CERTIFICATE OF ACCREDITATION

This is to attest

FUGRO SUHAIMI MLTD

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DAMMAM, 2165, SAUDI ARABIA

Testing Laboratory TL-1249

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date April 24, 2024

IAS ACCREDITED

International Accreditation Service
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SCOPE OF ACCREDITATION

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FUGRO SUHAIMI MLTD

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Accredited to ISO/IEC 17025:2017 *Effective Date April 24, 2024*

Aggregates	
ASTM C29/C29M	Bulk Density (Unit Weight) and Voids in Aggregate
ASTM C88	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C128	Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C131/C131M	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136/C136M	Sieve Analysis of Fine and Coarse Aggregates
ASTM C142/C142M	Clay Lumps and Friable Particles in Aggregates
ASTM C535	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C702/C702M	Reducing Samples of Aggregates to Testing Size
ASTM D75/D75M	Practice for Sampling Aggregates
ASTM D2419	Sand Equivalent Value of Soils and Fine Aggregate
ASTM D4253	Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4254	Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM D4644	Slake Durability of Shales and Other Similar Weak Rocks
ASTM D4791	Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
BS 812, Part 105.1	Determination of particle shape Flakiness Index
BS 812, Part 105.2	Determination of particle shape Elongation index of coarse aggregate
BS EN 933-7	Shell Content
BS EN 1097	Resistance to Fragmentation
BS EN 1367-2	Soundness Test
BS EN 1367-4	Drying Shrinkage
Bituminous	
AASHTO T195	Estimating Degree of Particle Coating of Asphalt Mixtures
Asphalt Institute MS-2	Marshall Method of Mix Design, Chapter 7
ASTM D5/D5M	Penetration of Bituminous Materials

ASTM D75/D75M	Sampling Aggregates
ASTM D979/D979M	Sampling Bituminous Paving Mixtures
ASTM D2041/D2041M	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2172/D2172M	Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D2489/D2489M	Estimating Degree of Particle Coating of Asphalt Mixtures
ASTM D2726	Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2995	Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3203/D3203M	Percent Air Voids in Compacted Asphalt Mixtures
ASTM D3549/D3549M	Thickness or Height of Compacted Asphalt Mixture Specimens
ASTM D5361/D5361M	Sampling Compacted Bituminous Mixtures for Laboratory Testing
ASTM D5444	Mechanical Size Analysis of Extracted Aggregate
ASTM D6307	Asphalt Content of Hot-Mix Asphalt by Ignition Method
ASTM D6926	Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Marshall Stability and Flow of Bituminous Mixtures
Cement	
ASTM C511	Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes
Concrete	
ACI-211 & 221r	Concrete Mix Design
ACI-301 &301M	Heat Of Hydration Test for Mass Concrete
ASTM C31/C31M	Making and Curing Concrete Test Specimens in the Field
ASTM C39/C39M	Compressive Strength of Cylindrical Concrete Specimens
ASTM C42/C42M	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement
ASTM C138/C138M	Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143/C143M	Slump of Hydraulic-Cement Concrete
ASTM C172/C172M	Sampling Freshly Mixed Concrete
ASTM C231/C231M	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C617/C617M	Capping Cylindrical Concrete Specimens
ASTM C805/C805M	Rebound Number of Hardened Concrete
ASTM C1064/C1064M	Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1231/C1231M	Use of Unbonded Caps in Determination of Compressive Strength of Hardened Cylindrical Concrete Specimens test
ASTM C1260	Potential Alkali Reactivity
ASTM D6132	Dry Film Thickness of Applied Organic Coatings Using Ultrasonic Coating Thickness Gage
ASTM D7012	Standard Test Methods for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

BS EN 12350-1	Method for Sampling Fresh Concrete
BS EN 12350-2	Slump Test
BS EN 12350-6	Density of Fresh Concrete
BS EN 12350-7	Air Content Volumetric
BS EN 12390-2	Making Cubes from Fresh Concrete
BS EN 12390-3	Determination of Compressive Strength of Cube
BS EN 12390-7	Determination Density of Hardened Concrete
Masonry	
ASTM C140	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
ASTM C780 Annex A.6	Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
Soils	
ASTM D698	Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D854	Specific Gravity of Soil Solids by the Water Displacement Method
ASTM D1140	Amount of Material in Soils Finer than No. 200 (75-µm) Sieve in Soils by Washing
ASTM D1143/D1143M	Standard Test Methods for Deep Foundations Under Static Axial Compressive Load
ASTM D1196	Standard Test Method for Nonrepetitive Static Plate Tests of Soils and Flexible Pavement Components for Use in Evaluation and Design of Airport and Highway Pavements
ASTM D1557	Laboratory Compaction Characteristics of Soil Using Modified Effort
ASTM D1586/D1586M	Penetration Test (SPT) and Split-Barrel Sampling of Soils
ASTM D1883	CBR (California Bearing Ratio) of Laboratory-Compacted Soils.
ASTM D2166	Unconfined Compressive Strength of Cohesive Soil.
ASTM D2216	Laboratory Determination of Water (Moisture) Content of Soil and Rock
ASTM D2435/D2435M	ASTM D2435/D2435M
ASTM D2487	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2850	Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils
ASTM D3080/D3080M	Direct Shear Test of Soils Under Consolidated Drained Conditions
ASTM D3689/D3689M	Standard Test Methods for Deep Foundations Under Static Axial Tensile Load
ASTM D3966/D3966M	Standard Test Methods for Deep Foundations Under Lateral Load
ASTM D4318/D4318M	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4428/D4428M	Crosshole Seismic Testing
ASTM D4546	One Dimensional Swell or Collapse of Soils
ASTM D4767	Consolidated Undrained Triaxial Compression Test for Cohesive Soils
ASTM D4943	Linear Shrinkage of Soils
ASTM D5334	Determination of Thermal Conductivity of Soil and Soft Rock by Thermal Needle Probe Procedure
ASTM D5778	Electronic Friction Cone and Piezocone Penetration Testing of Soils

ASTM D5882	Standard Test Method for Low Strain Impact Integrity Testing of Deep Foundations
ASTM D6467	Torsional Ring Shear Test to Determine Drained Residual Shear Strength of Cohesive Soils
ASTM D6913/D6913M	Particle Size Distribution (Gradation) of Soils Using Sieve Analysis
ASTM D6938	In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D6951/D6951M	Use of the Dynamic Cone Penetrometer in Shallow Pavement Applications
ASTM D7181	Consolidated Drained Triaxial Compression Test for Soils
ASTM D7263	Wet & Dry Unit Weight
ASTM D7928	Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
ASTM G57	Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method
DIN 18134	Plate Load Test
Rock	
ASTM C97 /ASTM D6473	Absorption and Bulk Specific Gravity of Dimension Stone
ASTM D3967	Splitting Tensile Strength of Intact Rock Core (Brazilian Test)
ASTM D5731	Determination of the Point Load Strength Index of Rock
ASTM D7012	Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures
ISRM Suggested Method 1974-2006	Determination of Density & Porosity
ISRM Suggested Method	Point Load Test
CHEMICAL SCOPE	
Aggregates	
ASTM C25	Chemical Analysis of Limestone, Quicklime, and Hydrated Lime, only Sec 11, 15, 18, 19, & 31
ASTM C289	Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
BS 812, Part 118	Determination of Sulphate Content in Aggregate, only Sec 6
BS 812, Part 117	Determination of Water Soluble Chloride Salts in Aggregate, only Appendix C
Concrete	
ASTM C114	Chemical Analysis of Hydraulic Cement, only Sec 7, 8, 9, 10, 14, 15, 16, 16, 17, 18, 19 & 21
ASTM C1084	Portland-Cement Content of Hardened Hydraulic-Cement Concrete, only Sec 8
ASTM C1152/C1152M	Acid-Soluble Chloride in Mortar and Concrete
ASTM C1218	Water Soluble Chloride in Mortar and Concrete
ASTM C1240	Silica Fume Used in Cementitious Mixtures, only Sec 10 & 12
Soils	
AASHTO T290	Determining Water-Soluble Sulfate Ion Content in Soil
AASHTO T291	Determining Water-Soluble Chloride Ion Content in Soil

ASTM D2974	Determining the Water (Moisture) Content, Ash Content, and Organic
ASTM D4972	pH of Soils
BS 1377-3: 1990	Water soluble Chloride and Sulfate in Soil, only Sec 5.2 & 7.2
BS 1377-3: 1990	Acid soluble Chloride and Sulfate in Soil, only Sec 5.3 & 7.3
BS1377-3: 1990	Rapid Determination of Carbonate Content of Soils, only Sec 6
BS 1377-3: 1990	pH Determination in Soil, only Sec 9
SM 3120 B	Determination in Soil by ICP Method – Aluminum (Al), Arsenic (As), Barium (Ba), Beryllium (Be), Boron (B), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium (Cr), Iron (Fe), Lead (Pb), Manganese (Mn), Nickel (Ni), Silver (Ag), Selenium (Se), Strontium (Sr), Thallium (Tl), Vanadium (V), Zinc (Zn), Potassium (K), Sodium (Na)
Water Analysis	
ASTM C1602/C1602M	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D511	Calcium and Magnesium Determination in Water
ASTM D512 Method A	Chloride Ion Determination in Water
ASTM D516	Sulfate Ion Determination in Water
ASTM D1293	pH Value Determination in water
ASTM D1429-13	Specific Gravity Determination in Water
ASTM D5907	Filterable Matter (Total Dissolved Solids) and Non-filterable Matter
HACH Manual HQ40d - DOC272.53.80021	Oxygen (dissolved) Determination in Water
HACH Method 8131	Sulphide Determination in Water
SM/HACH 4500 NH, C	Ammonium (N) Determination in Water
SM 2130 B	Turbidity Determination in Water
SM 2160 B	Taste Determination in Water
SM 2320 B	Total Alkalinity Determination in Water
SM 2320 B	Phenolphthalein Alkalinity Determination in Water
SM 2320 B	Bicarbonate Determination in Water
SM 2320 B	Carbonate Determination in Water
SM 2340 C	Total Hardness
SM 2510 B	Electrical Conductivity Determination in Water
SM 2540 B	Total Solids Determination in Water
SM 2540 D	Total Suspended Solids Determination in Water
SM 2540 C	Total Dissolved Solids Determination in Water
SM 2550	Temperature Determination in Water
SM 3120	Sodium Absorption Ratio (SAR) Determination in Water
SM 3120 B	Determination in water by ICP Method – Aluminum (Al), Arsenic (As), Barium (Ba), Beryllium (Be), Boron (B), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium (Cr), Iron (Fe), Lead (Pb), Manganese (Mn), Nickel (Ni), Silver (Ag), Selenium (Se), Strontium (Sr), Thallium (Tl), Vanadium (V), Zinc (Zn), Potassium (K), Sodium (Na)

SM 3120 B / SM 3500 Ca B	Calcium Determination in Water
SM 3120 B / SM 3500 K	Potassium, (K) Determination in Water by ICP Method
SM 3120 B / SM 3500 Na	Sodium, (Na) Determination in Water by ICP Method
SM 3500 Mg B	Magnesium Concentration by Calculation
SM 4500 Cl G	Total Chlorine Determination in Water
SM 4500 Cl I	Chlorine Free
SM 4500 Cl, I	Chloride Determination in Water
SM 4500 CN^- E	Cyanide Determination in Water
SM 4500 F	Fluoride Determination in Water
SM 4500 H^+B	pH Value Determination in water
SM 4500 NO3 E	Nitrate Nitrogen Determination in Water
SM 4500 NO2 D	Nitrite Nitrogen Determination in Water
SM 4500 P, E	Phosphorus-Phosphate (P-PO4) Determination in Water
SM 4500 P, E	Total Phosphorus Determination in Water
SM 4500 SiO2	Silica Determination in Water
SM 5210 B	Biological Oxygen Demand (BOD5) Determination in Water
SM 5220 D	Chemical Oxygen Demand (COD) Determination in Water
SM 5310 C	Total Organic Carbons (TOC) Determination in Water
SM 5310 D	Total Organic Carbons Determination in Water
SM 5520 B	Oil and Grease / Total Petroleum Hydrocarbons (Gravimetric)
SM 5530 C	Phenol Concentration Determination in Water
SM 9222 B (HACH)	Total Coliforms Determination in Water
Mineral Analysis	
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - Al2O3
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - CaO
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - Cr2O3
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - Fe2O3
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - K2O
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - MgO
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - MnO
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - Na2O

ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - P2O5
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - TiO2
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - V2O5
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF – ZnO
ASTM E1621/ User Manual (GeoQuant-M)	Chemical Analysis of Geological Samples by XRF - ZrO2
ASTM E1621/ User Manual (GeoQuant-M)	Sample Preparation by Pressed Pellet method for XRF Analysis
ASTM E1621/ User Manual (GeoQuant-M)	Sizing Determination, Pulverizing a sample and Fusing samples for XRF Analysis
Cement Analysis by XRF	
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - Al2O3
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - CaO
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - Cr2O3
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - Fe2O3
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - K2O
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - MgO
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - MnO
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - Na2O
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - P2O5
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - SiO2

ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - SO3
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - SrO
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - TiO2
ASTM E1621/ User Manual (Cement Quant)	Chemical Analysis of Cement by XRF - ZnO