Site investigation – some aspects of EN1997 Part 2

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QUESTION TO AUDIENCE

How many of you have SPECIFIED or CARRIED OUT a ground investigation in accordance with EN 1997?

PROGRESS today

Standards published and implemented

22475/1		Sampling and groundwater measurement
22475/2	(TS)	Qualification criteria of enterprises and personnel
22475/3	(TS)	Conformity assessment of enterprises and personnel
22476/2		Dynamic probing
22476/3		Standard Penetration test
22476/10	(TS)	Weight sounding test
22476/11	(TS)	Flat dilatometer test
22476/12		Mechanical CPT
14688/1		Soil description
14688/2		Soil classification
14689/1		Rock description and classification

That is 9 standards to date that we use in UK

National implementation steps

CEN rule on implementation
= publish locally and withdraw national standard

BS22475/1 Sampling and Measurement BS5930	**AMENDED**
Qualification criteria and conformity assessments	
BS22475/2 made normative in UK	**PUBLISHED**
BS22475/3 made normative in UK	**PUBLISHED**
BS1377 Part 9 Clause 3.2 (DP)	**WITHDRAWN**
BS1377 Part 9 3.3 (SPT)	**WITHDRAWN**
No BS for mechanical cone	No action
BS5930 on description	**AMENDED**

22475 Sampling

Category of sampler – can be specified

- A = cores, blocks, piston, UT100
- B = U100, Mostap
- C = SPT, window sample, disturbed
- Do we agree with UT100 (not in 22475)
- Do we agree with WS? Not suitable for water content?

Class of sample to be used in test can be specified

Class of sample achieved cannot be specified

- Effect of coarse particles, driving, drilling practice

Who decides sample is actually Class 1 and so suitable for compressibility and strength testing?

When is this decision made?

- on core wrapping, on extrusion, on laboratory bench?

22476 DP and SPT Calibration

Hammer calibration mandatory – Er to be reported

Frequency being clarified as annual

Measurement under anvil

Standard is silent on

- length of rods beneath test
- Stabilisation of string (in calibration or test)

Rod straightness requirement of 1:1200 mandatory

- Straightness to be checked every 20 tests
- HOW? NA calls for best efforts and reporting of procedure
- BS1377 had 1:1000 – also mandatory

What are we going to use Er for?

- In the field – Ban certain hammers?
- In design – Adjust all N values back to N_{60}?

Are the EN ISOs complete and satisfactory? Amendment is coming

14688/14689 Soil and rock description

Covered in BS5930:1999 (= CP not BS)

- Amendments 1 and 2
- Technical articles
- Book

Some changes to previous national practice

- Low and high plasticity
- Silty CLAY
- Separation of consistency and strength
- More particle shape terms
- More types of peat
- Rock strength terminology
- Backward step on rock weathering

Amendment needs majority vote – not achieved yet

PROGRESS TOMORROW – imminent standards

22476 – Field testing

/1	Cone penetration test
/4	Menard Pressuremeter
/5	Flexible dilatometer
/6	Self boring p/meter
/7	Borehole Jacking test
/8	Full displacement p/meter
/9	Field vane test
/13	Plate Loading test

22282 – Geohydraulic tests

/1	General rules
/2	Water permeability test in borehole without packer
/3	Water pressure test in rock
/4	Pumping tests
/5	Infiltrometer tests
/6	Closed packer systems

That will be a further 14 standards to be implemented into national practice

PROGRESS TOMORROW – later standards

22477 – Geotechnical structure tests

- /1 Static axial compression
- /2 Static axial tension
- /3 Transverse tension
- /4 Dynamic axial compression
- /5 Testing of anchorages
- /6 Testing of nails
- /7 Testing of reinforced fill
- /8 Statnamic testing

… and that will be a further 20 standards to be implemented

17892 – Laboratory testing

- /1 Water content
- /2 Density of fine grained soils
- /3 Density of solid particles
- /4 Particle size distribution
- /5 Oedometer test
- /6 Fall cone test
- /7 Compression test
- /8 Unconsolidated triaxial test
- /9 Consolidated triaxial test
- /10 Direct shear test
- /11 Permeability test
- /12 Atterberg limits

ALL TS – now published in UK
Being upgraded to normative status

Implementation – practical steps

New Standards – be aware of existence
– read and understand
Update specification clauses
Inform and Train staff
Notify clients
Update recording and reporting templates
Adjust interpretation routines as necessary
Deploy procedures into practice on NEW contracts
Implementation achieved – months?

Tasks for the future

- As standards are published/ implemented
  - Find volunteers to read and digest
  - Encourage publishing of critical summary
  - Achieve implementation faster than to date
- If we do not implement smoothly/ rapidly/ widely we will be operating parallel systems in too many areas
- Receive feedback and aim for revision in CEN
  - Slow process
  - Agree to task/ revise/ agree to revision
  - Revisions/amendments will also have to be implemented

"…the greater general emphasis on the assessment of deformation is likely to lead to a greater need for SI providers to consider ground deformation parameters"

- This is the intention of EN1997
- If industry is to benefit from changed emphasis on getting the right parameters at the right quality level we need to implement the whole of EN1997
- Do we as industry want to raise the bar?
- Is this the opportunity that we have been crying out for?