

### Laboratory Certification For

### Afghan Renewal Geotechnical Laboratory (ARGL)

Lab ID: LCP-002

Issue date: August 30, 2016

Expiry date: March 1, 2017

This letter confirms the completion of inspection and certification for Afghan Renewal Geotechnical Laboratory, which is located at Opposite Bakhtar Wedding Hall, Khoshal Khan Mena, Kabul, Afghanistan. This laboratory should now be considered as certified for use by the US Army Corps of Engineers Transatlantic Afghanistan District (USACE TAA) and other clients, for all tests listed in Table 1 to Table 5, as attached to this letter. This certification will be included with records that are maintained at the ABA and USACE TAA Headquarters in Bagram Airbase, Afghanistan. Retaining the certification will require yearly inspections by the ABA. This certification is also contingent upon the following conditions:

- A. Continued employment of the following individuals while without their oversight, the laboratory will require recertification:
  1. Eng. Mohammad Ishaq laboratory manager; and
  2. Other Senior Technicians who were inspected and certified during the inspection, a list of certified technicians can be provided upon request;
- B. If the calibration certificates of equipments expire or become invalid as per the relevant ASTM or AASHTO standard;
- C. If the laboratory is moved to a new location, it will require recertification; and
- D. If the laboratory fails to comply by the approved lab quality management plan, safety standards, and other criteria set forth in the most up-to-date ABA lab certification manual, the lab certification may be suspended.

For verification and good standing of this certification please check our online directory of laboratories at <http://aba.af/Lab-certification-program>. The inspection and certification process for the ARGL adhered to procedures outlined by the Materials Testing Center (MTC), which is located at the Geotechnical and Structures Laboratory (GSL), U.S. Army Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi, USA. The MTC is the USACE-authorized agency for certifying laboratories for use in quality control testing for USACE construction projects. To facilitate construction in Afghanistan, the USACE TAA has authorized the ABA to conduct laboratory certifications with strict adherence to MTC protocol. Qualifications of the authors for conducting these certifications include: 12 years of laboratory experience, 12 years of teaching classes on construction materials, and six years of teaching university-level construction classes.

Regards,

Naeem Yassin

President of Afghanistan Builders Association  
(ABA)



### Afghan Renewal Geotechnical Laboratory Tests

Table 1. List of Certified Soil Tests for ARG L

No	Test Method	Test Procedure Title
1	ASTM D 421	Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
2	ASTM D 422	Standard Test Method for Particle-Size Analysis of Soils
3	ASTM D 427	Shrinkage Factors of Soils by the Mercury Method
4	ASTM D 558	Moisture-Density Relations of Soil-Cement Mixtures
5	ASTM D 653	Terminology Relating to Soil, Rock, and Contained Fluids
6	ASTM D 698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
7	ASTM D 854	Standard Test Methods for Specific Gravity of solids by Water Pycnometer
8	ASTM D 1140	Standard Test Method for Amount of Material in Soils Finer than the No.200 (75-um) Sieve.
9	ASTM D 1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand cone Method
10	ASTM D 1557	Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort
11	ASTM D 1883	Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils
12	ASTM D 2166	Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
13	ASTM D 2216	Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
14	ASTM D 2487	Standard Practice for Classification of Soil for Engineering Purposes (Unified Soil Classification System)
15	ASTM D 2488	Standard Practice for Description and Identification of soils (Visual-Manual Procedure)
16	ASTM D 3017	Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
17	ASTM D 3282	Standard Practice for Classification of Soil and Soil-Aggregate Mixtures for Highway Construction Purpose
18	ASTM D 4220	Standard Practice for Preserving and Transporting Soil Samples
19	ASTM D 4318	Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
20	ASTM D 4643	Determination of Water (Moisture) Content of Soil by the Microwave Oven Heating

No	Test Method	Test Procedure Title
21	ASTM D 4718	Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
22	ASTM D 4959	Standard Test Method for Determination of Water (Moisture) Content of soil by Direct Heating
23	ASTM D 6026	Practice for Using Significant Digits in Geotechnical Data
24	ASTM D 6913	Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
25	ASTM D 6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) (Use instead of ASTM D 2922)
26	ASTM D 6951	Standard Test Method for Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications
27	ASTM D 7380	Standard Test Method for Soil Compaction Determination at Shallow Depths Using 5-lb (2.3 kg) Dynamic Cone Penetrometer
28	ASTM E 0011	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
29	ASTM D 1195	Standard Test Method for Repetitive Static Plate Load Tests of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
30	ASTM D 1196	Standard Test Method for Nonrepetitive Static Plate Load Test of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
31	ASTM D 1452	Practice for Soil Exploration and Sampling by Auger Borings
32	ASTM D 1586	Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils
33	ASTM D 1587	Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
34	ASTM D 2113	Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation
35	ASTM D 2435	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
36	ASTM D 3080	Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions
37	ASTM D 4829	Standard Test Method for Expansion Index of Soils
38	ASTM D 4944	Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester
39	ASTM D 5333	Standard Test Method for Measurement of Collapse Potential of Soils
40	ASTM D 5434	Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock
41	ASTM D 6032	Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core
42	AASHTO T89	Standard Test Method for Determining the Liquid Limit of Soils

No	Test Method	Test Procedure Title
43	AASHTO T90	Standard Test Method for Determining the Plastic Limit and Plasticity Index of Soils
44	AASHTO T 92	Standard Test Method of Determining the Shrinkage Factor of Soils
45	AASHTO T 93	Standard Specification for Determining the Field Moisture Equivalent of Soils
46	AASHTO T 224	Standard Test Method for Correction for Coarse Particles in the Soil Compaction Test
47	CRD-C 654	Standard Test Method for Determining the California Bearing Ratio of Soils

**Table 2. List of Certified Aggregate (Fine and Course) Tests for ARGL**

No	Test Method	Test Procedure Title
1	ASTM C 29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
2	ASTM C 40	Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
3	ASTM C 70	Standard Test Method for Surface Moisture in Fine Aggregate
4	ASTM C 88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
5	ASTM C 117	Standard Test Method for Materials Finer than 75 um (No. 200) Sieve in Mineral Aggregates by Washing
6	ASTM C 127	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
7	ASTM C 128	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
8	ASTM C 131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
9	ASTM C 136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
10	ASTM C 142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
11	ASTM C 144	Standard Specification for Aggregate for Masonry Mortar
12	ASTM C 404	Standard Specification for Aggregates for Masonry Grout
13	ASTM C 535	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
14	ASTM C 566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
15	ASTM C 702	Standard Practice for Reducing Samples of Aggregate to Testing Size
16	ASTM C 897	Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters



No	Test Method	Test Procedure Title
17	ASTM C 1252	Standard Test Methods for Uncompacted Void Content of Fine Aggregate (as Influenced by Particle Shape, Surface Texture, and Grading)
18	ASTM D 75	Standard Practice for Sampling Aggregates
19	ASTM D 1241	Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses
20	ASTM D 2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
21	ASTM D 4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
22	ASTM D 4944	Standard Test Method for Field Determination of Water (Moisture) Content of Soil by the Calcium Carbide Gas Pressure Tester
23	ASTM D 5079	Standard Practices for Preserving and Transporting Rock Core Samples
24	ASTM D 5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
25	BS 812 Section 105.1	Testing Aggregates – Part 105: Methods for determination of particle shape Section 105.1 Flakiness index
26	BS 812 Section 105.2	Testing Aggregate – Part 105: Methods for determination of particle shape Section 105.2 Elongation Index
27	BS 812	Aggregate Impact Value
28	BS 812	Aggregate Crushing Value
29	CRD-C 104-80	Method of Calculation of the Fineness Modulus of Aggregate
30	CRD-C 171	Standard Test Method for Determining Percentage of Crushed Particles in Aggregate

**Table 3. List of Certified Cement, Grout, Mortar and Concrete Tests for ARG L**

No	Test Method	Test Procedure Title
1	AASHTO T 132	Standard Method of Test for Tensile Strength of Hydraulic Cement Mortars
2	ASTM C 31	Standard Practice for Making and Curing Test Specimens in the Field
3	ASTM C 39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
4	ASTM C 42	Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
5	ASTM C 78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
6	ASTM C 94	Standard Specification for Ready-Mixed Concrete (Required for Batch Plants)

No	Test Method	Test Procedure Title
7	ASTM C 109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)
8	ASTM C 138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
9	ASTM C 143	Standard Test Method for Slump of Hydraulic-Cement Concrete
10	ASTM C 150	Specification for Portland Cement
11	ASTM C 172	Standard Practice for Sampling Freshly Mixed Concrete
12	ASTM C 174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
13	ASTM C 185	Standard Test Method for Air Content of Hydraulic Cement Mortar
14	ASTM C 187	Standard Test Method for Amount of Water Required for Normal Consistency of Hydraulic Cement Paste
15	ASTM C 188	Standard Test Method for Density of Hydraulic Cement
16	ASTM C 191	Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle
17	ASTM C 192	Standard Practice for Making and Curing Test Specimens in the Laboratory
18	ASTM C 231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method (Type B)
19	ASTM C 270	Standard Specification for Mortar for Unit Masonry
20	ASTM C 430	Standard Test Method for Fineness of Hydraulic Cement by the 45-um (No. 325) Sieve
21	ASTM C 470	Standard Specification for Molds for Forming Concrete Test Cylinders Vertically
22	ASTM C 511	Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
23	ASTM C 617	Standard Practice for Capping Cylindrical Concrete Specimens
24	ASTM C 642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
25	ASTM C 805	Standard Test Method for Rebound Number of Hardened Concrete
26	ASTM C 926	Standard Specification for Application of Portland Cement-Based Plaster
27	ASTM C 1019	Standard Test Method for Sampling and Testing Grout
28	ASTM C 1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
29	ASTM C 1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

No	Test Method	Test Procedure Title
30	ASTM C 1180	Standard Terminology of Mortar and Grout for Unit Masonry
31	ASTM C 1314	Test Method for Compressive Strength of Masonry Prisms
32	ASTM C 1231	Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders
33	ASTM C 1437	Standard Test Method for Flow of Hydraulic Cement Mortar
34	ASTM C 1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete

**Table 4. List of Certified Asphalt Cement and Asphalt Concrete Tests for ARGL**

No	Test Method	Test Procedure Title
1	AASHTO T 182	Standard Method Test for Coating and Stripping of Bitumen-Aggregate Mixtures
2	AASHTO T 230	Standard Method of Test for Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures
3	ASTM D 5	Standard Test Method for Penetration of Bituminous Materials
4	ASTM D 36	Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
5	ASTM D 70	Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)
6	ASTM D 88	Standard Test Method for Saybolt Viscosity
7	ASTM D 92	Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
8	ASTM D 113	Standard Test Method for Ductility of Bituminous Materials
9	ASTM D 140	Standard Practice for Sampling Bituminous Materials
10	ASTM D 242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
11	ASTM D 546	Standard Test Method for Sieve Analysis of Mineral Filler for Bituminous Paving Mixtures
12	ASTM D 979	Standard Practice for Sampling Bituminous Paving Mixtures
13	ASTM D 2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Pavement Mixtures
14	ASTM D 2172	Standard Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
15	ASTM D 2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
16	ASTM D 2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
17	ASTM D 3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures

No	Test Method	Test Procedure Title
18	ASTM D 3549	Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens
19	ASTM D 3665	Standard Practice for Random Sampling of Construction Materials
20	ASTM D 3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
21	ASTM D 5361	Standard Practice for Sampling Compacted Bituminous Mixtures for Laboratory Testing
22	ASTM D 5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
23	ASTM D 6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
24	ASTM D 6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
25	CRD-C 649	Standard Test Method for Unit Weight, Marshall Stability, and Flow of Bituminous Mixtures
26	CRD-C 650	Standard Method for Density and Percent Voids of Compacted Bituminous Paving Mixtures
27	CRD-C 652	Standard Test Method for Measurement of Reduction in Marshall Stability of Bituminous Mixtures Caused by Immersion in Water

**Table 5. List of Certified Brick, Stone, and Concrete Masonry Units Tests for ARGJ**

No	Test Method	Test Procedure Title
1	ASTM C 62	Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale)
2	ASTM C 67	Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
3	ASTM C 90	Standard Specification for Loadbearing Concrete Masonry Units
4	ASTM C 97	Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
5	ASTM C 119	Standard Terminology Relating to Dimension Stone
6	ASTM C 140	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
7	ASTM C 170	Standard Test Method for Compressive Strength of Dimension Stone
8	ASTM C 1093-13	Standard Practice for Accreditation of Testing Agencies for Masonry
9	ASTM C 1232	Terminology of Masonry
10	ASTM C 1552	Practice for Capping Concrete Masonry Units, Related Units, and Masonry Prisms for Compression Testing