM D5311/D5311M-25
	CTRG_DEV		X	Deviations from the test method	Explanation of any deviation
	CTRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	CTRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9

**Group Rules:**

- None

**Group Notes:**

- Total number of stages of test to include all components of consolidation (hold and swelling) stages, Bender element test stages, cyclic loading stages (one set of N cycles at a uniform frequency and amplitude is equivalent to one stage) and shearing stages (if any).
- There is no facility to capture non-uniform cycles at present.
- Cyclic loading is assumed to be sinusoidal.

Group Name: CTRP – Cyclic Triaxial Test – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CTRC_TESN		X	Test / Stage Number	2

Group Name: CTRP – Cyclic Triaxial Test – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	CTRP_CYC		0DP	Cycle number	2
	CTRP_CYCF		0DP	Cycle number of failure	29
	CTRP_PWPM	kPa	1DP	Maximum excess porewater pressure	100.1
	CTRP_MNPP	kPa	1DP	Minimum excess porewater pressure	95.1
	CTRP_MXSS	kPa	1DP	Maximum shear stress	125.2
	CTRP_MNSS	kPa	1DP	Minimum shear stress	110.2
	CTRP_AVSS	kPa	1DP	Mean shear stress	99.2
	CTRP_CSS	kPa	1DP	Cyclic shear stress ((Max-Min)/2)	117.2
	CTRP_ACVS	kPa	1DP	Average cyclic axial stress	200.1
	CTRP_ASF	%	3DP	Axial strain at failure	0.015
	CTRP_FPWP	kPa	1DP	Porewater pressure at failure	320.1
	CTRP_QMAX	kPa	1DP	Maximum deviatoric stress	232.2
	CTRP_QMIN	kPa	1DP	Minimum deviatoric stress	75.1
	CTRP_MNES	kPa	1DP	Mean effective stress at end of CTRD_CYC	81.2
	CTRP_EAMX	%	3DP	Maximum axial strain	0.258
	CTRP_EAMN	%	3DP	Minimum axial strain	0.258
	CTRP_FVR		3DP	Final voids ratio	0.783
	CTRP_QEMX	kPa	1DP	Deviatoric stress at maximum axial strain	195.1
	CTRP_QEMN	kPa	1DP	Deviatoric stress at minimum axial strain	55.2
	CTRP_ESEC	MPa	1DP	Secant modulus	452.2
	CTRP_DAMP		2DP	Damping ratio	7.31
	CTRP_MODE		X	Mode of failure	Brittle
	CTRP_DIPL	%	2DP	Percent Difference from Programmed Load	3.24
	CTRP_OBP		X	Observed Performance (Visual)	Uniform straining
	CTRP_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: CTRS – Cyclic Triaxial Tests – Saturation					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U

Group Name: CTRS – Cyclic Triaxial Tests – Saturation					
Status	Heading	Suggested Unit / Type		Description	Example
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	CTRS_TESN		X	Test / Stage Number	2
	CTRS_CELL	kPa	1DP	Saturation cell pressure	200.1
	CTRS_BPWP	kPa	1DP	Saturation base porewater pressure	100.2
	CTRS_MPWP	kPa	1DP	Saturation mid-height porewater pressure	120.1
	CTRS_MPB		2DP	Saturation mid-height B value	0.95
	CTRS_BB		2DP	Saturation base B value	0.99
	CTRS_SAT		X	Saturation method	Back Pressure
	CTRS_FSAT	%	2DP	Final saturation	99.12
	CTRS_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: DCPG - Dynamic Cone Penetrometer Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DCPG_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
*	DCPG_TESN		X	Test reference	1
*	DCPG_DPTH	m	2DP	Depth from surface to start of test	0.30
	DCPG_ZERO	mm	0DP	Zero reading	223
	DCPG_LREM		X	Details of surface and base layers removed prior to/during the test (if applicable)	Asphalt surface layer removed by coring to allow testing of sub-base layers
	DCPG_REM		X	Test remarks	Test terminated at 0.53m penetration due to significant lean away from vertical
	DCPG_ENV		X	Details of weather and environmental conditions during test	Sunny and warm
	DCPG_METH		X	Test method	DMRB CS 229
	DCPG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	DCPG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. field record sheets)	FS26
	DCPG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- DCPG and DCPT are used together to record dynamic cone penetrometer (DCP) tests where data is recorded as penetration per blow. If data is recorded as blows over an interval, data shall be recorded in DPRG and DPRB.
- DCPG\_REM should be used to record test set up including surface type, surface condition, base type, thickness of base (if removed) mm (ref TRL Project PR/INT/277/04).
- It is suggested that if CBR values derived from DCP tests are to be transferred in the AGS data then these should be included in the ICBR group.

Group Name: DCPT - Dynamic Cone Penetrometer Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DCPG_DATE	YYYY-mm-dd	DT	Test date	2003-03-20
*	DCPG_TESN		X	Test reference	1
*	DCPG_DPTH	m	2DP	Depth from surface to start of test	0.30
*	DCPT_CBLO		0DP	Cumulative blows	1
	DCPT_PEN	mm	0DP	Penetration at DCPT_CBLO	9
	DCPT_DEL	hh:mm	T	Delay before increment started	00:00
	DCPT_REM		X	Test reading remarks	Additional remarks as required

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: DETL - Stratum Detail Descriptions					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DETL_TOP	m	2DP	Depth to top of detail description	3.46
*	DETL_BASE	m	2DP	Depth to base of detail description	3.76
	DETL_DESC		X	Detail description	Claystone
	DETL_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS4

**Group Rules:**

- None

**Group Notes:**

- DETL is used to include geological details to the geological description of a stratum typically included in the margins of a borehole log.
- A geological description in DETL\_DESC should be considered as a supplement to the main stratum description given in GEOL\_DESC of the GEOL Group. Detailed descriptions should be given a single depth (which is repeated in both the DETL\_TOP and DETL\_BASE headings), only if it has no significant thickness, or if it marks the top of a gradational change in the nature of the stratum. For example, '27.65m Marl parting' or '35.65m Becoming very sandy'. If the change in the stratum is not gradational it is generally preferable to give depth ranges. For example, '6.50 to 8.70m Sandy', is generally preferable to 'Sandy below 6.50m'. The

depth or depth range of the detailed feature may be repeated within the description. Since the detailed descriptions are a supplement to the main description, detailed description depth ranges shall not cross main stratum boundaries.

Group Name: DISC - Discontinuity Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DISC_TOP	m	2DP	Depth to top in hole, or distance to start on traverse, of discontinuity zone, or discontinuity	10.26
*	DISC_BASE	m	2DP	Depth to base in hole, or distance to end on traverse, of discontinuity zone	12.67
*	FRAC_SET		X	Discontinuity set reference	J3
*	DISC_NUMB		X	Discontinuity reference	57
	DISC_TYPE		PA	Type of discontinuity	Joint
	DISC_DIP	deg	X	Dip of discontinuity	8
	DISC_DIR	deg	X	Dip direction of discontinuity	247
	DISC_RGH		X	Small scale roughness	Smooth
	DISC_PLAN		X	Medium scale roughness	Planar
	DISC_WAVE	m	1DP	Large scale roughness, wavelength	15.1
	DISC_AMP	m	1DP	Large scale roughness, amplitude	0.5
	DISC_JRC		0DP	Joint Roughness Coefficient	10
	DISC_APP		X	Surface appearance	Slightly polished
	DISC_APT	mm	XN	Discontinuity aperture measurement	2
	DISC_APOB		X	Discontinuity aperture observation	Infilled
	DISC_INFM		X	Infilling material	Soft clay
	DISC_TERM		PA	Discontinuity termination (lower, upper)	X
	DISC_PERS	m	1DP	Persistence measurement	10.5
	DISC_STR	MPa	0DP	Discontinuity wall strength	50
	DISC_WETH		X	Discontinuity wall weathering	Slightly weathered
	DISC_SEEP		X	Seepage rating	Small
	DISC_FLOW	l/s	0DP	Water flow estimate	2
	DISC_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS24
	DISC_MID	m	2DP	Depth to mid-point in hole, or distance to mid-point on traverse, of discontinuity zone	11.47

#### Group Rules:

- DISC\_APT shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200

#### Group Notes:

- DISC is used to record detailed discontinuity logging typically carried out in rock exposures and rock core.
- Discontinuity spacing data is recorded in the FRAC group.
- Changes have been made to bring the Group in line with BS EN ISO 14689. References to ISRM have been removed as BS EN ISO 14689 is compatible with previous standards. Terminology has been amended to reflect current requirements.
- DISC\_DIP and DISC\_DIR data type changed to X but care should be taken to ensure a consistent convention is used throughout the AGS file. Where possible one value should be reported but if a range is required the presence of excess spaces and inconsistent separators is discouraged e.g. 150-160 not 150 160 or 150 to 160
- REPORTING DISCONTINUITY LOGGING DATA
- Discontinuity logging may be carried out as part of a scanline survey of a rock face, or as a detailed fracture log of borehole core.
- a) The logging may take one of three forms, the first two being the commonest:

- The recording of the nature of individual discontinuities. All discontinuity descriptions are given in the DISC Group. The FRAC Group shall not be used. The spacing between individual discontinuities may be assessed from their depths.
- The recording of the typical nature of sets of discontinuities. The typical description for a discontinuity set is given in the DISC Group and the typical spacing is given in the FRAC Group. Individual discontinuities are not described.
- The recording of the nature of individual discontinuities, with each discontinuity assigned to a discontinuity set. The individual discontinuity descriptions are given in the DISC Group and the typical spacing of a discontinuity set is given in the FRAC Group.
- b) If individual discontinuities have been logged along a scanline or in a borehole, then the reporting procedure is as follows:
  - The nature of the individual discontinuities is recorded in the DISC Group.
  - For scanline logging, the location of each discontinuity is given in DISC\_TOP as a distance from the start of the traverse along a scanline. The DISC\_BASE should be completed to allow for checks against the discontinuity dip.
  - For borehole cores, the location of each discontinuity is given as a depth in either DISC\_TOP for horizontal to sub horizontal discontinuities or DISC\_TOP and DISC\_BASE for vertical to inclined discontinuities.
  - Each discontinuity is numbered sequentially in DISC\_NUMB from the top of the borehole, or from the start of the traverse.
  - If each discontinuity has been assigned to a discontinuity set, then the set reference number should be given in FRAC\_SET (see c below). The use of FRAC\_SET is optional when individual discontinuities are logged.
  - The orientation and nature of each discontinuity is reported using the remaining fields in DISC.
  - For borehole logs the surface nature of the discontinuity is described using a combination of DISC\_RGH, DISC\_PLAN, DISC\_JRC, DISC\_APP, DISC\_STR and DISC\_WETH. It is generally not reliable to measure the aperture of a discontinuity in borehole core as the effect of drilling disturbance is unknown. However, the thickness of any discontinuity infill should be given in DISC\_APT, and the nature of the infill given in DISC\_INFM. Discontinuity dip can be given in DISC\_DIP for vertical boreholes, and inclined boreholes with orientated core. Discontinuity dip direction can only be given in DISC\_DIR if the core is orientated. In an inclined borehole with unorientated core only relative discontinuity dip can be given with respect to the normal to the core axis.
- For scanline logs all the above details of discontinuity orientation and nature can be given, together with the large scale waviness, true discontinuity aperture, discontinuity termination (using the abbreviations defined on the AGS website), and water seepage observations.
- The format of the DISC Group is applicable to most descriptive schemes, other than ISRM (1978) ) and/or BS EN ISO 14689-1. Alternative schemes may be used on agreement between the Provider and Receiver.
- c) If sets or zones of discontinuities have been logged along a scanline or in a borehole, then the reporting procedure is as follows:
  - The discontinuity sets or zones are recorded in a combination of the DISC and FRAC Groups. The DISC Group is used to record either the typical orientation and nature of each set or zone of discontinuities, or the individual discontinuities. The FRAC Group is used to record the spacing of the discontinuities in each set or zone.
  - The start and end of each set or zone of discontinuities of similar nature is given in DISC\_TOP and DISC\_BASE, either as depth in a borehole, or as distance from the start of the traverse along a scanline. The start and end of each set or zone of discontinuities with a similar spacing is given in FRAC\_FROM and FRAC\_TO. Normally the 'nature' and 'spacing' zones will coincide, and, therefore, DISC\_TOP and DISC\_BASE will be the same as FRAC\_FROM and FRAC\_TO.
  - DISC\_NUMB data variable is null (Rule 12) when logging discontinuity sets or zones.
  - Each discontinuity set or zone must be given a unique set reference number in FRAC\_SET. For example, joint sets may be numbered J1, J2, J3 etc, bedding discontinuities as B1, B2 etc. The use of FRAC\_SET provides the link between the DISC and FRAC Groups.
  - The typical orientation and nature of each discontinuity set or zone is reported using the remaining fields in DISC.
- The spacing of the discontinuities within each discontinuity set or zone is reported in the FRAC Group, giving the minimum, average (typical), and maximum spacing in mm of the fractures in that set or zone, using the FRAC\_IMIN, FRAC\_IAVE and FRAC\_IMAX fields. Alternatively, the average (typical) number of fractures per metre can be given in FRAC\_FI.

Group Name: DLOG - Driller Geological Description					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DLOG_TOP	m	2DP	Depth to top of drillers stratum description	11.25
*	DLOG_BASE	m	2DP	Depth to base of drillers stratum description	12.25
	DLOG_DESC		X	Drillers description of stratum	Dense yellow SAND
	DLOG_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. sampling field sheets)	FS67

#### Group Rules:

- None

#### Group Notes:

- The DLOG group is to record initial stratum descriptions as recorded by the driller on the drillers logs. Engineers descriptions to be included in the GEOL group.

Group Name: DMDG - Flat Dilatometer Dissipation Test - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
*	DMDG_DPTH	m	2DP	Depth of dissipation test	5.05
	DMDG_TFLX	min	2DP	Time to point of inflection on dissipation curve (T <sub>flex</sub> )	10.15
	DMDG_CH	m <sup>2</sup> /yr	2SCI	Coefficient of consolidation (c <sub>h</sub> ), (horizontal), calculated from DMDG_TFLX	8.64E-6
	DMDG_CHMT		X	Method(s) used to determine horizontal coefficient of consolidation	Marchetti TC16
	DMDG_MH	MPa	2DP	Horizontal constrained modulus, M <sub>h</sub>	3.45
	DMDG_MHMT		X	Method(s) used to determine horizontal constrained modulus	Marchetti TC16
	DMDG_KH	m/s	1SCI	Horizontal coefficient of permeability (k <sub>h</sub> ), calculated from DMDG_TFLX	1.1E-8
	DMDG_KHMT		X	Method(s) used to determine horizontal coefficient of permeability	Marchetti TC16
	DMDG_DATE	yyyy-mm-ddThh:mm:ss	DT	Test start date and time	2009-10-01T10:15:16
	TEST_STAT		X	Test status	Checked
	DMDG_REM		X	Note on set up conditions	Additional remarks as required
	FILE_FSET		X	Associated File Reference	FS10

**Group Rules:**

- None

**Group Notes:**

- DMDG is to be used to record the general information relating to dissipation tests carried out during the flat dilatometer test

Group Name: DMDT - Flat Dilatometer Dissipation Test - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
*	DMDG_DPTH	m	2DP	Depth of dissipation test	5.05
*	DMDT_TIME	s	1DP	Elapsed time since start of test	5.5
	DMDT_A	kPa	2DP	A-pressure test reading	1.12
	DMDT_REM		X	Note on individual record	Additional remarks as required
	FILE_FSET		X	Associated File Reference	FS10

**Group Rules:**

- None

**Group Notes:**

- DMDT is used to include the dissipation test readings



Group Name: DMTG - Flat Dilatometer Test - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
	DMTG_DATE	yyyy-mm-ddThh:m m:ss	DT	Test date and time	2009-10-01T10:15:16
	DMTG_ORNT	deg	0DP	Angle that the membrane is pointing to	012
	DMTG_PED	m	2DP	Pre-drilled depth	1.25
	DMTG_WAT	m	2DP	Depth to groundwater level, z_w at time of test	2.25
	DMTG_WATA		X	Origin of groundwater level in DMTG_WAT	Measured
	DMTG_TYPE		PA	Specific details on type of DMT equipment	PNEUMATIC
	DMTG_REFB		X	Serial number of blade (if applicable)	ABC123
	DMTG_REFA		X	Serial number of the acquisition unit (if applicable)	XYZ123
	DMTG_MAN		X	Manufacturer of the dilatometer	GeoPoke
	DMTG_RIG		X	Type of penetration rig	Small track rig
	DMTG_EQPT		X	Mass, reaction and equipment geometry	5t, Ground anchors
	DMTG_COT		X	Method and calibration of thrust measurement	200 kN Futek LCF500 load cell, calibrated 18/11/2025, certificate number N25-2373.
	DMTG_TDR		X	Type and diameter of penetration rods	GeoPoke CPT rods, 36 mm
	DMTG_DIMS		X	Geometry and dimensions of the dilatometer, as measured	Width 95 mm, Thickness 15 mm, Apex angle 26 degrees
	DMTG_PRSG		X	Measuring range of the pressure gauges and zero offset when vented	6 bar, 0.02 bar offset. 80 bar, 0.5 bar offset.
	DMTG_FRIC		X	Details of any rod friction reducer, including diameter	40 mm ring 500 mm behind blade connection
	DMTG_DITH	mm	2DP	Membrane thickness	0.25
	DMTG_BCVA	kPa	2DP	Blade calibration value used, delta A	0.15
	DMTG_BCVB	kPa	2DP	Blade calibration value used, delta B	0.40
	DMTG_FAED	MPa	1DP	Dilatometer modulus (Ed) factor	34.7
	DMTG_FAS0	mm	1DP	Membrane displacement	1.1
	DMTG_TERM		X	Termination reason(s)	Maximum nominal pressure + danger of buckling rods
	DMTG_CORR		X	Corrections applied during data processing (e.g. depth corrections, zeros)	Different Delta A and Delta B used from 8.6 m down due to membrane tear at 8.4 m.
	DMTG_REM		X	Note on set up conditions, comments on testing, types of materials encountered if possible	Additional remarks as required
	DMTG_OPER		X	Name of test operator	ABC
	DMTG_ANBY		X	Name(s) of analyser / person responsible for data quality and correctness	ABC/DEF
	DMTG_ENV		X	Details of weather and environmental conditions during test	24 DegC and sunny
	DMTG_METH		X	Standard followed for testing	ISO 22476-11:2017
	DMTG_DEV		X	Deviations from the standard followed	Calibration readings were outside of standard range
	DMTG_CONT		X	Subcontractors name	ACME In Situ
	DMTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000

Group Name: DMTG - Flat Dilatometer Test - General					
Status	Heading	Suggested Unit / Type		Description	Example
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- DMTG is used to record the general information about flat dilatometer tests.
- DMTG\_WATA is required to clarify the origin of water level recorded in DMTG\_WAT.
- Flat dilatometer testing is frequently carried out by specialist sub-contractors. DMTG\_CONT is included to record the name of the specialist sub-contractor.

Group Name: DMTP - Flat Dilatometer Test - Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
*	DMTT_DPTH	m	2DP	Depth of result	1.25
	DMTP_BUW	kN/m3	1DP	Estimated bulk unit weight of soil, gamma (can be custom or correlation from software)	17.4
	DMTP_TVS	kPa	0DP	Estimated total vertical stress, sigma_v, (based on DMTP_BUW)	50
	DMTP_EVS	kPa	0DP	Estimated effective vertical stress, sigma'_v (Calculated from DMTP_TVS and DMTP_U0 or DMTG_WAT)	50
	DMTP_U0	kPa	1DP	In situ pore pressure, u_o (can be custom or based on depth below DMTG_WAT)	9.8
	DMTP_ID		2DP	Material index, I_D	5.66
	DMTP_KD		1DP	Horizontal stress index, K_D	1.8
	DMTP_ED	MPa	1DP	Dilatometer modulus, E_D	31.1
	DMTP_UD		2DP	Pore pressure index u_D	1.11
	DMTP_VS	m/s	0DP	Shear wave velocity (correlated), V_s	178
	DMTP_VDM	MPa	1DP	Vertical drained constrained modulus, M	121.1
	DMTP_SU	kPa	0DP	Undrained shear strength, s_u, fine soils only	20
	DMTP_PHI	deg	1DP	Effective angle of internal friction, phi', coarse soils only	39.1
	DMTP_K0		2DP	Coefficient of lateral earth pressure at rest, K_0, fine soils only	1.81
	DMTP_THS	kPa	0DP	Estimated total horizontal stress, sigma_h	50
	DMTP_EHS	kPa	0DP	Estimated effective horizontal stress, sigma'_h	50
	DMTP_OCR		1DP	Over-consolidation ratio, OCR, fine soils only	11.3
	DMTP_MPS	kPa	1DP	Estimated maximum preconsolidation stress, sigma'_p, (calculated from DMTP_OCR and DMTP_EVS)	201.8
	DMTP_DSD		X	Interpreted soil description	SAND
	DMTP_BUWM		X	Method for estimated bulk unit weight of soil, gamma_b	Custom definition based on discrete samples
	DMTP_TVSM		X	Method for estimated total vertical stress, sigma_v	Marchetti TC16

Group Name: DMTP - Flat Dilatometer Test - Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
	DMTP_EVSM		X	Method for estimated effective vertical stress, $\sigma'_v$	Marchetti TC16
	DMTP_U0M		X	Method for in situ pore pressure, $u_o$	Custom definition based on borehole piezometers
	DMTP_IDM		X	Method for material index, $I_D$	Marchetti TC16
	DMTP_KDM		X	Method for horizontal stress index, $K_D$	Marchetti TC16
	DMTP_EDM		X	Method for dilatometer modulus, $E_D$	Marchetti TC16
	DMTP_UDM		X	Method for pore pressure index $u_D$	Marchetti TC16
	DMTP_VSM		X	Method for shear wave velocity (correlated), $V_s$	Amoroso 2014
	DMTP_VDMM		X	Method for vertical drained constrained modulus, $M$	Marchetti TC16
	DMTP_SUM		X	Method for undrained shear strength, $s_u$ , fine soils only	Chang 1991
	DMTP_PHIM		X	Method for effective angle of internal friction, $\phi'$ , coarse soils only	Marchetti TC16
	DMTP_K0M		X	Method for coefficient of lateral earth pressure at rest, $K_0$ , fine soils only	Lunne 1989
	DMTP_THSM		X	Method for estimated total horizontal stress, $\sigma_h$	Marchetti TC16
	DMTP_EHSM		X	Method for estimated effective horizontal stress, $\sigma'_h$	Marchetti TC16
	DMTP_OCRM		X	Method for over-consolidation ratio, OCR, fine soils only	Lunne 1989
	DMTP_MPSM		X	Method for estimated maximum preconsolidation stress, $\sigma'_p$ , (calculated from DMTP_OCR and DMTP_EVS)	Marchetti TC16
	DMTP_DSDM		X	Method for interpreted soil description	Marchetti TC16
	DMTP_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- The DMTP group is used to transfer derived parameters determined from flat dilatometer tests.
- The requirement for this information as part of ground investigation reporting shall be fully specified at the outset of the investigation. The specification may need to detail the interpretative method(s) to be used.
- Headings with suffix of M are intended for details of the correlation methods/references used to carry out calculations.

Group Name: DMTT - Flat Dilatometer Test - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
*	DMTT_DPTH	m	2DP	Depth of result	1.25
	DMTT_MTH	kg	0DP	Thrust	56
	DMTT_BCVA	kPa	2DP	Blade calibration value for specific depth record, delta A	0.15
	DMTT_BCVB	kPa	2DP	Blade calibration value for specific depth record, delta B	0.40

Group Name: DMTT - Flat Dilatometer Test - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	DMTT_TMST	yyyy-mm-ddThh:mm:ss	DT	Pressurisation start time	2016-10-05T10:12:25
	DMTT_A	kPa	2DP	A-pressure test reading	1.82
	DMTT_TMA	s	1DP	A-position time since start of pressurisation	14.6
	DMTT_B	kPa	2DP	B-pressure test reading	10.90
	DMTT_TMB	s	1DP	B-position time since start of pressurisation	28.5
	DMTT_C	kPa	2DP	C-pressure test reading	0.23
	DMTT_TMC	s	1DP	C-position time since start of pressurisation	115.4
	DMTT_P0	kPa	0DP	Corrected test reading A, p_0	158
	DMTT_P1	kPa	0DP	Corrected test reading B, p_1	1054
	DMTT_P2	kPa	0DP	Corrected test reading C, p_2	42
	DMTT_INCX	deg	1DP	Inclination 1 (the axis through the membrane)	2.3
	DMTT_INCY	deg	1DP	Inclination 2 (the axis across the width of the blade)	1.1
	DMTT_RATE	mm/s	0DP	Penetration rate	20
	DMTT_REM		X	Remarks on specific depth readings	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- DMTT is used to include the readings from the measurement data using any required calibration factors and other mathematical formulae employed by the measurement contractor in accordance with the specification.

Group Name: DMTZ - Flat Dilatometer Test - Zeros					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DMTG_TESN		X	Test reference	5
*	DMTZ_DATE	yyyy-mm-ddThh:mm:ss	DT	Test date and time of zero readings	2009-10-01T10:15:16
	DMTZ_TYPE		PA	When were the zeros performed	BEFORE
	DMTZ_BCVA	kPa	2DP	Blade zero value, delta A	0.15
	DMTZ_BCVB	kPa	2DP	Blade zero value, delta B	0.40
	DMTZ_REM		X	Remarks on the zero values	From the end of last test
	FILE_FSET		X	Associated file reference	FS18

**Group Rules:**

- None

**Group Notes:**

- DMTZ is used to hold before, during (optional) and after test zero values for the membrane(s) used during the testing.

Group Name: DOBS - Drilling/Advancement Observations & Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DOBS_TOP	m	2DP	Depth to top of reported section	6.20
*	DOBS_BASE	m	2DP	Depth to base of reported section	7.20
*	DOBS_SET		X	Readings set reference	A
	DOBS_DURN	hh:mm:ss	T	Duration to advance reported section	00:05:00
	DOBS_STIM	yyyy-mm-ddThh:mm:ss	DT	Date and time of start of reported section	2010-12-02T14:05:15
	DOBS_ETIM	yyyy-mm-ddThh:mm:ss	DT	Date and time at end of reported section	2010-12-02T14:10:15
	DOBS_DHRT	Nm	1DP	Drill head rotational torque	250.5
	DOBS_DHRS	rpm	0DP	Drill head rotational speed	76
	DOBS_PENR	m/hr	1DP	Penetration rate	2.0
	DOBS_HAMM		YN	Hammering used during section	N
	DOBS_THRP	bar	1DP	Pressure of downthrust system	30.0
	DOBS_RESP	bar	1DP	Pressure of restraining (holdback) system	25.0
	DOBS_TORP	bar	1DP	Torque pressure	20.0
	DOBS_TORQ	Nm	1DP	Torque applied to top of drill rods	250.0
	DOBS_THST	kN	1DP	Downward thrust on bit	5.0
	DOBS_REST	kN	1DP	Restraining (holdback) force	5.0
	DOBS_HAMP	bar	1DP	Supply pressure to downhole hammer	80.0
	DOBS_SPEN	MJ/m3	1DP	Specific energy	500.0
	DOBS_FMPO	kPa	1DP	Flushing medium pressure at the output of the pump over flush zone	15.3
	DOBS_FMCR	l/min	1DP	Flushing medium circulation rate (input) over flush zone	1.2
	DOBS_FMRR	l/min	1DP	Flushing medium recovery rate over flush zone	1.1
	DOBS_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. drilling journals or log files)	FS36
	DOBS_METH		X	Measurement method	BS EN ISO 22476-15:2016

**Group Rules:**

- None

**Group Notes:**

- DOBS is to be used to record information on hole advancement and drilling parameters, for example open hole rotary drilling information.
- DOBS records are data relating to the drilling parameters over a depth range. Where instrumentation on drilling rigs provides point readings of these parameters, this data should either be collated to summarise parameters over appropriate depth ranges, or reported with the start and end of each depth range to represent a point reading.

- DOBS\_SET allows for multiple readings to be included in the group in circumstances for example where a hole depth section is re-drilled.
- FLSH shall be used to record other flushing related information.
- It is suggested that DOBS can be used to transfer information recorded from instrumented drilling rigs. Additional fields maybe required to fully transfer the information.

Group Name: DPRB - Dynamic Probe Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DPRG_TESN		X	Test reference	1
*	DPRB_DPTH	m	2DP	Depth to start of dynamic probe increment	2.50
	DPRB_BLOW		0DP	Dynamic probe blows for increment DPRB_INC	7
	DPRB_CBLW		0DP	Cumulative blows for test	35
	DPRB_TORQ	Nm	0DP	Maximum torque required to rotate rods	75
	DPRB_DEL	hh:mm	T	Delay before increment started	00:00
	DPRB_INC	mm	0DP	Dynamic probe increment	100
	DPRB_REM		X	Notes on events during increment	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS25

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: DPRG - Dynamic Probe Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DPRG_TESN		X	Test reference	1
	DPRG_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	DPRG_TYPE		PA	Dynamic probe type	DPL
	DPRG_METH		X	Test method	BS EN ISO 22476-2:2005+A1:2011
	DPRG_MASS	kg	1DP	Hammer mass	50.0
	DPRG_DROP	mm	0DP	Standard drop	500
	DPRG_CONE	mm	1DP	Cone base diameter	43.0
	DPRG_ROD	mm	0DP	Rod diameter	35
	DPRG_TANV		X	Type of anvil	Steel
	DPRG_DAMP		X	Type of anvil damper	None
	DPRG_TIP	m	2DP	Depth of cone if left in ground	8.00
	DPRG_REM		X	General remarks	Hole backfilled on completion
	DPRG_ANG	deg	0DP	Cone angle	90
	DPRG_RMSS	kg/m	1DP	Rod mass	9.0
	DPRG_PARF		X	Precautions against rod friction	None

Group Name: DPRG - Dynamic Probe Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	DPRG_PDIU		X	Pre-drilling if used	1 m predrilled
	DPRG_BCF		X	Blow count frequency	5 seconds
	DPRG_GW	m	2DP	Groundwater level	1.00
	DPRG_REET		X	Reasons for early end of test	Refusal on rock
	DPRG_ENV		X	Details of weather and environmental conditions during test	Heavy rain
	DPRG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	DPRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS25
	DPRG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- The cone angle and rod mass (per unit length) have been included to provide additional test data for defining non-standard equipment such as the Mackintosh Probe.

Group Name: DREM - Depth Related Remarks					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	DREM_TOP	m	2DP	Depth of remark (DREM_REM)	12.50
*	DREM_BASE	m	2DP	Base depth	13.80
	DREM_REM		X	Depth related remark	Driving boulder ahead of casing
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS5

**Group Rules:**

- None

**Group Notes:**

- DREM may be used for all remarks and notes that are related to a specific depth in the borehole or trial pit, that are not geological. Typically this includes drillers comments usually found on the boring or drilling journal.
- DREM is used for reporting incidents during drilling (such as 'Fishing for broken U100'), drilling records that don't readily fit in any other groups (such as 'Pushing boulder ahead of casing'), observations that are not strictly geological (such as 'Strong petrol smell').

Group Name: ECTN - Sample Container Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	11.25
*	SAMP_REF		X	Sample reference	32

Group Name: ECTN - Sample Container Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	SAMP_TYPE		PA	Sample type	ES
*	SAMP_ID		ID	Sample unique identifier	ABC121418010
*R	ECTN_ID		ID	Container unique identifier	AA121589465
	ECTN_TYPE		X	Sample container type	AMBER_GLASS
	ECTN_REM		X	Sample container remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. sampling field sheets)	FS67

**Group Rules:**

- When the sample is contained in a single container the sample shall not be reported in this group.

**Group Notes:**

- The ECTN group is used to record details of multiple containers forming part of any single sample. For example, a selection of glass jars, vials, tubs etc (comprising a single ES sample) taken for contamination testing, or multiple small bulk bags in lieu of a single large bulk for geotechnical testing (comprising a single LB sample).
- SAMP\_ID does not have to be used and can be NULL (Rule 12); the remaining keyset data field headings can be used on their own.

Group Name: ELRG - Environmental Laboratory Reporting					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	ES
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*R	ELRG_CODE		PA	Determinand code	P04100
*	ELRG_METH		X	Test method	In house method no 231241
*	ELRG_MATX		PA	Laboratory test matrix	LIQUID
*	ELRG_RTYP		PA	Run type (initial or reanalysis)	INITIAL
*	ELRG_TADE		PA	Test additional descriptor	CEN_2_1
*	ELRG_TICN		X	Tentatively identified compound (TIC)	1,2,3,dibrom etc
*R	ELRG_RUNI		PU	Result unit	mg/l
	SPEC_DESC		X	Specimen description	Grey angular limestone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ELRG_LSID		X	Laboratory sample ID	ABC123-A
	ELRG_RTCD		PA	Result type	TIC
	ELRG_IQLF		X	Interpreted qualifiers	<
	ELRG_LQLF		X	Laboratory qualifiers	<
	ELRG_RVAL		U	Result value	0.25



Group Name: ELRG - Environmental Laboratory Reporting					
Status	Heading	Suggested Unit / Type		Description	Example
	ELRG_RTXT		X	Reported result	<2.3
	ELRG_NAME		X	Determinand name	Boron
	ELRG_TNAM		X	Laboratory analytical name	Boron
	ELRG_DCAT		X	Determinand category	Metals, VOC, Pesticides
	ELRG_TESN		X	Test reference	12B
	ELRG_FDEV		YN	Flagged deviation	N
	ELRG_DEV		X	Result deviation description(s)	Holding time + Incorrect containers
	ELRG_RRES		YN	Reportable result	Y
	ELRG_DETF		YN	Detect flag	N
	ELRG_ORG		YN	Organic	Y
	ELRG_RDLM		U	Reporting detection limit	10
	ELRG_MDLM		U	Method detection limit	1
	ELRG_QLM		U	Quantification limit	10
	ELRG_DUNI		PU	Unit of detection/quantification limits	mg/l
	ELRG_CASC		X	CAS code	7782-44-7
	ELRG_TICP	%	ODP	Tentatively identified compound (TIC) probability	10
	ELRG_TICT	s	ODP	Tentatively identified compound (TIC) retention time	2
	ELRG_RDAT	yyyy-mm-ddThh:mm	DT	Sample receipt date/time at laboratory	2020-12-05T12:00
	ELRG_SGRP		X	Sample delivery or batch code	ABC123
	ELRG_DTIM	yyyy-mm-ddThh:mm	DT	Analysis date and time	2020-12-06T09:09
	ELRG_TEST		X	Test or Suite Name	Suite A
	ELRG_TORD		X	Total or dissolved	Total
	ELRG_LOCN		PA	Analysis location	LAB
	ELRG_BAS		PA	Basis	WET
	ELRG_DIL		ODP	Dilution factor	5
	ELRG_LMTH		X	Leachate preparation method	10:1
	ELRG_LDTM	yyyy-mm-ddThh:mm	DT	Leachate preparation date and time	2020-12-06T09:19
	ELRG_IREF		X	Instrument reference number or identifier	ABC123
	ELRG_ITYP		X	Instrument type	GCMS
	ELRG_SIZE	mm	ODP	Size of material removed prior to test; value given indicates lowest sized material removed	2
	ELRG_PERP	%	1DP	Percentage of material removed	8.9
	ELRG_REM		X	Remarks	Additional remarks as required
	ELRG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ELRG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000

Group Name: ELRG - Environmental Laboratory Reporting					
Status	Heading	Suggested Unit / Type		Description	Example
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS13

#### Group Rules:

- Where there is no unit, the ELRG\_RUNI data variable shall be set to 'UNITLESS'.
- Data type for data field heading ELRG\_UNIT, ELRG\_DUNI shall not be changed from PU.
- When reporting Tentatively Identified Compound (TIC) data variables the ELRG\_CODE shall be P4100

#### Group Notes:

- ELRG provides for the transfer of results provided by an environmental laboratory data. Linked to the SAMP group this results group is suitable for both results of geoenvironmental testing carried out in the field or in a chemical test laboratory.
- Geotechnical chemical testing is to be transferred using the GCHM group and shall not be transferred or duplicated within ELRG.
- The headings listed in ELRG represent a range of attributes to describe geoenvironmental test results to cater for both simple and extended reporting requirements. It is important to note there is no requirement to complete all headings in data files for every analysis carried out. Where additional quality control data is required then further user defined headings may be necessary to transfer additional information. It is imperative that data providers and data receivers agree the specification for ELRG data at the outset of a project.
- ELRG shall not be a repository of data that more properly belongs in a more appropriate, pre-existing AGS group. For example, geotechnical testing conducted by a geoenvironmental laboratory (such as an Atterberg test to a geotechnical standard) should be reported in the LLPL group and not in ELRG. ELRG permits inclusion of non-chemical results where appropriate e.g. No fibres, weight of sample, colour, % stones.
- AGS 4.0 ERES fully replaced with AGS 4.1 ELRG. For context, see AGS 4.1.0 or AGS 4.1.1.
- ELRG provides a more generic construct that does not focus on chemicals/contaminants/determinands but instead the reporting deliverable (or result) from the geoenvironmental laboratory. The transfer format should be capable of transferring the information that is reported in the laboratory certificate (currently provided in Adobe Portable Document Format - PDF).
- ELRG\_MATX has been returned to the original pick list configuration of SOLID, LIQUID, GAS and adds PRODUCT.
- New heading ELRG\_TADE (test additional descriptor) is a data heading providing the ability to use discriminators.
- In conjunction with ELRG\_RUNI, ELRG\_TADE provides the capacity to aid keyset uniqueness. Examples of ELRG\_TADE are CEN\_2\_1, CEN\_10\_1, NRA, or references to relevant standards.
- Heading ELRG\_TICN (tentatively identified compound (TIC) IUPAC name) is now a keyset heading in order to store the TIC name provided by the laboratory. To permit data analysis ELRG\_CODE becomes a P code for TIC and the breakdown information is stored in the TIC headings. The headings ELRG\_TICN, ELRG\_TICP and ELRG\_TICT allow for inclusion of tentatively identified compounds. ELRG\_RTCD shall be flagged as 'TIC'.
- Heading ELRG\_DEV (result deviation descriptions) permits reporting the sample or result deviation. Multiple descriptions can be used e.g. Holding time; Wrong container.
- Heading ELRG\_ITYP (Instrument Type) records instrument type information i.e. human readable description e.g. GCMS, ICP-OES
- Heading ELRG\_TEST (Test or Suite name) enables ELRG results to be connected to testing suites. The test or suite name can either be provided within the LBST group, or via manual scheduling methods. If utilising LBSG/LBST groups, ELRG\_TEST shall match LBST\_TEST. Suites are often used in geoenvironmental test scheduling rather than individual determinands so this change better supports actual practices but still supports inclusion of single determinand tests where applicable.

Group Name: ESCG - Effective Stress Consolidation Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay

Group Name: ESCG - Effective Stress Consolidation Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	ESCG_TYPE		PA	Test type	CD
	ESCG_CELL		X	Type of equipment used	250mm dia Hydraulic cell
	ESCG_COND		PA	Sample condition	UNDISTURBED
	ESCG_SDIA	mm	2DP	Test specimen diameter	100.15
	ESCG_HIGT	mm	2DP	Test specimen height	100.25
	ESCG_MCI	%	X	Initial water/moisture content	21.2
	ESCG_MCF	%	X	Final water/moisture content	18.6
	ESCG_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	ESCG_BDEF	Mg/m3	2DP	Final bulk density	2.20
	ESCG_DDEN	Mg/m3	2DP	Initial dry density	1.75
	ESCG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	ESCG_IVR		3DP	Initial voids ratio	0.812
	ESCG_SATR	%	0DP	Initial degree of saturation	98
	ESCG_LOAD		X	Type of loading ( strain )	Equal, Free, triaxial
	ESCG_DRAG		X	Type of drainage	To top, both ends, radial inwards, radial outwards
	ESCG_PPM		X	Pore pressure measurement location	Centre base, offset
	ESCG_SPRS	kPa	2SF	Swelling pressure, if measured	100
	ESCG_SATM		X	Method of saturation	Back pressure, cell only, water permeation
	ESCG_SINC	kPa	0DP	Saturation increments	50
	ESCG_SDIF	kPa	0DP	Differential pressure during saturation	10
	ESCG_CELF	kPa	0DP	Cell or diaphragm pressure at end of saturation	310
	ESCG_BACF	kPa	0DP	Back pressure at end of saturation	300
	ESCG_BVAL		2DP	B value at end of saturation	0.96
	ESCG_SVOL	ml	1DP	Volume of water taken in during saturation	10.0
	ESCG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Sample from base of U100 sample, axis vertical
	ESCG_METH		X	Test method	BS1377-2:2022, Clause 20
	ESCG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	ESCG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS9
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	ESCG_DEV		X	Deviations from the test method	Explanation of any deviation
	ESCG_ISVR		3DP	Voids ratio at in situ vertical stress	0.699
	ESCG_ISVS	kPa	0DP	In situ vertical effective stress	200
	ESCG_ISST	%	2DP	Axial strain at in situ vertical effective stress	0.85
	ESCG_PCP	kPa	0DP	Preconsolidation stress (yield stress)	500

Group Name: ESCG - Effective Stress Consolidation Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	ESCG_YSR		1DP	Yield stress ratio (based on Casagrande Method)	2.5
	ESCG_CC		3DP	Compression index over stress increment	0.085
	ESCG_CS		3DP	Swelling index over stress increment	0.009

**Group Rules:**

- None

**Group Notes:**

- ESCG and ESCT are primarily designed to take data from the consolidation tests detailed in BS1377-2:2022, Clause 20 including hydraulic cells such as the Rowe cell. Other types of testing can be included but headings should only be populated where the data is consistent with those of the BS tests and ambiguity of terminology should be avoided.
- ESCG\_IVR shall be used to report the initial voids ratio at the start of testing. This will not necessarily be the same as the voids ratio at the start of first stage consolidation ESCT\_VR0 due to saturation.

Group Name: ESCT - Effective Stress Consolidation Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	ESCT_INCN		X	Consolidation stage number	3
	ESCT_REM		X	Additional stage specific details	Stage terminated at 90% pwp dissipation
	ESCT_INCC	kPa	0DP	Cell or diaphragm pressure applied during stage	600
	ESCT_INCB	kPa	0DP	Back pressure applied during stage	300
	ESCT_PWP0	kPa	0DP	Pore pressure at end of undrained loading	580
	ESCT_PWPF	kPa	0DP	Pore pressure at end of consolidation stage	300
	ESCT_INCF	kPa	0DP	Effective stress at end of consolidation stage	310
	ESCT_VR0		3DP	Voids ratio at start of increment	0.801
	ESCT_VRE		3DP	Voids ratio at end of stress increment	0.621
	ESCT DISS	%	0DP	Percentage pore pressure dissipation at end of stage	98
	ESCT_DSET	mm	3DP	Settlement measured during consolidation stage	0.234
	ESCT_DVOL	ml	1DP	Volume change measured during consolidation stage	22.1
	ESCT_INMV	m2/MN	2SF	Reported coefficient of volume compressibility over stress increment	0.32
	ESCT_INCV	m2/yr	2SF	Reported coefficient of consolidation over stress increment	4.1
	ESCT_INSC		2SF	Coefficient of secondary compression over stress increment	0.12

Group Name: ESCT - Effective Stress Consolidation Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	ESCT_CVME		X	Method used for deriving Cv	Log time PWP, root time settlement
	ESCT_TEMP	DegC	1DP	Average temperature over stress increment	22.0
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS9
	ESCT_INK	m/s	XN	Permeability over stress increment (t90)	9.3E-9

**Group Rules:**

- ESCT\_INK shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >N when readings are above the reporting limit (N) of the testing equipment.

**Group Notes:**

- ESCT\_DVOL - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: FGHG - Field Geohydraulic Testing - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FGHG_TOP	m	2DP	Depth to top of test zone	12.20
*	FGHG_BASE	m	2DP	Depth to base of test zone	12.95
*	FGHG_TESN		X	Test reference	2
	FGHG_TDIA	mm	0DP	Diameter of test zone	150
	FGHG_SDIA	mm	0DP	Inside diameter of installation standpipe or borehole casing	19
	FGHG_ODIA	mm	0DP	Outside diameter of installation standpipe or borehole casing	26
	FGHG_HBAS	m	2DP	Depth of borehole during test (excluding tests in installations)	15.35
	FGHG_CAS	m	2DP	Depth of casing during test (excluding tests in installations)	12.20
	FGHG_SFAC	m	2DP	Shape factor for test zone	2.34
	FGHG_SFRF		X	Shape factor reference	BS EN ISO 22282-1 Annex B (4) Cylindrical cavity with: $1,2 < L/D < 10$
	FGHG_DATE	yyyy-mm-dd	DT	Test date	2008-01-23
	FGHG_TYPE		PA	Type of test	CONSTANT HEAD
	FGHG_CNFG		PA	Test configuration	SP
	FGHG_METH		X	Test method	BS EN ISO 22282-2:2012
	FGHG_PRWL	m	2DP	Depth to water in borehole or installation prior to test	10.60
	FGHG_AWL	m	2DP	Depth to assumed standing water level used for calculations of head during test	10.00
	FGHG_HEAD	m	2DP	Applied total head of water at centre of test zone	20.55
	FGHG_FLOW	l/s	1DP	Average flow rate during test	2.3
	FGHG_IPRM	m/s	1SCI	Representative permeability for test	5.1E-9
	FGHG_ILUG		XN	Representative Lugeon value for water pressure test	Use 10 or <1

Group Name: FGHG - Field Geohydraulic Testing - General					
Status	Heading	Suggested Unit / Type		Description	Example
	FGHG_FTyp		PA	Flow type for water pressure test	Laminar
	FGHG_REM		X	Test remarks	Additional remarks as required
	FGHG_ENV		X	Details of weather and environmental conditions during test	Sunny and warm
	FGHG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	FGHG_OPER		X	Name of test operator	Bill Mallard
	FGHG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

#### Group Rules:

- None

#### Group Notes:

- The FGHG and related groups are for reporting the results of field geohydraulic permeability tests carried out in general accordance with BS EN ISO 22282-2 (Water permeability tests in a borehole using open systems) and -3 (Water pressure tests in rock), and the General rules of Part 1. These cover the variable head test methods (rising and falling head) and constant head/constant flow-rate methods in boreholes and installations, and 'packer tests' (now referred to in the standard as water pressure tests).
- The FGHG groups allow reporting of additional information required by the standards and in particular the data from test instrumentation using flowmeters, pressure transducers, etc which were not included in the AGS4.0 IPRT group.
- The FGHG groups shall not be used for Pumping tests covered in Part 4 of the standard nor Infiltrometer tests in Part 5. (N.B. Infiltrometer tests here are not the same as 'soakaway' tests covered elsewhere.)
- All reported depths are assumed to relate to ground level at the time of test, as used elsewhere and recorded in LOCA\_GL
- For tests in boreholes FGHG\_TOP and FGHG\_BASE are defined by depths of borehole, casing, packers, etc. For tests in standpipe type installations FGHG\_TOP and FGHG\_BASE are defined by the installation response zone, and correspond to MONG\_TRZ and MONG\_BRZ. However, for response zones in non-homogenous materials of different permeability it may be appropriate to use a different depth range for interpretation.
- FGHG\_TDIA is the diameter of the borehole for tests in both boreholes and installations (where the response zone diameter corresponds to the borehole diameter in the latter).
- FGHG\_SDIA is the diameter of rising/falling cylinder of water used in volume change calculation for variable head tests only. This heading is not required for constant head or constant flow-rate tests.
- FGHG\_HBAS is the base depth of a test in a borehole, for example, double packer configurations where the test section base does not correspond to the base of the borehole.
- FGHG\_SFAC and FGHG\_SFRF are to report shape (or intake) factors in BS EN ISO 22282-1, Hvorslev (1951) or other reference stated.
- FGHG\_CNFG is to report test configuration e.g. borehole, standpipe, standpipe piezometer, well, single packer, double packer, single instrumented packer, double instrumented packer.
- FGHG\_PRWL and FGHG\_AWL are expressed as depths to water in metres, but may be calculated values obtained from pressure measurement devices in the test section.
- FGHG\_PRWL refers to the depth to water prior to any changes made to initiate the test.
- FGHG\_HEAD is the applied head of water in the test section in excess of the ambient head due to the assumed equilibrium groundwater level. It may be calculated from pressure measurement devices in the test section. This applies only to single stage constant head/flow tests with a corresponding value for FGHG\_FLOW.
- FGHG\_IPRM is used to report the assessed permeability from non-multistage type tests (e.g. VHT) and the representative permeability from analysis of multistage tests (e.g. water pressure/'packer' tests) where this has been assessed. See FGHS for reporting results for separate stages of multistage tests.
- FGHG\_FTyp is the flow type identified during a water pressure test in accordance with Annex B of BS EN ISO 22282-3, or other specification.

Group Name: FGHI - Field Geohydraulic Testing - Instrumentation Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FGHG_TOP	m	2DP	Depth to top of test zone	12.20
*	FGHG_BASE	m	2DP	Depth to base of test zone	12.95
*	FGHG_TESN		X	Test reference	2
*	FGHI_INST		X	Instrument reference / serial number	P1
	FGHI_TYPE		X	Instrument measured parameters	Pressure and temperature
	FGHI_DETL		X	Details of instrument	VWP-3000
	FGHI_LOCT		X	Instrument position	Centre of packer test section
	FGHI_REM		X	Test remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

#### Group Rules:

- None

#### Group Notes:

- The FGHI group, together with the FGHT group, allows transfer of test records (readings or measurements) made during the test where this is required in the test specification.
- FGHI\_INST defines a specific measuring device within the test system by a unique reference. Further information on the type, model, etc can be provided in FGHI\_TYPE and FGHI\_DETL.
- Details of the location/position of the measuring device can be provided in FGHI\_LOCT, including depths in relation to the test section defined by FGHG\_TOP and FGHG\_BASE.
- Multiple simultaneous readings in the FGHT group can be accommodated through FGHI\_INST, e.g. simultaneous flow and pressure readings at 1 minute intervals, including pressure readings from more than one location within the system.

Group Name: FGHS - Field Geohydraulic Testing - Test Results (per stage)					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FGHG_TOP	m	2DP	Depth to top of test zone	12.20
*	FGHG_BASE	m	2DP	Depth to base of test zone	12.95
*	FGHG_TESN		X	Test reference	2
*	FGHS_STG		0DP	Stage number of multistage test	1
	FGHS_STTM	yyyy-mm-ddThh:m m:ss	DT	Start of stage date / time	2020-07-01T10:49:20
	FGHS_ENTM	yyyy-mm-ddThh:m m:ss	DT	End of stage date / time	2020-07-01T10:49:20
	FGHS_HEAD	m	2DP	Applied head of water during test stage at centre of test zone	20.50
	FGHS_FLOW	l/s	1DP	Average flow rate during test stage	2.3
	FGHS_IPRM	m/s	1SCI	Permeability for test stage	5.1E-9
	FGHS_ILUG		XN	Lugeon value for test stage	Use 10 or <1
	FGHS_REM		X	Test remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

**Group Rules:**

- None

**Group Notes:**

- The FGHS group is used for reporting calculated permeability results for multistage constant head/flow-rate tests, including water pressure tests. For non- multistage tests where all results are reported in FGHG then the FHGS group shall not be used.

Group Name: FGHT - Field Geohydraulic Testing - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FGHG_TOP	m	2DP	Depth to top of test zone	12.20
*	FGHG_BASE	m	2DP	Depth to base of test zone	12.95
*	FGHG_TESN		X	Test reference	2
*	FGHI_INST		X	Instrument reference / serial number	P1
*	FGHT_TIME	yyyy-mm-ddThh:m m:ss	DT	Test date / clock time of reading	2020-07-01T10:49:20
*	FGHT_TYPE		PA	Test record type	FLWR
	FGHS_STG		0DP	Stage number of multistage test	1
	FGHT_DURN	hh:mm:ss s	T	Elapsed time of reading during test or test stage	01:20:00
	FGHT_RDNG		U	Test record (reading)	123.321, 2000 or 0.0023
	FGHT_UNIT		PU	Reading units	l/s
	FGHT_REM		X	Test record remark	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS26

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: FLSH - Drilling Flush Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FLSH_TOP	m	2DP	Depth to top of flush zone	10.00
*	FLSH_BASE	m	2DP	Depth to bottom of flush zone	20.00
	FLSH_TYPE		PA	Type of flush	Polymer
	FLSH_RETN	%	0DP	Flush return minimum (as percentage)	50
	FLSH_RETX	%	0DP	Flush return maximum (as percentage)	70
	FLSH_COL		X	Colour of flush return	White
	FLSH_REM		X	Remarks	Polyacrylate polymer used
	FILE_FSET		X	Associated file reference (e.g. drilling journal, mud logging or test records)	FS5



**Group Rules:**

- None

**Group Notes:**

- None

Group Name: FRAC - Fracture Spacing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	FRAC_FROM	m	2DP	Depth to top in hole, or distance to start on traverse, of the zone	31.20
*	FRAC_TO	m	2DP	Depth to base in hole, or distance to end on traverse, of the zone	33.65
*	FRAC_SET		X	Discontinuity set reference	J3
	FRAC_IMAX	mm	XN	Maximum fracture spacing over zone	350
	FRAC_IAVE	mm	XN	Average fracture (modal) spacing over zone	220
	FRAC_IMIN	mm	XN	Minimum fracture spacing over zone	NI
	FRAC_FI		XN	Fracture Index / frequency over zone (fractures per metre)	15
	FRAC_REM		X	Comments on fracture set	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. logging field sheets)	FS4

**Group Rules:**

- FRAC\_IMAX, FRAC\_IAVE, FRAC\_IMIN and FRAC\_FI shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 or for 'Not intact' (NI).

**Group Notes:**

- FRAC is used to include fracture spacing derived from rock core, scanline surveys of rock exposures or similar.
- It is not typical to define fracture set spacings as both min/avg/max fracture spacing and Fracture Index. The requirement for one or other should be specified.

Group Name: FRST - Frost Susceptibility Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	FRST_COND		PA	Sample condition	RECOMPACTION
	FRST_DDEN	Mg/m3	2DP	Dry density of specimens after preparation	1.96

Group Name: FRST - Frost Susceptibility Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	FRST_MC	%	X	water/moisture content of specimens at preparation	24
	FRST_HVE1	mm	1DP	Frost heave, first specimen	3.0
	FRST_HVE2	mm	1DP	Frost heave, second specimen	4.5
	FRST_HVE3	mm	1DP	Frost heave, third specimen	3.5
	FRST_HVE	mm	1DP	Mean heave of 3 specimens	3.6
	FRST_STAB	%	2SF	Amount of stabiliser added	23
	FRST_STYP		X	Type of stabiliser added	Cement
	FRST_REM		X	Notes on frost susceptibility testing as per TRRL SR 829	Additional remarks as required
	FRST_METH		X	Test method	BS 812-124:2009
	FRST_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	FRST_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS20
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	FRST_DEV		X	Deviations from the test method	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- BS 812 requires the results of three specimens and the mean to be reported. However, all three specimens are prepared to exactly the same density and water/moisture content and hence both the standard and the data format only require one density and water content.

Group Name: GCHM - Geotechnical Chemistry Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*R	GCHM_CODE		PA	Determinand	AS
*	GCHM_METH		X	Test method	BS 1377-3:2018+A1:2021
*R	GCHM_TTYP		PA	Test type	SOLID_21 WATER EXTRACT
	GCHM_RESL		U	Test result	14.23
R	GCHM_UNIT		PU	Test result units	mg/l
	GCHM_NAME		X	Client/laboratory preferred name of determinand	Water Soluble Sulfate

Group Name: GCHM - Geotechnical Chemistry Testing					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	2:1 water/soil extract
	GCHM_REM		X	Remarks on test	Additional remarks as required
	GCHM_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	GCHM_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23
	GCHM_RTXT		X	Reported result	<0.01
	GCHM_DLM		U	Lower detection limit	0.01
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	GCHM_DEV		X	Deviations from the test method	Explanation of any deviation
	GCHM_SGRP		X	Sample delivery or batch code	ABC123
	GCHM_LSID		X	Laboratory sample ID	ABC123-A
	GCHM_RDAT	yyyy-mm-ddThh:mm	DT	Sample receipt date/time at laboratory	2020-12-07T09:13
	GCHM_DTIM	yyyy-mm-ddThh:mm	DT	Analysis date and time	2020-12-07T12:11
	GCHM_TEST		X	Test of Suite name	Chalk content
	GCHM_IREF		X	Instrument reference no or identifier	XYZ789
	GCHM_ITYP		X	Instrument type	GCMS
	GCHM_SIZE	mm	0DP	Size of material removed prior to test; value given indicates lowest sized material removed	2
	GCHM_PERP	%	1DP	Percentage of material removed	8.9

#### Group Rules:

- Where a reading has no unit, the GCHM\_UNIT data shall be set to 'UNITLESS'.
- Units included in GCHM\_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.
- Data type for data field heading GCHM\_UNIT shall not be changed from PU.

#### Group Notes:

- GCHM\_RDEV included in error in AGS 4.1.0 Dec 2020, this heading shall not be used and shall be regarded as deleted. Correct heading is GCHM\_DEV.
- GCHM is used to report chemical testing carried out for geotechnical design and shall not be transferred or duplicated within ELRG.
- GCHM is to be used for testing in accordance with BS 1377, BS EN 1744-1+A1, testing for use in the assessment described in BRE Special Digest 1 and/or buried steel testing described in the Design Manual for Roads and Bridges; CD 375. Chemical testing for contamination or water quality testing is reported in ELRG. Laboratory resistivity test results should be reported using the LRES Group.
- The GCHM\_CODE abbreviations to report testing to BRE Special Digest 1 and BS 1377-3 would be:
  - PH = Acidity/alkalinity (pH value to nearest 0.1)
  - WS = Water-soluble sulfate (as mg/l SO<sub>4</sub>)
  - AS = Acid-soluble sulfate (as % SO<sub>4</sub>)
  - TS = Total sulfur (as % S)
  - WMG = Water/soil extract Magnesium (as mg/l)
  - NH<sub>4</sub> = Ammonium ion (as mg/l)
  - CL = Chloride (as mg/l)
  - NO<sub>3</sub> = Nitrate (as mg/l)

- ACO<sub>2</sub> = Aggressive Carbon dioxide (as mg/l)
- CO<sub>2</sub> = Carbonate content (as %CO<sub>2</sub>)
- LOI = Loss on ignition (as %)
- OGM = Organic matter content (as %)
- TDS = Total dissolved solids (in mg/l to 2SF)
- CaCO<sub>3</sub> = Chalk content (as %CaCO<sub>3</sub>)
- The GCHM\_CODE abbreviations to report testing of buried steel would be:
- REDOX = Redox Potential (as mV)
- All GCHM\_CODE abbreviations reported in this group are to be listed in the ABBR group.
- The GCHM\_TTYP abbreviations would be limited to SOLID\_21WAT, SOLID\_ACID, SOLID\_TOT and WATER to report testing to BRE Special Digest 1 and BS 1377-3.
- GCHM\_UNIT is a REQUIRED field (Rule 10b) which enforces the inclusion of units for all test results. Where a test result has no unit, the GCHM\_UNIT data shall be set to 'UNITLESS'.
- Units reported in GCHM\_UNIT must be fully defined in the UNIT group (Rule 15). It is possible that units require conversion when the data is received and amalgamated into project databases to ensure that data are consistent across testing tranches and appropriate for the assessment.
- For a chalk content test carried out to BS1377-3, it would be good practice to report both a Carbonate content (as CO<sub>2</sub>) and the chalk content (as %CaCO<sub>3</sub>).

Group Name: GEOL - Field Geological Descriptions					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	GEOL_TOP	m	2DP	Depth to the top of stratum	16.21
*	GEOL_BASE	m	2DP	Depth to the base of description	17.25
	GEOL_DESC		X	General description of stratum	Stiff grey silty CLAY
	GEOL_LEG		PA	Legend code	102
	GEOL_GEO1		PA	Geology code	LC
	GEOL_GEO2		PA	Second geology code	SAND
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	GEOL_BGS		PA	BGS Lexicon code	CHAM
	GEOL_FORM		X	Geological unit or stratum name	Charmouth Mudstone Formation
	GEOL_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. logging field sheets, photographs of exposures)	FS4
	GEOL_BNDF		PA	Geology base boundary definition	WELL-DEFINED

#### Group Rules:

- None

#### Group Notes:

- GEOL is used to transfer the field descriptions of geological materials required by EN ISO 14688-1 and 14689, and as described in guidance including BS 5930. Stratum descriptions recorded by the driller should be recorded in DLOG. This information will not need to be duplicated wholesale in GEOL
- GEOL\_GEO1 and GEOL\_GEO2 can contain codes that are defined by the organization supervising the investigation and may be an organization or project based classification of the strata. The codification is typically determined by the investigation supervisor, designer or consultant. The inclusion of the codification by a ground investigation contractor and provision in the AGS Format files has to be specified in full in the investigation specification as codification is typically not a requirement of investigation standards.
- A suggested use of the GEOL\_GEO1 and GEOL\_GEO2 codes is as follows:
- a) The geology code GEOL\_GEO1 relates to the Geological Name of each geological unit, for example:
  - RA as an abbreviation for Recent Alluvium
  - LC as an abbreviation for London Clay
- b) The second geology code GEOL\_GEO2 is an abbreviation for the material type of each stratum, for example:
  - CS as an abbreviation for sandy CLAY
  - C as an abbreviation for CLAY
- The BGS classification system (<http://nora.nerc.ac.uk/9179/>) could be a suitable classification for use on particular projects.

- The stratum code GEOL\_STAT may be used as the reference letter or number of each stratum on a trial pit log. Its sole purpose is to link the stratum shown on the face sketch of the trial pit to the stratum description given elsewhere on the log. It is therefore not used on borehole logs and it is not used on simple trial pit logs which are presented in borehole log format, without a face sketch. GEOL\_STAT is usually just the numbers 1, 2, 3 etc or the letters A, B, C etc.
- GEOL\_STAT also appears in the SAMP Group and several of the in situ testing Groups so that it is possible to indicate which stratum on a trial pit face a sample was taken from, or an in situ test carried out in.
- GEOL\_BGS can be included if required to contain the abbreviations from the British Geological Survey (BGS) lexicon of strata that is associated with the stratum. There is a list of these abbreviations provided and maintained on the BGS website: [www.bgs.ac.uk/lexicon/home.html](http://www.bgs.ac.uk/lexicon/home.html).
- BS 5930 states that the geological formation may also be named. Typically this information is presented as part of the exploratory hole log at the end of stratum description. If this is required, this data must be specified and the data is not included in GEOL\_DESC but transferred in an additional heading GEOL\_FORM. There is a link between GEOL\_FORM and GEOL\_BGS, however, the use of GEOL\_FORM will include for strata that do not have BGS Lexicon codes; for example, types of ANTHROPOGENIC GROUND such as embankment fill.
- If more detailed information on material weathering grades is required then these details are to be included in the WETH group.

Group Name: GRAG - Particle Size Distribution Analysis - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	GRAG_UC		1SF	Uniformity coefficient D60/D10	10
	GRAG_VCRE	%	1DP	Percentage of material tested greater than 63mm (cobbles)	0.0
	GRAG_GRAV	%	1DP	Percentage of material tested in range 63mm to 2mm (gravel)	30.1
	GRAG_SAND	%	1DP	Percentage of material tested in range 2mm to 63um (sand)	40.4
	GRAG_SILT	%	1DP	Percentage of material tested in range 63um to 2um (silt)	14.5
	GRAG_CLAY	%	1DP	Percentage of material tested less than 2um (clay)	15.0
	GRAG_FINE	%	1DP	Percentage less than 63um	29.5
	GRAG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Additional remarks as required
	GRAG_METH		X	Test method	BS EN ISO 17892-4:2016
	GRAG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	GRAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	F21
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	GRAG_DEV		X	Any deviation from the specified test procedure, and any other information that could be important for interpreting the test results.	Explanation of any deviation
	GRAG_PDEN	Mg/m3	XN	Particle density used in calculations with prefix # if value assumed	#2.65

Group Name: GRAG - Particle Size Distribution Analysis - General					
Status	Heading	Suggested Unit / Type		Description	Example
	GRAG_PRET		X	Method of pre-treatment, when applied	Hydrogen peroxide, hydrochloric acid
	GRAG_SUFF		YN	Amount of soil tested was sufficient to comply with recommended minimum mass	Y
	GRAG_EXCL		X	Remark if the size of the fractions is not expressed as percentage of total dry mass, together with the nature and amount of fractions excluded.	By volume
	GRAG_CC		1SF	Coefficient of curvature	9

**Group Rules:**

- None

**Group Notes:**

- GRAG is intended to report general information for particle size distribution testing carried out in accordance with BS EN ISO 17892-4.
- The data in GRAG\_CRED indicates the accreditation status of the testing as a whole. Therefore if part of the test method used, for example the pipette rather than the sieve, is not accredited, the GRAG\_CRED should be appropriately qualified or left empty.
- It should be noted that the results of percentage passing reported in GRAT\_PERP are to 0DP, in accordance with BS EN ISO 17892-4, whereas the calculated proportions of the various particle size fractions reported in GRAG\_VCRE, etc are to 1DP. This is intended to minimise any discrepancy, where the sum of the individual particle size fractions does not add up to exactly 100%, from using source data with a greater resolution than presented in the GRAT\_PERP values rounded to 0DP.

Group Name: GRAT - Particle Size Distribution Analysis - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	GRAT_SIZE	mm	3SF	Sieve or particle size	3.35
	GRAT_PERP	%	0DP	Percentage passing/finer than GRAT_SIZE	25
	GRAT_TYPE		PA	Test type	WS
	GRAT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	F21

**Group Rules:**

- None

**Group Notes:**

- GRAT\_TYPE should not be a combination of types across all the particle size records, but should be representative of the test type undertaken for the particular particle size.

Group Name: HDIA - Hole Diameter by Depth					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	HDIA_DPTH	m	2DP	Depth of base of hole at the diameter recorded in HDIA_DIAM	16.00
*	HDIA_DIAM	mm	0DP	Hole diameter	200
	HDIA_REM		X	Remarks	Cased to full depth
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS5

**Group Rules:**

- None

**Group Notes:**

- HDIA describes the profile of final exploratory hole. Casing information for the final hole construction should be recorded in the CDIA group.
- HDIA\_REM allows additional information on the hole construction to be included in the data file as necessary.

Group Name: HDPH - Depth Related Exploratory Hole Construction Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	HDPH_TOP	m	2DP	Depth to top of section	1.40
*	HDPH_BASE	m	2DP	Depth to base of section	3.40
*	HDPH_TYPE		PA	Type of depth related information	TP
	HDPH_STAR	yyyy-mm-ddThh:mm	DT	Date and time of start of section	2004-04-01T09:00
	HDPH_ENDD	yyyy-mm-ddThh:mm	DT	Date and time of end of section	2004-04-01T11:30
	HDPH_CREW		X	Name of rig/drill crew/operator	Bill Mallard
	HDPH_EXC		X	Plant used	JCB 3CX
	HDPH_SHOR		X	Shoring/support used	None
	HDPH_STAB		X	Stability of trial pit / trial trench or logged traverse length	Stable during excavation
	HDPH_DIML	m	2DP	Trial pit / trial trench or logged traverse length	27.56
	HDPH_DIMW	m	2DP	Trial pit / trial trench or logged traverse width	1.35
	HDPH_DBIT		X	Drill bit used	Stepped ABC
	HDPH_BCON		X	Bit condition	Good
	HDPH_BTYP		X	Barrel type	Triple tube
	HDPH_BLEN	m	2DP	Barrel length	3.00
	HDPH_LOG		X	Definitive person responsible for logging the section	ANO
	HDPH_LOGD	yyyy-mm-dd	DT	Start date of hole section logging	2008-04-01
	HDPH_REM		X	Remarks	Breaker required
	HDPH_ENV		X	Details of weather and environmental conditions during hole section construction	Dry, rain, standing water

Group Name: HDPH - Depth Related Exploratory Hole Construction Information					
Status	Heading	Suggested Unit / Type		Description	Example
	HDPH_METH		X	Details of method of hole section construction	Odex
	HDPH_CONT		X	Drilling contractor	ACME Drilling Ltd
	FILE_FSET		X	Associated file reference (e.g. drilling journals, hole orientation data)	FS21

**Group Rules:**

- None

**Group Notes:**

- HDPH is used to record information regarding exploratory hole construction. The HDPH group subdivides the hole development by depth such that the differing methods used to advance a hole or pit (or holes developed using combined methods) are explicitly described. As a minimum, one record will exist in HDPH for each record in the LOCA group if the AGS file is transferring hole construction details.
- Records of orientation and inclination of the exploratory hole shall be included in the HORN group.
- Records in HDPH shall be continuous and non-overlapping.
- HDPH\_LOG and HDPH\_LOGD have been added to include the name of the person describing the strata in this section of the exploratory hole and date as required in BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (Section 5). It is not deemed necessary to detail this information further for example in the GEOL group.

Group Name: HORN - Exploratory Hole Orientation and Inclination					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	HORN_TOP	m	2DP	Depth to top of exploratory hole section	0.00
*	HORN_BASE	m	2DP	Depth to base of exploratory hole section	10.15
	HORN_ORNT	deg	0DP	Orientation of exploratory hole section or traverse (degrees from north)	210
	HORN_INCL	deg	0DP	Inclination of exploratory hole section or traverse (measured positively down from horizontal)	65
	HORN_REM		X	Remarks relating to orientation and inclination of hole section	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. contract data specification)	FS22

**Group Rules:**

- None

**Group Notes:**

- HORN is used to record the details of exploratory hole orientation and inclination.

Group Name: ICBR - In Situ California Bearing Ratio Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ICBR_DPTH	m	2DP	Depth to top of CBR test	0.50
*	ICBR_TESN		X	Test reference	2
	ICBR_ICBR	%	2SF	CBR value	1.2
	ICBR_MC	%	X	Water/moisture content relating to test	25



Group Name: ICBR - In Situ California Bearing Ratio Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	ICBR_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	ICBR_KENT		X	Details of kentledge (reaction load)	2t Landrover
	ICBR_SEAT	N	ODP	Seating force	10
	ICBR_SURC	kPa	ODP	Surcharge pressure	15
	ICBR_TYPE		PA	Type of CBR	MEXECONE
	ICBR_REM		X	Remarks	Material >20mm below plunger, test terminated early, water ingress
	ICBR_ENV		X	Details of weather and environmental conditions during test	Sunny and frosty
	ICBR_METH		X	Test method	Manufacturer's instructions
	ICBR_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	ICBR_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS25
	ICBR_OPER		X	Name of test operator	Bill Mallard
	ICBR_BASE	m	2DP	Depth to base of derived CBR layer (DCP)	0.70

**Group Rules:**

- None

**Group Notes:**

- ICBR\_TYPE allows a description or abbreviation to be included to categorise the equipment and method of measurement.
- ICBR\_SEAT allows the plunger seating force to be included in the data as required.
- ICBR\_SURC allows the surcharge pressure to be recorded and the description for the ICBR\_REM heading has been modified.
- ICBR\_CONT allows the name of a specialist sub-contracting organization to be credited with the testing.

Group Name: IDEN - In Situ Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IDEN_DPTH	m	2DP	Depth of in situ density test	1.25
*	IDEN_TESN		X	Test reference	2
	IDEN_DATE	yyyy-mm-dd	DT	Test date	2003-02-23
	IDEN_TYPE		PA	Type of density test performed	CORE
	IDEN_IDEN	Mg/m3	2DP	In situ bulk density (after any calibration / corrections applied, i.e. reported value)	1.86
	IDEN_MC	%	X	Water/moisture content relating to in situ test (after any calibration / corrections applied, i.e. reported value)	18.0
	IDEN_STAB	%	2SF	Amount of stabiliser added	23
	IDEN_STYP		X	Type of stabiliser added	Cement

Group Name: IDEN - In Situ Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	IDEN_REM		X	Remarks	Uncorrected NDG values reported
	IDEN_ENV		X	Details of weather and environmental conditions during test	Cloudy and wet
	IDEN_METH		X	Test method	BS 1377-9:1990
	IDEN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS25
	IDEN_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: IFID - On Site Volatile Headspace Testing Using Flame Ionisation Detector					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IFID_DPTH	m	2DP	Depth of headspace test sample	1.00
*	IFID_TESN		X	Test reference	2
	IFID_DATE	yyyy-mm-dd	DT	Test date	2003-02-20
	IFID_RES	ppmv	XN	Result of FID analysis	10
	IFID_REM		X	Remarks on test	Additional remarks as required
	IFID_ENV		X	Details of weather and environmental conditions during test	Misty
	IFID_METH		X	Details of FID used and method description	Flame ionisation detector
	IFID_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IFID_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS23
	IFID_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- IFID\_RES shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

**Group Notes:**

- IFID is used to record the results of on-site volatile testing by means of headspace analysis using flame ionisation detectors.
- IFID\_CRED added to permit details of any test accreditation if appropriate to be included in data.

Group Name: IPEN - In Situ Hand Penetrometer Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IPEN_DPTH	m	2DP	Depth of test	13.50
*	IPEN_TESN		X	Test reference	2
	IPEN_IPEN	kPa	XN	Hand penetrometer result	6.8 or >20
	IPEN_DATE	yyyy-mm-dd	DT	Test date	2003-02-28
	IPEN_REM		X	Remarks on test	Additional remarks as required
	IPEN_ENV		X	Details of weather and environmental conditions during test	Dry and warm
	IPEN_METH		X	Test method	Manufacturer's instructions
	IPEN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IPEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	IPEN_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- IPEN\_IPEN shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

**Group Notes:**

- None

Group Name: IPID - On Site Volatile Headspace Testing by Photo Ionisation Detector					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IPID_DPTH	m	2DP	Depth of headspace test sample	1.00
*	IPID_TESN		X	Test reference	3
	IPID_DATE	yyyy-mm-dd	DT	Test date	2003-02-20
	IPID_TEMP	DegC	1DP	Ambient temperature at time of test	15.1
	IPID_RES	ppmv	XN	Result of PID analysis	10.00
	IPID_REM		X	Remarks on test	Additional remarks as required
	IPID_ENV		X	Details of weather and environmental conditions during test	Cloudy with light rain
	IPID_METH		X	Details of PID used and method description	Carried out on temporary samples using photo ionisation detector fitted with 10.6 eV lamp
	IPID_CONT		X	Name of testing organization	ACME On-site Testing Ltd

Group Name: IPID - On Site Volatile Headspace Testing by Photo Ionisation Detector					
Status	Heading	Suggested Unit / Type		Description	Example
	IPID_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS45
	IPID_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- IPID\_RES shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

**Group Notes:**

- IPID is used to record the results of on-site volatile testing by means of headspace analysis using photo ionisation detectors.
- IPID\_CRED added to permit details of any test accreditation if appropriate to be included in data.
- Clause 7.9.8 of the updated SISG Specification advises ambient weather and temperature to be recorded at time of test. IPID\_ENV and IPID\_TEMP added to include this information.

Group Name: IRDX - In Situ Redox Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IRDX_DPTH	m	2DP	Depth of redox test	1.00
*	IRDX_TESN		X	Test reference	2
	IRDX_DATE	yyyy-mm-dd	DT	Test date	2003-02-04
	IRDX_PH		1DP	pH	7.0
	IRDX_MPOT		0DP	Mean value of the potential of the two platinum probes	-50
	IRDX_IRDX	mV	0DP	Redox potential	400
	IRDX_REM		X	Details of redox test and probe type	Additional remarks as required
	IRDX_ENV		X	Details of weather and environmental conditions during test	Cloudy with light rain
	IRDX_METH		X	Test method	BS 1377-9:1990, Clause 5.2
	IRDX_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IRDX_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26
	IRDX_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: IRES - In Situ Resistivity Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IRES_DPTH	m	2DP	Depth to which in situ resistivity test relates	1.00
*	IRES_TESN		X	Test reference	1
	IRES_BASE	m	2DP	Base depth to which in-situ resistivity test relates	2.00
	IRES_TYPE		PA	Type of resistivity test	SCHL
	IRES_DATE	yyyy-mm-dd	DT	Test date	2003-03-20
	IRES_IRES	ohm m	2SF	Mean value of the apparent resistivity	2500
	IRES_RES1	ohm m	2SF	First value of apparent resistivity when more than 15% different to mean	30
	IRES_RES2	ohm m	2SF	Second value of apparent resistivity when more than 15% different to mean	10
	IRES_REM		X	Details of test e.g. electrode spacing and configuration	Additional remarks as required
	IRES_ENV		X	Details of weather and environmental conditions during test	Misty and cold
	IRES_METH		X	Test method	BS 1377-9:1990, Clause 5.1
	IRES_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IRES_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26
	IRES_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: ISAG - Soakaway Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISAG_TESN		X	Test reference	1
	ISAG_DATE	yyyy-mm-dd	DT	Test date	2010-02-28
	ISAG_DURN	hh:mm	T	Test duration	00:35
	ISAG_PWID	m	2DP	Soakaway pit width	2.00
	ISAG_PLEN	m	2DP	Soakaway pit length	1.00
	ISAG_PDIA	m	2DP	Soakaway pit diameter	1.50
	ISAG_DPTS	m	2DP	Soakaway pit depth at start of test	1.55
	ISAG_DPTE	m	2DP	Soakaway pit depth at end of test	1.55

Group Name: ISAG - Soakaway Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	ISAG_CONS		X	Description of soakaway construction	Vertical sides trimmed square with granular fill and observation tube
	ISAG_SI	m/s	2SCI	Soil infiltration rate	6.80E-6
	ISAG_PORO	%	0DP	Fill porosity	10
	ISAG_REM		X	Remarks	Unable to calculate infiltration rate. No fall in water level during test period.
	ISAG_ENV		X	Details of weather and environmental conditions during test	Raining
	ISAG_METH		X	Test method	BRE Digest 365
	ISAG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	ISAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	ISAG_OPER		X	Name of operator carrying out test	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ISAT - Soakaway Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISAG_TESN		X	Test reference	1
*	ISAT_TIME	hh:mm:ss	T	Elapsed time	05:00:02
	ISAT_DPTH	m	2DP	Depth to water	0.18
	ISAT_REM		X	Remark relating to test reading	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: ISPT - Standard Penetration Test Results					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISPT_TOP	m	2DP	Depth to top of test	13.50
	ISPT_SEAT		0DP	Number of blows for seating drive	14
	ISPT_MAIN		0DP	Number of blows for main test drive	35
	ISPT_NPEN	mm	0DP	Total penetration for seating drive and test drive	450
	ISPT_NVAL		0DP	SPT 'N' value	35
	ISPT_REP		X	SPT reported result	6,8/8,9,9,9 N=35
	ISPT_CAS	m	2DP	Casing depth at time of test	12.00
	ISPT_WAT	m	XN	Depth to water at time of test	2.50 or Dry
	ISPT_TYPE		PA	Type of SPT test	S
	ISPT_HAM		X	Hammer serial number from manufacturer	AB1234
	ISPT_ERAT	%	0DP	Energy ratio of the hammer	60
	ISPT_SWP	mm	0DP	Self-weight penetration	25
	ISPT_INC1		0DP	Number of blows for 1st Increment (Seating)	6
	ISPT_INC2		0DP	Number of blows for 2nd Increment (Seating)	8
	ISPT_INC3		0DP	Number of blows for 1st Increment (Test)	8
	ISPT_INC4		0DP	Number of blows for 2nd Increment (Test)	9
	ISPT_INC5		0DP	Number of blows for 3rd Increment (Test)	9
	ISPT_INC6		0DP	Number of blows for 4th Increment (Test)	9
	ISPT_PEN1	mm	0DP	Penetration for 1st Increment (Seating Drive)	75
	ISPT_PEN2	mm	0DP	Penetration for 2nd Increment (Seating Drive)	75
	ISPT_PEN3	mm	0DP	Penetration for 1st Increment (Test)	75
	ISPT_PEN4	mm	0DP	Penetration for 2nd Increment (Test)	75
	ISPT_PEN5	mm	0DP	Penetration for 3rd Increment (Test)	75
	ISPT_PEN6	mm	0DP	Penetration for 4th Increment (Test)	75
	ISPT_ROCK		YN	SPT carried out in soft rock	N
	ISPT_REM		X	Remarks	Early termination due to equipment damage
	ISPT_ENV		X	Details of weather and environmental conditions during test	Raining
	ISPT_METH		X	Test method	BS EN ISO 22476-3:2005+A1:2011
	ISPT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	ISPT_N60		0DP	SPT 'N' value (corrected by energy ratio ISPT_ERAT)	35

#### Group Rules:

- If the test was extended to 100 blows (as described in ISO 22476-3), the data variable under ISPT\_ROCK shall be 'Y'. To avoid ambiguity, in cases where the test was not extended the ISPT\_ROCK data shall be 'N'.

**Group Notes:**

- Where appropriate or requested, SPT equipment calibration certificates could be referred to in FILE\_FSET.

Group Name: ISTA - In Situ Seismic Test - Analysis					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISTG_TESN		X	Setup reference	3
*	ISTA_TOP	m	2DP	Depth to top of analysis range	4.56
*	ISTA_BASE	m	2DP	Depth to base of analysis range	5.56
*	ISTA_ANYN		X	Analysis Reference	1
	ISTA_DPTH	m	2DP	Midpoint of analysis depth range	5.06
	ISTA_RECT		RL	Link(s) to signal receiver top record	ISTR 327-16A 3 1.05 2
	ISTA_RECB		RL	Link(s) to signal receiver bottom record	ISTR 327-16A 3 1.55 2
	ISTA_RCOM		PA	Selected receiver component	X
	ISTA_MIVL		PA	Selected method for interval velocity	PSEUDO
	ISTA_WVTY		PA	Wave type	P
	ISTA_UPSR	ms	3DP	Up-sample rate	0.025
	ISTA_FTU		PA	Filter type used	BANDPASS
	ISTA_FMIN	Hz	0DP	Minimum filter frequency	10
	ISTA_FMAX	Hz	0DP	Maximum filter frequency	100
	ISTA_WATT	ms	3DP	Wave arrival time top signal	20.123
	ISTA_WATB	ms	3DP	Wave arrival time bottom signal	21.321
	ISTA_WATM		X	Method to assess wave arrival time	Back calculated
	ISTA_ITM		X	Method to assess interval time	Cross correlation
	ISTA_WVL	m/s	1DP	Final wave velocity	245.1
	ISTA_WVLM		X	Method to assess wave velocity	Straight line slant distance
	ISTA_STAC		YN	Final shear wave velocity is based on stacked traces	Y
	ISTA_IVAL		YN	Result invalid?	N
	ISTA_REM		X	Remarks	Additional remarks as required
	ISTA_ANBY		X	Name of analyser/ person responsible for data QAQC	ABC/DEF
	ISTA_CONT		X	Analysis subcontractors name	ABC Ltd
	ISTA_DATE	YYYY-mm-dd	DT	Analysis date	45842
	TEST_STAT		X	Analysis status	Checked
	FILE_FSET		X	Associated file reference (e.g. ASCII .csv file containing logged instrumentation data)	327-16A.csv

**Group Rules:**

- None

**Group Notes:**

- This group is intended to define selection of signal receiver records and their analysis.
- Stacked signals should be linked in ISTA\_RECT and ISTA\_RECB with a concatenator.
- Signal receiver records from different setup references may be selected.



Group Name: ISTG - In Situ Seismic Test - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISTG_TESN		X	Setup reference	3
	ISTG_TYPE		PA	Seismic test type	SCPT
	ISTG_LINK		RL	Record Link to pushing test, such as CPT	CPTG 327-16A 3
	ISTG_STAR	yyyy-mm-ddThh:mm:ss	DT	Date and time at the beginning of seismic setup reference	2024-12-01T10:00:11
	ISTG_END	yyyy-mm-ddThh:mm:ss	DT	Date and time at the end of seismic setup reference	2024-12-02T11:30:12
	ISTG_REF		X	Seismic receiver module reference	ABC123
	ISTG_RECC		PA	Seismic receiver configuration. SINGLE for single receiver, DUAL for dual receiver test	DUAL
	ISTG_RECD		X	Seismic receiver details, such as model	Strata view Model 1Z Triaxial geophone
	ISTG_SOUR		PA	Source, such as Hammer system	SPRING LOADED PISTON
	ISTG_RORD		X	Recording equipment details	Vibromatic Model 1XYZ3-Channel Seismograph
	ISTG_SHOF	m	2DP	Horizontal offset between centre of hole and source	1.24
	ISTG_ORNT	deg	0DP	Orientation of source relative to the receivers in plan view. Ideally 90 deg, such that the waves are directed at the receivers	87
	ISTG_SVOF	m	2DP	Source measured vertical offset from ground level/seafloor (positive down)	-0.13
	ISTG_OTOP	m	2DP	Offset between centre of the top receiver and the pushing device (CPT/DMT) tip. (Use this entry for both SINGLE and DUAL receiver setup.)	0.82
	ISTG_OBOT	m	2DP	Offset between centre of the bottom receiver and the pushing device (CPT/DMT) tip. (Only use this entry for DUAL receiver setup.)	0.43
	ISTG_BHCP		X	Borehole, how receiver is clamped in place	Mechanical spring
	ISTG_MTO		PA	Method of determination of trigger time latency	SOURCE PER LOCATION
	ISTG_OPER		X	Name of test operator	ABC
	ISTG_ANBY		X	Name of analyser/ person responsible for data QAQC	ABC/DEF
	ISTG_REM		X	Remarks, including borehole state at time of test if needed	Additional remarks as required
	ISTG_ENV		X	Details of weather and environmental conditions during test	Sunny
	ISTG_METH		X	Test method	ASTM D7400-19
	ISTG_CONT		X	Subcontractors name	ABC Ltd
	ISTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	PRELIM
	FILE_FSET		X	Associated file reference	327-16A.csv

#### Group Rules:

- If the test is related to a CPT or DMT ISTG\_LINK must be defined.

**Group Notes:**

- The IST set of groups is intended for seismic cone penetration tests (CPT), seismic flat dilatometer (DMT), and down hole seismic tests.
- This group is intended for the definition of the general equipment setup.
- ISTG\_TESN is used to define an equipment setup.
- Use PIPE and CDIA to define the borehole construction.

Group Name: ISTR - In Situ Seismic Test - Signal Receiver					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISTG_TESN		X	Setup reference	3
*	ISTS_SGLN		X	Signal reference	2
*	ISTR_DPTH	m	2DP	Depth to receiver	1.05
*	ISTR_REF		X	Receiver reference	Top
	ISTR_SSD	m	2DP	Source slant distance	3.17
	ISTR_QUAL		X	Quality of received signal	Excellent
	ISTR_QUAM		X	Method of quality assessment	Seismic trace characterisation parameters
	ISTR_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	327-16A_3_2.aci

**Group Rules:**

- None

**Group Notes:**

- This group is intended to define the receiver and received signal quality information.
- Provide time data for signal receiver in FILE\_FSET

Group Name: ISTS - In Situ Seismic Test - Signal					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ISTG_TESN		X	Setup reference	3
*	ISTS_SGLN		X	Signal reference	2
	ISTS_TYPE		PA	Source type	HL
	ISTS_DTIM	yyyy-mm-ddThh:m m:ss	DT	Date and time of signal	2024-12-02T12:30:05
	ISTS_RATE	ms	3DP	Raw sampling rate	0.2
	ISTS_PTRT	ms	1DP	Pre-trigger recording time	20
	ISTS_TTLT	ms	3DP	Trigger time latency (positive for late recording)	0.015
	ISTS_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS37

**Group Rules:**

- None

**Group Notes:**

- This group is intended to define the event generating the signals recorded at the receivers. Signal is otherwise known as shot.

Group Name: ITCH - In Situ Thermal Conductivity					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	ITCH_DPTH	m	2DP	Depth of thermal conductivity test	1.00
*	ITCH_TESN		X	Test reference	2
	ITCH_DATE	yyyy-mm-dd	DT	Test date	2003-02-04
	ITCH_TCON	W/(K-m)	2DP	Thermal Conductivity	3.26
	ITCH_TRES	(K-m)/W	2DP	Thermal Resistivity	0.31
	ITCH_TEMP	DegC	0DP	Ambient temperature at which test is performed	17
	ITCH_REM		X	Details of probe used and method description	15.0mm diameter probe pushed 100mm into prepared soil face
	ITCH_ENV		X	Details of weather and environmental conditions during test	Cloudy with light rain
	ITCH_METH		X	Test method	ASTM D5334-22AE01
	ITCH_OPER		X	Name of test operator	Bill Mallard
	ITCH_CONT		X	Name of testing organisation	ACME On-site Testing Ltd
	ITCH_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS26

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: IVAN - In Situ Vane Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	IVAN_DPTH	m	2DP	Depth of vane test	13.50
*	IVAN_TESN		X	Test reference	2
	IVAN_TYPE		PA	Vane type	BOREHOLE
	IVAN_IVAN	kPa	XN	Vane test result	60 or >80
	IVAN_IVAR	kPa	XN	Vane test remoulded result (residual)	45 or >80
	IVAN_DATE	yyyy-mm-dd	DT	Test date	2003-02-28
	IVAN_REM		X	Details of vane test, vane size	Additional remarks as required
	IVAN_ENV		X	Details of weather and environmental conditions during test	Dry and warm

Group Name: IVAN - In Situ Vane Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	IVAN_METH		X	Test method	BS EN ISO 22476-9:2020
	IVAN_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	IVAN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	IVAN_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- IVAN\_IVAN and IVAN\_IVAR data shall generally be numeric. A text form can only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

**Group Notes:**

- IVAN\_ENV allows records of environmental conditions to be recorded. Where the test is down hole this field should be left empty as this has no bearing on the measurement made.

Group Name: LBSG - Testing Schedule					
Status	Heading	Suggested Unit / Type		Description	Example
*	LBSG_REF		X	Schedule reference	2
	LBSG_DATE	yyyy-mm-dd	DT	Date of issue	2009-01-31
	LBSG_FROM		X	Schedule prepared by	ACME Consulting
	LBSG_TO		X	Schedule issued to	ACME Laboratories plc
	LBSG_DUE	yyyy-mm-dd	DT	Date schedule to be completed and reported	2009-04-01
	LBSG_REM		X	Comments on schedule	Additional remarks as required
	LBSG_STAT		X	Status of schedule	Complete
	FILE_FSET		X	Associated file reference (e.g. schedule sheets)	FS1

**Group Rules:**

- None

**Group Notes:**

- The LBSG group is used to describe the testing schedules generated on a project.
- One data row in this group represents the issue of one schedule to a laboratory or testing organization.
- Any general requirements for the test schedule, for example, dates for completion, contact details, should be included in this group. Details of the test required are provided in the LBST group against the samples.

Group Name: LBST - Testing Schedule Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	LBSG_REF		X	Testing schedule reference	2
*	LBST_TEST		X	Test Name	Suite A
	CHOC_REF		X	Chain of custody reference	A1241/1
	LBST_TTYP		X	Full test method or standard	California Bearing Ratio (BS 1377:1990:Pt 4, Section 7)
	LBST_METH		X	Method and test parameters	Point, 34 kPa surcharge.
	LBST_PREP		X	Preparation requirements	BS1377 part 9
	LBST_DEPN		X	Dependent test options	Advise if sample insufficient for testing
	LBST_STAT		PA	Status of laboratory test	IN PROGRESS
	LBST_REM		X	Remarks	Additional remarks as required
	LBST_DUE	yyyy-mm-dd	DT	Test results due date	2009-10-05
	LBST_DETL		X	Details of testing carried out or reasons for no testing possible	Insufficient sample
	LBST_DONE	yyyy-mm-dd	DT	Date test completed	2009-10-01
	FILE_FSET		X	Associated file reference	FS99

#### Group Rules:

- None

#### Group Notes:

- The LBST group is used to describe instructions and requirements to be passed to the laboratory regarding testing on samples.
- Each data row represents a test on a sample. Therefore sample details will be repeated for each test scheduled on that sample.
- LBSG\_REF provides the link between the test and the test schedule details.
- LBST\_TEST is the specific code or name of the particular test required on the sample. Whilst these will be drawn from standards, the test names are typically unique to laboratories or maybe linked to a particular contract specification. At the outset of scheduling testing the list of test names that are particular to a project or contract should be ascertained and used as a pick-list in any information system generating LBST data. It is envisaged that laboratories or contract specifications can provide coded lists for test details that would be suitable for LBST\_TEST data.
- The headings of LBST\_TTYP, LBST\_METH, LBST\_PREP, LBST\_DEPN allow for descriptions of the test name/method or standard, specific method details or test parameters, test specimen preparation and dependent options or comments. For any test some or all of these data items may be required to fully define the test. An example of the type of information that could be included under these headings could be:
  - LBST\_TEST = CBR
  - LBST\_TTYP = California Bearing Ratio. BS1377 : 1990 : Part 4 , Section 7
  - LBST\_METH = Top and Base. Surcharge mass 100 kPa
  - LBST\_PREP = Recompacted (see Remarks for compaction details), Soaked
  - LBST\_DEPN = Advise if sample unsuitable
- The group also includes headings that can be used by the testing laboratory to report testing progress or highlight problems with carrying out the instructed testing; LBST\_STAT, LBST\_DETL and LBST\_DONE. If data is provided under these headings to the organization that schedules the tests, they can use the information to track progress and monitor completion
- LBST\_STAT is used to describe the status of testing. Typically this would include standard phrases rather than detailed descriptions such as Scheduled, Restricted, In progress, Completed.
- Details of testing restrictions, for example insufficient or unsuitable sample, should be included under LBST\_DETL. The transfer of LBST could provide a suitable method for laboratories to advise on testing restrictions, for example, returning a file containing all LBST records with an LBST\_STAT of Restricted.

Group Name: LDEN - Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LDEN_TYPE		PA	Type of test performed	LINEAR
	LDEN_COND		PA	Sample condition	UNDISTURBED
	LDEN_SMTY		PA	Type of sample	BLOCK SAMPLE
	LDEN_MC	%	X	Water/moisture content	57
	LDEN_BDEN	Mg/m3	2DP	Bulk density	1.66
	LDEN_DDEN	Mg/m3	2DP	Dry density	1.06
	LDEN_REM		X	Remarks	Additional remarks as required
	LDEN_METH		X	Test method	BS EN ISO 17892-2:2014, Clause 5.1
	LDEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LDEN_DEV		X	Specimen size if less than 50cm3 and any deviation from the specified procedure	37cm3

**Group Rules:**

- None

**Group Notes:**

- Measurements of density on rock materials should be reported in RDEN.

Group Name: LDYN - Dynamic Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a

Group Name: LDYN - Dynamic Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LDYN_PWAV	m/s	0DP	P-wave velocity	3000
	LDYN_SWAV	m/s	0DP	S-wave velocity	1800
	LDYN_EMOD	GPa	0DP	Dynamic elastic modulus	20
	LDYN_SG	GPa	0DP	Shear modulus derived from LDYN_SWAV	8
	LDYN_REM		X	Remarks	Additional remarks as required
	LDYN_METH		X	Test method	ISRM: Suggested method
	LDYN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LDYN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LDYN_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- LDYN is to be used to report dynamic testing on soil and rock materials.
- The measurements of bulk density, dry density, water/moisture content, porosity and saturation that described the test specimen condition related to these tests should be recorded in RDEN.

Group Name: LFCN - Laboratory Fall Cone Test					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LFCN_DEV		X	Deviations from the procedure	Explanation of any deviation
	LFCN_CMAS	g	0DP	Mass of cone used	60
	LFCN_CANG	deg	0DP	Angle of cone tip	60

Group Name: LFCN - Laboratory Fall Cone Test					
Status	Heading	Suggested Unit / Type		Description	Example
	LFCN_PENA	mm	2DP	Average cone penetration	4.25
	LFCN_PEN1	mm	2DP	Individual penetration point 1 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.50
	LFCN_PEN2	mm	2DP	Individual penetration point 2 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.25
	LFCN_PEN3	mm	2DP	Individual penetration point 3 if values differ by more than 0.5mm from the average, for undisturbed tests.	5.00
	LFCN_PEN4	mm	2DP	Individual penetration point 4 if values differ by more than 0.5mm from the average, for undisturbed tests.	4.00
	LFCN_CONF		YN	Non-conforming test (due to penetration range)	Y
	LFCN_FCPK	kPa	2SF	Estimated undrained fall cone shear strength	8.8
	LFCN_FCRM	kPa	2SF	Estimated undrained fall cone shear strength, remoulded	5.2
	LFCN_WC	%	X	Water content of specimen	16.2
	LFCN_WCST		X	Water content determined on specimen trimmings or other if applicable.	Water content from specimen trimmings
	LFCN_REM		X	Test remarks	Additional remarks as required
	LFCN_METH		X	Test method	BS EN ISO 17892-6:2017
	LFCN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LFCN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LLIN - Linear Shrinkage Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Specimen prepared by cone and quartering



Group Name: LLIN - Linear Shrinkage Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	LLIN_LS	%	0DP	Linear shrinkage	11
	LLIN_425	%	0DP	Percentage passing 0.425mm sieve	12
	LLIN_PREP		X	Method of preparation	Wet sieve
	LLIN_REM		X	Remarks	Additional remarks as required
	LLIN_METH		X	Test method	BS 1377-2:2022, Clause 7
	LLIN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LLIN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LLIN_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- The LLIN group is included to transfer linear shrinkage tests. Shrinkage limit is to be transferred using the LSLT group.

Group Name: LLPL - Liquid and Plastic Limit Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LLPL_LL	%	0DP	Liquid limit	62
	LLPL_PL	%	XN	Plastic limit	38 or NP
	LLPL_PI		0DP	Plasticity Index	23
	LLPL_425	%	0DP	Percentage passing 0.425mm sieve	12
	LLPL_PREP		X	Method of preparation	Wet sieve
	LLPL_STAB	%	2SF	Amount of stabiliser added	23
	LLPL_STYP		X	Type of stabiliser added	Cement
	LLPL_REM		X	Remarks	1 point liquid limit test
	LLPL_METH		X	Test method	BS EN ISO 17892-12:2018+A2:2022

Group Name: LLPL - Liquid and Plastic Limit Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	LLPL_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LLPL_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LLPL_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	LLPL_TYPE		PA	Type of test	FALL CONE
	LLPL_POIN		PA	Number of points	FOUR
	LLPL_CONE		PA	For fall cone method, type of cone	60g/60deg
	LLPL_1PRE	mm	1DP	Mean of test readings, if one-point test.	19.1
	LLPL_1PCF		3DP	Correlation factor if one-point test.	1.015
	LLPL_SIZE	mm	U	Sieve size if other than 0.425mm	0.4
	LLPL_PASS	%	2SF	Percentage passing LLPL_SIZE sieve if other than 0.425mm	98
	LLPL_WC	%	X	The water content of the specimen before removal of particles prior to determination liquid or plastic limits, if measured	21.3

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LNMC - Water/moisture Content Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LNMC_MC	%	X	Water/moisture content	57
	LNMC_TEMP	DegC	0DP	Temperature sample dried at	105
	LNMC_STAB	%	2SF	Amount of stabiliser added	23
	LNMC_STYP		X	Type of stabiliser added	Cement
	LNMC_ISNT		YN	Is test result assumed to be a natural water/moisture content	Y

Group Name: LNMC - Water/moisture Content Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	LNMC_COMM		X	Reason water/moisture content is assumed to be other than natural	Slightly desiccated sample
	LNMC_REM		X	Remarks	Additional remarks as required
	LNMC_METH		X	Test method	BS EN ISO 17892-1:2014+A1:2022
	LNMC_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LNMC_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LNMC_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- This group shall be for water (moisture) content tests (usually synonymous with as received) carried out as individual or separate tests. Where a water content is measured as part of another test (e.g. a triaxial test), the water content shall be transferred in that group under the appropriate heading.
- Water/moisture content corrected for material >425µm and fluid content are not included as automatic headings. Apart from being very rarely used (in the UK), these are usually dependent upon assumptions about representativity, water content retention in coarse material or salt content in pore water. It is better left to the recipient of the data to interpret these other parameters which are not specified requirements of water content (or index) standards. It could be argued that if fluid content were to be included here, it should also be in all tests with water content.

Group Name: LOCA - Location Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
	LOCA_TYPE		PA	Type of activity	CP+RC
	LOCA_STAT		PA	Status of information relating to this position	PRELIM
	LOCA_NATE	m	2DP	National Grid Easting of location or start of traverse	523145.00
	LOCA_NATN	m	2DP	National Grid Northing of location or start of traverse	178456.12
	LOCA_GREF		PA	National grid referencing system used	OSGB
	LOCA_GL	m	2DP	Ground level relative to datum of location or start of traverse	16.23
	LOCA_REM		X	General remarks	Additional remarks as required
	LOCA_FDEP	m	2DP	Final depth	32.60
	LOCA_STAR	yyyy-mm-dd	DT	Date of start of activity	1991-03-18
	LOCA_PURP		X	Purpose of activity at this location	Groundwater observation well
	LOCA_TERM		X	Reason for activity termination	Abandoned on engineer's instruction
	LOCA_ENDD	yyyy-mm-dd	DT	End date of activity	1991-03-22
	LOCA_LETT		X	OSGB letter grid reference	TQ231784

Group Name: LOCA - Location Details					
Status	Heading	Suggested Unit / Type		Description	Example
	LOCA_LOCX	m	2DP	Local grid x co-ordinate or start of traverse	565.23
	LOCA_LOCY	m	2DP	Local grid y co-ordinate or start of traverse	421.12
	LOCA_LOCZ	m	2DP	Level or start of traverse to local datum	106.63
	LOCA_LREF		X	Local grid referencing system used	London grid 1
	LOCA_DATM		X	Local vertical datum referencing system used	Anytown datum
	LOCA_ETRV	m	2DP	National Grid Easting of end of traverse	523195.12
	LOCA_NTRV	m	2DP	National Grid Northing of end of traverse	178486.12
	LOCA_LTRV	m	2DP	Ground level relative to datum of end of traverse	9.67
	LOCA_XTRL	m	2DP	Local grid easting of end of traverse	523195.12
	LOCA_YTRL	m	2DP	Local grid northing of end of traverse	178486.12
	LOCA_ZTRL	m	2DP	Local elevation of end of traverse	9.67
	LOCA_LAT		DMS	Latitude of location or start of traverse	51:28:52.498
	LOCA_LON		DMS	Longitude of location or start of traverse	34:10:34.23
	LOCA_ELAT		DMS	Latitude of end of traverse	51:28:52.550
	LOCA_ELON		DMS	Longitude of end of traverse	34:10:34.23
	LOCA_LLZ		X	Geodetic datum	WGS84
	LOCA_LOCM		X	Method of location	dGPS
	LOCA_LOCA		X	Site location sub division (within project) code or description	Sub-station 1
	LOCA_CLST		X	Investigation phase grouping code or description	Phase 2a
	LOCA_ALID		X	Alignment Identifier	Tunnel Alignment P
	LOCA_OFFS		2DP	Offset	10.35
	LOCA_CNGE		X	Chainage	500+123.23
	LOCA_TRAN		X	Reference to or details of algorithm used to calculate local grid reference, local ground levels or chainage	Coordinate transforms document ref 100-23-A, dated 16 April 2010
	FILE_FSET		X	Associated file reference (e.g. boring or pitting instructions, location photographs)	FS2
	LOCA_NATD		X	National vertical datum referencing system used	OD Newlyn
	LOCA_ORID		X	Original Hole ID	BH1
	LOCA_ORJO		X	Original Job Reference	ABC1985
	LOCA_ORCO		X	Originating Company	ABC Labs
	LOCA_GLDT	yyyy-mm-ddThh:mm	DT	Date time of LOCA_GL measurement	2025-01-01T00:00
	LOCA_VSSL		X	Survey vessel	MV Marine
	LOCA_NSRI		0DP	Spatial reference identifier for national grid referencing system used (EPSG code)	27700
	LOCA_LSRI		0DP	Spatial reference identifier for local grid referencing system used (EPSG code)	7030
	LOCA_LLSI		0DP	Spatial reference identifier for latitude and longitude referencing system used (EPSG code)	4326

**Group Rules:**

- For the transfer of proposed exploratory locations, the designer shall use the LOCA group with LOCA\_STAT = 'PROPOSED', noting that the LOCA group does not accommodate both proposed and as-built data for a single position (such as co-ordinates), this is considered a data management issue.

#### Group Notes:

- LOCA is used to transfer the spatial location of all exploratory locations where data has been recorded. This includes the location of exploratory holes, sampling points or other locations where an observation / test has been made, or a sample / measurement taken.
- The LOCA\_TYPE code is used to categorise the type of activity that has occurred at the location.
- The details of exploratory hole construction are contained in the HDPH group. If LOCA\_TYPE codes are used that represent the type of exploratory hole construction then they must be correlated with the code or combinations of codes in HDPH\_TYPE. Alternatively the code 'EH' could be used to represent an Exploratory Hole the details of which are contained in HDPH.
- If the AGS data file includes information on construction items, then LOCA would also include references to these locations.
- LOCA\_ID must be unique for the project and should be unique for the site to allow for consolidation of data. Consideration of this needs to be made at the outset of the project. Typically the consulting engineer or designer allows for this in specifying hole or location identifiers.
- LOCA\_FDEP will generally be null for location points other than exploratory holes, pits, piles or other below ground constructed elements.
- Two headings, LOCA\_LOCA and LOCA\_CLST, provide a heading for tags of hole groupings. These groupings would typically be specified by the Investigation Supervisor/Designer rather than the Ground Investigation Contractor. LOCA\_LOCA should be used to define the grouping of a hole by site location, whereas LOCA\_CLST is typically used to indicate investigation phase. If codes are used to define these location or phase data, then the codes shall be defined in the ABBR group.
- LOCA\_OFFS, LOCA\_CNGE and LOCA\_ALID allow location data to be presented by chainage and offset to an alignment as typically used for location on road and rail projects. The data included in these headings will probably be expressed in project related units. For example, offset can be defined as positive or negative (e.g. +10 or -12). Chainage on UK railway projects may well be expressed in miles and chains (e.g. 10 mi 1 ch).
- LOCA\_NATE and LOCA\_NATN can include recognised international, state or regional projected coordinate systems. The relevant system used should be included in LOCA\_GREF.

Group Name: LPDN - Particle Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LPDN_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	LPDN_TYPE		PA	Type of test	SMALL PYK
	LPDN_REM		X	Remarks	Test on material <2mm only
	LPDN_METH		X	Test method	BS EN ISO 17892-3:2015
	LPDN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LPDN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LPDN_DEV		X	Any deviation from the specified test procedure, and any other information that could be important for interpreting the test results.	Sample crushed prior to test.

Group Name: LPDN - Particle Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	LPDN_PVOL	ml	0DP	Pycnometer volume if used and not 50ml	52
	LPDN_GAS		PA	Identity of gas if gas pycnometer used	Helium

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LPEN - Laboratory Hand Penetrometer Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LPEN_PPEN	kPa	0DP	Hand penetrometer undrained shear strength	40
	LPEN_MC	%	X	Water/moisture content local to test, if measured	23.7
	LPEN_REM		X	Remarks	Gravel present
	LPEN_METH		X	Test method	Manufacturers instructions
	LPEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LPEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LPEN_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LRES - Laboratory Resistivity Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LRES_BDEN	Mg/m3	2DP	Bulk density	2.12
	LRES_DDEN	Mg/m3	2DP	Dry density	1.84
	LRES_MC	%	X	Water/moisture content	15.2
	LRES_COND		X	Sample condition including details of remoulding	Remoulded
	LRES_LRES	ohm m	0DP	Temperature corrected (20 DegC) resistivity	45
	LRES_CDIA	mm	0DP	Diameter of container	450
	LRES_CCSA	mm2	0DP	Container cross-sectional area	25000
	LRES_CLEN	mm	0DP	Length of container	100
	LRES_TEMP	DegC	0DP	Temperature at which test performed	22
	LRES_ELEC		X	Type of electrodes including material	Steel discs
	LRES_PENT		X	Dimensions of probes, diameter, spacing, penetration into the soil specimen and whether inserted into ends or side	15mm diameter probes 100mm penetrating 75mm into test specimen
	LRES_CSHP		X	Shape of container	Cylinder
	LRES_WAT	ml	0DP	Volume of water required to saturate the soil	750
	LRES_WRES	ohm m	3SF	Water resistivity	0.690
	LRES_PART		X	Approximate percentage of large particles removed prior to test	None
	LRES_REM		X	Remarks	Additional remarks as required
	LRES_METH		X	Test method	BS 1377-3:2018+A1:2021, Clause 13
	LRES_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LRES_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LRES_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- The water conductivity LRES\_WCND may be included from relevant testing. For tests with natural water content values may come from suitable water collected in boreholes or, where water is added, a combination of in situ values and those of the added water.

- The method used including the container shape (LRES\_CSHP) and test geometry (LRES\_PENT) should be included.

Group Name: LSLT - Shrinkage Limit Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSLT_SLIM	%	2SF	Shrinkage limit	17
	LSLT_SHRA		0DP	Shrinkage ratio	5
	LSLT_IDEN	Mg/m3	2DP	Initial density	1.66
	LSLT_MCI	%	X	Initial water/moisture content of test specimen	20
	LSLT_425	%	0DP	Percentage passing 0.425mm sieve	12
	LSLT_REM		X	Remarks	Additional remarks as required
	LSLT_METH		X	Test method	ASTM D4943-25
	LSLT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LSLT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LSLT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Group LSLT is to be used to report shrinkage limit tests on soils.
- The LLIN group is to be used to report linear shrinkage tests.

Group Name: LSTG - Initial Consumption of Lime Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a



Group Name: LSTG - Initial Consumption of Lime Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSTG_ICL	%	2SF	Initial consumption of lime	4.4
	LSTG_PH		1DP	pH value used for interpretation of LSTG_ICL	12.6
	LSTG_LIME		X	Details of lime used for test	Laboratory grade Calcium Hydroxide
	LSTG_SUIT		1DP	pH of saturated lime solution (suitability)	12.4
	LSTG_425	%	2SF	Percentage passing 0.425mm sieve	82
	LSTG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Additional remarks as required
	LSTG_METH		X	Test method	BS 1924-2:2025, Clause 10.3
	LSTG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LSTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS15
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LSTG_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LSTT - Initial Consumption of Lime Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	LSTT_TESN		X	Test reference	1
	LSTT_LCON	%	1DP	Percentage of lime added	2.5
	LSTT_PH		1DP	pH of lime/soil suspension	12.4
	LSTT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS15

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LSWL - Swelling Index Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LSWL_SWPR	kPa	0DP	Swelling Pressure Index	50
	LSWL_SWSI	%	1DP	Swelling Strain Index	0.5
	LSWL_MCI	%	1DP	Initial water content of test specimen	5.6
	LSWL_SDIA	mm	1DP	Specimen diameter	63.2
	LSWL_THCK	mm	1DP	Specimen thickness	50.1
	LSWL_BDEN	kg/m3	0DP	Initial bulk density	2240
	LSWL_DDEN	kg/m3	0DP	Initial dry density	1870
	LSWL_REM		X	Remarks	Additional remarks as required
	LSWL_METH		X	Test method	ISRM: Suggested method
	LSWL_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LSWL_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LSWL_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- The LSWL group should be used for swelling tests on both soil and rock materials.

Group Name: LTCH - Laboratory Thermal Conductivity					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LTCH_COND		X	Sample condition	UNDISTURBED
	LTCH_BDEN	Mg/m3	2DP	Bulk density	2.12
	LTCH_DDEN	Mg/m3	2DP	Dry density	1.84
	LTCH_MC	%	X	Water/moisture content	57
	LTCH_TCON	W/(K-m)	2DP	Thermal Conductivity	3.21
	LTCH_TRES	(K-m)/W	2DP	Thermal Resistivity	0.75
	LTCH_TEMP	DegC	0DP	Ambient temperature at which test is performed	22
	LTCH_PDIA	mm	0DP	Probe diameter	15
	LTCH_PSPA	mm	0DP	Probe spacing	100
	LTCH_PPEN	mm	0DP	Probe penetration	75
	LTCH_PRBE		X	Method of probe insertion	Pushed, pre-drilled
	LTCH_PART		X	Particle grain size removed	>2mm
	LTCH_DEV		X	Deviation from the procedure	Explanation of any deviation
	LTCH_REM		X	Remarks	Additional remarks as required
	LTCH_METH		X	Test method	ASTM D5334-22AE01
	LTCH_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LTCH_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: LUCT - Laboratory Unconfined Compression Test					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LUCT_DEV		X	Deviation from the procedure	Explanation of any deviation
	LUCT_TYPE		PA	Test type	UNDISTURBED
	LUCT_DIA	mm	2DP	Specimen diameter	38.25
	LUCT_SLEN	mm	2DP	Specimen length	76.45
	LUCT_IWC	%	X	Specimen initial water content	15.7
	LUCT_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	LUCT_DDEN	Mg/m3	2DP	Initial dry density	1.84
	LUCT_RATE	%/min	2SF	Mean rate of compression	1.2
	LUCT_UCS	kPa	0DP	Unconfined compressive strength	121
	LUCT_STRA	%	1DP	Strain at failure	11.2
	LUCT_MODE		PA	Mode of failure	Brittle
	LUCT_REM		X	Remarks	Additional remarks as required
	LUCT_METH		X	Test method	BS EN ISO 17892-7:2018
	LUCT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LUCT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7

**Group Rules:**

- None

**Group Notes:**

- This group is for soil testing (ISO). Please refer to the RUCS group for reporting rock UCS testing (ISRM or ASTM).

Group Name: LVAN - Laboratory Vane Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	LVAN_VNPK	kPa	XN	Vane undrained shear strength (peak)	35
	LVAN_VNRM	kPa	XN	Vane undrained shear strength (remoulded)	25
	LVAN_MC	%	X	Water/moisture content local to the test	57.9
	LVAN_SIZE	mm	1DP	Equivalent diameter of vane	12.7
	LVAN_VLEN	mm	1DP	Length of vane	12.7
	LVAN_REM		X	Remarks	Test performed in U100, test on CBR specimen
	LVAN_METH		X	Test method, including type of vane	VJT5300 Laboratory Vane BS 1377-2:2022, Clause 24
	LVAN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	LVAN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	LVAN_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	LVAN_TYPE		PA	Vane type	HV

**Group Rules:**

- LVAN\_VNPK and LVAN\_VNRM shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

**Group Notes:**

- LVAN\_VNPK and LVAN\_VNRM should generally be numeric data. A text form can only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.

Group Name: MCVG - MCV Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010

Group Name: MCVG - MCV Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Stored at constant water/moisture content for 7 days, then soaked for 7 days, maintained at 20 +/- 2 degrees Celsius throughout
	MCVG_200	%	0DP	Weight percent of sample retained on 20 mm sieve	15
	MCVG_NMC	%	X	Natural water/moisture content below 20 mm	21
	MCVG_STAB	%	2SF	Amount of stabiliser added	23
	MCVG_STYP		X	Type of stabiliser added	Cement
	MCVG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Additional remarks as required
	MCVG_METH		X	Test method	BS 1377-2:2022, Clause 13.4
	MCVG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	MCVG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS15
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	MCVG_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: MCVT - MCV Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	MCVT_TESN		X	Test reference	1
	MCVT_MC	%	X	Water/moisture content for MCVT_TESN	17.7
	MCVT_CURV		X	Method of interpretation of the test curve	Steepest straight line
	MCVT_RELK		1DP	MCV value for MCVT_TESN	12.3

Group Name: MCVT - MCV Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	MCVT_BDEN	Mg/m3	2DP	After test bulk density for MCVT_TESN	2.02
	MCVT_DIFF	mm	1DP	Difference between initial (n) and final (3n) blows in rapid assessment test	4.5
	MCVT_RAPD		X	Stronger or weaker than pre-calibrated standard	Weaker
	MCVT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS15

**Group Rules:**

- None

**Group Notes:**

- MCVT\_BDEN is included to allow reporting of bulk density of the specimen after test. However, the requirement and procedure for this is not covered by BS1377.
- MCVT\_DIFF and MCVT\_RAPD are proposed to allow adequate and unambiguous reporting of a rapid assessment test.

Group Name: MOND - Monitoring Readings					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	MONG_ID		X	Monitoring point reference	P1
*	MONG_DIS	m	2DP	Initial distance of monitoring point from LOCA_ID datum	2.30
*	MOND_DTIM	yyyy-mm-ddThh:mm:ss	DT	Date and time of reading	2003-02-20T13:40:00
*	MOND_TYPE		PA	Reading type	WDEP
*	MOND_REF		X	Reading reference	2
	MOND_INST		X	Instrument reference / serial number	14124-1
	MOND_RDNG		XN	Reading	10.34
R	MOND_UNIT		PU	Units of reading	m
	MOND_METH		X	Measurement method	In-house method
	MOND_LIM		U	Instrument/method reading/detection limit	0.001
	MOND_ULIM		U	Instrument/method upper reading/detection (when appropriate)	10.000
	MOND_NAME		X	Client preferred name of measurement	ABC133
	MOND_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	MOND_CONT		X	Organization taking reading	ACME Monitoring
	MOND_REM		X	Comments on reading	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. monitoring field sheets, instrument logging file)	FS28

**Group Rules:**

- MOND\_RDNG shall generally be numeric data. A text form shall only be used by addition of a prefixing operator to denote greater than or less than conditions i.e. >200 when readings are above the reporting limit of the testing equipment.
- Where a reading has no unit, the MOND\_UNIT data shall be set to 'UNITLESS'.

- Units included in MOND\_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.
- Data type for data field heading MOND\_UNIT shall not be changed from PU.

#### Group Notes:

- MOND is used to transfer measurements or readings from instruments or geoenvironmental monitoring equipment. Geoenvironmental sampling (and laboratory testing should be included in the SAMP/ELRG groups).
- This group covers the scope of data included in AGS3 within groups MONR and ICCT.
- MOND\_TYPE defines the reading but not the instrument type nor units (which are defined by MONG\_TYPE and MOND\_UNIT respectively).
- A full list of abbreviations is provided on the AGS website [www.agsdataformat.org.uk](http://www.agsdataformat.org.uk).
- Units included in MOND\_UNIT must be fully defined in the UNIT group (Rule 15). It is possible that units require conversion when the data is received and amalgamated into project databases to ensure that data are consistent across monitoring tranches and appropriate for the assessment.
- Where an instrument records more than one parameter with each reading, for example the three components for a survey total station, or the temperature and pressure then each reading has separate entry.
- Allowance has been made for recording peak and steady gas concentrations which are a requirement of the SISG specification and CIRIA C665 report / BS8676:2013.
- If an incident affects a particular instrument or a particular data reading in a single instrument then it is best reported as a remark in MOND\_REM on the date and time at which it occurred or was noted, and associated with the particular reading that is affected e.g. 'Installation vandalised. Cover damaged'.
- If there is an event on the site that is of a more general nature that may affect the results on a number of instruments then this can be reported in PREM or TREM as a time related remark.

Group Name: MONG - Monitoring Installations and Instruments					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	MONG_ID		X	Monitoring point reference	P1
*	MONG_DIS	m	2DP	Initial distance of monitoring point from LOCA_ID	2.30
	PIPE_REF		X	Pipe reference	Pipe1
	MONG_DATE	yyyy-mm-dd	DT	Installation date	2003-01-01
	MONG_TYPE		PA	Instrument type	TS
	MONG_DETL		X	Details of instrument	Total Station
	MONG_TRZ	m	2DP	Distance to start of response zone from LOCA_ID datum	5.50
	MONG_BRZ	m	2DP	Distance to end of response zone from LOCA_ID datum	7.50
	MONG_BRGA	deg	0DP	Bearing of monitoring axis A (compass bearing)	90
	MONG_BRGB	deg	0DP	Bearing of monitoring axis B (compass bearing)	180
	MONG_BRGC	deg	0DP	Bearing of monitoring axis C (compass bearing)	270
	MONG_INCA	deg	0DP	Inclination of instrument axis A (measured positively down from horizontal)	87
	MONG_INCB	deg	0DP	Inclination of instrument axis B (measured positively down from horizontal)	88
	MONG_INCC	deg	0DP	Inclination of instrument axis C (measured positively down from horizontal)	89
	MONG_RSCA		X	Reading sign convention in direction A	Displacement to East +ve
	MONG_RSCB		X	Reading sign convention in direction B	Displacement to South +ve
	MONG_RSCC		X	Reading sign convention in direction C	Displacement up +ve
	MONG_REM		X	Remarks	Behind wall
	MONG_CONT		X	Contractor who installed monitoring instrument	ACME Instruments Ltd
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS27



**Group Rules:**

- None

**Group Notes:**

- Each monitoring point should have a unique identification detailed in MONG\_ID. Typically this reflects the actual reference or marking on the instrument.
- MONG\_DETL should be used to describe the instrument/sensor location or parameter in specific terms.
- MONG\_CONT used to include details of which organization installed the monitoring device.
- PIPE\_REF is to be used to link the monitoring installation with the appropriate pipe within an installation (for example where there is both a shallow and a deep installation).

Group Name: MONS - Monitoring Installations and Instruments Status					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	MONG_ID		X	Monitoring point reference	P1
*	MONG_DIS	m	2DP	Initial distance of monitoring point from LOCA_ID	2.30
*	MONS_STAR	yyyy-mm-dd	DT	Date and time of start of status	2020-02-24
	MONS_ENDD	yyyy-mm-dd	DT	Date and time of end of status	2020-02-25
	MONS_BY		X	Who recorded status	Joe Bloggs
	MONS_TYPE		PA	Type of status	ONLINE
	MONS_STAT		X	Status	Comissioned
	MONS_RPLO		ID	Location identifier this installation or instrument replaces	327-16
	MONS_RPID		X	Monitoring point reference this installation or instrument replaces	P0
	MONS_REM		X	Remarks	
	FILE_FSET		X	Associated file reference	FS99

**Group Rules:**

- None

**Group Notes:**

- MONS is used to transfer the status of a monitoring installation and instrument at a given time, or time period.
- MONS\_RPLO and MONS\_RPID are available to record which MONG record has been replaced by this current record, for example when an instrument is damaged and replace with a new one. A new instrument would typically correspond to a new MONG record.

Group Name: PIPE - Monitoring Installation Pipe Work					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PIPE_REF		X	Pipe reference	Pipe1
*	PIPE_TOP	m	2DP	Top of construction zone	0.00
*	PIPE_BASE	m	2DP	Base of construction zone	2.50
	PIPE_DIAM	mm	0DP	Diameter of pipe	75
	PIPE_TYPE		PA	Type of pipe	SLOTTED
	PIPE_CONS		X	Details of pipe construction	50 mm PVC

Group Name: PIPE - Monitoring Installation Pipe Work					
Status	Heading	Suggested Unit / Type		Description	Example
	PIPE_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS32

**Group Rules:**

- None

**Group Notes:**

- PIPE is to be used to transfer pipe work lengths installed in an exploratory hole to provide instrumentation access.
- A data row is included for each pipe length/type/diameter combination in a hole.
- PIPE\_TYPE would typically define the graphics used to represent the installation pipe work on reports or diagrams.

Group Name: PLTG - Plate Loading Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PLTG_DPTH	m	2DP	Test depth	1.23
*	PLTG_TESN		X	Test reference	1
*	PLTG_CYC		X	Load cycle	1
	PLTG_PDIA	mm	0DP	Plate diameter	600
	PLTG_SEAT	kN	1DP	Seating load including apparatus mass	10.0
	PLTG_FA0		2DP	Factor a0	0.00
	PLTG_FA1		2DP	Factor a1	12.65
	PLTG_FA2		2DP	Factor a2	-7.58
	PLTG_SMOD	MPa	1DP	Strain modulus	15.8
	PLTG_EV2	MPa	1DP	Elastic modulus for second loading cycle	83.0
	PLTG_MOSR	MPa/m	1DP	Modulus of subgrade reaction	60.8
	PLTG_EMOD	MPa	1DP	Elastic modulus	21.7
	PLTG_DATE	yyyy-mm-dd	DT	Test date	2008-07-23
	PLTG_STAB	%	2SF	Amount of stabiliser added	23
	PLTG_STYP		X	Type of stabiliser added	Cement
	PLTG_REM		X	Remarks	Additional remarks as required
	PLTG_ENV		X	Details of weather and environmental conditions during test	Dry and warm
	PLTG_METH		X	Test method	DIN18134 Strain Modulus
	PLTG_CONT		X	Name of testing organization	ACME On-site Testing Ltd
	PLTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	PLTG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- PLTG is to be used to transfer plate load tests. One data row in this group represents a test and loading cycle.
- The Factors a0, a1 and a2 are determined in testing carried out to the DIN standard and would not be appropriate for testing to other standards.
- PLTG\_EV2 is normally only completed when PLTG\_CYC = 2.

Group Name: PLTT - Plate Loading Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PLTG_DPTH	m	2DP	Test depth	1.23
*	PLTG_TESN		X	Test reference	1
*	PLTG_CYC		X	Load cycle	1
*	PLTT_STG		X	Load stage	1
*	PLTT_TIME	min	1DP	Stage elapsed time	0.5
	PLTT_LOAD	kN	1DP	Applied load	10.0
	PLTT_SET1	mm	2DP	Settlement Gauge 1	0.86
	PLTT_SET2	mm	2DP	Settlement Gauge 2	0.74
	PLTT_SET3	mm	2DP	Settlement Gauge 3	0.91
	PLTT_SET4	mm	2DP	Settlement Gauge 4	0.00
	PLTT_REM		X	Comments on reading	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

**Group Rules:**

- None

**Group Notes:**

- PLTT is used to transfer the load settlement readings from a test/load cycle of a plate load test.

Group Name: PMMC - Menard Pressuremeter Test Results - Unload/Reload Cycles					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMMG_DPTH	m	2DP	Depth of test	2.70
*	PMMG_TESN		X	Test reference	1
*	PMMC_CYNO		X	Cycle number	1
	PMMC_P1CY	MPa	3DP	Corrected pressure at origin of cyclic pressure range	0.573
	PMMC_P2CY	MPa	3DP	Corrected pressure at end of cyclic pressure range	0.886
	PMMC_EM CY	MPa	1DP	Cyclic Menard modulus	53.9
	PMMC_REM		X	Remarks	Comment
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

**Group Rules:**

- None

**Group Notes:**

- PMMC group is used for unload/reload cycles of a Mrd Pressuremeter

Group Name: PMMD - Menard Pressuremeter Test Results - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMMG_DPTH	m	2DP	Depth of test	2.70
*	PMMG_TESN		X	Test reference	1
*	PMMD_SEQ		0DP	Sequence number	1
	PMMD_P01S	MPa	3DP	Measured pressure at 1 s	0.123
	PMMD_P15S	MPa	3DP	Measured pressure at 15 s	0.123
	PMMD_P30S	MPa	3DP	Measured pressure at 30 s	0.123
	PMMD_P60S	MPa	3DP	Measured pressure at 60 s	0.123
	PMMD_V01S	cm3	1DP	Measured volume at 1 s	143.1
	PMMD_V15S	cm3	1DP	Measured volume at 15 s	143.1
	PMMD_V30S	cm3	1DP	Measured volume at 30 s	143.1
	PMMD_V60S	cm3	1DP	Measured volume at 60 s	143.1
	PMMD_CP	MPa	3DP	Corrected pressure	0.123
	PMMD_CVOL	cm3	1DP	Corrected volume	143.1
	PMMD_SLOP	cm3/MPa	0DP	Slope	537
	PMMD_CREP	cm3	1DP	Creep	1.8
	PMMD_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11

**Group Rules:**

- None

**Group Notes:**

- Menard Pressuremeter must be reported in PMMD and PMMG.

Group Name: PMMG - Menard Pressuremeter Test Results - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMMG_DPTH	m	2DP	Depth of test	2.70
*	PMMG_TESN		X	Test reference	1
	PMMG_DATE	yyyy-mm-ddThh:m m:ss	DT	Date and time of test	2021-03-11T15:00:00
	PMMG_DCU	m	2DP	Distance of control unit above ground	0.70
	PMMG_PRWL	m	2DP	Depth to water/fluid in borehole prior to test	10.61

Group Name: PMMG - Menard Pressuremeter Test Results - General					
Status	Heading	Suggested Unit / Type		Description	Example
	PMMG_REF		X	Instrument reference / serial number	PMT123456
	PMMG_TYPE		PA	Pressuremeter type	MPM
	PMMG_DIAM	mm	0DP	Uninflated diameter of pressuremeter	60
	PMMG_PRC	MPa	0DP	Pressure capacity	5
	PMMG_TC		PA	Method of test control	AUTOMATED
	PMMG_P1	MPa	2DP	Start of linear section pressure, P_1	0.10
	PMMG_P2	MPa	2DP	End of linear section pressure, P_2	0.61
	PMMG_EM	MPa	1DP	Menard modulus, E_M	70.1
	PMMG_MPL	MPa	2DP	Menard limit pressure	3.41
	PMMG_MPLM		PA	Menard limit pressure method	PLMH
	PMMG_PF	MPa	2DP	Creep pressure	0.82
	PMMG_METH		X	Test method	BS EN ISO 22476-4:2021
	PMMG_CREM		X	Describe corrections applied during processing	Pressure loss and volume correction
	PMMG_REM		X	Remarks	Membrane rupture
	PMMG_CRDT	yyyy-mm-dd	DT	Date of last calibration of instrument	2009-10-01
	PMMG_OPER		X	Name of test operator	ANO/TBA
	PMMG_ANBY		X	Name(s) of analyser / person responsible for data quality and correctness	ABC/DEF
	PMMG_CONT		X	Subcontractors name	An Contractor Ltd
	PMMG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	PMMG_ENV		X	Details of weather and environmental conditions during test	Rain, standing water close to test area
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11

**Group Rules:**

- None

**Group Notes:**

- Menard Pressuremeter must be reported in PMMD and PMMG.

Group Name: PMTD - Pressuremeter Test Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMTG_DPTH	m	2DP	Depth of test	2.70
*	PMTG_TESN		X	Test reference	1
*	PMTD_SEQ		0DP	Sequence number	1
	PMTD_TPC	kPa	1DP	Total pressure	54.4
	PMTD_PPA	kPa	1DP	Pore pressure cell A	29.2
	PMTD_PPB	kPa	1DP	Pore pressure cell B	31.5

Group Name: PMTD - Pressuremeter Test Data					
Status	Heading	Suggested Unit / Type		Description	Example
	PMTD_VOL	cm3	1DP	Volume change in test cell	2.6
	PMTD_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	PMTD_AX1	mm	4DP	Axis 1 displacement	2.0031
	PMTD_AX2	mm	4DP	Axis 2 displacement	2.0041
	PMTD_AX3	mm	4DP	Axis 3 displacement	2.0051
	PMTD_SA1	mm	4DP	Arm 1 displacement	2.0011
	PMTD_SA2	mm	4DP	Arm 2 displacement	2.0021
	PMTD_SA3	mm	4DP	Arm 3 displacement	2.0031
	PMTD_SA4	mm	4DP	Arm 4 displacement	2.0041
	PMTD_SA5	mm	4DP	Arm 5 displacement	2.0051
	PMTD_SA6	mm	4DP	Arm 6 displacement	2.0063
	PMTD_SAME	mm	4DP	Mean arm displacement	2.0041
	PMTD_TIME	s	0DP	Time elapsed since start of test	250

#### Group Rules:

- None

#### Group Notes:

- PMTD\_AX1, PMTD\_AX2 and PMTD\_AX3 are used to report displacements across the pressuremeter axis. This is the change in diameter across the outside of the pressuremeter membrane (and Chinese lantern strips or other protective sheath if fitted) as measured on the inside of the membrane by a single arm (3 arm pressuremeter) or pair of diametrically opposite arms (6 arm pressuremeter) and adjusted for the thickness of the membrane (including effects of membrane compression and thinning with expansion).
- Displacements measured directly by individual arms are reported using PMTD\_SA1 etc, according to the number of displacement measuring arms fitted.
- PMTD\_SAME is used to report the mean arm displacement.
- Pressuremeters not fitted with internal strain arms (e.g. Mrd type pressuremeters), where the volumetric expansion of the pressuremeter is measured by recording the volume of fluid entering the system, will have no data for PMTD\_ARM1, 2 and 3. The volume change in the test cell entered in PMTD\_VOL is the volumetric change measured at the surface corrected for line expansion, etc.
- Previous requirements to record the pressure against each arm/axis of the equipment have been removed and replaced with the total pressure in the test cell PMTD\_TPC. The total pressure is measured inside the pressuremeter with a pressure cell. The measured pressure is corrected for the inherent stiffness of the membrane the amount of pressure to inflate the membrane when the pressuremeter is out of the ground. This amount is assessed by a membrane calibration where the membrane is inflated in free air. The pressure correction is subtracted from the measured pressure to get the pressure exerted on the ground.
- PMTD\_TPC is the pressure imposed by the outside of the membrane; i.e. that required to expand the pressuremeter, corrected for the inherent membrane stiffness. For modern type pressuremeters this is normally measured inside the pressuremeter by one or more electronic transducers. For instruments without internal pressure transducers, where the pressure is measured at the surface, PMTD\_TPC will also include correction for the elevation head due to the difference in height between the pressuremeter instrument in the borehole and the measuring equipment at the surface.

Group Name: PMTG - Pressuremeter Test Results - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMTG_DPTH	m	2DP	Depth of test	2.70
*	PMTG_TESN		X	Test reference	1
	PMTG_DATE	yyyy-mm-dd	DT	Date of test	1993-12-23
	PMTG_WAT	m	2DP	Measured or assumed ground water level	1.53
	PMTG_CONT		X	Subcontractors name	An Contractor Ltd
	PMTG_CREW		X	Operators details	ANO/TBA
	PMTG_REF		X	Instrument reference / serial number	PMT123456
	PMTG_TYPE		PA	Pressuremeter type	SBP
	PMTG_DIAM	mm	2DP	Uninflated diameter of pressuremeter	82.90
	PMTG_HO	kPa	0DP	Estimated in situ horizontal stress	700
	PMTG_GI	MPa	0DP	Initial shear modulus	70
	PMTG_CU	kPa	0DP	Undrained shear strength	420
	PMTG_PL	kPa	0DP	Limit pressure	3400
	PMTG_AF	deg	1DP	Angle of friction	39.0
	PMTG_AD	deg	0DP	Angle of dilation	10
	PMTG_AFCV	deg	1DP	Angle of friction at constant volume (*cv) used	35.0
	PMTG_METH		X	Method(s) used to determine derived soil parameters (including those in PMTL).	Pressuremeters in Geotechnical Design
	PMTG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	PMTG_ENV		X	Details of weather and environmental conditions during test	Rain, standing water close to test area
	PMTG_REM		X	Remarks	6 arms used in determination of average
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	PMTG_NUAR		0DP	Number of arms	6
	PMTG_ORNT	deg	0DP	Bearing of arm 1 (clockwise degrees from North)	015
	PMTG_AXIS		X	Arm combination used for analysis	Average arms
	PMTG_PRWL	m	2DP	Depth to water/fluid in borehole prior to test	10.61
	PMTG_TC		PA	Method of test control	STRESS+STRAIN
	PMTG_STAD	yyyy-mm-ddThh:mm:ss	DT	Start of drilling of SBPM	2021-03-11T15:00:00
	PMTG_ENDD	yyyy-mm-ddThh:mm:ss	DT	End of drilling of SBPM	2021-03-11T15:00:00
	PMTG_TOPP	m	2DP	Depth to top of test pocket for SBPM	5.10
	PMTG_BOTP	m	2DP	Depth to base of test pocket for SBPM	6.10
	PMTG_SBHT		PA	Self-boring head type of SBPM	RC
	PMTG_SBCS	mm	1DP	Self-boring cutting shoe diameter, dp, of SBPM	83.1

Group Name: PMTG - Pressuremeter Test Results - General					
Status	Heading	Suggested Unit / Type		Description	Example
	PMTG_SBCT		PA	Cutter type of SBPM	RRB
	PMTG_SBCD	mm	1DP	Cutter dimension of SBPM	63.1
	PMTG_SBCP	mm	0DP	Cutter position, h (+ve inside cutting shoe, -ve outside cutting shoe) of SBPM	20
	PMTG_FLFT		X	Flushing fluid type of SBPM	Polymer
	PMTG_FLFP	kPa	0DP	Flushing or jetting fluid pressure of SBPM	350
	PMTG_TRST	kN	0DP	Thrust force of SBPM	55
	PMTG_PPRD		YN	Pore pressures recorded during boring	Y
	PMTG_CMT		PA	Cone module type	TC
	PMTG_CREM		X	Describe corrections applied during processing	membrane stiffness and system compliance
	PMTG_CRDT	yyyy-mm-dd	DT	Date of last calibration of instrument	2009-10-01
	PMTG_ANBY		X	Name(s) of analyser / person responsible for data quality and correctness	ABC/DEF

**Group Rules:**

- None

**Group Notes:**

- PMTG (together with PMTD, PMTL, PMTZ and PMTP) are used to record pressuremeter tests using standard pressuremeters, including self-boring pressuremeters, pre-bored pressuremeters (dilatometers) and full-displacement pressuremeters (e.g. cone pressuremeters).
- PMTG\_NUAR has been added to record the number of displacement measurement 'arms' for the pressuremeter used.
- PMTG\_ORNT has been added to record the orientation of Arm 1 as clockwise angle in degrees relative to North.
- Interpretation of parameters is conventionally carried out on average displacements measured on the three instrument axes (generally by 3 or 6 arms), however, alternative arm combinations may be used where readings from one or more arms are considered to be unrepresentative. The arm combination is recorded in PMTG\_AXIS; likely combinations for a 6 arm device would be Average arms, Odd arms (arms 1, 3 and 5), Even arms (arms 2, 4 and 6), Axis 1 (arms 1 and 4), etc. If one or more arms/axes are excluded this should be noted in PMTG\_REM.
- Provide calibration certificates via FILE\_FSET.

Group Name: PMTL - Pressuremeter Test Results - Individual Loops					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMTG_DPTH	m	2DP	Depth of test	2.70
*	PMTG_TESN		X	Test reference	1
*	PMTL_LNO		0DP	Unload/reload loop number	1
	PMTL_GAA	MPa	3SF	Unload/reload shear modulus, average	139
	PMTL_SINC	%	2DP	Mean strain	3.48
	PMTL_PINC	kPa	0DP	Mean pressure	1586
	PMTL_STRA	%	3DP	Strain range or amplitude	0.105
	PMTL_PRSA	kPa	0DP	Pressure range or amplitude	284
	PMTL_NLSA	MPa	3DP	Shear stress coefficient (from Bolton and Whittle, 1999)	2.921
	PMTL_NLSB		3DP	Linearity exponent (from Bolton and Whittle, 1999)	0.538
	PMTL_REM		X	Remarks	Additional remarks as required



Group Name: PMTL - Pressuremeter Test Results - Individual Loops					
Status	Heading	Suggested Unit / Type		Description	Example
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS11
	PMTL_AXIS		X	Arm combination used for analysis	Odd arms
	PMTL_HP	kPa	0DP	Hold pressure	700
	PMTL_HT	s	0DP	Hold duration	120
	PMTL_CR	%	4DP	Creep rate	0.0029

**Group Rules:**

- None

**Group Notes:**

- PMTL is used to transfer summary details of test loops. If detailed information is required on test loop data this would be provided as attached files and listed under FILE\_FSET in the PMTG group.
- Additional headings PMTL\_NLSA and PMTL\_NLSB have been added to include for data from Bolton and Whittles (1999) interpretation of unload-reload loops to derive non-linear stiffness parameters. The interpretation gives two parameters, sometimes referred to as the linearity exponent and shear stress coefficient (Beta and alpha respective).
- PMTL\_AXIS is used to report which arm combination has been used for analysis of the test loops in the same way as defined for PMTG\_AXIS given above.

Group Name: PMTP - Pressuremeter Test Results - Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMTG_DPTH	m	2DP	Depth of test	2.70
*	PMTG_TESN		X	Test reference	1
	PMTP_U0	kPa	0DP	In situ pore water pressure	50
	PMTP_STO	mm	2DP	Strain origin	0.04
	PMTP_HO	kPa	0DP	Estimated in situ horizontal stress	700
	PMTP_HOM		X	Method remark for Estimated in situ horizontal stress	Curve fitting
	PMTP_GI	MPa	3SF	Shear modulus from first loading	70.1
	PMTP_SU	kPa	1DP	Undrained shear strength	420.1
	PMTP_SUM		X	Method remark for Undrained Shear Strength (s_u)	Whittle 1999
	PMTP_AF	deg	1DP	Peak angle of friction	39.0
	PMTP_AD	deg	1DP	Angle of dilation	10.0
	PMTP_AFDM		X	Method remark for Peak angle of friction and Angle of dilation	Hughes 1977
	PMTP_AFCV	deg	1DP	Angle of friction at constant volume (*cv) used	35.0
	PMTP_DC	kPa	0DP	Drained cohesion	40
	PMTP_DCM		X	Method remark for Drained cohesion	Carter, Booker, and Yeung Modified 2010
	PMTP_PL	kPa	0DP	Total limit pressure	3400
	PMTP_PF	kPa	0DP	Total yield stress	472
	PMTP_PFM		X	Method remark for Total yield stress	Marsland and Randolph 1977 (1990)
	PMTP_YM	MPa	1DP	Yield modulus	12.6

Group Name: PMTP - Pressuremeter Test Results - Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
	PMTP_YMM		X	Method remark for Yield modulus	Houlsby and Withers 1988
	PMTP_MU		2DP	Poisson's ratio	0.31
	PMTP_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11

**Group Rules:**

- None

**Group Notes:**

- Used to transfer calculated engineering parameters for standard pressuremeter testing.
- The requirement for this information as part of ground investigation reporting shall be fully specified at the outset of the investigation. The specification may need to detail the interpretative method(s) to be used.
- Headings with suffix of M are intended for details of the correlation methods/references used to carry out calculations.

Group Name: PMTZ - Pressuremeter Test Results - Zeros					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PMTG_DPTH	m	2DP	Depth of test	2.70
*	PMTG_TESN		X	Test reference	1
*	PMTZ_PARM		PA	Measured Parameter	TPC1
	PMTZ_MRS		X	Measuring ranges of the sensors, min to max unit	0 to 30 MPa
	PMTZ_ZC		U	Zero from calibration	4565
	PMTZ_ZB		U	Zero before at surface	4567
	PMTZ_ZH		U	Zero in hole before test at test depth	5123
	PMTZ_ZA		U	Zero after at surface	4568
	PMTZ_ZD		U	Zero drift	1
	PMTZ_EGUT		PU	Unit for PMTZ_ZD	mV
	PMTZ_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11

**Group Rules:**

- None

**Group Notes:**

- Zero readings from calibration, before the test and after the test.

Group Name: PREM - Project Specific Time Related Remarks					
Status	Heading	Suggested Unit / Type		Description	Example
*	PREM_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of remark or start of event	2001-05-16T12:00
	PREM_COMP		X	Component or sub-activity	Slab G12
	PREM_REM		X	Time related remark	Completion of concrete pour
	PREM_DURN	hh:mm:ss	T	Duration of event or activity	01:25:00
	PREM_ETIM	yyyy-mm-ddThh:mm	DT	Date and time of end of event	2001-05-16T16:00
	FILE_FSET		X	Associated file reference (e.g. site journal records)	FS28

**Group Rules:**

- None

**Group Notes:**

- PREM may be used to report a site diary of key events e.g. 'Heavy rain for 2 days, site flooded'.
- TREM should be used to record general remarks that are related to a site location.
- PREM\_ETIM and PREM\_DURN could be different depending on the nature of the activity or commentary. Where there are differences in elapsed time and duration these would be explained or expanded on in PREM\_REM.

Group Name: PTIM - Boring/Drilling Progress by Time					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PTIM_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of progress reading	1991-03-01T14:35
	PTIM_DPTH	m	2DP	Hole depth	22.13
	PTIM_CAS	m	2DP	Depth of casing	20.50
	PTIM_WAT	m	XN	Depth to water	16.56 or Dry
	PTIM_REM		X	Remarks	Stopped drilling on client's instruction
	FILE_FSET		X	Associated file reference (e.g. drilling journals)	FS21

**Group Rules:**

- None

**Group Notes:**

- PTIM is used to record information on the development of the exploratory hole, including readings of depth of hole, casing and water level at the start and end of shift.

Group Name: PTST - Laboratory Permeability Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	PTST_TESN		X	Test reference	2
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	PTST_COND		PA	Sample condition	UNDISTURBED
	PTST_SZUN	mm	0DP	Size cut off of material too coarse for testing	5
	PTST_UNNS	%	0DP	Proportion of material removed above PTST	36
	PTST_DIAM	mm	2DP	Specimen diameter	102.52
	PTST_LEN	mm	2DP	Specimen length	200.22
	PTST_MC	%	X	Initial water/moisture content of test specimen	20
	PTST_BDEN	Mg/m3	2DP	Initial bulk density of test specimen	2.24
	PTST_DDEN	Mg/m3	2DP	Initial dry density	1.87
	PTST_IDIA	mm	2DP	Diameter of drain for radial permeability in hydraulic cell	3.75
	PTST_DMET		X	Method of forming central drain	Bored using mandrel and filled with saturated sand
	PTST_VOID		3DP	Initial voids ratio	0.375
	PTST_K	m/s	1SCI	Coefficient of permeability	4.1E-6
	PTST_TSTR	kPa	0DP	Mean effective stress at which permeability measured (when measured in triaxial or hydraulic cell).	112
	PTST_HYGR		0DP	Hydraulic gradient at which permeability measured (for constant head test).	1
	PTST_ISAT	%	2SF	Initial degree of saturation	72
	PTST_SAT		X	Details of saturation, where appropriate	Back pressure, Bf = 0.96
	PTST_CONS		X	Details of consolidation, where appropriate	Drainage to top with pwp at base
	PTST_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	PTST_TYPE		PA	Type of permeability measurement	Falling head
	PTST_CELL		PA	Type of permeameter	TRIAXIAL CELL
	PTST_REM		X	Remarks on test	Additional remarks as required
	PTST_METH		X	Test method	BS EN ISO 17892-11:2019
	PTST_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	PTST_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65

Group Name: PTST - Laboratory Permeability Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	PTST_DEV		X	Deviations from the test method	Explanation of any deviation
	PTST_WCIS		X	Initial water content source	Specimen trimmings
	PTST_WCF	%	X	Final water content of test specimen	20.2
	PTST_FSAT	%	2SF	Final degree of saturation, if determined	72
	PTST_TEMP	DegC	1DP	Average laboratory temperature at which the test was performed	20.2
	PTST_SOUR		X	Source of permeameter water	Tap water
	PTST_BACK	kPa	0DP	Back pressure	50
	PTST_BVAL		2DP	B-value, if used	0.98
	PTST_LOSS		X	Equipment head loss corrections applied to the measurements, if any, and the associated flow rates	Correction applied

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: PUMG - Pumping Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PUMG_TEST		X	Test reference	1991-03-16#1
	PUMG_CONT		X	Contractor	PUMP Ltd
	PUMG_METH		X	Method of testing	BS EN ISO 22282-3:2021
	PUMG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	PUMG_ENV		X	Details of weather and environmental conditions during test	Heavy rain
	PUMG_REM		X	Remarks on test	Double packer
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS11
	PUMG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- PUMG is to be used to record the general arrangements and details of pumping test.

Group Name: PUMT - Pumping Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	PUMG_TEST		X	Test reference	1991-03-16#1
*	PUMT_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of reading	1991-03-16T13:25
	PUMT_DPTH	m	2DP	Depth to water below ground	12.50
	PUMT_QUAT	l/s	1DP	Pumping rate from hole	0.8
	PUMT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS29

**Group Rules:**

- None

**Group Notes:**

- The general information about the pumping test should be recorded in the PUMG group.
- Records for observation holes and piezometers during the tests can be recorded in MONG and MOND.

Group Name: RCAG - Rock Abrasiveness Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	C
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Weak brown fine grained SANDSTONE
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RCAG_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	RCAG_DATE	yyyy-mm-dd	DT	Date of test	2020-01-06
	RCAG_COND		X	Condition of specimen as tested (saturated, as received, air dried, oven dried, etc)	Air dried
	RCAG_GSIZ		2DP	Maximum grain size	0.06
	RCAG_ANIS		X	Planes of weakness or anisotropy present (bedding, schistosity, etc)	Thinly laminated
	RCAG_MACH		X	Type of apparatus	Type 1 ACME Model 12345
	RCAG_MMTD		X	Measurement method (side view, top view, optical, digital)	Side view, optical
	RCAG_CAIM		1DP	CAI mean value	2.1
	RCAG_CAIS		2DP	CAI standard deviation	0.11

Group Name: RCAG - Rock Abrasiveness Tests - General					
Status	Heading	Suggested Unit / Type		Description	Example
	RCAG_ABCL		X	Abrasiveness classification	Low
	RCAG_REM		X	Remarks	45deg relative to axis, Tests carried out at prevailing surface unless annotated otherwise.
	RCAG_METH		X	Test method	ISRM: Suggested Method for Determining the Abrasivity of Rock by the CERCHAR Abrasivity Test
	RCAG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RCAG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10

**Group Rules:**

- None

**Group Notes:**

- This group is for reporting the results of rock abrasiveness tests carried out by the Cerchar method in accordance with ISRM Suggested Method for Determining the Abrasivity of Rock by the CERCHAR Abrasivity Test (2013)

Group Name: RCAT - Rock Abrasiveness Tests - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	C
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	RCAT_TESN		X	Measurement number	1
	RCAT_CUT		X	Surface condition (rough, saw-cut)	Fresh saw-cut
	RCAT_SDIR		X	Direction of scratching with respect to planes of weakness or anisotropy	Normal
	RCAT_STYH		0DP	Rockwell hardness HRC of stylus	42
	RCAT_STYC		X	Stylus condition (new or re-sharpened)	Re-sharpened
	RCAT_CAI		1DP	As measured CAI value	2.4
	RCAT_CAIS		1DP	Equivalent CAI value at standard stylus hardness HRC 55	3.1
	RCAT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	CHER23

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RCCV - Chalk Crushing Value Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	RCCV_TESN		X	Test reference	3
	SPEC_DESC		X	Specimen description	White chalk
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RCCV_MC	%	X	Water content of specimen tested	2.1
	RCCV_CCV		1DP	Chalk crushing value	5.6
	RCCV_100	%	0DP	Percentage larger than 10mm in original sample	85
	RCCV_REM		X	Remarks	Additional remarks as required
	RCCV_METH		X	Test method	BS 1377-2:2022, Clause 14
	RCCV_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RCCV_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RCCV_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Group added to report data specific to the Chalk Crushing Value test to BS1377 part 4 Clause 6.
- The saturated water/moisture content should be reported in RDEN\_SMC.

Group Name: RDEN - Rock Porosity and Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010



Group Name: RDEN - Rock Porosity and Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RDEN_MC	%	X	Water content of specimen	2.1
	RDEN_SMC	%	X	Saturated water content	2.3
	RDEN_BDEN	kg/m3	0DP	Bulk density	2260
	RDEN_DDEN	kg/m3	0DP	Dry density	2210
	RDEN_PORO	%	1DP	Porosity	17.3
	RDEN_PDEN	kg/m3	0DP	Apparent particle density	2750
	RDEN_TEMP	DegC	0DP	Temperature sample dried at	60
	RDEN_REM		X	Remarks	Average of three reported
	RDEN_METH		X	Test method	ISRM: Suggested method for determining porosity/density using saturation and calliper technique.
	RDEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RDEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	RDEN_IDEN	Mg/m3	2DP	Intact dry density	1.78
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RDEN_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Measurements of density on soil materials should be reported in LDEN.
- RDEN\_PDEN is denoted as the 'apparent particle density' reflecting fact that it is calculated rather than measured. This may not be the same as the particle density of the solid material.

Group Name: RELD - Relative Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55

Group Name: RELD - Relative Density Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RELD_DMAX	Mg/m3	2DP	Maximum dry density	2.15
	RELD_375	%	0DP	Weight percent of sample retained on 37.5mm sieve	7
	RELD_063	%	0DP	Weight percent of sample retained on 6.3mm sieve	10
	RELD_020	%	0DP	Weight percent of sample retained on 2mm sieve	5
	RELD_DMIN	Mg/m3	2DP	Minimum dry density	1.65
	RELD_REM		X	Remarks on test	Material >37.5 replaced with smaller material
	RELD_METH		X	Test method	BS 1377-2:2022, Clause 12
	RELD_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RELD_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS24
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RELD_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- The maximum and minimum on sands has the possibility of being on two different sizes, <6.3mm (max) and <2mm (min). Since the minimum density is a discreet test the percentage retained 2mm should be the total and not that between 6.3 and 2mm - as may be derived in practice.

Group Name: RESC – Resonant Column Test – Consolidation					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	BH01
*	SAMP_TOP	m	2DP	Depth to top of sample	10.12
*	SAMP_REF		X	Sample reference	10WaxA
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	12345
*	SPEC_REF		X	Specimen reference	DSS01
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	10.15
*	RESC_TESN		X	Test / Stage Number	2
	RESC_SDIA	mm	2DP	Specimen diameter	22.15
	RESC_HIGH	mm	2DP	Specimen height	25.15
	RESC_CTYP		PA	Type of consolidation	ISOTROPIC
	RESC_ELAP	hh:mm:ss	T	Duration of stage	09:15:30

Group Name: RESC – Resonant Column Test – Consolidation					
Status	Heading	Suggested Unit / Type		Description	Example
	RESC_CHGT	mm	2DP	Specimen height at end of test/stage	21.32
	RESC_CDIA	mm	2DP	Specimen diameter at end of test/stage	21.98
	RESC_CMC	%	X	Water content at end of test/stage	21
	RESC_CDDN	Mg/m3	2DP	Dry density at end of test/stage	1.61
	RESC_CRD	%	1DP	Relative density at end of test/stage	90.1
	RESC_INCE		3DP	Voids ratio at end of test/stage	0.765
	RESC_EASC	kPa	1DP	Effective axial stress during consolidation at end of test/stage	200.5
	RESC_ERSC	kPa	1DP	Effective radial stress during consolidation at end of test/stage	100.4
	RESC_DEVS	kPa	1DP	Deviatoric stress at end of test/stage	99.1
	RESC_SHRS	kPa	1DP	Shear stress at end of test/stage	25.3
	RESC_MNES	kPa	1DP	Mean effective stress at end of test/stage	16.5
	RESC_AXSN	%	3DP	Axial strain at end of test/stage	1.456
	RESC_VLSN	%	3DP	Volumetric strain from measured volume change at end of test/stage	1.812
	RESC_RDSN	%	3DP	Radial strain from measured volume change	0.184
	RESC_BESE		X	Bender element test sequence	After anisotropic consolidation stage 2
	RESC_BEAX		X	Bender element axis of measurement	Shv
	RESC_DBTE	mm	2DP	Distance between bender elements	196.16
	RESC_MAT	s	4DP	Measured arrival time of propagated wave	0.4941
	RESC_MATM		X	Method of measuring arrival time of propagated wave	Peak to peak
	RESC_SWV	m/s	0DP	Calculated shear wave velocity	395
	RESC_SMGM	MPa	1DP	Shear modulus Gmax from bender elements	295.3
	RESC_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RESD – Resonant Column Test – Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	BH01
*	SAMP_TOP	m	2DP	Depth to top of sample	10.12
*	SAMP_REF		X	Sample reference	10WaxA
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	12345
*	SPEC_REF		X	Specimen reference	DSS01

Group Name: RESD – Resonant Column Test – Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	10.15
*	RESD_TESN		X	Test / Stage Number	2
*	RESD_MNUM		X	Measurement Number	3
	RESD_CNDS		PA	Test Conditions	DRAINED
	RESD_SDIA	mm	2DP	Specimen Diameter	22.15
	RESD_HIGH	mm	2DP	Specimen Height	44.32
	RESD_CELL	kPa	1DP	Cell Pressure	350.5
	RESD_BP	kPa	1DP	Back Pressure	779.4
	RESD_AXL	kPa	1DP	Axial Stress	523.2
	RESD_BPWP	kPa	1DP	Base Pore Water Pressure	692.3
	RESD_MPWP	kPa	1DP	Mid-height Pore Water Pressure	692.2
	RESD_PPR		2DP	Pore Pressure Ratio	0.07
	RESD_PWPM	kPa	1DP	Maximum Excess Pore Water Pressure	100.1
	RESD_EAS	%	3DP	External Axial Strain	0.002
	RESD_VOL	%	3DP	Volumetric Strain	0.002
	RESD_DEV	kPa	1DP	Principal Stress Difference	150.2
	RESD_MEES	kPa	1DP	Mean Effective Stress	510.3
	RESD_MIPS	kPa	1DP	Minor Principal Stress (sigma 3)	560.4
	RESD_MAPS	kPa	1DP	Major Principal Stress (sigma 1)	720.5
	RESD_AVSS	%	3DP	Average Shear Strain	5.234
	RESD_SM	MPa	2DP	Shear Modulus	56.23
	RESD_DMP	%	2DP	Damping	10.56
	RESD_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RESG – Resonant Column Test – General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	BH01
*	SAMP_TOP	m	2DP	Depth to top of sample	10.00
*	SAMP_REF		X	Sample reference	10WaxA
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	12345
*	SPEC_REF		X	Specimen reference	DSS01
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	10.15

Group Name: RESG – Resonant Column Test – General					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RESG_COND		PA	Sample condition	UNDISTURBED
	RESG_CONS		X	Specific condition statements	At natural moisture content
	RESG_DRAG		X	Type of Drainage	One end only
	RESG_ORNT		PA	Orientation of Specimen	Vertical
	RESG_SDIA	mm	2DP	Initial specimen diameter	22.15
	RESG_HIGT	mm	2DP	Initial specimen Height	25.15
	RESG_MCI	%	X	Initial Water/moisture Content	10.5
	RESG_MCF	%	X	Final Water/moisture Content	10.4
	RESG_BDEN	Mg/m3	2DP	Initial Bulk Density	2.12
	RESG_DDEN	Mg/m3	2DP	Initial Dry Density	2.05
	RESG_MIDD	Mg/m3	2DP	Minimum dry density for sand	1.17
	RESG_MADD	Mg/m3	2DP	Maximum dry density for sand	1.86
	RESG_IRDI	%	1DP	Initial relative density index	80.1
	RESG_IVR		3DP	Initial void ratio	0.995
	RESG_ISAT	%	0DP	Initial degree of saturation	97
	RESG_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	RESG_DAMP		X	Damping measurement method	Steady state/ free vibration
	RESG_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	RESG_REM		X	Remarks	Additional remarks as required
	RESG_METH		X	Test method	ASTM D4015-21
	RESG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RESG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS-0000
	TEST_STAT		X	Test Status	Draft
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- Sample photos before and after the test may be included in FILE\_FSET

Group Name: RESP – Resonant Column Test – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	BH01
*	SAMP_TOP	m	2DP	Depth to top of sample	10.00
*	SAMP_REF		X	Sample reference	10WaxA

Group Name: RESP – Resonant Column Test – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	12345
*	SPEC_REF		X	Specimen reference	DSS01
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	10.15
*	RESD_TESN		X	Test / Stage Number	2
*	RESD_MNUM		X	Measurement Number	3
	RESP_CTYP		X	Type of Consolidation	Isotropic
	RESP_CSTG		0DP	Consolidation Stage	3
	RESP_CELL	kPa	1DP	Isotropic/Anisotropic Consolidation Cell Pressure	600.5
	RESP_BACK	kPa	1DP	Isotropic/Anisotropic Consolidation Back Pressure	530.5
	RESP_ERSC	kPa	1DP	Effective Radial Stress During Consolidation	40.4
	RESP_EASC	kPa	1DP	Effective Axial Stress During Consolidation	32.3
	RESP_DEV	kPa	1DP	Deviator Stress at End of Isotropic/Anisotropic Consolidation	-8.5
	RESP_VOLS	%	3DP	Change to Volumetric Strain During Isotropic/Anisotropic Consolidation	3.081
	RESP_STRN	%	3DP	Axial Strain After Isotropic/Anisotropic Consolidation	9.212
	RESP_SMOD	MPa	2DP	Shear Modulus G0	29.31
	RESP_SSTR	kPa	1DP	Mean Effective Stress	200.1
	RESP_DAMP	%	4DP	Damping Ratio	1.3581
	RESP_SMRA		2DP	Normalised Shear Modulus by Maximum Shear Modulus	0.75
	RESP_SR		2DP	Slippage Ratio	0.21
	RESP_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RESS – Resonant Column Test – Saturation					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	BH01
*	SAMP_TOP	m	2DP	Depth to top of sample	10.00
*	SAMP_REF		X	Sample reference	10WaxA
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	12345
*	SPEC_REF		X	Specimen reference	DSS01
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	10.15

Group Name: RESS – Resonant Column Test – Saturation					
Status	Heading	Suggested Unit / Type		Description	Example
*	RESS_TESN		X	Test / Stage Number	3
	RESS_INC	kPa	1DP	Pressure increment	10.1
	RESS_DIFF	kPa	1DP	Differential pressure used	20.2
	RESS_CELL	kPa	1DP	Final cell pressure	200.5
	RESS_BPWP	kPa	1DP	Final base porewater pressure	200.4
	RESS_STRN	%	3DP	Final axial strain	1.256
	RESS_MCF	%	X	Final water content	20
	RESS_BDEN	Mg/m3	2DP	Final bulk density	1.79
	RESS_DDEN	Mg/m3	2DP	Final dry density	1.66
	RESS_FVR		3DP	Final voids ratio	0.976
	RESS_FSAT	%	0DP	Final degree of saturation	100
	RESS_B		2DP	Final B value	0.96
	RESS_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS10

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RPLT - Point Load Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RPLT_PLS	MPa	2DP	Uncorrected point load (Is)	2.34
	RPLT_PLSI	MPa	2DP	Size corrected point load index (Is 50)	2.51
	RPLT_PLTF		PA	Point load test type	A+L
	RPLT_MC	%	1DP	Water content of point load test specimen	2.1
	RPLT_REM		X	Remarks	Saturated specimen
	RPLT_METH		X	Test method	ISRM: 2007 : Suggested method for determining point load strength. Int J Rock Mech Min

Group Name: RPLT - Point Load Testing					
Status	Heading	Suggested Unit / Type		Description	Example
					Sci & Geomech Abstr, Vol 22, No 2, pp 51-60
	RPLT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RPLT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RPLT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- A list has been defined for RPLT\_PLTF to include the test abbreviations derived from the ISRM Suggested Method (ISRM, 2007). Typically a test will include combined abbreviations to represent the sample type/orientation and the direction of the test with respect to bedding. For example a piece of core tested across the diameter and along the bedding direction will be coded as A+L. Reference: ISRM: 2007 : The Complete ISRM Suggested Methods for Rock Characterisation , Testing and Monitoring : 1974-2006.

Group Name: RSCH - Schmidt Rebound Hardness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RSCH_SCHV		0DP	Schmidt hardness value	12
	RSCH_AXIS		X	Orientation of the hammer axis in the test from horizontal (positive numbers downwards and negative numbers upward)	90
	RSCH_CLAM		X	Method of clamping specimen	V-block
	RSCH_REM		X	Remarks	Additional remarks as required
	RSCH_METH		X	Test method	ISRM: Suggested method for determination of Schmidt rebound hardness
	RSCH_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RSCH_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10



Group Name: RSCH - Schmidt Rebound Hardness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RSCH_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	RSCH_STYP		PA	Specimen type	CORE
	RSCH_EXCV		PA	Method of excavation or block production	BORING
	RSCH_DIAM	mm	1DP	Specimen diameter	86.7
	RSCH_LEN	mm	1DP	Specimen length	235.3
	RSCH_WC	%	1DP	Water content of specimen, if measured	2.1
	RSCH_WCTX		X	Description of water content if not measured	DRY
	RSCH_HTYP		PA	Hammer type	L
	RSCH_ORN		X	Orientation of hammer axis with reference to intact rock anisotropy features (e.g. lamination, foliation, schistosity, lineation)	Perpendicular to lamination
	RSCH_MEAN		0DP	Schmidt hardness mean (normalized to horizontal impact direction)	12
	RSCH_MED		0DP	Schmidt hardness median (normalized to horizontal impact direction)	12
	RSCH_MODE		0DP	Schmidt hardness mode (normalized to horizontal impact direction)	12
	RSCH_RANG		0DP	Schmidt hardness range (normalized to horizontal impact direction)	3
	RSCH_NUM		X	Number of determinations if less than 20 and reason	12 determinations - 10 consecutive readings differing by less than 4.

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RSHR - Shore Scleroscope Hardness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RSHR_SHOR		1DP	Average Shore hardness value	29.7
	RSHR_AXIS		X	Orientation of the test surface relative to bedding	Perpendicular
	RSHR_NUM		0DP	Number of tests conducted	20
	RSHR_REM		X	Remarks	Additional remarks as required

Group Name: RSHR - Shore Scleroscope Hardness Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	RSHR_METH		X	Test method	ISRM: Suggested method for determination of Shore Scleroscope hardness
	RSHR_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RSHR_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RSHR_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RTEN - Tensile Strength Testing					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RTEN_SDIA	mm	1DP	Specimen diameter	54.1
	RTEN_LEN	mm	1DP	Specimen thickness	27.2
	RTEN_MC	%	1DP	Water content of test specimen	3.7
	RTEN_COND		X	Condition of specimen as tested	Natural, saturated, dried at 105 DegC
	RTEN_DURN	mm:ss	T	Test duration	00:25
	RTEN_STRA	N/s	0DP	Stress rate	200
	RTEN_TENS	MPa	3SF	Tensile strength	50.1
	RTEN_MODE		PA	Mode of failure	Shear
	RTEN_MACH		X	Testing machine	Denison 7225
	RTEN_REM		X	Remarks	Thin card used between platens and test specimen
	RTEN_METH		X	Test method	ISRM: Suggested method for determination of indirect tensile strength by the Brazil test

Group Name: RTEN - Tensile Strength Testing					
Status	Heading	Suggested Unit / Type		Description	Example
	RTEN_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RTEN_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RTEN_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: RUCS - Rock Uniaxial Compressive Strength and Deformability Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RUCS_SDIA	mm	1DP	Specimen diameter	86.7
	RUCS_LEN	mm	1DP	Specimen length	235.3
	RUCS_MC	%	1DP	Water content of specimen tested	3.7
	RUCS_COND		X	Condition of specimen as tested	Natural, saturated, dried at 105 DegC
	RUCS_DURN	mm:ss	T	Test duration	06:54
	RUCS_STRA	MPa/s	3DP	Stress rate	0.526
	RUCS_UCS	MPa	3SF	Uniaxial compressive strength	16.8
	RUCS_MODE		PA	Mode of failure	Shear
	RUCS_MACH		X	Type of testing machine	Denison 7225
	RUCS_REM		X	Remarks	Specimen tested outside required 2.5-3.0 diameter to length ratio
	RUCS_METH		X	Test method	ISRM: Suggested method for determination of Uniaxial Compressive Strength
	RUCS_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc

Group Name: RUCS - Rock Uniaxial Compressive Strength and Deformability Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	RUCS_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RUCS_DEV		X	Deviation from the specified procedure	Explanation of any deviation
	RUCS_ESEC	GPa	3SF	Young's modulus, secant	221
	RUCS_ETAN	GPa	3SF	Young's modulus, tangent	213
	RUCS_EAVG	GPa	3SF	Young's modulus, average (mean)	196
	RUCS_SSEC		X	Stress level at which secant Young's modulus has been measured	50% UCS
	RUCS_STAN		X	Stress level at which tangent Young's modulus has been measured	50% UCS
	RUCS_SAVG		X	Stress level at which average (mean) Young's modulus has been measured	0-50% UCS
	RUCS_MUS		3SF	Poisson's ratio, secant	0.310
	RUCS_MUT		3SF	Poisson's ratio, tangent	0.330
	RUCS_MUAV		3SF	Poisson's ratio, average (mean)	0.320

**Group Rules:**

- None

**Group Notes:**

- The units and accuracy for UCS are not prescribed in ISRM and the conventional MPa to 3SF is adopted here. ISRM defines GPa to 3SF for Young's modulus and as such this is also adopted.
- ISRM specifies stress rate MPa/s but most tests are performed at a rate of loading kN/s or kN/min, and sometimes under strain controlled conditions for deformability. The results should always be converted and reported as MPa/s where necessary.
- RUCS\_E, RUCS ESTR and RUCS\_ETYP have been deprecated to allow for reporting of Young's modulus secant, tangent and average simultaneously.
- RUCS\_MU has been deprecated to allow for reporting of Poisson's ratio secant, tangent and average simultaneously.

Group Name: RWCO - Water Content of Rock Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Brown sandstone
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	RWCO_MC	%	X	Water content	2.2
	RWCO_TEMP	DegC	0DP	Temperature sample dried at	60

Group Name: RWCO - Water Content of Rock Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	RWCO_REM		X	Remarks	Additional remarks as required
	RWCO_METH		X	Test method	ISRM: Suggested method for determining water content
	RWCO_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	RWCO_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS10
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	RWCO_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None

Group Name: SAMP - Sample Information					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
	SAMP_BASE	m	2DP	Depth to base of sample	25.00
	SAMP_DTIM	yyyy-mm-ddThh:mm	DT	Date and time sample taken	1991-03-26T09:28
	SAMP_UBLO		0DP	Number of blows required to drive sampler	35
	SAMP_CONT		X	Sample container	Metal UT100 tube
	SAMP_PREP		X	Details of sample preparation at time of sampling	Preservative added
	SAMP_SDIA	mm	0DP	Sample diameter	100
	SAMP_WDEP	m	2DP	Depth to water below ground surface at time of sampling	4.50
	SAMP_RECV	%	0DP	Percentage of sample recovered	60
	SAMP_TECH		X	Sampling technique/method	Purged
	SAMP_MATX		X	Sample matrix	Surface water
	SAMP_TYPC		X	Sample QA type (Normal, blank or spike)	Normal
	SAMP_WHO		X	Samplers initials or name	MS
	SAMP_WHY		X	Reason for sampling	Routine monitoring sample
	SAMP_REM		X	Sample remarks	Additional remarks as required
	SAMP_DESC		X	Sample/specimen description	Grey silty CLAY

Group Name: SAMP - Sample Information					
Status	Heading	Suggested Unit / Type		Description	Example
	SAMP_DESD	yyyy-mm-dd	DT	Date sample described	2008-11-03
	SAMP_LOG		X	Person responsible for sample/specimen description	AN Other
	SAMP_COND		X	Condition and representativeness of sample	Sample softened, or fractured by drilling
	SAMP_CLSS		X	Sample classification as required by EN ISO 14688-1	5
	SAMP_BAR	bar	1DP	Barometric pressure at time of sampling	99.1
	SAMP_TEMP	DegC	0DP	Sample temperature at time of sampling	8
	SAMP_PRES	bar	1DP	Gas pressure (above barometric)	0.2
	SAMP_FLOW	l/min	1DP	Gas flow rate	0.2
	SAMP_ETIM	yyyy-mm-ddThh:mm	DT	Date and time sampling completed	1991-05-01T10:03
	SAMP_DURN	hh:mm:ss	T	Sampling duration	30:15:00
	SAMP_CAPT		X	Caption used to describe sample	TP1,2.50m,1,B,+TP1,3.50m,3,B
	SAMP_LINK		RL	Sample record link	MONG BH1 Pipe1 2.30
	GEOL_STAT		X	Stratum reference shown on trial pit or traverse sketch	1
	FILE_FSET		X	Associated file reference (e.g. sampling field sheets, sample description records)	FS67
	SAMP_RECL	mm	0DP	Length of sample recovered	205

#### Group Rules:

- None

#### Group Notes:

- The SAMP group is used to record all samples; e.g. those taken during field sampling or monitoring or sub-samples created in the laboratory.
- SAMP\_ID has been added to the sample key set. Unique sample identifiers can be used to enhance the process of reintegration of testing results from subcontract laboratories and/or used to contain barcode or pre-made label references. The addition of the SAMP\_ID heading into the SAMP group provides greater flexibility for accommodating different process methodologies. A full explanation of example uses of SAMP\_ID are given in on the AGS website.
- SAMP\_ID does not have to be used and can be NULL (Rule 12). The remaining descriptive key/label headings can be used on their own.
- SAMP\_LINK has been added to permit the source of samples to be fully detailed. The SAMP\_LINK field is a Record Link (RL) format as defined in Rule 11 and accompanying Note v.
- In selecting abbreviations for use in SAMP\_TYPE, allowance should be made for use of additional codification or suffixes to standard abbreviations to reflect the sample types and collection methods applying to measurement / payment purposes.
- SAMP\_PREP allow details of the sample preparation to be included. This would typically be used to detail the precautions taken with samples for further chemical or environmental testing.
- SAMP\_LOG and SAMP\_DESD allow inclusion of the name of the person describing the sample and date this was carried out as required in BS EN ISO 14688-1, Section 6 and BS EN ISO 14689, Section 5.
- SAMP\_COND has been included to provide for any comments on condition, representativeness and reliability of the sample which are requirements of EN ISO 14688-1 (Section 6) and BS 5930. This heading together with the sample recovery SAMP\_RECV provide useful data to those specifying laboratory scheduling. Data included if not 100%.
- The requirement of BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (Section 5) to record the details of origin, collection and handling of samples are included in the associated groups.
- SAMP\_ETIM and SAMP\_DURN allow for data that describes the duration of sampling event if that is required. This can be important in environmental sampling applications.
- SAMP\_CAPT provides for description of sample composition in the case of an amalgamated sample.

Group Name: SCDG – Static Cone Dissipation Tests – General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SCPG_TESN		X	Test reference or push number	3
*	SCDG_DPTH	m	2DP	Depth of dissipation test	5.20
	SCDG_PWPI	MPa	3DP	Measured or assumed initial pore water pressure	0.400
	SCDG_PWPE	MPa	3DP	Measured or assumed equilibrium pore water pressure	0.035
	SCDG_DDIS	%	0DP	Degree of dissipation for analysis	50
	SCDG_T	s	1DP	Time to achieve degree of dissipation stated in SCDG_DDIS	258.5
	SCDG_CV	m <sup>2</sup> /yr	2SCI	Coefficient of consolidation (vertical)	1.33E1
	SCDG_CVMT		X	Method(s) used to determine vertical coefficient of consolidation	C <sub>h</sub> x 5
	SCDG_CH	m <sup>2</sup> /yr	2SCI	Coefficient of consolidation (horizontal)	8.64E-6
	SCDG_CHMT		X	Method(s) used to determine horizontal coefficient of consolidation	Houlsby and Teh
	SCDG_REM		X	Remarks	Additional remarks as required
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS19
	SCDG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- SCDG is to be used to record the general information relating to dissipation tests carried out during static cone penetrometer testing.

Group Name: SCDT – Static Cone Dissipation Tests – Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SCPG_TESN		X	Test reference or push number	3
*	SCDG_DPTH	m	2DP	Depth of dissipation test	5.20
*	SCDT_SEGS	s	1DP	Seconds elapsed since start of test	50.5
	SCDT_RES	MPa	3DP	Cone resistance	0.801
	SCDT_PWP1	MPa	4DP	Face porewater pressure (u1)	0.0814
	SCDT_PWP2	MPa	4DP	Shoulder porewater pressure (u2)	0.0814
	SCDT_PWP3	MPa	4DP	Top of sleeve porewater pressure (u3)	0.0814
	SCDT_REM		X	Comments	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS19

**Group Rules:**

- None

#### Group Notes:

- SCDT is used to include the dissipation test readings converted from the measurement data using any required calibration factors.

Group Name: SCPG – Static Cone Penetration Tests – General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SCPG_TESN		X	Test reference or push number	3
	SCPG_TYPE		PA	Cone test type	PG
	SCPG_REF		X	Cone reference	S15.CFIP.A27
	SCPG_GSA	cm <sup>2</sup>	0DP	Surface area of cone tip	15
	SCPG_RATE	mm/s	0DP	Nominal rate of penetration of the cone	20
	SCPG_FILT		X	Type of filter material used	HDPE
	SCPG_FRIC		YN	Friction reducer used	Y
	SCPG_WAT	m	2DP	Groundwater level at time of test	3.50
	SCPG_WATA		X	Origin of water level in SCPG_WAT	Assumed from measurements in nearby boreholes
	SCPG_REM		X	Comments on testing and basis of any interpreted parameters included in SCPT and SCPP	Additional remarks as required
	SCPG_ENV		X	Details of weather and environmental conditions during test	Sunny
	SCPG_CONT		X	Subcontractors name	An Contractor Ltd
	SCPG_METH		X	Standard followed for testing	NEN 5140
	SCPG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	SCPG_CAR		3DP	Cone area ratio used to calculate qt	0.810
	SCPG_SLAR		3DP	Sleeve area ratio used to calculate ft	1.001
	FILE_FSET		X	Associated file reference (e.g. cone calibration records)	FS18
	SCPG_OPER		X	Name of test operator	Bill Mallard

#### Group Rules:

- None

#### Group Notes:

- SCPG is used to record the general information about static cone penetration tests.
- Pressuremeter tests using CPT equipment (e.g. cone or driven pressuremeter) shall be recorded in the PMTG and associated groups.
- SCPG\_FILT and SCPG\_FRIC are included as they are reporting requirements of BS1377 and BS EN ISO 22476-1.
- SCPG\_WATA is required to clarify origin of water level recorded in SCPG\_WAT.
- SCPG\_REM is used to transfer comments on the test and any interpreted parameters. SCPG\_REM may refer to the STND group where full information on standards and references could be provided.
- CPT testing is frequently carried out by specialist sub-contractors. SCPG\_CONT is included to record name of specialist sub-contractor.
- SCPG\_CAR and SCPG\_SLAR are included to transfer information used to calculate qt and ft.

Group Name: SCPP – Static Cone Penetration Tests – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A



Group Name: SCPP – Static Cone Penetration Tests – Derived Parameters					
Status	Heading	Suggested Unit / Type		Description	Example
*	SCPG_TESN		X	Test reference or push number	3
*	SCPP_TOP	m	2DP	Depth to top of layer	5.20
*	SCPP_BASE	m	2DP	Depth to base of layer	5.30
*	SCPP_REF		X	Interpretation reference	ACME CPT Testing Ltd
	SCPP_REM		X	Remarks	Additional remarks as required
	SCPP_CSBT		X	Interpreted Soil Type	3 – Clays
	SCPP_CSU	kPa	1DP	Undrained Shear Strength (Su); fine soils only	50.2
	SCPP_CRD	%	1DP	Relative density (Dr); coarse soils only	90.1
	SCPP_CPHI	deg	1DP	Internal Friction Angle; coarse soils only	42.7
	SCPP_CIC		1DP	Soil Behaviour Type Index (Ic)	1.5
	SCPP_CSPT		0DP	Equivalent SPT N60 value	32
	FILE_FSET		X	Associated file reference	FS18

#### Group Rules:

- None

#### Group Notes:

- The SCPP group is to be used to transfer derived soil parameters determined from CPT test data. The requirement for this information as part of ground investigation reporting shall be full specified at the outset of the investigation. The specification may need to detail the interpretative method(s) to be used.
- The interpretation is given a reference in SCPP\_REF that defines who and possibly how the interpretation has been carried out.
- Details of the standards and methods used to carry out calculations need to be included in SCPP\_REM. SCPP\_REM may in turn refer to the STND group where full information on standards and references may be provided.
- Where soil type interpretation leading to borehole style stratum descriptions is carried out the information should be entered in GEOL.
- The coefficient of consolidation is calculated from dissipation testing data which is included in SCDG and SCDT.

Group Name: SCPT – Static Cone Penetration Tests – Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SCPG_TESN		X	Test reference or push number	3
*	SCPT_DPTH	m	2DP	Depth of result	7.12
	SCPT_RES	MPa	3DP	Cone resistance (qc)	18.065
	SCPT_FRES	MPa	4DP	Local unit side friction resistance (fs)	0.0968
	SCPT_PWP1	MPa	4DP	Face porewater pressure (u1)	0.0118
	SCPT_PWP2	MPa	4DP	Shoulder porewater pressure (u2)	0.0118
	SCPT_PWP3	MPa	4DP	Top of sleeve porewater pressure (u3)	0.0118
	SCPT_CON	uS/cm	4DP	Conductivity	1.1111
	SCPT_TEMP	DegC	4DP	Temperature	8.4000
	SCPT_PH		4DP	pH reading	6.9000
	SCPT_SLP1	deg	4DP	Slope indicator no. 1	1.7136
	SCPT_SLP2	deg	4DP	Slope indicator no. 2	1.1111
	SCPT_REDX	mV	4DP	Redox potential reading	1.1111

Group Name: SCPT – Static Cone Penetration Tests – Data					
Status	Heading	Suggested Unit / Type		Description	Example
	SCPT_MAGT	nT	4DP	Magnetic flux – Total (calculated)	1.1111
	SCPT_MAGX	nT	4DP	Magnetic flux – X	1.1111
	SCPT_MAGY	nT	4DP	Magnetic flux – Y	1.1111
	SCPT_MAGZ	nT	4DP	Magnetic flux – Z	1.1111
	SCPT_SMP	%	4DP	Soil moisture	1.1111
	SCPT_NGAM	counts/s	4DP	Natural gamma radiation	1.1111
	SCPT_REM		X	Remarks	Additional remarks as required
	SCPT_FRR	%	2DP	Friction ratio (Rf)	0.54
	SCPT_QT	MPa	4DP	Corrected cone resistance (qt) piezocone only	18.0668
	SCPT_FT	MPa	4DP	Corrected sleeve resistance (ft) piezocone only	0.1235
	SCPT_QE	MPa	4DP	Effective cone resistance (qe) piezocone only	18.0532
	SCPT_BDEN	Mg/m <sup>3</sup>	2DP	Bulk density of material (measured or assumed)	2.21
	SCPT_CPO	kPa	2DP	Total vertical stress (based on SCPT_BDEN)	210.46
	SCPT_CPOD	kPa	2DP	Effective vertical stress (calculated from SCPT_CPO and SCPT_ISPP or SCPG_WAT)	107.56
	SCPT_QNET	MPa	4DP	Net cone resistance (qn)	17.8563
	SCPT_FRRRC	%	2DP	Corrected friction ratio (Rf) piezocone only	2.76
	SCPT_EXPP	MPa	4DP	Excess pore pressure (u-uo) piezocone only	-0.0911
	SCPT_BQ		4DP	Pore pressure ratio (Bq) piezocone only	-0.0051
	SCPT_ISPP	MPa	4DP	In situ pore pressure (uo) (measured or assumed where not simple hydrostatic based on SCPG_WAT)	0.2000
	SCPT_NQT		4DP	Normalised cone resistance (Qt)	166.0125
	SCPT_NFR	%	4DP	Normalised friction ratio (Fr)	0.5423
	FILE_FSET		X	Associated file reference (e.g. raw field data)	FS18

#### Group Rules:

- None

#### Group Notes:

- SCPT is used to include the readings from the cone converted from the measurement data using any required calibration factors and other mathematical formulae employed by the measurement contractor in accordance with the specification.
- Readings included in group will depend on the test carried out. For example, the ground parameters measured and included in this group will depend on test type / cone.
- The fluorescence intensity, photo-multiplier tube readings, PID, FID and conductivity data require graphic interpretation. These have been removed.
- SCPT\_BDEN and SCPT\_ISPP allow for complex assumptions on density and piezometric profiles. Explanation of these assumptions is required within SCPG\_REM.
- The requirements for transfer of data in SCPT should be fully specified at the outset of testing in the investigation specification.

Group Name: SHBG - Shear Box Testing - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SHBG_TYPE		PA	Test type	SMALL SBOX
	SHBG_COND		PA	Sample condition	UNDISTURBED
	SHBG_CONS		X	Specific condition statements	Recompacted to specified density
	SHBG_PCOH	kPa	2SF	Peak cohesion intercept	5.1
	SHBG_PHI	deg	1DP	Peak angle of friction	26.5
	SHBG_RCOH	kPa	2SF	Residual cohesion intercept	1.3
	SHBG_RPHI	deg	1DP	Residual angle of friction	13.0
	SHBG_ENCA		X	Method of encapsulation of specimens tested	Resin
	SHBG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	c' and phi' derived by linear regression, c' assumed zero etc
	SHBG_METH		X	Test method	BS EN ISO 17892-10:2018
	SHBG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	SHBG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS18
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	SHBG_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- Group SHBG and SHBT contain the processed results from soil or rock joint shear box tests. Raw data, such as the stresses and displacements at all points of the test are not included.

Group Name: SHBT - Shear Box Testing - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U

Group Name: SHBT - Shear Box Testing - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	SHBT_TESN		X	Shear box stage/specimen reference	1
	SHBT_BDEN	Mg/m3	2DP	Initial bulk density	1.96
	SHBT_DDEN	Mg/m3	2DP	Initial dry density	1.63
	SHBT_NORM	kPa	0DP	Normal stress applied	100
	SHBT_DISP	mm/min	2SF	Displacement rate for peak stress stage	0.024
	SHBT_DISR	mm/min	2SF	Displacement rate for residual stress stage	0.12
	SHBT_REVS		0DP	Number of traverses if residual test	3
	SHBT_PEAK	kPa	1DP	Peak shear stress	65.5
	SHBT_RES	kPa	1DP	Residual shear stress	47.2
	SHBT_PDIS	mm	2DP	Horizontal displacement at peak shear stress	2.35
	SHBT_RDIS	mm	2DP	Horizontal displacement at residual shear stress	12.41
	SHBT_PDIN	mm	2DP	Vertical displacement at peak shear stress	1.24
	SHBT_RDIN	mm	2DP	Vertical displacement at residual shear stress	-4.23
	SHBT_PDEN	Mg/m3	XN	Particle density with prefix # if value assumed	#2.65
	SHBT_IVR		3DP	Initial voids ratio	0.526
	SHBT_MCI	%	X	Initial water/moisture content	20
	SHBT_MCF	%	X	Final water/moisture content	18
	SHBT_DIA1	mm	2DP	Specimen diameter in direction of shear (rock joints)	85.21
	SHBT_DIA2	mm	2DP	Specimen diameter perpendicular to shear (rock joints)	89.34
	SHBT_HGT	mm	2DP	Specimen height	80.02
	SHBT_CRIT		X	Failure/residual strength criterion used	Stress ratio
	SHBT_REM		X	Remarks	Reached end of travel
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS18
	SHBT_PVST	kPa	0DP	Normal (vertical) stress at peak shear stress	100
	SHBT_RVST	kPa	0DP	Normal (vertical) stress at residual shear stress	125

**Group Rules:**

- None

**Group Notes:**

- SHBT\_PDIN & SHBT\_RDIN - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: STND - Standards / Specifications					
Status	Heading	Suggested Unit / Type		Description	Example
*	STND_REF		X	Reference of standard	BS EN ISO 14688-1:2018
	STND_TTLE		X	Document Title	Geotechnical investigation and testing - Identification and classification of soil - Part 1: Identification and description
	STND_SCPE		X	Scope of data collected to this standard	Soil descriptions; field logging and laboratory test specimens
	STND_REM		X	Comments	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. contract specific specifications)	FS1

**Group Rules:**

- None

**Group Notes:**

- STND may be used to state a list of standards, specifications and other reference documents that define the methods to which data has been collected and reported. For example, BS EN ISO 14688-1 (Section 6) and BS EN ISO 14689 (Section 5) describes that it should be clearly stated that the descriptions are based on visual and manual identification.
- Information on the scope of the data collected to each standard is included in STND\_SCPE.

Group Name: SUCT - Suction Tests					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	SUCT_DIAM	mm	2DP	Specimen diameter	100.25
	SUCT_LEN	mm	2DP	Specimen length	99.65
	SUCT_COND		PA	Sample condition	UNDISTURBED
	SUCT_BDEN	Mg/m3	2DP	Initial bulk density	1.96
	SUCT_DDEN	Mg/m3	2DP	Initial dry density	1.63
	SUCT_MC	%	2SF	Initial water/moisture content	20
	SUCT_VAL	kPa	0DP	Suction value	50
	SUCT_REM		X	Remarks	Additional remarks as required
	SUCT_METH		X	Test method	BRE IP4/93, suction probe in triaxial
	SUCT_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	SUCT_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked

Group Name: SUCT - Suction Tests					
Status	Heading	Suggested Unit / Type		Description	Example
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS98
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	SUCT_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: TNPC - Ten Per Cent Fines					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	TNPC_TESN		X	Test reference	1
	TNPC_DRY		X	10% fines values on dry aggregate	75
	TNPC_WET		X	10% fines values on wet aggregate	60
	TNPC_REM		X	Remarks	Additional remarks as required
	TNPC_METH		X	Test method	BS 812-111:1990
	TNPC_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TNPC_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS19
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TNPC_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- None.

Group Name: TREG - Triaxial Tests - Effective Stress - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions
	TREG_TYPE		PA	Test type	CU
	TREG_COND		PA	Sample condition	UNDISTURBED
	TREG_COH	kPa	0DP	Cohesion intercept associated with TREG_PHI	4
	TREG_PHI	deg	1DP	Angle of friction for effective shear strength triaxial test	32.0
	TREG_FCR		X	Failure criterion	Maximum deviator stress
	TREG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Peak stress ratio, side drains fitted
	TREG_METH		X	Test method	BS 1377-2:2022, Clause 29
	TREG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TREG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TREG_DEV		X	Any deviation from the procedure or specified test conditions	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- TREG and TRET are to be used for the reporting of effective stress testing.

Group Name: TREM - Location Specific Time Related Remarks					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	TREM_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of remark or start of event	2001-05-16T12:00
	TREM_COMP		X	Component or sub-activity	Slab G12
	TREM_REM		X	Time related remark	Completion of concrete pour
	TREM_DURN	hh:mm:ss	T	Duration of event or activity	01:25:00

Group Name: TREM - Location Specific Time Related Remarks					
Status	Heading	Suggested Unit / Type		Description	Example
	TREM_ETIM	yyyy-mm-ddThh:mm	DT	Date and time of end of event	2001-05-16T12:30
	FILE_FSET		X	Associated file reference (e.g. site journal records)	FS28

**Group Rules:**

- None

**Group Notes:**

- TREM\_COMP allows comments to be related to specific activities or components of work occurring at the location given by LOCA\_ID. This heading can be used to tag similar construction activities occurring at multiple locations or identify specific construction elements.
- TREM\_DURN allows the length of time associated with a particular event to be included if this is appropriate.

Group Name: TRET - Triaxial Tests - Effective Stress - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	TRET_TESN		X	Triaxial test/stage number	1
	TRET_SDIA	mm	2DP	Specimen diameter	38.25
	TRET_LEN	mm	2DP	Specimen length	76.50
	TRET_IMC	%	X	Specimen initial water/moisture content	15.5
	TRET_FMC	%	X	Specimen final water/moisture content	14.9
	TRET_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	TRET_DDEN	Mg/m3	2DP	Initial dry density	1.84
	TRET_SAT		X	Method of saturation	Back pressure, cell pressure, none
	TRET_CONS		X	Details of consolidation stage	Drainage to both ends with radial boundary
	TRET_CONP	kPa	0DP	Effective stress at end of consolidation/ start of shear stage	100
	TRET_CELL	kPa	0DP	Total cell pressure during shearing stage	400
	TRET_PWPI	kPa	0DP	Porewater pressure at start of shear stage	50
	TRET_STRR	%/hr	1DP	Rate of axial strain during shear	1.5
	TRET_STRN	%	1DP	Axial strain at failure	9.0
	TRET_DEVF	kPa	0DP	Deviator stress at failure	360
	TRET_PWPF	kPa	0DP	Porewater pressure at failure	60
	TRET_STV	%	2DP	Volumetric strain at failure (drained only)	2.56



Group Name: TRET - Triaxial Tests - Effective Stress - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	TRET_MODE		PA	Mode of failure	Brittle
	TRET_REM		X	Comments	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS7
	TRET_BACK	kPa	0DP	Final back pressure applied prior to shearing	300
	TRET_VERT	%	1DP	Vertical strain at end of consolidation	1.3
	TRET_VOLM	%	1DP	Volumetric strain at end of consolidation	1.2
	TRET_RATE	%/hr	1DP	Rate of volumetric strain immediately prior to shearing	0.3
	TRET_BVAL		2DP	Final B-value prior to shearing	0.95
	TRET_DRN		X	Type of drainage conditions during shear	Radial
	TRET_MEMB	kPa	0DP	Membrane corrections applied at failure	2
	TRET_FILC	kPa	0DP	Filter paper corrections applied at failure	1
	TRET_IVR		3DP	Initial voids ratio	0.796
	TRET_SATR	%	0DP	Saturation percentage	100
	TRET_CVP	kPa	0DP	Effective vertical pressure at end of consolidation	200
	TRET_CRP	kPa	0DP	Effective radial pressure at end of consolidation	100
	TRET_MEAN	kPa	0DP	Peak mean effective stress during shear	133
	TRET_CU	kPa	0DP	Undrained shear strength at failure	150
	TRET_EP50	%	2DP	Strain at 50 % peak deviator stress	3.22
	TRET_E50	MPa	2DP	Secant modulus at 50 % peak deviator stress	75.50

**Group Rules:**

- None

**Group Notes:**

- The information in this group is only used in conjunction with the detailed laboratory reports.
- TRET\_STV - consolidation (flow of water out of specimen) to be reported as positive and dilatancy or swelling (flow of water into specimen) to be reported as negative.

Group Name: TRIG - Triaxial Tests - Total Stress - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
	SPEC_DESC		X	Specimen description	Grey slightly gravelly clay
	SPEC_PREP		X	Details of specimen preparation including time between preparation and testing	Prepared according to client instructions

Group Name: TRIG - Triaxial Tests - Total Stress - General					
Status	Heading	Suggested Unit / Type		Description	Example
	TRIG_TYPE		PA	Test type	UU
	TRIG_COND		PA	Sample condition	UNDISTURBED
	TRIG_REM		X	Remarks including commentary on effect of specimen disturbance on test result	Additional remarks as required
	TRIG_METH		X	Test method	BS EN ISO 17892-8:2018
	TRIG_LAB		X	Name of testing laboratory/organization	ACME Laboratories plc
	TRIG_CRED		X	Accrediting body and reference number (when appropriate)	UKAS 0000
	TEST_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS7
	SPEC_BASE	m	2DP	Depth to base of specimen	24.65
	TRIG_DEV		X	Deviation from the specified procedure	Explanation of any deviation

**Group Rules:**

- None

**Group Notes:**

- The data reported from total and effective stress testing is different therefore TREG and TRET has been added for the reporting of effective stress testing. LUCT should be used for Laboratory Unconfined Compression Tests
- Standard testing methods normally report the Cu value against each test specimen and defer from providing an assessed Cu value for a set of specimens from a sample. This data is therefore included in the TRIT group.

Group Name: TRIT - Triaxial Tests - Total Stress - Data					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	SAMP_TOP	m	2DP	Depth to top of sample	24.55
*	SAMP_REF		X	Sample reference	24
*	SAMP_TYPE		PA	Sample type	U
*	SAMP_ID		ID	Sample unique identifier	ABC121415010
*	SPEC_REF		X	Specimen reference	1a
*	SPEC_DPTH	m	2DP	Depth to top of test specimen	24.55
*	TRIT_TESN		X	Triaxial test/stage reference	1
	TRIT_SDIA	mm	2DP	Specimen diameter	38.25
	TRIT_SLEN	mm	2DP	Specimen length	76.45
	TRIT_IMC	%	X	Specimen initial water/moisture content	15.7
	TRIT_FMC	%	X	Specimen final water/moisture content	14.9
	TRIT_CELL	kPa	0DP	Total cell pressure	100
	TRIT_DEVF	kPa	0DP	Corrected deviator stress at failure	360
	TRIT_BDEN	Mg/m3	2DP	Initial bulk density	2.12
	TRIT_DDEN	Mg/m3	2DP	Initial dry density	1.84
	TRIT_STRN	%	2SF	Axial strain at failure	9.5
	TRIT_CU	kPa	0DP	Undrained Shear Strength at failure	180

Group Name: TRIT - Triaxial Tests - Total Stress - Data					
Status	Heading	Suggested Unit / Type		Description	Example
	TRIT_MODE		PA	Mode of failure	Brittle
	TRIT_REM		X	Comments	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS7
	TRIT_FZWC	%	X	Failure zone water content, if measured	14.7
	TRIT_RATE	%/min	2SF	Mean rate of shear	1.5

**Group Rules:**

- None

**Group Notes:**

- Individual stage undrained shear strength values should be included as TRIT\_CU. Interpretation is usually beyond the remit of the geotechnical testing laboratory.
- The information in this group is only used in conjunction with the detailed laboratory reports.

Group Name: WADD - Water Added Records					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WADD_TOP	m	2DP	Depth to top of reported section	10.50
*	WADD_BASE	m	2DP	Depth to base of reported section	20.50
	WADD_VOLM	l	0DP	Amount of water added	10
	WADD_METH		X	Boring/drilling method associated with addition of water (HDPH_TYPE abbreviation)	CP
	WADD_REM		X	Remarks related to addition of water requirements, method	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. drilling journal)	FS20

**Group Rules:**

- None

**Group Notes:**

- WADD is to be used to record details of water added to exploratory holes.

Group Name: WETH - Weathering					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WETH_TOP	m	2DP	Depth to top of weathering subdivision	3.50
*	WETH_BASE	m	2DP	Depth to base of weathering subdivision	3.95
	WETH_SCH		PA	Weathering scheme	BS 5930
	WETH_SYS		PA	Material or mass weathering system	MASS CLASS
	WETH_WETH		X	Weathering classifier for WETH_SCH and WETH_SYS	B
	WETH_REM		X	Remarks	Additional remarks as required

Group Name: WETH - Weathering					
Status	Heading	Suggested Unit / Type		Description	Example
	FILE_FSET		X	Associated file reference (e.g. logging sheets)	FS4

**Group Rules:**

- None

**Group Notes:**

- WETH\_SCH and WETH\_SYS are used to identify the weathering scheme utilised and whether it is the material or mass that is described in accordance with BS 5930.
- This means that as well as special descriptions specific to rock types (e.g. in the UK: Chalk, Mercia Mudstone) other systems can be used. This then allows the use of:
- Grades = I to VI, Zones = 1 to 6, Classes = A to E, for example, or more complex classifiers. These are all systems/methods currently practised in the UK. The BS and EN refer to weathering of rocks but there have also been weathering classifications derived for soils (Solid strata on BGS maps) such as the London Clay.

Group Name: WGPG - Wireline Geophysics - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WGPG_ID		X	Test reference	327-16A -Pass01
*	WGPG_TOOL		PA	Tool used	TGRA
	WGPG_DATE	yyyy-mm-dd	DT	Test date	1999-07-02
	WGPG_STRT	m	2DP	Test start depth	14.10
	WGPG_STOP	m	2DP	Test stop depth	24.56
	WGPG_BHD	m	2DP	Depth of borehole	25.85
	WGPG_WAT	m	XN	Depth of water in borehole	4.36
	WGPG_DETL		X	Details of instrument	A1 meter
	WGPG_CDIA		X	Casing internal diameter as reported by drillers	From 0 to 10m : 200mm - From 0 to 30m: 90mm
	WGPG_REM		X	Remarks	Additional remarks as required
	WGPG_ENV		X	Details of weather and environmental conditions during test	Sunny
	WGPG_METH		X	Measurement method	In-house method
	WGPG_CONT		X	Contractor who undertook testing	ACME Instruments Ltd
	WGPG_CRED		X	Accrediting body and reference number (Where appropriate)	UKAS 0000
	WGPG_STAT		X	Test status	Checked
	FILE_FSET		X	Associated file reference (e.g. equipment calibrations)	FS01
	WGPG_OPER		X	Name of test operator	Bill Mallard

**Group Rules:**

- None

**Group Notes:**

- WGPG\_TOOL abbreviations could be the name of the test reference. Examples of WGPG\_CODE include: SGR Spectral Gamma, CAL3 3 arm calliper.
- Good practice dictates that Instrument method, upper reading detection limits are provided as part of the appendix of the test.

- WPGP\_CDIA is intentionally a text field recording the information provided to the wireline surveyors from the drilling operations to compare it to the information reported in CDIA (Casing Diameter by Depth) group.
- WPGP\_STRT shall report the test top depth and WPGP\_STOP shall report the base depth, irrespective of direction the test was run.
- Equipment data sheets shall be added in FILE\_FSET.

Group Name: WGPT - Wireline Geophysics - Readings					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WPGP_ID		X	Test reference	327-16A -Pass01
*	WPGP_TOOL		PA	Tool used	OBI
*	WGPT_PARA		PA	Parameter recorded by tool WPGP_TOOL	OBI-EAST
*R	WGPT_UNIT		PU	Test result units	m
*	WGPT_DPTH	m	2DP	Depth of reading	10.45
	WGPT_RDNG		U	Reading	123.321, 2000 or 0.0023
	WGPT_CAS		PA	Borehole casing details at depth of reading	OH
	WGPT_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference	FS01

#### Group Rules:

- Where a reading has no unit, the WGPT\_UNIT data shall be set to 'UNITLESS'.
- Units included in WGPT\_UNIT shall be fully defined in the UNIT group (Rule 15), the unit group is case sensitive.
- Data type for data field heading WGPT\_UNIT shall not be changed from PU.

#### Group Notes:

- WGPT\_CAS defines if the reading was carried out in open hole, cased hole, PVC cased. Example of WGPT\_CAS include: OH = Open hole; CH = Cased hole; PVC = PVC cased; 6IN = 6 inch casing; PQ = PQ size casing; SLOT = Slotted casing
- Refer to parent group for definition of WPGP\_TOOL, WGPT\_PARA.
- Where the heading has no unit the WGPT\_UNIT data variable shall be set to 'UNITLESS'.

Group Name: WINS - Window or Windowless Sampling Run Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WINS_TESN		X	Sampler run reference	2
*	WINS_TOP	m	2DP	Top of sampling run	17.20
*	WINS_BASE	m	2DP	Base of sampling run	20.00
	WINS_DIAM	mm	0DP	Internal diameter of sampler	97
	WINS_DURN	hh:mm:ss	T	Duration of sampling run	00:30:00
	WINS_REC	%	0DP	Sample recovery	50
	WINS_REM		X	Remarks about sampling run	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. field records)	FS28

#### Group Rules:

- None

#### Group Notes:

- WINS is used to record the details of window sampling runs.

Group Name: WSTD - Water Strike - Details					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WSTG_DPTH	m	2DP	Depth to water strike	17.20
*	WSTD_NMIN	min	0DP	Minutes after strike	20
	WSTD_POST	m	2DP	Depth to water after WSTD_NMIN minutes	10.23
	WSTD_REM		X	Remarks	Additional remarks as required
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28

**Group Rules:**

- None

**Group Notes:**

- See notes provided with WSTG.

Group Name: WSTG - Water Strike - General					
Status	Heading	Suggested Unit / Type		Description	Example
*	LOCA_ID		ID	Location identifier	327-16A
*	WSTG_DPTH	m	2DP	Depth to water strike	17.20
	WSTG_DTIM	yyyy-mm-ddThh:mm	DT	Date and time of water strike	1991-03-19T16:40
	WSTG_SEAL	m	2DP	Depth at which water strike sealed by casing	19.10
	WSTG_CAS	m	2DP	Casing depth at time of water strike	15.70
	WSTG_REM		X	Remarks	Steady flow of water into hole
	FILE_FSET		X	Associated file reference (e.g. test result sheets)	FS28

**Group Rules:**

- None

**Group Notes:**

- WSTG and WSTD are used to record information on the behaviour of water encountered during development of an exploratory hole.
- Water levels recorded during sampling or testing in exploratory holes are recorded in the appropriate group together with the related data. Water readings in installations (e.g. piezometers) are recorded in Group MOND.

## 4 TRANSFER FILE FORMAT

It is intended that other AGS Data Management Working Group approved file formats will be included in future versions of the AGS Format.

### 4.1 CSV File (comma separated value)

The default AGS 4.2 file format uses a series of data groups in CSV format. The file itself is not compliant with the CSV specification [RFC 4180:2005](#), but it is typically referred to as CSV.

#### 4.1.1 CSV File Rules

The following rules shall be followed in the preparation of AGS 4.2 CSV format files.

Rule Ref	Rule Description
Rule 1	The data file shall be entirely composed of ASCII characters.
Rule 2	Each data file shall contain one or more data GROUPs. Each data GROUP shall comprise a number of GROUP HEADER rows and must have one or more DATA rows.
Rule 2a	Each row is located on a separate line, delimited by a new line consisting of a carriage return (ASCII character 13) and a line feed (ASCII character 10).
Rule 2b	The GROUP HEADER rows fully define the data presented within the DATA rows for that group (Rule 8). As a minimum, the GROUP HEADER rows comprise GROUP, HEADING, UNIT and TYPE rows presented in that order.
Rule 3	<p>Each row in the data file must start with a DATA DESCRIPTOR that defines the contents of that row. The following Data Descriptors are used as described below:</p> <ul style="list-style-type: none"><li>• Each GROUP row shall be preceded by the "GROUP" Data Descriptor.</li><li>• Each HEADING row shall be preceded by the "HEADING" Data Descriptor.</li><li>• Each UNIT row shall be preceded by the "UNIT" Data Descriptor.</li><li>• Each TYPE row shall be preceded by the "TYPE" Data Descriptor.</li><li>• Each DATA row shall be preceded by the "DATA" Data Descriptor.</li></ul>
Rule 4	<p>Within each GROUP, the DATA items are contained in data FIELDS. Each data FIELD contains a single data VARIABLE in each row. Each DATA row of a data file will contain one or more data FIELDS.</p> <p>The GROUP row contains only one DATA item, the GROUP name, in addition to the Data Descriptor (Rule 3). All other rows in the GROUP have a number of DATA items defined by the HEADING row.</p>
Rule 5	DATA DESCRIPTORS, GROUP names, data field HEADINGS, data field UNITS, data field TYPES, and data VARIABLES shall be enclosed in double quotes ("..."). Any quotes within a data item must be defined with a second quote e.g. "he said ""hello""".

Rule Ref	Rule Description
Rule 6	The DATA DESCRIPTORS, GROUP names, data field HEADINGS, data field UNITS, data field TYPES, and data VARIABLES in each line of the data file shall be separated by a comma (,). No carriage returns (ASCII character 13) or line feeds (ASCII character 10) are allowed in or between data VARIABLES within a DATA row.
Rule 7	The order of data FIELDS in each line within a GROUP is defined at the start of each GROUP in the HEADING row. HEADINGS shall be in the order described in the AGS FORMAT DATA DICTIONARY.
Rule 8	Data VARIABLES shall be presented in the units of measurement and type that are described by the appropriate data field UNIT and data field TYPE defined at the start of the GROUP within the GROUP HEADER rows.
Rule 9	Data HEADING and GROUP names shall be taken from the AGS FORMAT DATA DICTIONARY. In cases where there is no suitable entry, a user-defined GROUP and/or HEADING may be used in accordance with Rule 18. Any user-defined HEADINGS shall be included at the end of the HEADING row after the standard HEADINGS in the order defined in the DICT group (see Rule 18a).
Rule 10	<p>HEADINGS are defined as KEY, REQUIRED or OTHER.</p> <ul style="list-style-type: none"> <li>• KEY fields are necessary to uniquely define the data.</li> <li>• REQUIRED fields are necessary to allow interpretation of the data file.</li> <li>• OTHER fields are included depending on the scope of the data file and availability of data to be included.</li> </ul>
Rule 10a	In every GROUP, certain HEADINGS are defined as KEY. There shall not be more than one row of data in each GROUP with the same combination of KEY field entries. KEY fields must appear in each GROUP, but may contain null data (see Rule 12).
Rule 10b	Some HEADINGS are marked as REQUIRED. REQUIRED fields must appear in the data GROUPS where they are indicated in the AGS FORMAT DATA DICTIONARY. These fields require data entry and cannot be null (i.e. left blank or empty).
Rule 10c	Links are made between data rows in GROUPS by the KEY fields. Every entry made in the KEY fields in any GROUP must have an equivalent entry in its PARENT GROUP. The PARENT GROUP must be included within the data file.
Rule 11	<p>HEADINGS defined as a data TYPE of 'Record Link' (RL) can be used to link data rows to entries in GROUPS outside of the defined hierarchy (Rule 10c) or DICT group for user defined GROUPS.</p> <p>The GROUP name followed by the KEY FIELDS defining the cross-referenced data row, in the order presented in the AGS4 DATA DICTIONARY.</p>



Rule Ref	Rule Description
Rule 11a	Each GROUP/KEY FIELD shall be separated by a delimiter character. This single delimiter character shall be defined in TRAN_DLIM. The default being " " (ASCII character 124).
Rule 11b	<p>A heading of data TYPE 'Record Link' can refer to more than one combination of GROUP and KEY FIELDS.</p> <p>The combination shall be separated by a defined concatenation character. This single concatenation character shall be defined in TRAN_RCON. The default being "+" (ASCII character 43).</p>
Rule 11c	Any heading of data TYPE 'Record Link' included in a data file shall cross-reference to the KEY FIELDS of data rows in the GROUP referred to by the heading contents.
Rule 12	Data does not have to be included against each HEADING unless REQUIRED (Rule 10b). The data FIELD can be null; a null entry is defined as "" (two quotes together).
Rule 13	Each data file shall contain the PROJ GROUP which shall contain only one data row and, as a minimum, shall contain data under the headings defined as REQUIRED (Rule 10b).
Rule 14	Each data file shall contain the TRAN GROUP which shall contain only one data row and, as a minimum, shall contain data under the headings defined as REQUIRED (Rule 10b).
Rule 15	<p>Each data file shall contain the UNIT GROUP to list <i>all</i> units used within the data file.</p> <p>Every unit of measurement entered in the UNIT row of a GROUP or data entered in a FIELD where the field TYPE is defined as "PU" (for example ELRG_RUNI, GCHM_UNIT or MOND_UNIT FIELDS) shall be listed and defined in the UNIT GROUP.</p>
Rule 16	<p>Each data file shall contain the ABBR GROUP when abbreviations have been included in the data file.</p> <p>The abbreviations listed in the ABBR GROUP shall include definitions for all abbreviations entered in a FIELD where the data TYPE is defined as "PA" or any abbreviation needing definition used within any other heading data type.</p>
Rule 16a	<p>Where multiple abbreviations are required to fully codify a FIELD, the abbreviations shall be separated by a defined concatenation character. This single concatenation character shall be defined in TRAN_RCON. The default being "+" (ASCII character 43)</p> <p>Each abbreviation used in such combinations shall be listed separately in the ABBR GROUP. e.g. "CP+RC" must have entries for both "CP" and "RC" in ABBR GROUP, together with their full definition.</p>
Rule 17	<p>Each data file shall contain the TYPE GROUP to define the field TYPEs used within the data file.</p> <p>Every data type entered in the TYPE row of a GROUP shall be listed and defined in the TYPE GROUP.</p>

Rule Ref	Rule Description
Rule 18	Each data file shall contain the DICT GROUP where non-standard GROUP and HEADING names have been included in the data file.
Rule 18a	<p>The order in which the user-defined HEADINGS are listed in the DICT GROUP shall define the order in which these HEADINGS are appended to an existing GROUP or appear in a user-defined GROUP.</p> <p>This order also defines the sequence in which such HEADINGS are used in a heading of data TYPE 'Record Link' (Rule 11).</p>
Rule 19	A GROUP name shall not be more than 4 characters long and shall consist of uppercase letters and numbers only.
Rule 19a	A HEADING name shall not be more than 9 characters long and shall consist of uppercase letters, numbers or the underscore character only.
Rule 19b	<p>HEADING names shall start with the GROUP name followed by an underscore character .e.g. "NGRP_HED1"</p> <p>Where a HEADING refers to an existing HEADING within another GROUP, the HEADING name added to the group shall bear the same name.</p> <p>e.g. "CMPG_TESN" in the "CMPT" GROUP.</p>
Rule 20	<p>Additional computer files (e.g. digital images) can be included within a data submission. Each such file shall be defined in a FILE GROUP.</p> <p>The additional files shall be transferred in a sub-folder named FILE. This FILE sub-folder shall contain additional sub-folders each named by the FILE_FSET reference. Each FILE_FSET named folder will contain the files listed in the FILE GROUP.</p>

### 4.1.2 CSV File Example

The following is an example of AGS 4.2 Format. This demonstrates the basics of the format construct and is not a complete set of data.

```
"GROUP","PROJ"
"HEADING","PROJ_ID","PROJ_NAME","PROJ_LOC","PROJ_CLNT","PROJ_CONT","PROJ_ENG"
"UNIT","","","","",""
"TYPE","ID","X","X","X","X","X"
"DATA","121415","ACME Gas Works Redevelopment","Anytown","ACME Enterprises","ACME Drilling Ltd","ACME Consulting"

"GROUP","TRAN"
"HEADING","TRAN_ISNO","TRAN_DATE","TRAN_PROD","TRAN_STAT","TRAN_DESC","TRAN_AGS","TRAN_RECV","TRAN_DLIM","TRAN_RCON"
"UNIT","","yyyy-mm-dd","","","","",""
"TYPE","X","DT","X","X","X","X","X","X","X"
"DATA","1","2020-08-18","ACME Drilling Ltd","DRAFT","Draft Logs only","4.2","ACME Consulting","|","+

"GROUP","TYPE"
"HEADING","TYPE_TYPE","TYPE_DESC"
"UNIT","",""
"TYPE","X","X"
"DATA","ID","Unique Identifier"
"DATA","X","Text"
"DATA","PA","Text listed in ABBR Group"
"DATA","DT","Date time in international format"
"DATA","2DP","Value; 2 decimal places"

"GROUP","UNIT"
"HEADING","UNIT_UNIT","UNIT_DESC"
"UNIT","",""
"TYPE","X","X"
"DATA","m","metres"
"DATA","yyyy-mm-dd","year month day"

"GROUP","LOCA"
"HEADING","LOCA_ID","LOCA_NATE","LOCA_NATN"
"UNIT","","m","m"
"TYPE","ID","2DP","2DP"
"DATA","327-16A","523145.00","178456.12"

"GROUP","SAMP"
"HEADING","LOCA_ID","SAMP_TOP","SAMP_REF","SAMP_TYPE","SAMP_ID","SAMP_BASE","SAMP_CONT"
"UNIT","","m","","","m",""
"TYPE","ID","2DP","X","PA","ID","2DP","X"
"DATA","327-16A","24.55","24","B","ABC121415010","25.00",""

"GROUP","ABBR"
"HEADING","ABBR_HDNG","ABBR_CODE","ABBR_DESC","ABBR_LIST","ABBR_REM","FILE_FSET"
"UNIT","","","","",""
"TYPE","X","X","X","X","X","X"
"DATA","SAMP_TYPE","B","Bulk disturbed sample","AGS4","",""
```

## 5 NOTES ON THIS DOCUMENT

### 5.1 Data Management

Refer to BS 8574:2014 'Code of practice for the management of geotechnical data for ground engineering projects' and the project or organization specific data management plan.

### 5.2 Headings, Key and Required Fields

The data HEADINGS should be considered as the equivalent of a field name within a database. However, the term HEADING is used within the rules to highlight that this document defines a data transfer format and not a database schema.

KEY Headings are important for maintaining data integrity. Without this, the receiving software may not be able to create the inter-relationships within the data in a meaningful way.

REQUIRED Headings (Rule 10b) are necessary to interpret the data file. Without data in these headings the user or receiving software may not be able to access the data or process the information within.

Note that there is no requirement to include all HEADINGS in a GROUP. The general approach should be to only include the HEADINGS for which data is required or provided (Rule 10). This is subject to meeting the requirement to include all KEY and REQUIRED headings (Rules 10a and 10b).

### 5.3 Units and Data Types

Units of measurement and data types for each of the HEADINGS are given in the Data Dictionary (3.4). These represent the typical units of measurement that are used in the UK. They will either be the appropriate International System of Units (SI) units or the unit defined by the particular Eurocode or British Standard relating to the measurement data under that specific HEADING.

It is recognised that situations will occur where neither the SI unit nor the suggested unit of measurement are appropriate. In these cases, the unit of measurement and/or data TYPE for the results presented may be changed from the one shown in this document and the results presented according to the revised data UNIT / data TYPE.

### 5.4 Sample Referencing

If descriptive information regarding the sample is not to be disclosed to the data receiver (for example a laboratory), the single SAMP\_ID field is used and the remaining 4 KEY FIELDS are transmitted as null values. If no such requirement exists, the 4 descriptive fields can be used and the SAMP\_ID can either be transmitted or contain a null value (Rule 12).

SAMP\_ID should be provided by the sample creator / generated at sample creation time – this should not be created by the testing laboratory.

Note: When a sample is received at a geoenvironmental laboratory ELRG\_LSID is the sample ID created by the laboratory, assigned to each sample when received at the laboratory, allowing the laboratory to assign an identifier in addition to the SAMP Group keyset provided by the client. This enables a 1-to-1 relationship between client and laboratory sample referencing systems. The laboratory sample identifier can be assigned to multiple containers:

i.e. for a single environmental water (EW) sample, comprising multiple vials and jars, there is only one laboratory sample identifier (ELRG\_LSID) that refers to this group of samples.

This approach is extended to all GROUPs that are descended from SAMP in the group hierarchy (section 3.1).

### 5.5 Record Linking

A data TYPE of 'Record Link' in the SAMP group (Heading SAMP\_LINK) links sample data to other data records; in particular the sample source; for example, a monitoring instrument or test that created the sample. This provides the data receiver with additional information that is used to interpret testing data related to the sample.

The reference within a Record Link data variable is formed as defined in Rule 11 of:

- GROUP
- The data under the KEY HEADINGS in the order defined in the Data Dictionary (or DICT GROUP for user defined groups)
- Each component of the link being separated by a delimiter of "|" (the pipe character, ASCII Character 124).

For example: "SAMP|BH1|4.50|1|D|UX123"

where

SAMP	= The Sample data group
BH1	= LOCA_ID
4.50	= SAMP_TOP
1	= SAMP_REF
D	= SAMP_TYPE
UX123	= SAMP_ID

This facility allows a link to exist between a sample and a monitoring point or other process / test such as the SPT.

Multiple links can be created by concatenation using the separator defined in TRAN\_RCON (default being "+", ASCII Character 43).

Examples:

- "MONG|BH1|Pipe1" links a sample to the specific monitoring point of its origin.
- "ISPT|BH1|4.50+CDIA|BH1|2.00|200" links a sample to the SPT test from which the sample was derived and also references the casing depth at the time of sampling.

The simplicity or complexity of the link depends on user requirements or specification.

## 5.6 Associated Files

Where other digital files or file sets are associated with data, the file association (FILE\_FSET) should be made with the relevant data type and record.

For example:

- Site location plans would be associated with the PROJ group.
- Photographs of core should be recorded against the core run records within the CORE group.
- Sample logging sheets if included with the data file would be associated with the SAMP group and against the relevant sample.
- Logging files from in situ tests should be associated with the appropriate test group.
- Test specimen photographs (e.g. pre-test, post-test UCS with the RUCS group).

See the AGS Format website ([www.agsdataformat.com](http://www.agsdataformat.com)) for more information.

## 5.7 Internal, Preliminary, Draft and Final Data Submission

The status of TRAN\_STAT and LOCA\_STAT should be agreed in accordance with the recommendations of BS 8574:2014 and all parties involved.

Suggested definitions:

- |               |  |
|---------------|--|
| • Internal    | For use within your own organization                         |
| • Preliminary | Unchecked and incomplete                                     |
| • Draft       | Substantially complete and checked prior to final acceptance |
| • Final       | Complete submission with comments agreed and actioned        |

Preliminary data in electronic format can be useful on projects where design is undertaken during the period of the investigation. However, the need for this facility should be very carefully considered by the receivers before including it in their Contract Specifications since it will require the imposition of rigorous data management procedures. The format is not intended to show change in data. Where the highlighting of change is required, this should be a facility incorporated in the receiver's software or data management systems. This does not preclude submission of parts of the data separately.

Each submission should be given a unique issue sequence reference (TRAN\_ISNO). AGS Format includes the transmittal group, TRAN, to manage this process and include information about the data transfer within the transferred file.

## **5.8 AGS Data Transmittal Record**

The Producer shall produce an external transmittal record for each submission of AGS Format data and associated files with the minimum following details:

- The heading 'AGS Format Data'
- The project identification (PROJ\_ID)
- The unique issue sequence reference (TRAN\_ISNO)
- The name of the Receiver (TRAN\_RECV)
- The date of issue to the Receiver (TRAN\_DATE)
- The name of the Producer (TRAN\_PROD)
- The AGS Edition Reference (TRAN\_AGS)
- A general description of the data transferred and/or a file listing for associated files

In addition the transmittal record will detail the following for each AGS Format data file within the data submission, including all associated files:

- The file name including the extension
- The date of file creation
- The time of file creation
- The file size
- A general description of the data contained in each file and/or a file listing for associated files

A transmittal record should be prepared for each data set and accompany it each time a data set is issued. An example can be found in Section 6 Additional Resources.

## 6 ADDITIONAL RESOURCES

The AGS Format website address is [www.agsdataformat.com](http://www.agsdataformat.com).

It contains this publication, in Adobe PDF, together with the latest AGS Format abbreviations (ABBR) and other resources to assist those using the format or developing software applications to interpret AGS Format data files. The site also contains a discussion board where users can discuss questions with the AGS Data Management Working Group members and other users.

### 6.1 Guidance Files

Guidance on the recommended usage of the AGS Format is published on the website ([www.agsdataformat.com](http://www.agsdataformat.com)).

### 6.2 AGS Format Abbreviations (ABBR), Units (UNIT) and Data Types (TYPE)

The abbreviations, units and data types for each heading are provided in the Data Dictionary. The abbreviations, units and data types in the data dictionary should be used unless otherwise agreed between data provider and receiver in accordance with a project specification.

The list of standard abbreviations and descriptions, units and data types are presented on the AGS website and shall not be redefined. Additional abbreviations may be defined as required within a project but should not match/impersonate existing standard abbreviations i.e. “CP” for Cable percussion in LOCA\_TYPE should not be given a non-standard abbreviation defined as “CH” for Cable hole, LOCA\_TYPE of “SCP” (Static cone penetrometer) shall not be replaced by a non-standard abbreviation of “CPT” (Cone penetration test) for example.

The ABBR list is not case sensitive. When using ABBR\_CODE (abbreviation used) or ABBR\_DESC (description of abbreviation) this should be applied consistently throughout an AGS Format file.

The TYPE list is case sensitive.

The UNIT list is case sensitive.

Users should check the list of ABBR/UNIT/TYPE abbreviations (proposed, approved or declined) before defining a new abbreviation on the website. If the required item is not listed on the website, is not project specific, but may be appropriate for whole industry use, submit your suggestion using the forms provided on the website. All suggestions will be considered by the AGS Data Management Working Group.

### 6.3 AGS 4.2 Change log

The AGS 4.2 Change Log is located on the AGS Format website ([www.agsdataformat.com](http://www.agsdataformat.com)).

#### 6.4 Suggested Format for a Transmittal Record

AGS Format Data Transmittal Record

Project Identification	
Client	
From	

[illegible]



## 6.5 AGS Format Historical Development Notes

Since AGS1 (1991) formal rules have been applied to the naming of Groups and Headers within the dictionary. Despite being applied consistently they have not previously been documented. They are now presented below to provide a consistent background for future developments.

They include, in no particular order:-

- The data items are those that are usually required to be reported by the specifications and standards
- Data fields which can be derived from existing data fields already in a group are not normally included. There may be some exceptions to this where the data field is required to be reported by the associated standard; the notable example being plasticity index (LLPL\_PI).
- The units are reported in 'Engineering Units' rather than direct readings, for example "milli volts". It is up to the organization obtaining the data to measure, convert, calibrate and quality assure each measurement. Including the original readings with their conversion and calibration factors, as may be requested, would change the whole industry and is not something the AGS wishes to facilitate.

### Units and Data Types

Suggested units of measurement and data types for each of the HEADINGS are given in the Data Dictionary (3.4). These represent the typical units of measurement that are used in the UK. They will either be the appropriate SI units or the unit defined by the particular Eurocode or British Standard relating to the measurement data under that specific HEADING.

It is recognised that situations will occur where neither the SI unit nor the suggested unit of measurement are appropriate. In these cases, the unit of measurement and/or data TYPE for the results presented may be changed from the one shown in this document and the results presented according to the revised data UNIT / data TYPE.

- The metadata required for each observation fall into three parts:
  - those required to make the data field unique so that it can be stored and re-accessed;
  - those required to make the data work or make sense or place the data in an appropriate context;
  - those required by the project specification.

The first two are reflected by the concept of KEY and REQUIRED Headings.

- The data dictionary uses the concept of "flat files" rather than "relational files". The Groups have a "parent/child" relationship
- For multiple results (such as Down hole test readings) paired tables are used
- There is a concept of using a General Group to provide the overview and a Detail Group ('child') to contain the detailed results from an observation
- Where changes to the KEY Headings or keyset in a GROUP are required, new GROUPs are created with different names and the original Group deprecated
- Deprecated Groups and Headings are removed in the next version of an AGS revision.
- Multiple instances of the same group in a file has historically been allowed for smaller organisations to manually create an AGS file. Whilst this is not considered best practice in 2025, this is still acceptable providing it is agreed between both the data provider and the data receiver.
- The keyset in a child group must match the parent data in the keyset exactly. For example, LOCA\_ID="LOCATION1A" must be replicated in all child groups with case maintained:

LOCA group > LOCA\_ID = "LOCATION1A"

SAMP group > LOCA\_ID = "LOCATION1A" (not "LOCATION1a", "Location1a" or "LOCATION\_1A")

- The AGS Format is not a database specification BUT may be used to inform database design

- The borehole, trial pit and reference point numbers must be consistent throughout the data set. For example, borehole BH1A must always be written exactly in this way. Variants such as Borehole 1A, BH1a, BH1, BH-1A, BH1(A), BH 1A, 1A etc are not acceptable. The program will check every data Group below HOLE in the hierarchy and every line of data in every Group must have a borehole number which is in HOLE. If the borehole number is not in HOLE or is formatted differently from the version in HOLE or is missing then this is an integrity error and must be corrected.