



CERTIFICATE OF ACCREDITATION

This is to attest that

UNIVERSITY OF MIAMI, STRUCTURES AND MATERIALS LABORATORY

1251 MEMORIAL DRIVE, MEB 108
CORAL GABLES, FLORIDA 33146, U.S.A.

Testing Laboratory TL-478

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 October 8, 2021



A handwritten signature in black ink that reads "Raj Nathan".

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

UNIVERSITY OF MIAMI, STRUCTURES AND MATERIALS LABORATORY

www.um-sml.com

Contact Name Francisco De Caso

Contact Phone +1-305-284-6150

Accredited to ISO/IEC 17025:2017

Effective Date October 8, 2021

CMT	
ASTM A370	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM C31	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 C67	Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
ASTM C70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C128	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C140	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete

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ASTM C157	Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C191	Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle
ASTM C192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C271	Standard Test Method for Density of Sandwich Core Materials
ASTM C272	Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
ASTM C293	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)
ASTM C305	Standard Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency
ASTM C348	Standard Test Method for Flexural Strength of Hydraulic- Cement Mortars
ASTM C349	Standard Test Method for Compressive Strength of Hydraulic- Cement Mortars (Using Portions of Prisms Broken in Flexure)
ASTM C387	Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar
ASTM C441	Standard Test Method for Effectiveness of Pozzolans or Ground Blast-Furnace Slag in Preventing Excessive Expansion of Concrete Due to the Alkali-Silica Reaction
ASTM C469	Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ASTM C496	Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
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 C512	Standard Test Method for Creep of Concrete in Compression
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM C596	Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement
ASTM C597	Standard Test Method for Pulse Velocity Through Concrete
ASTM C617	Standard Practice for Capping Cylindrical Concrete Specimens
ASTM C642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete

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ASTM C666	Standard Test Method for resistance of Concrete Rapid Freezing and Thawing
ASTM C672	Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals
ASTM C823	Standard Practice for Examination and Sampling of Hardened Concrete in Constructions
ASTM C880	Standard Test Method for Flexural Strength of Dimension Stone
ASTM C947	Standard Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete (Using Simple Beam with Third-Point Loading)
ASTM C1012	Standard Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1194	Standard Practice for Accreditation of Testing Agencies for Masonry.
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1293	Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction
ASTM C1314	Standard Test Method for Compressive Strength of Masonry Prisms
ASTM C1399	Standard Test Method for Obtaining Average Residual-Strength of Fiber-Reinforced Concrete
ASTM C1542	Standard Test Method for Measuring Length of Concrete Cores
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1583	Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)
ASTM C1585	Standard Test Method for Measurement of Rate of Absorption of Water by Hydraulic Cement Concretes
ASTM C1604	Standard Test Method for Obtaining and Testing Drilled Cores of Shotcrete
ASTM C1609	Standard Test Method for Flexural Performance of Fiber-Reinforced Concrete (Using Beam with Third-Point Loading)
ASTM C1679	Standard Practice for Measuring Hydration Kinetics of Hydraulic Cementitious Mixtures Using Isothermal Calorimetry
ASTM C1698	Standard Test Method for Autogenous Strain of Cement Paste and Mortar
ASTM C1723	Standard Guide for Examination of Hardened Concrete Using Scanning Electron Microscopy
ASTM C1753	Standard Practice for Evaluating Early Hydration of Hydraulic Cementitious Mixtures Using Thermal Measurements
ASTM C1768	Standard Practice for Accelerated Curing of Concrete Cylinders

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ASTM C1872	Standard Test Method for Thermogravimetric Analysis of Hydraulic Cement
ASTM D1621	Standard Test Method for Compressive Properties of Rigid Cellular Plastics
ASTM D3418	Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry
ASTM D7958	Standard Test Method for Evaluation of Performance for FRP Composite Bonded to Concrete Substrate using Beam Test
ASTM E8	Standard Test Methods for Tension Testing of Metallic Materials
ASTM E10	Standard Test Method for Brinell Hardness of Metallic Materials
ASTM E18	Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials
ETAG 001	Guideline for European technical approval of metal anchors for use in concrete*
ICC ES AC178	Inspection and verification of concrete and reinforced and unreinforced masonry strengthening using fiber reinforced polymer composite systems (Test Methods referenced in Section 9.0)
ICC ES AC434	Masonry and concrete strengthening using fiber reinforced cementitious matrix (FCRM) and steel reinforced grout (SRG) composite systems (Sections 3.0, 4.0 and 5.0, except Section 4.10)*
ICC ES AC454	Fiber reinforced polymer (FRP) bars for internal reinforcement of concrete (Section 4.0, except Section 4.5)*
ICC ES AC521*	Acceptance criteria for Fiber-reinforced Polymer (FRP) Bars and Meshes for Internal Reinforcement of Non-structural Concrete Members (Section 4.0)
Structural	
ACI 355.2*	Qualification of Post-Installed Mechanical Anchors in Concrete & Commentary (excluding test no. 12 and 13)
ACI 355.4*	Qualification of Post-Installed Adhesive Anchors in Concrete (excluding test Nos. 8a, 8b, 17 and 18)
ACI 440.3R	Guide Test Methods for Fiber-Reinforced Polymers (FRPs) for Reinforcing or Strengthening Concrete Structures
ACI 440.6	Specifications for Carbon and Glass Fiber-Reinforced Polymer (FRP) Bar Materials for Concrete Reinforcement
ASTM C297	Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
ASTM C581	Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass-Fiber-Reinforced Structures Intended for Liquid Service
ASTM D143	Standard Test Methods for Small Clear Specimens of Timber
ASTM D570	Standard Test Method for Water Absorption of Plastics
ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D695	Standard Test Method for Compressive Properties of Rigid Plastics
ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

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ASTM D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement (Method A)
ASTM D1141	Standard Practice for the Preparation of Substitute Ocean Water
ASTM D1761	Standard Test Methods for Mechanical Fasteners in Wood
ASTM D2240	Standard Test Method for Rubber Property-Durometer Hardness
ASTM D2247	Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
ASTM D2344	Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates
ASTM D2565	Standard Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications
ASTM D2584	Standard Test Method for Ignition Loss of Cured Reinforced Resins
ASTM D2734	Standard Test Methods for Void Content of Reinforced Plastics
ASTM D2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
ASTM D3039	Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials
ASTM D3165	Standard Test Method for Strength Properties of Adhesives in Shear by Tension Loading of Single-Lap-Joint Laminated Assemblies
ASTM D3171	Standard Test Methods for Constituent Content of Composite Materials
ASTM D3479	Standard Test Method for Tension-Tension Fatigue of Polymer Matrix Composite Materials
ASTM D3552	Standard Test Method for Tensile Properties of Fiber Reinforced Metal Matrix Composites
ASTM D3776	Standard Test Methods for Mass Per Unit Area (Weight) of Fabric
ASTM D4475	Standard Test Method for Apparent Horizontal Shear Strength of Pultruded Reinforced Plastic Rods By the Short-Beam Method
ASTM D5028	Standard Test Method for Curing Properties of Pultrusion Resins by Thermal Analysis
ASTM D5229	Standard Test Method for Moisture Absorption Properties and Equilibrium Conditioning of Polymer Matrix Composite Materials
ASTM D5766	Standard Test Method for Open-Hole Tensile Strength of Polymer Matrix Composite Laminates
ASTM D5961	Standard Test Method for Bearing Response of Polymer Matrix Composite Laminates
ASTM D6641	Standard Test Method for Compressive Properties of Polymer Matrix Composite Materials Using a Combined Loading Compression (CLC) Test Fixture
ASTM D6742	Standard Practice for Filled-Hole Tension and Compression Testing of Polymer Matrix Composite Laminates

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ASTM D6873	Standard Practice for Bearing Fatigue Response of Polymer Matrix Composite Laminates
ASTM D7205	Standard Test Method for Tensile Properties of Fiber Reinforced Polymer Matrix Composite Bars
ASTM D7234	Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers
ASTM D7248	Standard Test Method for Bearing/Bypass Interaction Response of Polymer Matrix Composite Laminates Using 2-Fastener Specimens
ASTM D7264	Standard Test Method for Flexural Properties of Polymer Matrix Composite Materials
ASTM D7332	Standard Test Method for Measuring the Fastener Pull-Through Resistance of a Fiber-Reinforced Polymer Matrix Composite
ASTM D7337	Standard Test Method for Tensile Creep Rupture of Fiber Reinforced Polymer Matrix Composite Bars
ASTM D7522	Standard Test Method for Pull-Off Strength for FRP Laminate Systems Bonded to Concrete Substrate
ASTM D7565	Standard Test Method for Determining Tensile Properties of Fiber Reinforced Polymer Matrix Composites Used for Strengthening of Civil Structures
ASTM D7615	Standard Practice for Open-Hole Fatigue Response of Polymer Matrix Composite Laminates
ASTM D7616	Standard Test Method for Determining Apparent Overlap Splice Shear Strength Properties of Wet Lay-Up Fiber-Reinforced Polymer Matrix Composites Used for Strengthening Civil Structures
ASTM D7617	Standard Test Method for Transverse Shear Strength of Fiber-reinforced Polymer Matrix Composite Bars
ASTM D7705	Standard Test Method for Alkali Resistance of Fiber Reinforced Polymer (FRP) Matrix Composite Bars used in Concrete Construction
ASTM D7913	Standard Test Method for Bond Strength of Fiber-Reinforced Polymer Matrix Composite Bars to Concrete by Pullout Testing
ASTM D7914	Standard Test Method for Strength of Fiber Reinforced Polymer (FRP) Bent Bars in Bend Locations
ASTM D7957	Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement
ASTM E83	Standard Practice for Verification and Classification of Extensometer Systems
ASTM E104	Standard Practice for Maintaining Constant Relative Humidity by Means of Aqueous Solutions
ASTM E488	Standard Test Methods for Strength of Anchors in Concrete Elements
ASTM E1131	Standard Test Method for Compositional Analysis by Thermogravimetry
ASTM E1356	Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry

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ASTM E1640	Standard Test Method for Assignment of the Glass Transition Temperature By Dynamic Mechanical Analysis
ASTM E2160	Standard Test Method for Heat of Reaction of Thermally Reactive Materials by Differential Scanning Calorimetry
ASTM G153	Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
CSA S806-02	Design and construction of building structures with fibre- reinforced polymers
ETAG 001*	Guideline for European technical approval of metal anchors for use in concrete
GR-63-CORE	NEBS*
ICC ES AC125*	Concrete and reinforced and unreinforced masonry strengthening using externally bonded fiber reinforced polymer (FRP) composite systems (Test methods referenced in Section 5.0, excluding Sections 5.13 and 5.18)
ICC ES AC133*	Acceptance Criteria of Mechanical Splice Systems for Steel Reinforcing Bars (Section 3.0 and 4.0)
ICC ES AC156*	Seismic certification by shake table testing of non-structural components (Section 6.0)
ICC ES AC178	Inspection and verification of concrete and reinforced and unreinforced masonry strengthening using fiber reinforced polymer (FRP) composite systems (Section 9.0)
ICC ES AC303*	Acceptance Criteria for Post-tensioning Anchorages and Couplers of Prestressed Concrete (Section 3.0 and 4.0)
ICC ES AC422	Acceptance Criteria for Semi continuous Fiber-reinforced Grid Connectors used in Combination with Rigid Insulation in Concrete Sandwich Panel Construction
ICC ES AC454	Fiber reinforced polymer (FRP) bars for internal reinforcement of concrete (Test methods referenced in Section 4.0, except Section 4.5)*
IEEE-344*	Standard for Seismic Qualification of Equipment for Nuclear Power Generating Stations
IEEE-693*	Recommended Practice for Seismic Design of Substations

(*) Test methods accredited for offsite (Witness) testing