

Laboratory Certification For

Afghanite Geo & Mining Engineering Services

Lab ID: LCP-015

Issue date: Aug 23<sup>rd</sup>, 2017

Expiry date: Aug 22<sup>nd</sup>, 2018

This letter confirms the completion of inspection and certification Afghanite Lab, which is located at Opposite of Shane Islam Mosque, Behind of Ariana Wedding Hall, Khushal Khan Mina, District 5, 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 6, 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 below individual while without his oversight, the laboratory will require recertification:
  - a. Eng. Mohammad Mirzaee the laboratory manager;
- B. If the calibration certificates of equipment expire or become invalid as per the relevant 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/lcp\\_directory.php](http://aba.af/lcp_directory.php). The inspection and certification process for the Afghanite 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.

Certified to perform 142 tests, as shown on attached sheets and summarized as:

Table 1:	36
Table 2:	24
Table 3:	22
Table 4:	27
Table 5:	23
Table 6:	10

Regards,

Mowdood Popal  
President of Afghanistan Builders Association



### Afghanite Certified Laboratory Tests

**Table 1. List of Certified Soil Tests**

No	Test Method	Test Procedure Title
1	AASHTO T 093	Standard Specification for Determining the Field Moisture Equivalent of Soils
2	AASHTO T 224	Standard Method of Test for Correction for Coarse Particles in the Soil Compaction Test
3	ASTM D 421	Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
4	ASTM D 422	Standard Test Methods for Particle Size Analysis of Soils
5	ASTM D 427	Standard Test Methods for Shrinkage Factors of Soils by the Mercury Method
6	ASTM D 558	Standard Test Methods for Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
7	ASTM D 559	Standard Test Methods for Wetting and Drying Compacted Soil-Cement Mixtures
8	ASTM D 698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
9	ASTM D 854	Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
10	ASTM D 1140	Standard Test Methods for Amount of Material in Soil Finer than No. 200 (75- $\mu$ m) Sieve
11	ASTM D 1556	Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
12	ASTM D 1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
13	ASTM D 1586	Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils
14	ASTM D 1587	Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
15	ASTM D 1883	Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils
16	ASTM D 2113	Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation
17	ASTM D 2166	Standard Test Method for Unconfined Compressive Strength of Cohesive Soil
18	ASTM D 2216	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
19	ASTM D 2217	Standard Practice for Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
20	ASTM D 2434	Standard Test Method for Permeability of Granular Soils (Constant Head)



No	Test Method	Test Procedure Title
21	ASTM D 2435	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
22	ASTM D 2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
23	ASTM D 2488	Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
24	ASTM D 3080	Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions
25	ASTM D 4220	Standard Practices for Preserving and Transporting Soil Samples
26	ASTM D 4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
27	ASTM D 4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
28	ASTM D 4546	Standard Test Methods for One-Dimensional Swell or Collapse of Soils
29	ASTM D 5434	Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock
30	ASTM D 6169	Standard Guide for Selection of Soil and Rock Sampling Devices Used With Drill Rigs for Environmental Investigations
31	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
32	ASTM D 1196	Standard Test Method for Nonrepetitive Static Plate Load Tests of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
33	ASTM D 3282	Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
34	ASMT D 4718	Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
35	ASTM D 4972	Standard Test Method for pH of Soils
36	ASTM D 5333	Standard Test Method for Measurement of Collapse Potential of Soils

**Table 2. List of Certified Aggregate (Fine and Coarse) Tests**

No	Test Method	Test Procedure Title
1	ASTM C 40	Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
2	ASTM C 117	Standard Test Method for Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
3	ASTM C 127	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate

No	Test Method	Test Procedure Title
4	ASTM C 128	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
5	ASTM C 136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
6	ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
7	ASTM C 70	Standard Test Method for Surface Moisture in Fine Aggregate
8	ASTM C 87	Standard Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
9	ASTM C 88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
10	ASTM C 131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
11	ASTM C 142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
12	ASTM C 535	Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
13	ASTM C 566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
14	ASTM C 702	Standard Practice for Reducing Samples of Aggregate to Testing Size
15	ASTM C 1293	Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction
16	ASTM D 75	Standard Practice for Sampling Aggregates
17	ASTM D 546	Standard Test Method for Sieve Analysis of Mineral Filler
18	ASTM D 2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
19	ASTM D 4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
20	ASTM D 5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
21	CRD-C 104	Fineness Modulus
22	CRD-C 119	Flat and Elongation Particles
23	CRD-C 171	Standard Test Method for Determining Percentage of Crushed Particles in Aggregate
24	BS 812 Section 105.1 and Section 105.2	Testing aggregates — Part 105: Methods for determination of particle shape Section 105.1 Flakiness index and Elongation Index for Coarse Aggregate

**Table 3. List of Certified Concrete Tests**

No	Test Method	Test Procedure Title
1	ASTM C 31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
2	ASTM C 39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
3	ASTM C 143	Standard Test Method for Slump of Hydraulic-Cement Concrete
4	ASTM C 172	Standard Practice for Sampling Freshly Mixed Concrete
5	ASTM C 231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
6	ASTM C 1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
7	ASTM C 42	Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
8	ASTM C 78	Standard Test Method for Flexural Strength of Concrete by Third Point Loading
9	ASTM C 174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
10	ASTM C 192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
11	ASTM C 293	Standard Test Method for Flexural Strength of Concrete using Center Point Loading
12	ASTM C 469	Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
13	ASTM C 470	Standard Specification for Molds for Forming Concrete Test Cylinders Vertically
14	ASTM C 490	Standard Practice for Use of Apparatus for the Determination of Length Change of Hardened Cement Paste, Mortar, and Concrete , cement paste
15	ASTM C 511	Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
16	ASTM C 567	Standard Test Method for Determining Density of Structural Lightweight Concrete
17	ASTM C 617	Standard Practice for Capping Cylindrical Concrete Specimens
18	ASTM C 642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete
19	ASTM C 805	Standard Test Method for Rebound Number of Hardened Concrete
20	ASTM C 823	Standard Practice for Examination and Sampling of Hardened Concrete in Constructions
21	ASTM C 1231	Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens
22	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**

No	Test Method	Test Procedure Title
1	ASTM D 5	Standard Test Method for Penetration of Bituminous Materials
2	ASTM D 36	Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
3	ASTM D 70	Standard Test Method for Specific Gravity and Density of Semi-Solid Bituminous Materials
4	ASTM D 113	Standard Test Method for Ductility of Bituminous Materials
5	ASTM D 140	Standard Practice for Sampling Bituminous Materials
6	ASTM D 242	Standard Specification for Mineral Filler For Bituminous Paving Mixtures
7	ASTM D 1075	Standard Test Method for Effect of Water on Compressive Strength of Compacted Bituminous Mixtures
8	ASTM D 1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
9	ASTM D 1559	Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
10	ASTM D 2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
11	ASTM D 2172	Standard Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
12	ASTM D 2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
13	ASTM D 5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
14	CRD-C 649	Standard Test Method for Unit Weight, Marshall Stability, and Flow of Bituminous Mixtures
15	CRD-C 650	Standard Method for Density and Percent Voids of Compacted Bituminous Paving Mixtures
16	ASTM D 92	Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
17	ASTM D 546	Standard Test Method for Sieve Analysis of Mineral Filler for Bituminous Paving Mixtures
18	ASTM D 979	Standard Practice for Sampling Bituminous Paving Mixtures
19	ASTM D 2489	Standard Test Method for Estimating Degree of Particle Coating of Asphalt Mixtures
20	ASTM D 3549	Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens
21	ASTM D 3665	Standard Practice for Random Sampling of Construction Materials
22	ASTM D 5361	Standard Practice for Sampling Compacted Bituminous Mixtures for Laboratory Testing
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

No	Test Method	Test Procedure Title
25	AASHTO T 182	Standard Method of Test for Coating and Stripping of Bitumen-Aggregate Mixtures
26	AASHTO T 230	Standard Method of Test for Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures
27	AASHTO T 283	Standard Method of Test for Resistance of Compacted Hot Mix Asphalt (HMA) to Moisture-Induced Damage

**Table 5. List of Certified Masonry and Cement Tests**

No	Test Method	Test Procedure Title
1	ASTM C 20	Standard Test Methods for Apparent Porosity, Water Absorption, Apparent Specific Gravity, and Bulk Density of Burned Refractory Brick and Shapes by Boiling Water
2	ASTM C 27	Standard Classification of Fireclay and High-Alumina Refractory Brick
3	ASTM C 90	Standard Specification for Loadbearing Concrete Masonry Units
4	ASTM C 91	Standard Specification for Masonry Cement
5	ASTM C 109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars using Cube Specimens
6	ASTM C 133	Standard Test Methods for Cold Crushing Strength and Modulus of Rupture of Refractories
7	ASTM C 140	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
8	ASTM C 185	Standard Test Method for Air Content of Hydraulic Cement Mortar
9	ASTM C 187	Standard Test Method for Amount of Water Required for Normal Consistency of Hydraulic Cement Paste
10	ASTM C 188	Standard Test Method for Density of Hydraulic Cement
11	ASTM C 191	Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle
12	ASTM C 204	Standard Test Methods for Fineness of Hydraulic Cement by Air-Permeability Apparatus
13	ASTM C 305	Standard Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency
14	ASTM C 451	Standard Test Method for Early Stiffening of Hydraulic Cement (Paste Method)
15	ASTM C 780	Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
16	ASTM C 1019	Standard Test Method for Sampling and Testing Grout
17	ASTM C 1437	Standard Test Method for Flow of Hydraulic Cement Mortar
18	ASTM C 1552	Standard Practice for Capping Concrete Masonry Units, Related Units and Masonry Prisms for Compression Testing
19	ASTM C 67	Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
20	ASTM C 97	Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension
21	ASTM C 99	Standard Test Method for Modulus of Rupture of Dimension Stone

No	Test Method	Test Procedure Title
22	ASTM C 170	Standard Test Method for Compressive Strength of Dimension Stone
23	ASTM C 150	Specification for Portland Cement

**Table 6. List of Certified Rock Tests**

No	Test Method	Test Procedure Title
1	ASTM D 2938	Standard Test Method for Unconfined Compressive Strength of Intact Rock Core Specimens
2	ASTM D 3967	Standard Test Method for Splitting Tensile Strength of Intact Rock Core Specimens (Brazilian) Method
3	ASTM D 4543	Standard Practices for Preparing Rock Core as Cylindrical Test Specimens and Verifying Conformance to Dimensional and Shape Tolerances
4	ASTM D 5313	Standard Test Method for Evaluation of Durability of Rock for Erosion Control Wetting and Drying Conditions
5	ASTM D 5731	Standard Test Method for Determination of the Point Load Strength Index of Rock and Application to Rock Strength Classifications
6	ASTM D 5873	Standard Test Method for Determination of Rock Hardness by Rebound Hammer Method
7	ASTM D 5878	Standard Guides for Using Rock-Mass Classification Systems for Engineering Purposes
8	ASTM D 6032	Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core
9	ASTM D 6473	Standard Test Method for Specific Gravity and Absorption of Rock for Erosion Control
10	ASTM C 295	Standard Guide for Petrographic Examination of Aggregates for Concrete