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CERTIFICATE OF ACCREDITATION

This is to attest that

ADVANCED CONSTRUCTION TECHNOLOGY SERVICES

SALAH AD DIN AL AYYUBI STREET, AS SAFA DISTRICT
RIYADH, 12851, SAUDI ARABIA

Testing Laboratory TL-663

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 February 21, 2024



A handwritten signature in black ink, reading "Raj Nathan".

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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ADVANCED CONSTRUCTION TECHNOLOGY SERVICES

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Accredited to ISO/IEC 17025:2017

Effective Date February 21, 2024

| Aggregate | |
|-----------------|---|
| ASTM C29/C29M | Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate |
| ASTM C40 | Standard test method for organic impurities in fine aggregates for concrete |
| ASTM C88/C88M | Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate |
| ASTM C117 | Standard test method for materials finer than 75-µm (no. 200) sieve in mineral aggregates by washing |
| ASTM C127 | Standard test method for density, relative density (specific gravity), and absorption of coarse aggregate |
| ASTM C128 | Standard test method for relative density, relative density (specific gravity), and absorption of fine aggregate |
| ASTM C131 | Standard test method for resistance to degradation of small-size coarse aggregate by abrasion and impact in the Los Angeles machine |
| ASTM C136/C136M | Standard test method for sieve analysis of fine and coarse aggregates |
| ASTM C142 | Standard test method for clay lumps and friable particles in aggregates |
| ASTM C566 | Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying |
| ASTM D2419 | Standard test method for sand equivalent value of soils and fine aggregate |
| ASTM D5821 | Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate |
| BS 812-117 | Testing aggregates- method for determination of water-soluble chloride salts (Appendix C) |
| BS 812-118 | Testing aggregates - methods for determination of sulfate content (clause 5.0) |
| Asphalt | |
| AASHTO T324 | Standard Method for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures. |
| ASTM D5 | Standard Test Method for Penetration of Bituminous Materials |
| ASTM D36 | Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus) |
| ASTM D92 | Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester |

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| ASTM D979 | Standard Practice for Sampling Bituminous Paving Mixtures |
| ASTM D1188 | Standard test method for bulk specific gravity and density of compacted bituminous mixtures using coated samples |
| ASTM D2041/D2041M | Standard Test Method for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures |
| ASTM D2172 | Standard test methods for quantitative extraction of bitumen from bituminous paving mixtures |
| ASTM D2726/D2726 | Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures |
| ASTM D2872 | Standard Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test) |
| ASTM D2995 | Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors |
| ASTM D3549/D3549M | Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens |
| ASTM D4402/D4402M | Standard Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer |
| ASTM D5361/D5361M | Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing |
| ASTM D6521 | Standard Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV) |
| ASTM D6648 | Standard Test Method for Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR) |
| ASTM D6925 | Standard Test Method for Preparation and Determination of the Relative Density of Asphalt Mix Specimens by Means of the Superpave Gyratory Compactor |
| ASTM D6926 | Standard Practice for Preparation of Asphalt Mixture Specimens Using Marshall Apparatus |
| ASTM D6927 | Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures |
| ASTM D7175 | Standard Test Method for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer |
| ASTM D8292 | Standard Test Method for Permanent Deformation Behavior and Rutting Resistance of Compacted Asphalt Mix in the Modified Loaded Wheel Tracker Test Utilizing Controlled Confining Pressure |
| BS EN 13399 | Bitumen and bituminous binders. Determination of storage stability of modified bitumen |
| Cement | |
| ASTM C185 | Test Method for Air Content of Hydraulic Cement Mortar |
| ASTM C188 | Standard Test Method for Density of Hydraulic Cement |

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| ASTM C191 | Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle |
| ASTM C204 | Standard Test Methods for Fineness of Hydraulic Cement by Air-Permeability Apparatus |
| ASTM C311/C311M | Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete |
| ASTM C430 | Standard Test Method for Fineness of Hydraulic Cement by the 45-µm (No. 325) Sieve |
| ASTM C1437 | Standard Test Method for Flow of Hydraulic Cement Mortar |
| Chemical | |
| ASTM C289 | Test method for potential alkali reactivity by aggregates (by chemical method) |
| Concrete | |
| ASTM C31/C31M | Standard practice for making and curing concrete test specimens in the field |
| ASTM C39 | Standard test method for compressive strength of cylindrical concrete specimens |
| ASTM C42 | Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete |
| ASTM C94/C94M-22a | Standard Specification for Ready-Mixed Concrete- Concrete Uniformity Test (Annex A1. Concrete Uniformity Requirements) |
| ASTM C138 | Standard test method for density (unit weight), yield, and air content (gravimetric) of concrete |
| ASTM C143 | Standard test method for slump of hydraulic-cement concrete ASTM C187 |
| ASTM C172 | Standard Practice for Sampling Freshly Mixed Concrete |
| ASTM C231 | Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method |
| ASTM C511 | Standard specification for mixing rooms, moist cabinets, moist rooms, and water storage tanks used in the testing of hydraulic cements and concretes |
| ASTM C617 | Standard practice for capping cylindrical concrete specimens ASTM C805/C805M |
| ASTM C1064 | Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete |
| ASTM C1202 | Standard test method for electrical indication of concrete's ability to resist chloride ion penetration |
| ASTM C1610/C1610M | Standard Test Method for Static Segregation of Self-Consolidating Concrete Using Column Technique |
| ASTM C1611/C1611M | Standard Test Method for Slump Flow of Self-Consolidating Concrete |
| ASTM C1621/C1621M | Standard Test Method for Passing Ability of Self-Consolidating Concrete by J-Ring |

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| ASTM C1758/C1758M | Standard Practice for Fabricating Test Specimens with Self-Consolidating Concrete. |
| BS 1881-122 | Testing concrete- method for determination of water absorption |
| BS EN 12390-8 | Testing hardened concrete Depth of penetration of water under pressure |
| Deep Foundation | |
| ASTM D1143/D1143M | Standard Test Methods for Deep Foundation Elements Under Static Axial Compressive Load |
| ASTM D3689 | Standard Test Methods for Deep Foundations Under Static Axial Tensile Load |
| ASTM D3966 | Standards Test Methods for Deep Foundations under Lateral Load |
| Fire Resistive Material | |
| ASTM E605 | Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members |
| ASTM E736/E736M | Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members |
| ASTM E2174 | Standard Practice for On-Site Inspection of Fire Stops |
| ASTM E2393 | Standard Practice for On-Site Inspection of Fire Resistive Joint Systems and Perimeter Fire Barriers |
| Geotechnical | |
| ASTM D5731 | Standard Test Method for Determination of the Point Load Strength Index of Rock and Application to Rock Strength Classifications |
| Masonry | |
| ASTM C109 | Compressive strength of hydraulic cement mortars (using 2-in. or [50-mm] cube specimens |
| ASTM C140 | Standard test methods for sampling and testing concrete masonry units and related units |
| NDT | |
| AAMA 501.2 | Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems |
| ACI 228.2 | Nondestructive Test Methods for Evaluation of Concrete in Structures: CI. 2.2.4 - Spectral Analysis of Surface Waves (SASW) |
| ACI 228.2 / ASTM C597 | Ultrasonic/Sonic Pulse Velocity and Velocity Tomography for quality and integrity of concrete |
| ACI 228.2 / ASTM C1383 | Impact Echo for thickness and integrity of concrete |
| ACI 228.2 / ASTM C1740 | Slab Impulse Response for structural evaluation and void detection |
| ACTS-SOP-004/18 | Ground Penetrating Radar (GPR) |
| AWS D1.1 / ASTM E164 | Ultrasonic inspection by flaw detectors |
| AWS D1.1 / ASTM E165 | Liquid Penetration inspection by Aerosols |
| AWS D1.1 / ASTM E709 | Magnetic particle inspection by yokes |

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| Soil | |
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| ASTM D421 | Standard Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants Soils (withdrawn 2016) |
| ASTM D422 | Standard Test Method for Particle-Size Analysis of Soils (withdrawn 2016) |
| ASTM D854 | Standard test method for specific gravity of soil solids by water pycnometer |
| ASTM D1140 | Standard Test Methods for Determining the Amount of Material Finer than 75- μ m (No. 200) Sieve in Soils by Washing |
| ASTM D1195 | 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 |
| ASTM D1556 / D1556M | Standard test method for density and unit weight of soil in place by sand-cone method |
| ASTM D1557 | Standard test methods for laboratory compaction characteristics of soil using modified effort (56,000 ft-lbf/ft ³ (2,700 kN-m/m ³)) |
| ASTM D1883 | Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils |
| ASTM D2216 | Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass |
| ASTM D2419 | Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate |
| ASTM D4318 | Standard test methods for liquid limit, plastic limit, and plasticity index of soils |
| ASTM D4972 | Standard Test Methods for pH of Soils |
| ASTM D6938 | Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) |
| Steel | |
| ASTM A370 | Standard test methods and definitions for mechanical testing of steel products (tensile tests, section 6-14 and annexes A1, A2, A3, A7 and A9, and bend test section 15 only) |
| ASTM A1061/A1061M | Standard Test Methods for Testing Multi-Wire Steel Prestressing Strand |
| ASTM D7234 | Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers |
| ASTM E488 | Standard Test Methods for Strength of Anchors in Concrete Elements |
| ASTM F606/F606M | Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets Inclusions: 1. Clause 4.2 (Proof Load Test for Internally Threaded Fasteners) 2. For Externally Threaded Fasteners: Section 3, Proof Load 3.2.1, Method 1, Length Measurement 3.2.3, Method 2, Yield Strength 3.2.4, Axial Tension Testing of Full-Size Product 3.4. |
| Water | |

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| ASTM D512 | Standard Method of Test for Chloride Ion in Water |
| ASTM D516 | Standard Method of Test for sulfate ion in Water |
| ASTM D1293 | Standard Method for PH of water |