مركز الإمارات العالمي للاعتماد

Emirates International Accreditation Centre

متطلبات اعتماد مختبرات مواد البناء والفحص الجيولوجي الفني

Accreditation Requirements for Construction Materials & Geo-Technical Investigation Testing Laboratories

EIAC-RQ-LB-002

Signatories	
Approved:	Director, Laboratories Accreditation Department

Revision history			
Issue no.	**Rev. No.**	**Details**	**Date**
1	0	First Issue for use under EIAC Name	20-06-2019
1	1	Modify the names of International/ Internal documents used by EIAC (Clause no. 9: References)	16-04-2020
1	2	Totally modified to comply with ISO/ IEC 17025:2017	10-04-2023
1	3	Revised due to the incorporation of the new identity of the Dubai Government	23-07-2024

Contents

1 Foreword

This document describes the requirements for accreditation of construction materials and geotechnical investigation testing laboratories under the accreditation program operated by Emirates International Accreditation Center (EIAC).

Accreditation is granted to Test methodology as it is depending on the measurand as standard indicates.

The requirements for accreditation of construction materials and geotechnical investigation testing laboratories are basically the ISO/IEC 17025 Applicable Current Version including relevant EIAC Requirements available at www.eiac.gov.ae and as well as the criteria for performing testing according to the technical standards defined in the scope of accreditation by each Laboratory.

The laboratories are required to comply with all the requirements listed in the international standard ISO/IEC 17025 “General requirements for the competence of testing and calibration laboratories”. The Specific Criteria document EIAC-RQ-LB-002 shall be used in conjunction with ISO/IEC 17025. Further, the laboratory shall follow the national and local laws and regulations as applicable.

This document should be read in conjunction with the International Standard ISO/IEC 17025 - Particular requirements for quality and competence, and EIAC document EIAC-RQ-GNL-001, EIAC-RQ-GNL-002 Accreditation Requirements.

While accreditation will normally be an indication of the quality of services offered by the Laboratories, it should not be regarded as a guarantee that the Laboratory will always maintain a particular level of performance. It shall not, in any way, diminish the contractual obligation between the Laboratory and its users.

This document is subject to revision periodically when deemed necessary. It is the responsibility of the Accredited Laboratories to ensure that the latest version of this document is available for reference and implementation.

2 Objective

This document outlines the accreditation requirements of construction materials and geotechnical investigation testing laboratories as a third-party recognition of their competence against the requirements of ISO/IEC 17025.

3 Definitions and Terminology

The following definitions and terminology shall apply in addition to those defined in ISO/IEC 17025 and ISO/IEC 17011:

3.1 **Construction Material Testing Laboratory** - a laboratory engaged in sampling and/ or testing activities of construction related materials and products such as, but not limited to, cement, admixtures, concrete, aggregates, asphalt and soils for engineering purposes.

3.2 **Geotechnical Investigation Laboratory** - a laboratory engaged in site investigation activities covering subsurface exploration through trial pitting and/or forming of exploratory boreholes, acquisition of soil samples (disturbed and/or undisturbed), in-situ and laboratory geotechnical testing.

3.3 **Permanent Laboratory** – A legally identifiable testing laboratory erected on a fixed location, which usually serves multiple customers over many years.

3.4 **Site Laboratory** – A temporary or mobile testing laboratory set up in a dedicated area on a site away from the Permanent Laboratory e.g. a construction project, for the fixed duration of a specific contract.

3.5 **Site Sampling/ Testing** – Sampling and/or testing performed by staff sent out from a permanent laboratory or site laboratory location outside the premises or grounds of the permanent laboratory. Examples of this are sampling, soil density tests, concrete slump tests, forming bore holes, SPT tests etc.

3.6 **Proficiency Testing (PT)** - determination of the testing performance of a laboratory against pre-established criteria by means of interlaboratory comparison. For the purposes of this document, the term proficiency testing means continuous schemes – where laboratories are required to participate at regular intervals on a continuous basis. Participation in PT programmes bring significant benefits to a laboratory such as, but not limited to, the following:

- Demonstration of a laboratory's relative performance with that of other participating (peer) laboratories;
- Evidence of a facility's on-going performance;
- Improvement in the performance of tests following investigation and identification of the cause(s) of unsatisfactory PT performance to prevent re-occurrence;

- Contribution to a facility's overall risk management process;
- Evidence of personnel competence monitoring;
- Evaluation of methods, including the establishment of method precision and accuracy;
- Contributing to estimation of measurement uncertainty;
- Provide a mechanism for construction materials and geotechnical investigation testing laboratories a laboratory to demonstrate its competence to both its customers, regulators and EIAC.

3.7 **Interlaboratory Comparison (ILC)** - is the organisation, performance and evaluation of tests on the same or similar items by two or more laboratories in accordance with predetermined conditions. Whilst not necessarily subject to the type of statistical analysis that would apply for formal PT programmes, the results are still typically compared so that a determination can be made, as to whether the test results are satisfactory, within a defined confidence interval.

4 Accreditation Requirements for Laboratories

4.1 General Requirements

The granting, maintenance or renewal of EIAC accreditation is conditional upon:

- Laboratories meeting all the requirements of the ISO/IEC 17025 standard on an ongoing basis;
- Laboratories meeting all the requirements of EIAC regulations on an ongoing basis;
- Being and remaining a legally identifiable entity whilst accredited;
- Laboratories operating within the Emirate of Dubai complying with Law # 2/2010.

4.2 Safety

- Laboratories operating within Dubai shall follow the safety requirements in accordance with the procedures as per Dubai Municipality regulations. An in house procedure in line with Dubai Municipality regulations shall be prepared and submitted to EIAC 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 EIAC for review and approval.
- EIAC does not define mandatory safety measures but does draw attention to any unsafe practices that may be observed in the course of an assessment. When clauses related to safety are written into test methods covered by the accreditation these must be observed.

5 Specific Requirements for Geotechnical Investigation Testing Laboratories

5.1 Structural Requirements

- The main text of this clause is the text of the same clause 5.0 of ISO/IEC 17025:2017 is applicable.
- Geotechnical investigation testing Laboratory working within Emirate of Dubai shall aquire No Objection Certificates
- (NOC) prior to commencing drilling, regardless of whether obtained by the laboratory or by its customer.
- Laboratory shall prepare work programme for its activities with a frequency suitable to its nature of work.
- Laboratories outside Dubai shall comply with local regulatory requirements.

5.2 Resource Requirements

5.2.1 Personnel

- The main text of this clause is the text of the same clause 6.2 of ISO/IEC 17025:2017
- Personnel involved in carrying out a geotechnical investigation Shall have suitable qualifications, skills and specialist experience in geotechnical investigations. They Shall also be familiar with the purposes of the particular investigation and be suitably skilled and experienced in the specific methods of investigation covered by EIAC accreditation.
- The following sector specific requirements apply to personnel involved in carrying out a geotechnical investigation:
- **Professional Staff Overseeing Geotechnical Exploration** - Shall be suitably qualified and competent in geotechnical investigation. Acceptable qualifications and experience cover engineering geologist, geotechnical engineer, geologist or civil engineer based on the requirements of. Professional staff are responsible for planning, direction, execution, and supervision of ground investigation and final reporting and Shall be suitably experienced in these areas as appropriate;
- **Field Technicians** - Shall be suitably qualified and experienced in their specific areas of activity such as sampling and testing in boreholes, probing, geophysical data acquisition, field tests and instrument installations.
- **Lead Driller and Driller** - There Shall be a lead driller in charge of each individual drilling rig, who Shall be skilled in the practice of exploration of the ground by means of forming boreholes, sampling and in-situ testing, in making groundwater observations in boreholes, and properly recording the information obtained e.g. measured records of strata with simple soil and rock descriptions. Drillers and other operators who are assisting the lead driller shall be skilled and experienced in the safe use of rigs and plant as appropriate. The supervision of the geotechnical work in the field Shall be either the full-time or the part-time responsibility (depending on the size of the investigation) of a suitably qualified and experienced member of professional staff. Geotechnical investigation laboratories Shall describe procedures for and frequency of field supervision within their procedures. Assessment of drillers for the purpose of EIAC accreditation will be 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.

- Laboratory management shall authorize staff for relevant areas.
- EIAC assessment team will assess such authorizations and evaluate the competence of authorized staff through their assessments.
- Any changes to authorized signatories and key staff shall be communicated to EIAC as per Table 1

5.2.2 Equipment

- The main text of this clause is the text of the same clause 6.4 of ISO/IEC 17025:2017.
- Laboratory shall comply with Calibration Intervals are defined under Table 2 where applicable.

5.2.2.1 The following requirements apply to equipment used in geotechnical investigation:

- All drilling rigs need to be uniquely and clearly identifiable;
- the geotechnical investigation laboratory shall have a suitable yard space for storage of its rigs;
- Regular checks on equipment suitability, commensurate with usage, Shall be undertaken and any substandard equipment removed from use.

5.2.2.2 The following Shall be considered when calibrating standard penetration test (SPT) assemblies:

- Internal/ in-house calibration performed by the laboratory is acceptable provided that:
  a) Calibration is conducted in accordance with documented calibration procedures approved by the laboratory management;
  b) Reference standards used are traceable to national or international standards through a valid calibration certificate;
  c) Personnel enacting the calibration procedure are qualified to conduct that calibration.

5.3 Process Requirements

The main text of this clause is the text of the same clause 7.0 of ISO/IEC 17025:2017

5.3.1 Sampling

The main text of this clause is the text of the same clause 7.3 of ISO/IEC 17025:2017

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

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

5.3.1.2 It is the responsibility of the client in consultation with the laboratory to determine the depth of investigation and this shall form part of the pre-investigation contract review. Records of instructions shall be retained.

5.3.1.3 Samples shall be stored so that they are protected from damage, deterioration, loss of water, and to maintain quality as required by the test methods used on that sample. Where necessary samples shall be stored at an appropriate temperature and a record of storage temperatures shall be maintained. Plastic bags will be acceptable as sample containers as long as they do not lead to loss sample integrity or moisture content.

5.3.1.4 Where moisture content of samples taken above the water table are required water (pressure) techniques must not be used to eject the sample from the core barrel.

5.3.1.5 All borehole datum elevation in the Emirate of Dubai must be quoted as relative to Dubai Municipality Datum (DMD)

5.3.1.6 Using the same ID Number for head contractor and subcontractor for sample identification is not permissible. All samples shall be clearly and unambiguously labelled and have a unique number, which might be a combination of the ground investigation identification, borehole number, sample number and/or depth or other system deemed acceptable to EIAC.

5.3.1.7 The geotechnical investigation laboratory shall have a suitable storage place for samples that ensures sample integrity and traceability is maintained. Storage areas shall 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. Sample retention periods shall be agreed upon with client at contract review stage.

5.3.1.8 Laboratories working withing Emirate of Dubai shall comply with the standards as defined under mandatory scope for Geotechnical Investigation.

5.4 Management System Requirements

The main text of this clause is the text of the same clause 8.0 of ISO/IEC 17025:2017

5.4.1 Control of Management System Documents

The main text of this clause is the text of the same clause 8.3 of ISO/IEC 17025:2017

5.4.1.1 Drillers logs Shall be considered as controlled documents and form part or the technical records system. The lead driller must sign each log and the overseeing member of the professional staff must countersign the driller's log whenever he makes visits to the site.

6 Specific Requirements for Construction Materials and Geotechnical Testing Laboratories

6.1 Resource Requirements

The main text of this clause is the text of the same clause 6.0 of ISO/IEC 17025:2017

6.1.1 The following requirements are for personnel working within construction materials testing and geotechnical testing laboratory facilities (Point 4 defines expected requirements for those involved directly with the geotechnical investigation):

- **Laboratory Managers -** Degree or Advanced Diploma in Civil Engineering, Materials Science, Engineering Geology or similar relevant qualification with not less than 5 years full time experience in the relevant field.
- **Construction Materials Testing Supervisory Personnel** – Shall Demonstrate the necessary knowledge of the laboratory's operations and authority over sampling and testing activities – this may be within a laboratory and/ or on site as appropriate. Supervisory personnel to hold a Degree or Diploma in Civil Engineering, Engineering Geology or similar relevant qualification with not less than 3 years full time experience in in the relevant field of construction materials testing or geotechnical testing.
- **Construction Materials and Geotechnical Laboratory Testing Staff** - Shall have appropriate qualification relevant to the relevant field. Technicians to demonstrate the necessary knowledge of the laboratory's testing and sampling procedures defined in their competence approvals and ideally hold a relevant qualification preferably in the field of Civil Technology. Demonstrable experience, competence and/ or relevant professional training will also be acceptable in lieu formal tertiary qualification.
- **Chemists** - Degree or Diploma in a chemistry and demonstrate the necessary knowledge of the laboratory's chemistry testing procedures as defined in their competence approvals. Relevant professional training may also be acceptable to EIAC in lieu formal tertiary chemistry qualification.

7 References

- Regulation No. 2/ 2010 regarding arranging the operation of conformity assessment bodies operating in the Emirates of Dubai.
- ISO/ IEC 17025 General requirement for the competence of testing and calibration laboratories.
- ISO/IEC 17043, Conformity assessment – General requirements for proficiency testing.
- ILAC-G17 ILAC Guidelines for Measurement Uncertainty in Testing
- ILAC-P9 ILAC Policy for Participation in Proficiency Testing Activities
- ILAC-P10 ILAC Policy on Metrological Traceability of Measurement Results
- EIAC-RQ-GEN-001 “General Accreditation Requirements”.
- EIAC-RQ-GEN-002 “The Conditions for the Use of EIAC Accreditation Symbol and ILAC MRA/ IAF MLA Marks”.
- EIAC-RQ-GEN-003 “Emirates International Accreditation Centre Fees Structure”.
- EIAC-RQ-LB-011 Measurement Uncertainty in Testing, Calibration
- EIAC-RQ-LB-012 Metrological Traceability of Measurement Results

8 Annex A

Construction Materials Tests Available for Accreditation

S. No.	Type of Test	Material/ Product	Test Name	Standard Method
1	Physical/Mechnical/Chemical	Various	Various	National/International /In-house/Customer defined methods.

9 Annex B

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
1	Physical/Mechanical/Chemical	Site Work/Laboratory	Site Work/Laboratory	As defined under Law 2/2010 published at EIAC website. www.eiac.gov.ae

10 Annex C

Guidelines on Contractual Obligations between External Calibration Laboratory and Laboratory

- Laboratory shall ensure that Calibration Laboratory is accredited in Accordance with ISO 17025 by ILAC MRA
- Laboratory shall ensure that scope of service which laboratory is seeking calibration shall be accredited
- Laboratory shall ensure that working ranges of the instrument under calibration shall be accredited
- Laboratory shall ensure the CMC (Calibration and Measurement Capability) of the service provider is taken into account while selecting the calibration laboratory as service provider to match laboratory technical requirements.
- Laboratory shall ensure that tolerance limits of instruments being used in laboratory shall be less than or equal to the Measurement Uncertainty reported by Calibration laboratory.
- Calibration certificates upon receipt shall be verified and reviewed by authorized signatory to ensure all the above criteria are fulfilled
- Laboratory has right to visit Calibration laboratory and witness the calibration activity of the instrument.

11 Annex D

Service Providers

- Mandatory to select the calibration laboratory accredited in accordance with ISO 17025 by ILAC MRA for instruments/equipment listed under table 2.
- Recommended that laboratory shall select the proficiency-testing agency accredited in accordance with ISO 17043 by ILAC MRA, where possible.
- Recommended to select the Waste management agency for all types of waste to dispose off safely, shall be licensed by local legal authority to dispose off, Biomedical, Liquid, Solid and Toxic Waste.
- Laboratory shall regularly monitor the Accreditation/Certification status of Vendor where applicable

Supplies Providers

- Recommended that Reagents, Calibrators, Controls, Media, Certified Reference Material, Certified Reference Standards shall be procured by Agencies accredited in accordance with Guide 34 by ILAC MRA
- Analytical Instruments, Equipments, all Quality Critical items, consumable supplies that affect the quality of its service shall be procured preferably by ISO 9001 certified agencies.
- Laboratory shall regularly monitor the Accreditation/Certification status of Vendor where possible.

12 Annex E

Contractual Agreement between Client and Laboratory

As a minimum and not limited to the following conditions shall be met when the laboratory enters into an agreement to provide laboratory services to Clients. A Request form can be treated as agreement, provided below terms and conditions are defined documented and agreed with the Client.

a) The requirements of the Client and the provider of the laboratory services including the test methods and procedures to be used shall be defined documented and understood
b) The laboratory shall have the capability and resources to meet the both regulatory and client requirements
c) Laboratory personnel shall have the skills and expertise necessary for the performance of the intended tests/investigations.
d) Test procedures selected shall be appropriate and able to meet the client needs
e) Clients shall be informed of deviations from the agreement that impact upon the test results.
f) Reference shall be made to any work out-sourced by the laboratory to the external service proivder.
g) Laboratory shall provide the information on sample retention periods & records retention periods including turn around time of test results.
h) Laboratory shall provide the information related to Measurement of Uncertainty where applicable.

i) Laboratory shall disclaim, should the results fall within Measurement Uncertainty, that compliance statement couldn't be provided by laboratory, as part of Decision rule, unless requested by client.

j) Opinions and Interpretation services shall be clearly defined and documented and agreed upon with Client.

Both Client and Laboratory In-charge/Technical Manager/Laboratory Director/Laboratory Supervisor shall sign the agreement. This agreement may be signed once during Client registration or when required, long term client agreements can be reviewed annually.

Table 1 Key Changes information to EIAC

S. No	Type of Information	Reporting Interval	Mode of intimation to EIAC
1	Laboratory Director	Immediate	E mail
2	Authorized Signatory	Immediate	Email
3	Quality Manager	Immediate	E mail
4	Technical Manager	Immediate	E mail
5	Major Analytical Instruments/Equipment	Prior to commissioning or usage	E mail
6	Location of Lab	30 working days Prior to operation in new facility	E mail
7	Test Method Changes	Immediate	E mail
8	Laboratory Contacts Phone Email etc	Immediate	E mail
9	Laboratory Name Change	Immediate	E mail

Table 2 Calibration Interval for Instruments / Equipment

Equipment	Calibration Interval	Requirements

Glassware, Pipettes & Dispensers	Once in a year At usage range	In-house calibration method where applicable & Recommended to calibrate by ISO 17025 Accredited Calibration Laboratory by ILAC MRA
Data Loggers Thermometers Wireless Thermometer Infrared Thermometer Thermo Hygrometers (Humidity gauges)	Once in Year At Working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA
Laboratory Refrigerators & Freezers	Once during commissioning and when Repaired, & Shifted At Working Ranges	9/5 Point Temperature Profile check By ISO 17025 Accredited Calibration Laboratory by ILAC MRA External data loggers/Maximum-Minimum temperature devices shall be used to continuously control, monitor and record temperature & are calibrated once in year.
Incubators Water Baths Ovens & Muffle Furnances	Once in Year At Working Ranges	9/5/1 Point Temperature Profile check By ISO 17025 Accredited Calibration Laboratory by ILAC MRA External data loggers/Maximum-Minimum temperature devices shall be used to continuously control, monitor and record temperature & are calibrated once in year.
Balances/ Weighing Scales	Once in Year At working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA Intermediate checks daily or prior to use with clean stainless mass within the working range can be used.
Autoclaves- Temperature, Pressure & Time	Once in Year At working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA Pressure, Temperature & Time shall be calibrated
Biological Safety Cabinets	Once in Year	Including Sterility check at least once in a week Internally & Recommended ISO 17020 accredited Inspection body by ILAC MRA
Timers, Stop Watchs Thermo Hygro Clocks	Once in Year At working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA
Force Measuring Devices	Once in Year At Working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA
Dimensional/Length Measuring Devices Manual & Digital	Once in Year At working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA
Curing Tanks	Once in Year	In-house profile checks by using ISO 17025 accredited calibrated thermocouples.
	Once in Year At working Ranges	By ISO 17025 Accredited Calibration Laboratory by ILAC MRA