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BS1377 Part 9 Clause 3.2 (DP) WITHDRAWN
BS1377 Part 9 3.3 (SPT) WITHDRAWN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 N60?

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

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<tr>
<th>22477 – Geotechnical structure tests</th>
<th>17892 – Laboratory testing</th>
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<td>/1 Static axial compression</td>
<td>/1 Water content</td>
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<td>/2 Density of fine grained soils</td>
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<td>/3 Transverse tension</td>
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<td>/9 Consolidated triaxial test</td>
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<td>/11 Permeability test</td>
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<td>/12 Atterberg limits</td>
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... and that will be a further 20 standards to be implemented

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?