



**ACCREDITATION REQUIREMENTS FOR
CONSTRUCTION MATERIALS &
GEO-TECHNICAL INVESTIGATION TESTING
LABORATORIES**

DAC-REQ-04

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1. DEFINITIONS

1.1. Construction Material Testing Laboratory:

Any laboratory which is performing mechanical, physical, chemical, testing such as but not limited to:

- Concrete
- Aggregates
- Asphalt
- Soils

1.2 Laboratory Proficiency Testing Program:

Determinations of laboratory testing performance by means of inter- laboratory comparisons organized by external bodies.

NOTE: For the purposes of this document, the term laboratory proficiency tests means continuous schemes – where laboratories are required to participate at regular intervals on a continuous basis.

2. SCOPE

2.1 The accreditation program shall cover the tests carried out for construction materials & Geotechnical Investigation testing as given in Annex 1 & 2

2.2 Laboratories may apply for accreditation of other tests not listed in Annex 1 & 2; however, accreditation will depend on availability of resources and expertise accordingly, DAC shall inform the applicant laboratory whether the test can be accredited or not. For in-house and laboratory-developed methods, the relevant clauses of ISO/IEC 17025: 2005 shall apply.

3. GENERAL REQUIREMENTS

3.1 Specific Criteria for Laboratories performing Geotechnical Investigation.

3.2 The laboratory shall obtain No Objection Certificates (NOC) prior to commencing drilling, regardless whether it is obtained by the laboratory or by its client.

3.3 The laboratory shall prepare work program for its activities with a frequency suitable to its nature of work.

4. TECHNICAL COMPETENCE OF STAFF

4.1 General Technical Requirements

In addition to clause 5.2 of ISO 17025:

4.1.1 The laboratory shall maintain a list of staff for authorized *signatories*. *Authorized signatories shall comply with, as minimum Bachelor degree of Science or Engineering, preferably in Civil Engineering or Chemical / Materials Science, as appropriate with at least 2 years of experience in the relevant field.*

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Note: The assessment team may however recommend authorized signatory who does not meet the above specified minimum experience required with specific recommendations to DAC, after adjudging the competence of the authorized signatory during the on- site assessment

- 4.1.2 The staff shall have appropriate qualification relevant to the field of construction materials testing. Supervisory positions shall have as minimum Bachelor degree of Science or Engineering, preferably in Civil Engineering or Chemical / Materials Science, as appropriate. Technicians shall have Diploma as minimum in Engineering or Science preferably in the field of Civil Technology.
- 4.1.3 Assistant technicians are restricted to carry out testing. Their role is only to assist the Technicians or Engineers.
- 4.1.4 Requirements for Experience: For supervisory position minimum five years of work experience in the relevant field of testing two of which must be in Engineering and/or in managerial position. Technicians must have at least three years of work experience in the relevant field of testing.
- 4.1.5 Training records shall be maintained for each technical staff. The training records shall show evidence that they have carried out the tests and obtained satisfactory results on dummy runs, *staff shall take turns to participate in proficiency testing, and results of PT participation shall be documented in the relevant staff training files.*
- Training records shall be reviewed and updated regularly at least once every year; *operator matrix shall be made available to supervisor.*

4.2 Criteria of Competence for Geotechnical Investigation staff.

In addition to above clause: 4.1 the Geotechnical labs are required to comply to below given.

4.2.1 Professional Staff.

The professional staff shall be an experienced engineering geologist, geotechnical engineer, geologist or civil engineer according to the requirements of BS 5930, clause 17.2. He is responsible for planning, direction, execution, and supervision of ground investigation and final reporting.

4.2.2 Drillers

The driller in charge of the drilling rig shall be skilled in the practice of exploration of the ground by means of boreholes testing, soil sampling and, making ground water observations in the boreholes as well as properly recording the information obtained.

4.2.3 Driller's Logs

- ❖ *The site investigation laboratory shall have a controlled form for the driller log. The driller must sign in the log.*

- ❖ *A professional supervisor of the driller must co-sign the driller's log whenever he makes visits to the site.*

4.2.4 **Material identification by the driller**

Drillers are required to be capable of making simple identification of soil types (Ref BS 5930 clause 17.4)

4.2.5 **Frequency of check visits to drillers by supervisor**

Laboratories must be able to verify the drilling work. Laboratories must describe this point in their Quality Management System Documentation.

4.2.6 **Assessment of drillers for the purpose of accreditation**

Drillers will be assessed by witnessing their performance in the field. Not all drillers may be assessed during the first visit but all drillers will be assessed within the 3-year validity period of the accreditation.

4.2.7 **Operators**

Operators who are assisting the drillers shall be skilled and experienced in the safe use of rigs and plants for digging/ excavating.

4.2.8 **Laboratory staff.**

The person in charge of the chemical testing in the laboratory shall have appropriate educational background in chemistry, adequate experience, and training in the field of chemistry a minimum qualification of B.Sc Chemistry is required.

4.2.9 **Technical Staff working in the lab**

The person in charge of the soil testing in the laboratory shall have appropriate educational background in civil engineering or engineering geology, adequate experience, and training in the field of soil testing. The technical staff of the laboratory shall, likewise, have appropriate qualification.

4.2.10 **Staff responsible for Preparation of Reports**

The staff involved in preparing the final report shall have educational background in civil or geotechnical engineering, and/or geology, adequate experience, and training in the field of soil investigation reporting. The requirements of ISO 17025 clause 5.2.1 (Note 2) shall apply.

4.3 **Site Work, Sampling and Sampling Method**

4.3.1 **Site Work**

4.3.1.1 Work sheets used on site shall contain the following information as minimum:

- Driller log
- People on site
- Start/ finish times
- Problems
- Casing record

4.3.1.2 Depth of Investigation

It is the responsibility of the client to determine the depth of investigation.

4.3.2 Sampling and Sampling Methods

4.3.2.1 Sampling

4.3.2.1.1 Sample containers

Suitable plastic bags will be acceptable as long as they do not lead to losing sample integrity.

4.3.2.1.2 Moisture content of samples taken above the water table

When the moisture content is needed from samples taken from above the water table, water (pressure) must not be used to eject the sample from the core barrel.

4.3.2.1.3 Borehole Elevation datum

All elevations must be made to DMD.

4.3.2.1.4 Sample Identification and Storage

- Using the same ID Number for head contractor and subcontractor is not accepted. However, traceability has to be ensured.
- The site investigation laboratory shall have a suitable storage place for samples that ensures maintaining the samples integrity and traceability. It is also required to maintain proper ventilation and lighting. Tested samples have to be retained in the storage area at least for one month from the date of issuing final report.

4.3.2.1.5 Sampling Methods

- SPT: Shall be according to *BS 1377 part 9*.
- Soil Sampling shall be according to BS 5930, clauses 22.3 and 22.4.
- Ground Water Level Measurement shall be according to BS 5930; clause 23.2, 27.5 and 47.2.7.
- Ground Water Sampling shall be according to BS 5930; clause 23.2.

4.3.2 Construction Materials Testing Sampling Methods.

4.3.2.1 The tests shall be carried out in accordance with the relevant standard test methods.

4.3.2.2 Sampling, if done by the laboratory, shall be in accordance with the relevant sampling method as provided for in the concerned test standards.

4.3.2.3 *Requirement for sampling and sample handling stated in ISO/IEC 17025 Clauses: 5.7 and 5.8 will be applicable.*

4.4 Testing Equipments

4.4.1 *The laboratory shall follow ISO 17025 clause: 5.5 in addition to the below defined criteria.*

Laboratory shall have the appropriate testing equipments and instruments as specified in the relevant test method specifications/standards. The laboratory shall have a calibration and maintenance program for all equipments and instruments to ensure their continuing reliability. All calibrations shall have traceability to national and international standards.

4.4.2 External calibration shall be carried out at *accredited calibration laboratory complying with ISO/IEC 17025. In case the laboratory seeking calibration services not available with the accredited calibration lab, this can be reviewed by DAC and an appropriate solution can be advised and implemented.*

4.4.3 *Laboratory shall follow the UKAS publication LAB 21 for Calibration and Measurement Traceability for Construction Materials Testing Equipment*

4.4.5 Equipment used in Geotechnical Investigation.

Besides the requirements of clause 5 in the ISO/IEC 17025, the laboratory shall fulfill the following requirements:

4.4.5.1 Rig identification

Proper identification of all rigs is required.

4.4.5.2 Calibration of SPT assembly

- a) Energy calibration methods are not acceptable.
- b) Apart from (a) above, internal/ in-house calibration performed by the laboratory is acceptable provided that:
- c) The calibration shall be conducted in accordance with documented calibration procedures approved by the laboratory management.
- d) The reference standards used are traceable to national or international standards through a valid calibration certificate.
- e) The laboratory personnel involved in calibration are qualified to conduct that calibration.

4.4.5.3 Storage yard for rigs

The site investigation laboratory shall have a suitable yard space for storage of its rigs.

4.4.5.4 Sub-standard equipment

No substandard equipments are allowed for use. This includes SPT split samplers where the sampling shoe has (parallel) flats to aid assembly and disassembly.

4.5 Internal Quality Control

4.5.1 The laboratory shall carry out internal quality control (IQC) testing in accordance with an IQC plan. The IQC result acceptability criteria shall be clearly defined. Quality control data shall be analyzed and, where they are found to be outside pre-defined criteria, planned action shall be taken to correct the problem and to prevent incorrect results from being reported.

4.5.2 The IQC may be in one or more, or a combination of the following:

- Use of certified reference materials
- Use of internal or external check samples
- Replicate testing using the same or different method
- Re-testing of retained items
- Use of control charts

4.6 Participation in External Quality Control Schemes

4.6.1 Proficiency Testing Programs (PTP):

The laboratory shall participate in Proficiency testing program (PTP) organized by *any* competent PTP provider and shall provide evidence that their results are within the acceptance criteria of the PTP organizer.

4.6.2 The minimum amount of participation in proficiency testing schemes for its applicant and accredited laboratories are as given below.

- One activity related to each major discipline *at least once a year*.

Example: Major Disciplines- Concrete, Soils, Asphalt, Aggregate, Steel, Chemistry etc.

Note: Laboratories operating within Dubai shall comply with Law # 2/2010 (Formerly known as Local Order 52/1990)

4.7 Test Reports

4.7.1 The accredited laboratory *shall* use DAC Accreditation Symbol as a demonstration in recognition of laboratory's competence to perform the tasks defined in the scope of accreditation in accordance with the document DAC-Req-05 'Conditions for using DAC symbol'.

4.7.2 Test reports shall be in accordance with the requirements listed in ISO/IEC 17025 clause 5.10 and reporting requirements and/or information specified in the concerned test method specifications/standards.

The format of the test reports shall be designed to accommodate each type of test carried out and to minimize the possibility of misunderstanding or misuse.

Any amendments to a test report shall meet all the requirements specified in ISO/IEC 17025.

4.7.3 Geotechnical Site Investigation Report

- 4.7.3.1 The laboratory shall produce a report on the site investigation to fulfill the client's needs and the applicable clauses of BS 5930 (principally Section 47). The requirements of relevant clauses of ISO/IEC 17025 shall apply.
- 4.7.3.2 Opinions and interpretations that are included in the report are neither subject to assessment nor to accreditation.

5. ACCOMMODATION AND ENVIRONMENTAL CONDITIONS.

- 5.1 *The laboratory lay out shall be in a way as to provide adequate bench/work space at each work centre to ensure free movement during working.*
- 5.2 *Entrance to the laboratory shall be such that it protects the area from dust and does not destroy the required environmental condition. Adequate measures shall be taken to make sure good housekeeping in the test laboratory.*
- 5.3 *Entry to the laboratory area shall be restricted, visitors may be allowed with prior permission with the management.*

In addition to the above given, laboratory shall follow Clause: 5.3 of ISO 17025

6.0 SAFETY.

*Laboratories operating within Dubai shall follow the safety requirements in accordance with the procedures as per DM regulations.
An in house procedure in line with DM regulations shall be prepared and submitted to DAC for review and approval.*

Laboratories operating outside Dubai shall follow the local regulations defined by the authorities, and a relevant procedure shall be prepared and submitted to DAC for review and approval.

7.0 SAMPLING AND SAMPLE HANDLING

*In addition to the clause: 5.7 & 5.8 of ISO 17025, the laboratory shall have procedures for sampling and sample handling,
Sample retention periods shall be defined, documented and agreed upon with the customers.*

8.0 RECORDS

*In addition to the clause: 4.13 of ISO 17025 the laboratory is required to maintain record system in compliance with local regulations.
It shall retain all records of original observations, calculations and derived data, and final test reports not less than 5 years.*

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Storage of data in computers is preferable; records shall include the identity of the personnel involved in sampling, testing and authorization.

9. REFERENCES

- 9.1 Law number 2/2010 on conditions required for licensing laboratories operating in the emirate of Dubai
- 9.2 ISO/ IEC 17025: 2005, General requirement for the competence of testing and calibration laboratories,
- 9.3 DAC-Req-01 Accreditation Requirements
- 9.4 DAC-Req-05 Conditions for using DAC symbol
- 9.5 DAC-G2-03 'Accreditation Fee Structure'
- 9.6 DAC-G2-04 'Traceability on Measurement and Calibration of Instruments'
- 9.7 DAC- G2-07 'Code of Conduct of the Unannounced Surveillance Visits'
- 9.8 *ISO/IEC 17043*, Proficiency testing inter-laboratory comparisons –Part 1: Development and operation of proficiency testing schemes
- 9.9 UKAS Publications LAB 21

ANNEX 1

List of Test Methods for Construction Materials Available for Accreditation but not Limited to:

S.No	Type of Test	Material/product	Test name	Standard method
1	Chemical	Aggregates	Acid soluble chlorides	BS 812: 1988 Part 117
2	Chemical	Aggregates	Acid soluble sulphates	BS 812: 1988 Part 118
3	Chemical	Aggregates	Organic impurities in fine aggregates for concrete (92)	ASTM C 40
4	Chemical	Aggregates	Chloride content of aggregates using a nitric acid extract, for aggregate containing chloride not extracted by water	BS 812 Part 117
5	Chemical	Aggregates	Total sulphate content by acid extraction	BS 812 Part 118
6	Chemical	Aggregates	Acid soluble materials in fine aggregates	BS 812 Part 119
7	Mechanical and physical	Aggregates	Determination of particle size distribution (wet and dry sieving)	BS 812
8	Mechanical and physical	Aggregates	Determination of clay, silt and dust in fine or coarse aggregates	BS 812
9	Mechanical and physical	Aggregates	Determination of particle densities and water absorption of coarse and fine aggregates	BS 812
10	Mechanical and physical	Aggregates	Determination of aggregate crushing value	BS 812 Part 110
11	Mechanical and physical	Aggregates	Determination of flakiness index of coarse aggregates	BS 812 Part 105
12	Mechanical and physical	Aggregates	Determination of elongation index of coarse aggregates	BS 812
13	Mechanical and physical	Aggregates	Determination of ten per cent fines value of aggregates (dry and soaked)	BS 812

14	Mechanical and physical	Aggregates	Sand equivalent value of soils and fine aggregates	ASTM D 2419
15	Mechanical and physical	Aggregates	Sieve analysis of fine and coarse aggregates	ASTM C 136
16	Mechanical and physical	Aggregates	Determination of shell content in coarse aggregate	BS 812
17	Mechanical and physical	Aggregates	Determination of aggregate impact value	BS 812
18	Mechanical and physical	Aggregates	Soundness of aggregates by the use of sodium sulfate or magnesium sulfate	ASTM C 88
19	Mechanical and physical	Aggregates	Clay lumps and friable particles in aggregates	ASTM C 142
20	Mechanical and physical	Aggregates	Specific gravity and water absorption of coarse aggregates	ASTM C 127
21	Mechanical and physical	Aggregates	Specific gravity and water absorption of fine aggregates	ASTM C 128
22	Mechanical and physical	Aggregates	Resistance to degradation of small size or large size coarse aggregate by abrasion and impact in the Los Angeles machine	ASTM C 131 ASTM C 535
23	<i>Mechanical and physical</i>	<i>Aggregates</i>	<i>Determination of ten per cent fines value of aggregates (dry)</i>	<i>BS 812 Part 111</i>
24	Thermal	Architectural Glass	Visible Light Properties (Light transmittance and Light reflectance)	EN 410
25	Thermal	Architectural Glass	Solar Properties : Direct transmittance, Reflectance, Absorptance Total Solar energy Transmittance Shading Co-efficient	EN 410 Clause 4.4
26	Thermal	Architectural Glass	Thermal Properties:U value (Watt/sq meterKelvin) Summer and winter Value	EN 673 ASHRAE
27	Chemical	Block	Chloride Content in Conc. Block	BS 1881 : P 124
28	Mechanical and physical	Carbon steel bars for reinforcement of concrete	Steel bend tests	BS 4449

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29	Mechanical and physical	Carbon steel bars for reinforcement of concrete	Steel tensile strength tests	BS 4449
30	Mechanical and physical	Carbon steel bars for reinforcement of concrete	Steel re-bend tests	BS 4449
31	Chemical	Cement	CL Content of Cement	BS EN 196 : P 21
32	Chemical	Cement	Chemical Analysis using X ray-F	BS EN 196 : P2
33	Chemical	Concrete	Determination of chloride content in hardened concrete	BS 1881 Part 124
34	Chemical	Concrete	Determination of sulphate content in hardened concrete	BS 1881 Part 124
35	Chemical	Concrete	Depth of carbonation	BS 1881 Part 201 (referring to BRE IP6/81)
36	Chemical	Concrete	Electrical indication of concrete's ability to resist chloride ion penetration (ASTM)	ASTM C 1202
37	Chemical	Concrete	Electrical indication of concrete's ability to resist chloride ion penetration (AASHTO)	AASHTO T 277
38	Chemical	Concrete	Type of Cement in Hard. Concrete	BS 1881 : P 125
39	Electrical	Concrete	Half-cell potentials of uncoated reinforced steel in concrete	ASTM C 876
40	Mechanical and physical	Concrete	Determination of compressive strength of concrete cubes	BS 1881 Part 116 BS EN 12390
41	Mechanical and physical	Concrete	Determination of compressive strength of pre-cast concrete masonry units	BS 6073 Part 2 Appendix B
42	Mechanical and physical	Concrete	Determination of compressive strength of pre-cast concrete paving blocks	BS 6717 Part 1 Annex B
43	Mechanical and physical	Concrete	Determination of block density	BS 6073 Part 2
44	Mechanical and physical	Concrete	Measurement of dimension of pre-cast concrete masonry units	BS 6073 Part 1
45	Mechanical and physical	Concrete	Measurement of dimension of pre-cast concrete paving blocks	BS 6717 Part 1 Annex A
46	Mechanical and	Concrete	Determination of water permeability - old	DIN 1048 clause 4.7.5

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	physical			
47	Mechanical and physical	Steel	Steel tensile strength tests	BS 4449
48	Mechanical and physical	Concrete	High strain dynamic load testing of cast-in place piles	ASTM D 4945
49	Mechanical and physical	Concrete	Determination of water permeability	DIN 1048 Part 5
50	Mechanical and physical	Concrete	Low strain echo response method for pile integrity testing (4)	Relevant Applicable standard methods
51	Mechanical and physical	Concrete	Recommendations for the determination of the initial surface absorption of concrete	BS 1881Part 208
52	Mechanical and physical	Concrete	Method for determination of water absorption on hardened concrete	BS 1881 Part 122
53	Mechanical and physical	Concrete	Tensile testing of metallic materials, Part 1. Method of test at ambient temperature	BS EN 10002-1
54	Mechanical and physical	Concrete	Dynamic pile testing and analysis	Institute of Civil Engineers Specifications for Piling
55	Mechanical and physical	Concrete	Low strain echo response method for pile integrity testing	Relevant Applicable standard methods
56	Mechanical and physical	Concrete	Determination of depth of penetration of water under pressure	BS EN 12390: Part 8
57	Mechanical and physical	Concrete	Low strain integrity testing of piles	ASTM D 5882
58	Sampling	Concrete	Concrete sampling by pulverizing method	AASHTO T-260
59	Mechanical and physical	Concrete piles	High strain Dynamic test	ASTM D4945
60	Mechanical and physical	Concrete piles	Cross Hole Sonic Test	ASTM D 6760
61	Mechanical and physical	Concrete piles	Caliper Logging Test	ASTM D 6167

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62	Mechanical and physical	Concrete piles	Pile instrumentation using vibrating Wire Strain Guages	Relevant Applicable standard methods
63	Mechanical and physical	Concrete piles	PS-Suspension Logger (Shear Wave Velocity)	Relevant Applicable standard methods
64	Mechanical and physical	Concrete piles	Pressure Meter (Menard & High Elastometer)	Relevant Applicable standard methods.
65	Mechanical and physical	Concrete piles	Cone Penetration Test (Static/Electric)	BS 1377:part 9
66	Mechanical and physical	Concrete piles	Sonic pile integrity testing	ASTM D 5882 and ICE Specification for Piling, Section 9.1
67	Mechanical and physical	Concrete piles	High strain dynamic load testing of cast-in place piles	ASTM D 4945
68	Chemical	Ferrous Material	Mass of Zinc Coating of ferrous Mat. (Grav. Method)	BS EN ISO 1460
69	Chemical	Lubricating Oil	Flash & Fire Points by Cleveland Open Cup	ASTM D92
70	Chemical	Lubricating Oil	Pour Point of Petroleum Products	ASTM D97
71	Chemical	Lubricating Oil	Kinematic Viscosity & Calculation of Viscosity Index	ASTM D445 & ASTM D2270
72	Chemical	Lubricating Oil	Foaming Characteristics of Lubricating Oils	ASTM D892
73	Chemical	Lubricating Oil	Apparent Viscosity of Lub. Oils between -5 & -35°C using cold cranking simulator	ASTM D 5293
74	Chemical	Lubricating Oil	Flash Point by Pensky Marten closed cup Oils.	ASTM D93
75	Chemical	Lubricating Oil	Sulfated Ash from Lubricating Oils & additives	ASTM D 874
76	Chemical	Material (cement)	Cement Content of Stabilized Mat	BS 1924 : P 2
77	Chemical	Soil	Organic Matter Content	BS 1377 : P 3
78	Chemical	Soil	Water Soluble Chloride	BS 1377 : P 3
79	Chemical	Soil	Acid Soluble Chloride	BS 1377 : P 3
80	Chemical	Soil	Water Soluble Sulfate	BS 1377 : P 3

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81	Chemical	Soil	pH of Soil	BS 1377 : P 3
82	Chemical	Soil	Carbonate Content	BS 1377 : P 3
83	Mechanical and physical	Soil	Determination of in-situ density by sand replacement method (large and small pouring cylinder)	BS 1377 Part 9
84	Mechanical and physical	Soil	Determination of dry density-moisture content relationship using 4.5 kg rammer for coarse and medium gravel size particles	BS 1377 Part 4
85	Mechanical and physical	Soil	Determination of particle size distribution	BS 1377 Part 2
86	Mechanical and physical	Soil	Determination of California Bearing Ratio (CBR)	BS 1377 Part 4
87	Mechanical and physical	Soil	Method for determining point load strength	International Society for Rock Mechanics (ISRM), Suggested Method,
88	Mechanical and physical	Soil	Determination of the liquid limit	BS 1377 Part 2
89	Mechanical and physical	Soil	Determination of the plastic limit and plasticity index	BS 1377 Part 2
90	Mechanical and physical	Soil	Field determination of water (moisture) content of soil by the calcium carbide gas pressure tester method	ASTM D 4944
91	Mechanical and physical	Soil	Bearing capacity of soil for static load and spread footings	ASTM D 1196
92	Mechanical and physical	Soil	Nuclear density and moisture content test	BS 1377 Part 9
93	Mechanical and physical	Soil	Determination of the liquid limit by cone penetrometer method	BS 1377 Part 2
94	Mechanical and physical	Soil	Density of Soils and Soil-aggregate in Place by Nuclear Methods(Shallow Depth)	ASTM D 2922
95	Mechanical and physical	Soil	Water Content of Soil and Rock in Place by Nuclear Methods(Shallow Depth)	ASTM D 3017

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96	Chemical	Steel	Hot dip Galvanized Coating on Steel articles – Specifications & test method	BS EN ISO 1461
97	Chemical	Steel	Chemical analysis of steel (Carbon, Sulphur, Phosphorus, Nitrogen, & Carbon Equivalent)	Optical emission Method ASTM 415
98	Chemical	Steel wire	Mass of Zinc Coating of Steel wire	BS 443
99	Chemical	Thermal Plastic Road Marking Material	Grading of Glass Beads	BS 6088
99	Chemical	Thermal Plastic Road Marking Material	Softening Point of T. P. R.M.M	BS 2000 : P 58
100	Chemical	Thermal Plastic Road Marking Material	Luminance Factor of T. P. R.M.M	BS 3262 : P 1
101	Chemical	Thermal Plastic Road Marking Material	Flow Resistance of T. P. R.M.M	BS 3262 : P 1
102	Chemical	Thermal Plastic Road Marking Material	Skid Resistance of T. P. R.M.M	BS 3262 : P 1
103	Chemical	Thermal Plastic Road Marking Material	Grading of T. P. R.M.M	BS 3262 : P 1
104	Chemical	Thermal Plastic Road Marking Material	Relative Density of T. P. R.M.M	BS 3262 : P 3
105	Chemical	Vitreous enamel finishes	Resistance to alkali	BS 1344: Part 6
106	Chemical	Vitreous enamel finishes	Resistance to citric acid at room temperature	BS 1344: Part 2
107	Chemical	Water	Total Dissolved Solids of Water	BS 1377 : P 3
108	Chemical	Water	Chloride Content of Ground Water	BS 1377 : P 3
109	Chemical	Water	Sulphate Content of Ground Water	BS 1377 : P 3

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110	Chemical	Water	pH of Ground Water	BS 1377 : P 3
111	Chemical	Water	pH of Water	ASTM D1293
112	Chemical	Water	Chloride Ion in Water	ASTM D512
113	Chemical	Water	Sulphate Ion in Water	ASTM D516

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ANNEX 2

List of Test Methods for Geotechnical Investigation Available for Accreditation but not Limited to. (Mandatory for the laboratories operating within Dubai)

S.NO	Type of Task	Materials/Products	Task Name	Standard method
114	Physical/Mechanical	Site Work:	Standard Penetration Test Soil Sampling Ground Water Level Measurement 2.1.1.4 Ground Water Sampling	BS 1377 part 9, section 3.3 BS 1377 part 9 (R 2003), section 3.3 BS 5930 Clause 22 BS 5930 Clause 23.2 & 27.5 & 47.2.7 BS 5930 Clause 23.3
115	Chemical	Soils	Acid soluble sulphate content of soil Water soluble sulphate content of soil Acid soluble chloride content of soil Water soluble chloride content of soil 2.1.2.5 pH of soil 2.1.2.6 pH of ground water 2.1.2.7 Sulphate content of ground water 2.1.2.8 Chloride content of ground water	BS 1377 Part 3: BS 1377 Part 3: Clause 5 Clause 5 Clause 7 Clause 7 Clause 9 Clause 9 Clause 5 Clause 7
116	Physical/Mechanical	Soils	2.1.3.1 Particle Size Distribution	BS 1377 Part 2: Clause 9.2 BS 1377 Part 2:
117		Rock & Soils	Unconfined Compression Test Rock Quality Designation 2.1.4.3 Core Recovery	ASTM D 2938-95 & D 4543-01 ASTM D 2938-95 & D 4543 BS 5930 Clause 44.4.4



S.NO	Type of Task	Materials/Products	Task Name	Standard method
118		Soil	Soil Description	BS 5930 Clause 41 and 44, and Clark and Walker
119		Reporting	Reporting	BS 5930 Section 7