

RAFAEL CAMILO GUTIERREZ MELGAREJO

Ph.D., M.Sc. | Structural Engineer | Structural Inspector | Project Manager

Concrete Restoration | Structural Inspections

Building Assessments | Project Management

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LinkedIn Website FIU Profile Certificates

01 RESTORATION AND INSPECTION PROFILE

Structural Engineer, Structural Inspector and Project Manager with 12+ years of international experience in concrete construction, building condition assessments, and rehabilitation support. Completed 100+ structural and threshold inspections with M. Hajjar & Associates and supported 40-Year Recertification assessments. Experience covers foundations, reinforcement, concrete systems, waterproofing, facade conditions, and verification against approved drawings and project specifications. Evaluates visible cracking, concrete deterioration, moisture intrusion, and earthquake-related damage; prepares technical reports and recommendations for repair, strengthening, rehabilitation, and follow-up inspection. Coordinates drawing and submittal reviews, field discrepancies, contractors, concrete testing, curing and QA/QC, applying FBC, ACI, ASTM and ASCE requirements. Supports cost estimates, schedules and constructability, supported by FDOT-sponsored UHPC connection research and GRC aging and durability studies.

02 EDUCATION AND THESIS RESEARCH

- **Ph.D. in Civil Engineering | FIU, Miami | 2025**
  Dissertation: Effect of Curing Time and Conditions Upon Cementitious Interface Behavior.
- **M.Sc. in Civil Engineering (Structures) | FIU | 2024**
  Research: Bond Performance Between Precast UHPC and Field-Cast UHPC Connections.
- **M.Sc. in Project and Construction Management | Javeriana | 2017**
  Thesis: Mitigation of Aging of Glass Fiber Reinforced Cement (GRC) Using Additions.
- **B.Sc. in Civil Engineering | Universidad Católica de Colombia | 2013**
  Undergraduate thesis: Propuesta conceptual para estación intermodal entre el corredor vial Calle 26 con Avenida Ferrocarril en la ciudad de Bogotá. Co-author: Claudia Natalí Hernández Murcia.
- **English Language Program | University of Arizona, USA**
  Center for English as a Second Language (CESL), Tucson. Non-degree education.

03 CORE COMPETENCIES

- **Structural inspections:** Concrete, reinforcement and foundations; drawing verification; field observations; inspection logs and technical reports.
- **Concrete restoration and condition assessment:** Cracking, deterioration and moisture intrusion; repair recommendations; rehabilitation and strengthening reviews.
- **Building evaluations:** 40-Year Recertification assessments; residential inspections; post-earthquake damage documentation and follow-up recommendations.
- **Construction and project management:** Contractor coordination; constructability; submittals; cost estimates; schedules; field discrepancies and quality control.
- **Concrete materials and compliance:** UHPC bond and interface shear; GRC aging and durability; concrete testing and curing; FBC, ACI, ASTM, ASCE and NSR-10.

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04 CONCRETE RESTORATION AND STRUCTURAL INSPECTIONS

- **Structural Inspector | M. Hajjar & Associates, Inc.**
  Miami, FL | Jul 2025-Feb 2026
- Conducted 100+ structural and threshold inspections of buildings, foundations, reinforcement, and concrete systems; checked approved drawings and FBC, ACI, ASTM, and ASCE requirements.
- Performed 40-Year Recertification assessments, including educational facilities; documented cracking, concrete deterioration, moisture intrusion, facade conditions, and rehabilitation needs.
- Verified reinforcement placement, waterproofing, concrete quality, slump checks, strength testing, and curing against project requirements.
- Reviewed shop drawings, submittals, inspection logs, and field discrepancies; coordinated corrective actions and prepared technical inspection reports.
- **Structural & Management Consultant | RESOF**
  Miami, FL | 2026-Present
- Provide structural and project management consulting for industrial warehouses and logistics facilities.
- Review structural plans, specifications, and shop drawings; develop recommendations for foundations, slabs, steel structures, and precast systems.
- Support bidding, cost analysis, scheduling, and coordination with clients and contractors.
- **Independent Consultant | Seismic and Building Condition Assessments**
  Venezuela / Colombia | 2026
- Conduct structural condition assessments related to earthquake damage in Venezuela and Colombia, combining field inspections with remote technical review of building documentation and photographs.
- Document and map visible cracking, concrete deterioration, deformation, settlement indicators, and distress in masonry, slabs, roof systems, and timber framing.
- Evaluate observed damage and structural vulnerabilities to identify conditions requiring further engineering analysis, monitoring, or detailed assessment.
- Prepare technically supported recommendations for repair, strengthening, rehabilitation, and follow-up inspection based on observed conditions.
- **Independent Consultant | Residential and House Inspections**
  Miami, FL / Colombia | 2023-Present
- Perform structural assessments and inspections of houses and other residential buildings; provide design advice and repair recommendations.
- Prepare technical reports, concrete restoration recommendations, and constructability and code-compliance reviews.
- Support cost estimates, schedules, submittals, and stakeholder coordination.

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05 CONSTRUCTION AND INFRASTRUCTURE PROJECTS

- **Resident Engineer / Project Coordinator | OPAIN-El Dorado International Airport**
  Bogotá, Colombia | Aug-Dec 2013
- Supervised construction and rehabilitation activities for airport concrete floors and pavements in the northern and southern sectors, coordinating field execution and technical requirements.
- Coordinated a multidisciplinary team of approximately 20 personnel, work assignments, activity programming, execution times, and contractor interfaces.
- Organized work orders, progress records, technical reports, and activity statistics to support construction control and maintenance planning.
- Reviewed concrete slab and expansion-joint conditions and coordinated responses to field issues affecting construction and rehabilitation.
- Supported structural inspections of foundations, vertical elements, and roof systems; documented findings for maintenance, upgrades, and compliance reviews.
- **Director of Infrastructure Projects | PILM-Parque Industrial Las Mercedes**
  Funza / Siberia industrial corridor, Colombia | Feb 2016-Feb 2022
- Directed planning and execution of industrial park infrastructure, including roads, utilities, drainage, retaining systems, and supporting industrial and institutional facilities.
- Acted as an owner-side technical representative coordinating contractors, consultants, agencies, and stakeholders across scope, schedule, budget, safety, and quality.
- Coordinated construction methodologies, sequencing, procurement, permitting activities, field supervision, and technical documentation.
- Applied NSR-10 and AASHTO requirements to design reviews, construction compliance, foundations, and retaining structures.
- **Construction Director | CELTA Trade Park One / SICRE**
  Funza / Siberia industrial corridor, Colombia | Feb 2014-Feb 2016
- Directed construction activities within a large business and logistics park comprising approximately 200 warehouses and industrial buildings.
- Supervised reinforced-concrete and steel works, foundations, slabs, frames, and contractor interfaces; reviewed constructability and field changes.
- Managed construction sequencing, procurement, subcontractor performance, schedules, safety coordination, and QA/QC.
- Coordinated technical documentation and multidisciplinary work fronts to support delivery of warehouse and supporting infrastructure packages.
- **Infrastructure Quality Supervisor | Inversiones Lubal SAS**
  Soacha, Colombia | Feb 2017-Aug 2018
- Oversaw QA for roadway, bridge, stormwater, and urban infrastructure works, verifying field execution and construction quality.
- Coordinated multidisciplinary teams, contractors, and work activities to support compliant infrastructure delivery.

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06 STRUCTURAL ENGINEERING AND MATERIALS

- **Graduate Research Assistant | FIU / FDOT UHPC Project**
  Miami, FL | Aug 2022-Aug 2025
- Analyzed and tested precast-to-field-cast UHPC bridge connections, including bond, interface shear, and effects of curing time and conditions.
- Performed 100+ flexural, shear, and material characterization tests using AASHTO and ASTM methodologies; interpreted results and prepared technical reports.
- Interpreted cementitious interface behavior and bond performance to support durable concrete connections, technical documentation, and practical construction recommendations.
- **Structural Engineer & Project Manager | Constructora Terranova**
  Bogotá, Colombia | Feb 2021-Aug 2022
- Supervised post-tensioned concrete systems for mid-rise buildings, coordinating structural requirements, seismic design considerations, BIM workflows, and construction schedules.
- **Research Assistant / Advisor | GRC, Titán Plant**
  Cota, Colombia | 2015-2017
- Researched GRC facade panel formulations with pozzolanic materials and acrylic polymers during Javeriana master's research; evaluated flexural response, accelerated aging, and durability.
- Supported industrial spray-up panel fabrication and specimen preparation.
- Related accelerated aging and flexural performance to durability of GRC facade products and formulation improvements.
- **Research Assistant | NEUROCRETE, Universitat Politècnica de Catalunya**
  Barcelona, Spain | 2022-2023
- Investigated self-sensing cementitious composites and conductive concrete with carbon fibers; supported experimental evaluation and interpretation for smart infrastructure applications.
- **Structural Civil Engineer | Educational & Cultural Projects**
  Colombia | Aug 2010-Dec 2012
- Conducted structural evaluations, retrofit design support, and rehabilitation upgrades for existing educational and cultural buildings.
- **Structural & Management Consultant | Proyectos Urbanos y del Caribe**
  USA / Colombia | 2026-Present
- Provide consulting for industrial, commercial, and infrastructure projects in Colombia and the Caribbean.
- Support design reviews, constructability analysis, value engineering, project planning, cost analysis, and execution strategies.
- **Volunteer Construction | Fundación TECHO Colombia**
  Colombia | Community service
- Participated in house construction for vulnerable communities, supporting collaborative fieldwork and on-site construction activities.

07 INTERNATIONAL UNIVERSITY TEACHING

- **Adjunct Professor | Florida International University**
  Miami, Florida, USA | Aug 2025-Present
- Courses: BCN 2405-Structures I; BCN 4431-Structural Design II; BCN 4465-Temporary Structures.
- Develop lectures, exercises, assessments, and mentoring connecting structural behavior, construction practice, and temporary works.
- **Graduate Teaching Assistant | Florida International University**
  Miami, Florida, USA | Jan 2023-Aug 2025
- Structural Analysis and Mechanics of Materials: laboratory instruction, technical support, and curriculum development.

08 UNIVERSITY TEACHING IN COLOMBIA

University lecturer appointments in Colombia; principal teaching period 2018-2022, with additional prior teaching at Javeriana.

- **Pontificia Universidad Javeriana | Graduate Assistant / Research Assistant**

  Courses and academic responsibilities: Strength of Construction Materials: laboratory and teaching support, theoretical/practical evaluations, student follow-up, and experimental assembly (July-December 2016). CECATA materials research (2015-2017): GRC aging mitigation, pozzolanic/polymeric additions, pavement and asphalt-nanomaterials research, and materials-laboratory support.

- **Corporación Universitaria Minuto de Dios (UNIMINUTO)**

  Courses and academic responsibilities: Social Housing for Vulnerable Communities; Introduction to Civil Engineering; Building Materials; Building Materials for Home Construction; Environmental Engineering; Construction Management.

- **Universidad Santo Tomás**

  Courses and academic responsibilities: Legislation in Civil Engineering; Construction Methods; Construction Management.

- **Universidad La Gran Colombia**

  Courses and academic responsibilities: Construction Management; Construction in Civil Engineering.

- **Universidad Católica de Colombia**

  Courses and academic responsibilities: Construction and Strength of Materials; Graphic Expression; Structural Analysis and Laboratory; Concrete Structures Design; Statistics and Probability; Construction; Catholic Culture. Graduate thesis supervision and geomaterials research support. Academic administration: alumni coordination and coordination of postgraduate Civil Engineering specialization activities.

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09 RESEARCH PUBLICATIONS AND PRESENTATIONS

- **Estudio a flexotracción en paneles de fachada de elementos en concretos reforzados con fibra de vidrio GRC con adiciones de materiales alumino-silíceos y polímeros**

  Journal of Engineering Research, vol. 2, no. 22, 2022. DOI: 10.22533/at.ed.3172222203107. Co-authored study of GRC façade panel formulation, flexural response, and aging.

- **Mitigation of Aging of Glass Fiber Reinforced Cement (GRC) Using Pozzolan and Acrylic Resin Additions**

  2019 Congreso Internacional de Innovación y Tendencias en Ingeniería (CONIITI). Conference contribution on durability improvement of cementitious façade products.

- **Bond Performance Between Precast UHPC and Field-Cast UHPC Connections**

  Research presentation, Miami, USA, March 2024. Focus: advanced concrete connection systems and interface performance.

- **Evaluation of Electrically Conductive Concrete (ECC) with Carbon Fibers**

  Research presentation, Barcelona, Spain, June 2023. Focus: conductive cementitious composites and smart concrete applications.

- **Aging Mitigation of GRC with Pozzolan and Resin Additions**

  Research presentation, Santiago, Chile, August 2019. Focus: formulation and durability of glass fiber reinforced cementitious materials.

10 HONORS AND AWARDS

- Scholarship Award - Colombian Association of Engineers 2025
- FIU Dissertation Fellowship Spring/Summer 2024
- FIU LAC Doctoral Fellowship Fall 2023
- Fulbright Scholarship 2022
- Excellence Scholarship for Foreign Students - Chile 2019

11 PROFESSIONAL DEVELOPMENT AND AFFILIATIONS

- LEED Green Associate - USGBC August 2023
- PMP Exam Preparation May 2025
- FE Exam - NCEES / Florida Board May 2026
- ASCE Member No. 12488823
- Sigma Xi | Chi Epsilon | Florida Engineering Society (FES)

TECHNICAL TOOLS AND LANGUAGES

Tools: AutoCAD, Civil 3D, Revit, Bluebeam, SAP2000, ETABS, Mathcad, Primavera P6, MS Project and Procore. Codes: FBC, ACI, ASTM, AASHTO and NSR-10. Languages: English (B2) and Spanish (Native).