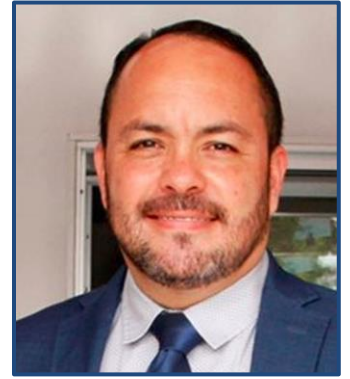


LUIS GUILLERMO LORIA SALAZAR



I. GENERAL INFORMATION

Date of birth: October 6, 1974

Address: Cartago, Costa Rica

Marital status: Married

Nationality: Costa Rican

Telephones:

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Email: lloria@uin.cr
lgloria27@gmail.com

Education:

- 1987-1991: High School Education, San Luis Gonzaga College
- 1992-1998: University of Costa Rica, Civil Engineer, Degree: Bachelor
- 2005-2007: Master in Civil Engineering (M.Sc.) University of Nevada, Reno.
- 2007-2011: Ph.D., University of Nevada, Reno.

II. CURRENT AND PREVIOUS POSITIONS

- Vice-president of Research, Isaac Newton University, Costa Rica, since 2022.
- Founding partner and owner at Mat-Tech Engineering and Material Science (www.mat-tech.cr), since 2019.
- President of the International Society of Asphalt Pavement (ISAP) (www.asphalt.org). 2021-2023.
- Consultant on pavement design, materials, road evaluation, airports and concessions in several projects between Mexico, Central and South-America.
- Member of the following committees of the Transportation Research Board (TRB): AFK20 Bituminous Materials (2012-2020), AFD40 Accelerated Pavement Testing (2015-2022), AFD50 Surface Properties of Asphalt Materials (2020-2022).
- Keynote speaker in more than 100 presentations and webinars.
- Full-time professor, tenure at the Civil Engineering School of the University of Costa Rica, 2000-2021.
- Founder of the Master Program on Road Infrastructure at University of Costa Rica. 2012.
- Former chairperson of the Heavy Vehicle Simulator International Alliance (HVSIA) 2016-2018.
- Former General Coordinator of the Transportation Infrastructure Program (PITRA) of the National Laboratory of Materials and Structural Models of the University of Costa Rica (LanammeUCR) and Professor of the Civil Engineering School in the University of Costa Rica.

As General Coordinator of PITRA-LanammeUCR, Eng. Loria-Salazar was in charge of the management and control of a team of 80 professionals and 60 research assistants, divided into 7 work units: Materials and Pavements Unit, Technical Audit Unit, Road Safety and Transport Unit, Municipal Management Unit, Unit Evaluation of the National Road Network, Bridges Unit, Regulatory and Technical Update Unit.

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III. RESEARCH / EXPERTISE TOPICS

- Pavements design and materials
- Recycled materials
- Accelerated full scale pavement testing
- Nano-analysis and design of materials (FTIR, Raman, DSC, TGA, DMA, AFM)
- Public Policy for Infrastructure
- Infrastructure Management
- Development of Territory
- Sustainability of Infrastructure
- Private Public Partnerships
- Life cycle cost analysis for road works
- Airport design
- Concessions feasibility

IV. INTERNATIONAL MEMBERSHIP OF SCIENTIFIC/INDUSTRY COMMITTEES

- **Transportation Research Board (TRB)** -United States:-
 - AFK20 Materiales Bituminosos (2012-2020), Full member
 - AFD40 Ensayos Acelerados de Pavimentos (2015-2022), full member
 - Research Coordinator,
 - AFD40 Subcommitte on International Activities, Chair
 - AKM20 Binders, Full member (2020-2021)
 - AFD50 Propiedades Superficiales de Materiales Asfálticos (2020-2022), amigo
 - AKM30 Asphalt Materials Selection and Mix Design, amigo
 - AKM40 Asphalt Mixture Evaluation and Performance, amigo
 - AKP40 Pavement Structural Testing and Evaluation, amigo
- **APSE:** Academy of Pavement Science and Engineering -founding member-
- **Heavy Vehicle International Alliance (HVSIA)** -member and former chairman-
- **AILA:** Iberoamerican asphalt association -member of the board of directors-
- **CILA:** Iberoamerican Asphalt Conference -member of the board of directors-
- **RILEM.** International Union of Laboratories and Experts in Construction Materials, Systems and Structures
 - TC 5: Recycled Materials Committee
- **AAPT:** American Asociation of Asphalt Pavement Technolohist -member-
- **IRF:** International Road Federation -Member of the Board of Directors-
- **ISAP:** International Society of Asphalt Pavements –current president-
- **ASCE:** American Society of Civil Engineers
- **Transportation and Development Institute (TD&I) of ASCE** –Former member of the board of directors-

V. WORKING EXPERIENCE

- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica; **Field technician** specializing in paving materials. December 97 - January 99.
- University of Costa Rica, Civil Engineering School; **Professor of Mechanics I (Static)**. February 00 - July 01.
- University of Costa Rica, Civil Engineering School; **Professor of Laboratory of Pavements**. August 01 - August 05.

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- Office of Civil Aviation, Ministry of Transport of Costa Rica; **Consultant for Pavement Reconstruction of the runway, approach ramps and maneuvering runways of the Juan Santamaría International Airport in San José, Costa Rica.** August 01 - March 02. Ingenya Consultants.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica, **Development of a New Method for the Control of Quality, Assurance and Payment of Roads Works.** January 99 - August 00.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica, **Consultant on the Development of the Central American Manual of Specifications for the Construction of Highways and Bridges,** published in 2001. January 99-May 01.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica, **Coordinator of special studies: Analysis and Design of Subgrades, Granular Bases, Stabilized Bases and Embankments.** August 00-July 01.
- National Laboratory of Structural Materials and Models, Civil Engineering School, University of Costa Rica, **Coordinator of Road Infrastructure Laboratories;** Personnel in charge: 15 engineers, 30 technicians, 3 chemists, 2 assistants, 3 administrative. August 01-August 05.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica, **Professional in charge of the technical direction of the accreditation of the Laboratory of Materials of the UCR by ISO 17025:** 2000 (Accreditation was obtained in January 2003). August 01 - August 05
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica, **Associated Researcher.** August 01 - August 05
- University of Nevada, Reno. Department of Civil Engineering. Superpave Regional Center of the West, **Research Assistant.** August 05 - August 10.
- University of Nevada, Reno. Department of Civil Engineering. Centro Superpave Regional del Oeste, **Professor of the courses: Construction Materials, Design Workshop, and Pavements Analysis and Design.** January 08-August 09.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica. **Coordinator of the Research Group in Pavements and Materials.** June 2007-August 2009.
- University of Costa Rica, Civil Engineering School; **Professor of Statistics.** 2012 – 2019.
- University of Costa Rica, Civil Engineering School; **Professor of Pavement Design and Analysis.** 2012 – 2019.
- University of Costa Rica, Master Program on Road Infraestructure; **Professor of a) Advanced Pavement Design, b) Advanced Pavement Materials and; c) Pavement Management Systems.** 2013 – 2019.
- National Laboratory of Materials and Structural Models, Civil Engineering School, University of Costa Rica. **General Director of the Transportation Research Program.** August 2009-June 2019.
- Mat-Tecn Engineering and Materials Science. **CEO.** Since 2019.
- Isaac Newton University, Costa Rica. **Vice-President of Research.** Since 2022.

VI. **PROFESIONAL EXPERIENCE**

Experience in design / supervision / inspection of road and highway pavements:

1. Quality assurance manager of eight asphalt plants in Costa Rica. 2001-2003.
2. Extensive experience in designing road materials and pavements in Costa Rica, the United States, Mexico, Central and South America, including extensive use of Marshall, Hveem and Superpave design methodologies. Knowledge of all performance tests offered by the current technique: APA, HWT, RLT, Flow number, fatigue, Resilience modulus in granulars and soils, indirect tensile strength resilience modulus and Dynamic modulus for HMA, Crack reflection, and others. Since 2003.
3. Experience in the design of stabilized materials with asphalt emulsions, cold recycling, warm mixes and foamed asphalt in Costa Rica, Nicaragua, Guatemala, Honduras and Nevada, United States. 2004-current.

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4. Experience in the design of asphalt mixtures with modified asphalts, special gradations. 2000-current.
5. Experience in laboratory and plant modification Polymer-modified binders of various kinds, such as SBR, SBS, EGA, PPA, carbon black, recycled, Hydrogreen, among others. 2000-current.
6. Extensive application and use of pavement evaluation equipment: FWD, RSP (for IRI and Rutting), Laser Retroreflector, Geo3D (high definition cameras), Dynamic Cone Penetration (DCP), Light Weight Deflectometer (LWD), Georadar and 3D Laser Scanner. Since 2000.
7. Direct experience in the evaluation of road corridors in Costa Rica. More than 70 000.00 km pavement assessment. Since 2001.
8. Design and FWD evaluation of 50 km project Tegucigalpa-Danlí, Honduras. 2004.
9. Design and evaluation of project Tegucigalpa-El Guanabano, Honduras. 2004.
10. Develop of deterioration models for asphalt pavements and slurry seals at the Washoe County and the cities of Reno and Sparks in Nevada (2007-2010).
11. Review by FWD and Proposal of Structural Capacity for the Flexible Pavement of the Parrita-Quepos Project. 2008.
12. Two-mile section design on McCarran Boulevard, Washoe County, Nevada. (AASHTO 93 and MEPDG). 2009.
13. Implementation and management of the PaveLab, natural scale track for the evaluation of pavements of the LanammeUCR: formation of work group, design of facilities, acquisition of equipment, start-up of experiments. 2009-2012.
14. In charge of the development of the Empirical-Mechanistic Design Guide of pavements design for Costa Rica (2012-2019)
15. Structural design of road pavements in the Oreamuno canton, Cartago. 2011.
16. Analysis of Industrial Park Concrete Pavements, Global Park. 2011.
17. Evaluation of the Structural Performance of the Project: "Mejoramiento de la Ruta Nacional N° 613. Sección Sabalito-Las Mellizas Public Licitacion Number. 2008LN-000001-DI". 2012.
18. Review of the Pavement Design on Route 141. 2012.
19. Pavement Design for Barrio Limoncito, Limón, 39 km. 2012.
20. Pavement Design for Bijagua, Upala, 10 km. 2012.
21. Pavement Design for Canalete-Colonia Puntarenas, Upala, 6 km. 2012
22. Pavement Design for Santa Clara, San Ramón, 5 km. 2012.
23. Analysis of the Structural Capacity of the Pavement Reinforcement of Costa Rican National Route 32, through FWD for Soil and Base Material. 2013.
24. Determination of the Structural Capacity of the Pavement Reinforcement of Costa Rican National Route 32 by FWD - Hot asphalt mix-. 2013.
25. Pavement Design for Cuadrantes San Pablo, San Pedro and Acceso Bijagual, Turrubares, 5 km. 2013.
26. Road Reconstruction Design Barrio María Auxiliadora, Curridabat, 0.4 km. 2013.
27. Pavement Design for Proyecto Calles Urbanas MOPT/BID, Pérez Zeledón, 4 km. 2013.
28. Pavement Design for Proyecto acceso de Extralum, Grecia, 2 km. 2013.
29. Pavement Design for la Rehabilitación de calles urbanas, Hojancha, 0,2 km. 2013.
30. Review of Flexible Pavement Design in the Proyect Sifón-La Abundancia. 2014.
31. Review of Flexible Pavement Design in the Proyect 27 de April-Villareal. 2014.
32. Review of Pavement Design by FWDfor Odebetch, Panama. STAGE 1. Divisa-Chitré: Flexible pavement: total length of 35 km (analysis of external lane in both directions): 35 km linear. 2014.
33. Review of the Pavement Design by FWD for Odebetch. STAGE 2. Santiago Viguí: Flexible pavement, total length of 18 km (two-lane roadway analysis in both directions): 36 km linear. 2014.
34. Review of the Pavement Design by FWD for Odebetch. STAGE 3. Santiago Viguí: Hard pavement, 12 sections with lengths between 300 and 700 m, measurements at the edges and centers of the slabs. 2014.
35. Análisis mecánico-estructural de dos tramos de 300 m de longitud, de un pavimento de concreto en Panamá, sobre la Ruta 1, correspondiente a la Carretera Panamericana, en el sentido Guabalá - San Felix. Determinación de Módulos de un Rubblizing propuesto. Panamá, 2014. Para ITP-Panamá-
36. Evaluation of the Preliminary Studies and Designs for the Construction Project of the National Route No.4 Section: Bajos de Chilamate-Vuelta de Kooper. 2014

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37. Pavement Design for Proyecto Estación Alfredo Volio UCR (EEAVM) Cartago 2 km. 2014.
38. Reconstruction Design urban streets of Filadelfia, Carrillo, 8 km. 2014.
39. Pavement Design for Rehabilitation of Urban Streets, La Cruz, 1 km. 2014.
40. Pavement Design for Rehabilitation of Urban Streets Urbanización Carvajal-Cedros, Montes de Oca, 0,3 km. 2014.
41. Pavement Design for Calle Casagro, San Ramón, 0,4 km. 2014.
42. Pavement Design for the Rehabilitation of primary roads, Zarcero, 5 km. 2014.
43. Evaluation of Cracking, Analysis of Causes and Finite Element Modeling of Pavement with Base Stabilized with Cement in Jinotega-Miralagos Projects, Jinotepe-Nandaime., Nicaragua, 2014. FOMAV. For Ing. Ricardo Arauz Bucardo.
44. Design of Pavements located in front of School in Peninsula de Nicoya for Pave the Road, Cóbano, 2015.
45. Analysis of Document SGBO/ G-No. 80-2013. Specification of the International Regularity Index (Roughness) and Deflections for Pavement Acceptance in the Project "Rehabilitation of the Gualaco-Bonito Oriental Highway" Sections III and IV. Honduras. for ACI.
46. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities) (In charge of pavement design/review, materials QA, materials sources approval, and other activities). San Juan del Río Coco-Las Cruces Improvement Project. Total length: 8.0 km. Cobble. Nicaragua, 2015. For INCOSA-Spain.
47. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Condega - San Sebastián de Yalí Highway Improvement Project. Nicaragua. Total length: 16.5 km. Cobble. Parking 22+400 to 38+921. 2015. For INCOSA-Spain.
48. Foreign Consultant in the Development of the Empirical-Mechanistic Pavement Design Guide of Colombia. Colombia. 2015. For University of Cauca, Popayan.
49. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Esquipulas-Muy Muy Highway Improvement Project, Total length: 33.63 km. Esquipulas-Very Very section, Estimated length: 29.08 km. El Empalme La Danta-La Luna Branch, Estimated Length: 4.65km. 2015. For INCOSA-Spain.
50. Pavement Performance Indicators Specialist at Las Piedrecitas-Empalme Izapa Performance-Based Contract. 2015-2020. For INCOSA, Nicaragua.
51. Pavement Design and Superpave Mix Design. "Project for the expansion and rehabilitation of the Pan-American highway, section: Bridge of the Americas – Arraiján. Panama, 2016. For Egis-Eyser, Spain.
52. Analysis of Asphalt Mix Alternatives and Structural Design for the Las Pipas-La Mesa Project for the Scenario of Using a Dense-Coarse Asphalt Mix with Elvaloy Modified Asphalt. Panama. 2016. For MECO-Panama.
53. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Jinotepe - Nandaime Expansion Project of the "Project: Nejapa - El Crucero - Diriamba - Jinotepe - Nandaime". Length 58.17 km. Nicaragua. 2017. For ICC Consultants.
54. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Improvement of the Pantasma-Wiwilí road. Modified Asphalt. Length: 48.4 km. Nicaragua. 2017. For Acruta & Tapia.
55. FWD evaluation of road projects at the City of Panama, Panama. 2017
56. Review of the report of the Geotechnical Study of the Construction of the Wastewater Treatment Plant and Final Disposal for the Improvement and Expansion of the Sanitary Sewerage System of the City of Masaya. Nicaragua, 2017. For Acruta & Tapia.
57. Pavement Design Technical Report on Route 1, Commuter Castella Interchange. 2017. For INTRA.
58. Analysis of the Hot Asphalt Mix placed in the Construction of the Villa de San Antonio - Goascorán Road Logistics Corridor, Section II: El Quebrachal - San Juan II Bridge and Section III: San Juan II Goascorán Bridge. Honduras, 2017. For Ing. Oscar Moncada Buezo.
59. Pavement Design for the Design and Construction Project of the Binational Bridge over the Sixaola River under sustainability standards between Costa Rica and Panama-UNOPs. Costa Rica, 2017. For Binational-Sixaola Consortium.

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60. Supervision of studies and designs for the rehabilitation and improvement of highway CA-13 stretch. La Ceiba (entrance to the bridge over the Cangrejal River, station 190+790) – Corocito (detour to Bonito Oriental, station 325+780). Length=134.99 km, in the departments of Atlántida and Colón. Section A: La Ceiba - Puente Tomalá. 2018-2019. For the URCI-Laptop Consortium.
61. Design of Rehabilitation and Expansion of the Danlí-Las Manos Section, 30 km. 2018. Honduras. for ACI.
62. IRI evaluation report, and its correct application during the evaluation of constructed pavement surfaces. Costa Rica. 2018. For INTRA.
63. Design of the Pavement in the Adaptation of the design for the road expansion of National Route No.147 (Radial Lindora) and related works between the bridge over the Corroges River, including the transitions on both sides, and the bridge over the Virilla River, as well as the technical support during the construction of the works. Costa Rica. 2018. For INTRA.
64. Soils and Pavement Specialist. El Camastro – Los Chinamos – El Ayote Road Improvement Project. Modified asphalt. Length: 39.14 km. Nicaragua. 2018-2020. For Acruta & Tapia.
65. Backcalculation Analysis of Villa de San Antonio – Goascarán Road Logistics Corridor Modules. Report 1. Honduras, 2017. For Ing. Oscar Moncada Buezo.
66. Determination of Structural Capacity and Design Proposal for Logistic Corridor Sections II and III, Villa de San Antonio – Goascarán Highway, Honduras. 2018. For Engineer Oscar Moncada.
67. Backcalculation Analysis of Logistic Corridor Modules Villa de San Antonio – Goascarán Highway. Report 2. Honduras, 2018. For Ing. Oscar Moncada Buezo. Análisis estructural, deterioros y materiales del pavimento. Proyecto Jícaro Galán – El Amatillo. Longitud: 40,3 km. Honduras. 2018. Para Prodecón.
68. Soil and Pavements Specialist. Improvement of the Macuelizo – Santa María Road” (10.00 Km). Cobble. 2018-2020. For Acruta & Tapia.
69. Pavement design for the CA-13 Highway Rehabilitation and Improvement Project: Lot B: Exit of the bridge over the Tomalá River (Station 230+790) to Sabá (Detour to Olanchito, Station 269+130). Honduras. Length 38.34 km. 2019. For ACI.
70. Pavement Design for the Pre-Feasibility Study of the Application of Public-Private Partnership (PPP) for the project: "Pacific Corridor between the Border Crossing in La Hachadura and Highway CA12 (Kilo 5)". FOMILENIO. The Savior. For INCOSA-Spain. 2019-2020.
71. Evaluation of the Performance in the Modified Asphalt Mixture with Plastic placed in the Corregimiento San Carlitos, Community of San Francisco, Chiriquí, Panama. 2019. For Green Tide.
72. Report on the Analysis of the Effectiveness of the Intervention Works Carried Out on Crossing Routes 10101 and 10109. Costa Rica. 2019. For Margarita Soto.
73. Revision of the IRI Specification for Traverse Routes. Costa Rica. 2019. For Margarita Soto.
74. Review and Optimization of the "Engineering Final Design of the Project "Rural Road Improvement MOR13W, Section: San Simón Municipality – San Isidro Municipality, department of Morazán". The Savior. 2019. For Laptop, Honduras.
75. Design of Pavement Expansion to 6 Lanes for Las Playas Corridor, Section La Chorrera-Santa Cruz. Contract AL-1-85-17. Panama. 2019. Las Playas Corridor Consortium (PROINTEC).
76. Experimental design, Construction and Laboratory Evaluation of HMA modified with recycled plastics for Marea Verde Foundation, Panama. 2019.
77. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Wiwili Bridge on Coco's River Construction. 2019. For Acruta & Tapia, Nicaragua.
78. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Project of Construction of Border Facilities at Guasaule. 2020. For Acruta & Tapia, Nicaragua.
79. Development of the Biding Documents for a PMS for the Honduras National Road Network. 2020. For ACI, Honduras.
80. Design, Construction, Supervision and Performance Monitoring of a Base Course using Foamed Asphalt in San Carlos. 2021. Constructora Herrera, Costa Rica.

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81. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). San Jose-La Cañada Road Construction Project. 2021. For Acruta & Tapia, Nicaragua.
82. Georadar study for 3D-modeling of the Plattform Structure of the ENACAL Suction Plant. 2021. For Acruta & Tapia, Nicaragua.
83. HDM-4 Modeling of Pavement Performance and Maintenance/rehabilitation Actions for the Prefactibility Study of the San Jose-Cartago Concesion. 2020-2021. For ITP, Costa Rica.
84. Design, Construction, Supervision and Performance Monitoring of a Base Course using RAP Stabilized with Asphalt Emulsion. 2021. For MSD Consultores y Constructores, Costa Rica.
85. Concepts of thin-structural HMA Overlays on Flexible Pavements. 2021. For MSD Consultores y Constructores, Costa Rica.
86. Analysis of Maintenance Activities at Florencio del Castillo Highway. 2021. For MSD Consultores y Constructores, Costa Rica.
87. Evaluation and Condition Assesment through HMA Performance Tests of HMA overlays at national Route 32. 2021. For MSD Consultores y Constructores, Costa Rica.
88. Use of Recycled Asphalt Pavements (RAP) Stabilized with Emulsion as Base Courses. 2021. For MSD Consultores y Constructores, Costa Rica.
89. Design, Construction, Supervision and Performance Monitoring of a Base Course using Foamed Asphalt in Santa Teresa. 2021. Constructora Herrera, Costa Rica.
90. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Las Flores-Guanacaste Road Construction Project. 2021-2022. For CAEM, Nicaragua.
91. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Rosita-Bonanza Road Construction Project. 2021-2022. For CAEM, Nicaragua.
92. Soils and Pavements Engineer (In charge of pavement design/review, materials QA, materials sources approval, and other activities). Tipitapa-San Benito Road Construction Project. 2021-2022. For CAEM, Nicaragua.
93. Evaluation of Premature Distresses and Solution Proposal for Jicaro Galan-Amatillo Highway. 2021. For ACI Consultores, Honduras.
94. Use of CaOH as a HMA-filler and Anti-stripping Agent. 2019-2022. For Horcalsa, Guatemala.

Experience in design / supervision / inspection of airport pavements:

95. Evaluation of the Structural Design of the Reconstruction of the Track 07/25 of the Juan Santamaría International Airport, for INGENIA Consultores, Costa Rica 2001.
96. Supervisor of the Reconstruction of the Track 07/25 of the Juan Santamaría International Airport, for INGENIA Consultores, Costa Rica, 2001.
97. Quality Assurance Consultant of the Reconstruction of the Track 07/25 of the Juan Santamaría International Airport, for INGENIA Consultores, Costa Rica, 2001
98. Biannual friction resistance evaluation of runway 07/25 at Juan Santamaría International Airport. 2003-current. Costa Rica, 2004-2005.
99. Evaluation of IRI of Comalapa International Airport, San Salvador. 2006.
100. Review of the Design of Pavements, Access Ramps and Internal Transportation Streets of the International Airport, Daniel Oduber. Costa Rica. 2011.
101. Reinforcement Solutions for Pavements, Access Ramps and Internal Transportation Streets Airport Daniel Oduber. Costa Rica, 2012.
102. Quality Assurance and Construction Supervisor of the Juan Santamaría Airport Runway Rehabilitation. For ICC Consultores, Costa Rica. 2012.
103. Pavement Rehabilitation Design for the Internal Roads of U.S.A. Militar Base at Palmerola, Honduras, 2019.

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104. Analysis of Pavement Condition using HWD/Backcalculation and PCN Determination for the Runway of the Palmerola International Airport, Honduras. For ACI Consultores, 2021.
105. Pavement Design of the Runway Rehabilitation, Drainage Systems Analysis, Costs Estimation and Proposal for Performance-Based Contract for the Daniel Oduber International Airport, Liberia, Costa Rica. For the International Development Bank (IDB). 2020-2021.
106. Friction Evaluation and Analysis of the Tegucigalpa International Airport Runway and Taxiways, Honduras. For PEESA-Argentina; 2021.
107. Friction Evaluation and Analysis of the San Pedro Sula International Airport Runway and Taxiways, Honduras. For PEESA-Argentina; 2021.
108. Friction Evaluation and Analysis of the La Ceiba National Airport Runway and Taxiways, Honduras. For PEESA-Argentina; 2021.
109. Friction Evaluation and Analysis of the Roatan Island International Airport Runway and Taxiways, Honduras. For PEESA-Argentina; 2021.

Specific Experience in Evaluating Road Concession Contracts or Public-Private Partnerships (PPP)

110. Pavement and Geotechnical Condition Assessment of the San Jose-Caldera public works concession contract, from 2010 to 2018. Project Length: 76 km. Parameters evaluated: FWD, IRI, Friction, Pavement distresses (cameras), Road Safety, Geotechnical Problems.
111. Evaluation of contractual technical specifications for the project San José, Caldera. LM-PI-ERV-40-2010, September 2010.
112. Assessment report of the project San José, Caldera Year 2010. INF-PITRA-002-2010, December 2010.
113. Evaluation of road safety, National Route No. 27, San José-Caldera Concession Project, Pedestrian facilities, Side road conditions and aspects of road geometry. INF-PITRA-004-2010.
114. Analysis of the geological-geotechnical studies and the design, construction and maintenance of the section between the parking lots 46 + 780 to 46 + 860 and of the attention to the facts related to the failure of the filling section, San José Project -Calera, National Route 27, Section II. INF-PITRA-005-2010, December 2010.
115. Hydrological and hydraulic review of five points of national highway 27, INF-PITRA-006-2010. Project Evaluation Report San José - Caldera National Route 27 Year 2011. INF – PITRA –2010–2011. December 2011.
116. Evaluation of the sections located between the Stations 36 + 340 to 36 + 460, 38 + 700 to 38 + 800 and 44 + 300 to 44 + 530. Section II, National Route 27 San José – Caldera. LM-PI-UE-002-11. March 2011.
117. Evaluation of hydrothermal conditions between kilometers 38 and 48 of National Route 27. LM-PI-UE-007-11. July 2011.
118. Location and evaluation of sites susceptible to landslides of the National Route 27 San José - Caldera, Section II. LM – PI – UE – 008 – 2011. October 2011.
119. Inspection report Concession San José-Caldera. LM-PI-UE-005-2012. July 2012.
120. Performance specifications for concession projects. LM-PI-130-12. October 2012.
121. Definition of technical specifications for operation and maintenance, Public Works Concession Project, San José-San Ramón.
122. Assessment report of the Project San José – Caldera Ruta Nacional 27 Año 2012. INF – PITRA – 001 – 2013. April 2013.
123. Assessment report of the Project San José – Caldera Ruta Nacional 27. Año 2013 - 2014. INF – PI – UGERVN – 05 – 2014. March 2014.
124. Short audit report, Road San José-Caldera, Ruta Nacional 27, Slope in section 38+500. LM-PI-UGERVN-005-2013. April 2013.
125. Inspection Report, Integral Slope Review, San José-Caldera Road, National Route 27. LM-PI-UGERVN-007-2013. May 2013.

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- 126.**Performance-Based Indicator Specialist. Contrato de Mantenimiento por Niveles de Servicio, Las Piedrecitas-Empalme Izapa. No. LPI-FOMAV/BID-01-2014. 60,5 km. 2015-2020. Nicaragua. Para INCOSA-Nicaragua.
- 127.**Pavement Engineer Specialist for the Pre-Feasibility Analysis of the Troncal Magdalena Highway Concession (312 km) 2021-2022. For INCOSA, Colombia.

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At LanammeUCR web library, there are 732 signed reports under my direction

Additional Experience in Road Assessment Indicators using Standards (approximately 5000 km evaluated per report)

- Assessment Report of the National Road Paved Network of Costa Rica. Year 2004.
- Assessment Report of the National Road Paved Network of Costa Rica. Year 2011.
- Assessment Report of the National Road Paved Network of Costa Rica. Year 2013.
- Assessment Report of the National Road Paved Network of Costa Rica. Year 2015.
- Assessment Report of the National Road Paved Network of Costa Rica. Year 2017.

Evaluated Field Performance Parameters (km)

- International Regularity Index: ~ 25 000 km
- Structural Capacity by Falling Weight Deflectometry: 25 000 km
- Superficial Friction (micro and macro texture): 12 000 km
- Evaluation of deterioration by images (5 000 km)

Superpave Designs and Superpave Performance Grade Assesment

128.Bi-weekly assessment of asphalt produced by Refinadora Costarricense de Petróleo (RECOPE), period 2001-2005 and 2009-2016.

129.Constructora Urbana S.A. LM-PI-C-UMP-008-15. Volumetric design SUPERPAVE of asphalt mix

130.Asfaltos Panameños S.A. LM-PI-C-UMP-011-15. Evaluation of binder and volumetric design of asphalt mix based on the SUPERPAVE methodology

131.Constructora Asfáltica Panamá S.A. LM-PI-C-UMP-013-15. Evaluation of binder and volumetric design of asphalt mix based on the SUPERPAVE methodology

132.Asfaltos Panameños S.A. LM-PI-C-UMP-015-15 Evaluation of volumetric design of asphalt mix based on the SUPERPAVE methodology

133.Castro & DeLaTorre S.A. LM-PI-C-UMP-019-15 Evaluation of modified binder and volumetric design of asphalt mix based on the SUPERPAVE methodology

134.MCM Global S.A. LM-PI-C-UMP-020-15 Volumetric design SUPERPAVE of asphalt mix

135.Odebrecht Panamá Tocumen LM-PI-C-UMP-021-15 Evaluation of modified asphalt binder and volumetric design SUPERPAVE of asphalt mix

136.Odebrecht Panamá Santiago. LM-PI-C-UMP-029-15. Verification of volumetric design of asphalt mix SUPERPAVE.

Total of projects desings 2 to 9:

- Superpave design with virgin asphalt: 4
- Superpave designs with polymer modified asphalt: 7
- Superpave design with asphalt modified with synthetic fiber: 2

137.Superpave design for Project Quepos-Savegre.

138.Superpave design for Project Savegre-Barú.

139.Superpave Asphalt Mix Designs for Research projects with ellaboration of Superpave asphalt mix designs: Moisture Damage Project at UCR

- Non modified asphaly design: 4
- With lime: 4
- With polymer: 16

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Nanotechnology and Green Pavements at UCR

- Nano-silica: 2
- Nanocal: 1
- Wasting Materials: 4

Recycled Mixtures

RAP: 4

*Total of Superpave Asphalt Mixtures Designs: **50***

Total Performance Grade Assessments for virgin and modified asphalt: At least 162

Concrete Pavement Projects

- 140.** Reconstruction and Improvement of the Project Cruce de Moravia - Cruce de Ipís. Route 218. LM-PI-PV-AT-62-04, realizado con pavimento de concreto. 2004
- 141.** Improvement National Route 204, Zapote San Francisco. Superficial Regularity Assessment. LM-AT-156-09, made with concrete pavement. 2009
- 142.** Improvement National Route 211, San Francisco-La Colina. Superficial Regularity Assessment. LM-AT-215-09, made with concrete pavement. 2009
- 143.** Improvement National Route 167, Librería Universal-La Salle. Superficial Regularity Assessment. LM-AT-255-09, made with concrete pavement. 2009
- 144.** Improvement National Route 167, Librería Universal-La Salle. Superficial Regularity Assessment. LM-AT-111-10, made with concrete pavement. 2010
- 145.** Evaluation of the Performance of Surface Condition of Road Reconstruction Projects. (Includes concrete works San Francisco La Colina and Zapote San Francisco. LM-PI-AT-042-12, made with concrete pavement. 2012.
- 146.** Cañas - Liberia: Analysis of the Quality of the Loan Material and Evaluation of Traffic Control in Construction. LM-PI-AT-130-12, made with concrete pavement. 2013.
- 147.** Cañas - Liberia: Analysis of the Quality of the Loan Material, Subbase, Stabilized Base. LM-PI-AT-047-13, made with concrete pavement. 2013.
- 148.** Analysis of the Quality of the Loan Material, Subbase and Stabilized Base and Concrete Pavement. LM-PI-AT-066-13. 2013.
- 149.** Cañas - Liberia: Analysis of the Quality of the Loan Material, Subbase and Stabilized Base and Concrete of the Rigid Pavement. LM-PI-AT-029-14. 2014
- 150.** Slabs placed in Ochomogo - Cartago. National Route 2. Note Report LM-IC-D-0345-12. 2012
- 151.** Evaluation of the materials and the activities of placing of concrete and plastic tuff flooring. Replacement of concrete slabs, Ochomogo-Cartago. LM-AT-114-12. 2012.
- 152.** Patching in concrete slabs Limonal - Tempisque. National Route 18. Note Report LM-IC-D-0340-14. 2014.
- 153.** Replacement of slabs placed in Cartago. National Route 10. Section: Cruce Ruta 2 and Cementerio Cartago. Note Report LM-AT-047-16. 2016.
- 154.** Replacement of slabs placed in Limonal - Tempisque. National Route 18. Currently performance tracking. 2016

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3. [Manual Centroamericano de Especificaciones para la Construcción de Carreteras y Puentes](#). Co-author. Made in LanammeUCR under contract of the SIECA. Published in 2001.
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5. Loría, Luis; Arce, Mario; Jiménez, Mónica; Moreira, Luis Diego; Elizondo, Fabián. [Evaluación del contenido del agua atrapada en mezclas asfálticas en caliente](#). Main autor. Published in the Ibero-American Asphalt Congress. 2005.
6. Aguiar Moya, José Pablo; Moreira, Luis Diego; Loría Salazar, Luis Guillermo. [Reología de Asfaltos modificados](#). Published in the Ibero-American Asphalt Congress. San José, Costa Rica 2005.
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12. [Desarrollo de una Especificación para Densidad de Juntas Longitudinales. Fase II: Evaluación de Secciones de Prueba](#). Nevada-Reno University. Co-author. 2005.
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169. Loría-Salazar, Luis Guillermo; Aguiar-Moya, José Pablo; Miranda-Arguello, Fabiola. [Hot Recycling Technologies: Experiences and New Challenges in Costa Rica and Central América](#). Publicado en el Internacional Forum AAPT Volumen 86. 2017

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170. [Truck Weights on Municipal and National Roads without Weight Enforcement](#). publication date 2019
publication description Transportation Research Record 1–100 National Academy of Sciences:Transportation Research Board 2019
171. [Analysis of Asphalt Oxidation By Means Of Accelerated Testing And Environmental Conditions](#) publication.
National Academy of Sciences:Transportation Research Board 2019
172. [Analysis of the tire pressure effect on flexible pavement's responses by means of FEM and APT instrumentation](#). publication date 2018 publication description. Advances in Materials and Pavement Performance Taylor & Francis ISBN 978-1-138-31309-5 2018
173. [Calibration of a Mechanistic-Empirical Fatigue Model under Different Moisture Conditions](#) publication date 2018 publication description TRB. 2018.
174. [Desarrollo de la Gestión Vial Municipal en Costa Rica: Incidencia de Elementos Político – Técnicos](#). Lilly Xu-Ye, Sharline López-Ramírez, Jaime Allen Monge, Luis Guillermo Loría-Salazar. *Revista Centroamericana De Administración Pública*, (75), 149–158. Recuperado a partir de <https://ojs.icap.ac.cr/index.php/RCAP/article/view/40>
175. [Costa Rica's Mechanical Empirical Design Software For Flexible Pavements](#), CRME publication date 2018
publication description TRB. 2018.
176. [Differences in asphalt binder variability quantified through traditional and advanced laboratory testing](#)
publication date 2018 publication description Construction and Building Materials 176 (2018) 500–508
177. [Diseño de mezcla asfáltica con materiales de desecho](#). publication date 2018 publication description
Revista Ingeniería de obras Civiles Vol 8, No. 1, ISSN 07190514, Chile.
178. [Effects of Freeze-Thaw Cycles and Anti-Stripping Agents on Hot Mix Asphalt Dynamic Modulus](#) publication date 2018 publication description TRB. 2018.
179. [Testing and Modeling Geotextiles Reflective Cracking Attenuators](#) publication. 2018 publication description Advances in Materials and Pavement Performance Taylor & Francis ISBN 978-1-138-31309-5 2018
180. [Effects of moisture damage and anti-stripping agents on hot mix asphalt dynamic modulus](#). Jose Corrales-Azofeifa, Adrian Ricardo Archilla ,Fabiola Miranda-Argüello,Luis Loria-Salazar. Road Materials and Pavement Design (RMPD). Pages 1135-1154 | Received 12 Apr 2018, Accepted 11 Oct 2018, <https://doi.org/10.1080/14680629.2018.1539408>. Published online: 05 Nov 2018.
181. [A synthesis of the first full-scale experiment in Central America](#). International Journal of Pavement Engineering (IJPE). Tania Ávila-Esquivel, José Pablo Aguiar-Moya, Edgar Camacho-Garita, Luis Loría-Salazar Taylor and Francis. Volumen 22. Number 5. Pages 560-569. <https://doi.org/10.1080/10298436.2019.1628959>. 2019.
182. [APT Analysis Based on Deflection Parameters](#), Jose Aguiar-Moya, Tania Ávila-Esquivel, Edgar Camacho-Garita, and Luis Loria-Salazar, TD&I Conference, Chicago, Illinois, 2019.
183. [Effect of HMA Thickness, Type of Base, and Moisture on an APT Test](#). Jose Aguiar-Moya, Luis Loria-Salazar, TD&I Conference, Chicago, Illinois, 2019.
184. [Oxidative and Thermoreversible Aging Effects on Performance-Based Rheological Properties of Six Latin American Asphalt Binders](#). Max Berkowitz, Matthew Filipovich, Alejandra Baldi, Simon A. M. Hesp, José P. Aguiar-Moya and, Luis G. Loría-Salazar. Energy Fuels 2019, 33, 4, 2604–2613. Publication Date: February 12, 2019 <https://doi.org/10.1021/acs.energyfuels.8b03265>. 2019.
185. [Structural Analysis for APT Sections Based on Deflection Parameters](#). Edgar Camacho-Garita, Robinson Puello-Bolaño, Piero Laurent-Matamoros, José P. Aguiar-Moya, Luis Loria-Salazar. Transportation Research Board, <https://doi.org/10.1177/0361198119828284>. 2019.
186. [Carbon Footprint Estimation in Road Construction: La Abundancia–Flores Case Study](#). Marianela Espinoza, Noelia Campos, Rebekah Yang, Hasan Ozer, José P. Aguiar-Moya, Alejandra Baldi, Luis G. Loría-Salazar and Imad L. Al-Qadi. Sustainability 2019, 11(8), 2276; <https://doi.org/10.3390/su11082276>.
187. [Laboratory and Field Oxidation of Asphalt Binders: a Kinetic Study](#). Baldi, Alejandra; Aguiar-Moya, José P Loría-Salazar, Luis G. Transportation Research Board, <https://trid.trb.org/view/1572298>. 2019.
188. [Improvements to Backcalculation Procedure by Means of Structural Analysis Based on Deflection Parameters](#). Piero Laurent-Matamoros, Edgar Camacho-Garita, Tania Avila-Esquivel, Jose Aguiar-Moya, and Luis Guillermo Loria-Salazar. Accelerated Pavement Testing Proceedings. ISBN 978-3-030-55236-7

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- (eBook). ISSN 2366-2565 ISSN 2366-2565. <https://doi.org/10.1007/978-3-030-55236-7>. Nantes, France, 2022.
- 189.** [Development of a Distress Prediction Model Based on Deflection Parameters](#). Piero Laurent-Matamoros, Edgar Camacho-Garita, Tania Avila-Esquivel, Jose Aguiar-Moya, and Luis Guillermo Loria-Salazar. Accelerated Pavement Testing Proceedings. ISBN 978-3-030-55236-7 (eBook). ISSN 2366-2565 ISSN 2366-2565. <https://doi.org/10.1007/978-3-030-55236-7>. Nantes, France, 2022.
- 190.** [Development and Calibration of Performance Models Based on APT Data](#). Tania Avila-Esquivel, Piero Laurent-Matamoros, Edgar Camacho-Garita, , Jose Aguiar-Moya, and Luis Guillermo Loria-Salazar. Accelerated Pavement Testing Proceedings. ISBN 978-3-030-55236-7 (eBook). ISSN 2366-2565 ISSN 2366-2565. <https://doi.org/10.1007/978-3-030-55236-7>. Nantes, France, 2022.
- 191.** [RESIN8©: A Micro-Plastic Assessment and Product Circularity When Used in CMU's and Concrete Pavers](#) Luis G. Loria-Salazar and German Gomez-Sandoval. Engineering Advances, 1(1), 1-8. DOI: 10.26855/ea.2021.06.001. 2021.
- 192.** UNDER REVIEW. [Integrated Performance Evaluation of Asphalt Mixtures with Very High Reclaimed Asphalt Pavement \(RAP\) Content](#). Reza Imaninasab, Luis Lora, Alan Carter. CONBUILDMAT-D-22-01269R1
- 193.** UNDER REVIEW: [Impact of Aggregate Structure Restoration on Rutting Resistance in Asphalt Mixtures with Very High Percentage of RAP](#). Reza Imaninasaba, Alan Carter and Luis Loria-Salazar. Submitted to RMPD Special Issue for ISAP 2022.
- 194.** UNDER REVIEW: [Relation between crossover modulus and asphalt chemistry to oxidation process based on the RHEO+ Method](#). Ernesto Villegas, Jose Aguiar-Moya, Alejandra Baldí Sevilla, Fabiola Miranda and Luis Loria-Salazar. Submitted to RMPD Special Issue for ISAP 2022.
- 195.** UNDER REVIEW: [Use of a Pre-conditioned resin aggregate made from recycled plastic as hot-mix asphalt additive](#). Luis Loria-Salazar, German Gomez, David Zamora and Donald Thompsom. Submitted to JTE Special Issue for ISAP 2022.
- 196.** UNDER REVIEW: [Determinación de propiedades viscoelásticas y termo-químicas de un asfalto AC-20 modificado con varios tipos de nano-arcilla](#). Ignacio Vladimir Cerón, Luis Guillermo Loría-Salazar. Submitted to Iberoamerican Asphalt Conference (CILA), Punta del Este, Uruguay, 2022.

VIII. THESIS AND DOCTORAL DISSERTATION

Master's Thesis:

Evaluación y Desarrollo de Técnicas de Mitigación de Reflejo de Grietas en el Estado de Nevada, Estados Unidos (Evaluation and Development of Crack Reflection Mitigation Techniques in the State of Nevada, United States). 2008.

Doctoral Dissertation:

Evaluación y Desarrollo de Metodologías de Diseño de Mezclas Asfálticas que Contienen Materiales Asfálticos Reciclados (Evaluation and Development of Design Methodologies for Asphalt Mixtures Containing Recycled Asphalt Materials). 2011.

IX. UNIVERSITY COURSES TAUGHT

University Undergraduate and Postgraduate

- **Statics.** University of Costa Rica; 2000-2001 and 2020-2021.
- **Pavement Laboratory.** University of Costa Rica; 2001-2005.
- **Construction materials.** University of Nevada Reno; 2008-2010.
- **Analysis and Design of pavements.** University of Nevada Reno; 2010.
- **Applied Statistics for Engineers.** Civil Engineering School, University of Costa Rica; 2011-2013.

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- **Quality control of Road Works.** Universidad Nacional de Ingeniería, Managua; Nicaragua 2011.
- **Introduction to the use of the new AASHTO-MEPDG Empirical-Mechanistic Design Guide.** Universidad del Norte Barranquilla, Colombia; 2013.
- **Materials for Pavements.** System of Postgraduate Studies: "Master in Transport Infrastructure and Roads" University of Costa Rica; 2014-2016.
- **Advanced Pavement Design.** Postgraduate Education System, "Master in Transport Infrastructure and Roads" University of Costa Rica; 2014-2017.
- **Introduction to the use of the new AASHTO-MEPDG Empirical-Mechanic Pavement Design Guide.** Universidad Piloto de Colombia; 2015.
- **Introduction to the design of materials and structural of flexible pavements.** America Institute of Public Administration ICAP, Costa Rica; 2015.
- **Infrastructure Management.** Postgraduate Education System, "Master in Transport Infrastructure and Roads" University of Costa Rica; 2017.
- **Workshop in Mechanic Design of Flexible Pavements,** Universidad Americana, Managua; 2015.

Professional Actualization/Training Taught Courses

- **Laboratory of Asphalt Mixes.** LanammeUCR 2001.
- **Laboratory of Asphalt Mixes.** LanammeUCR 2002.
- **Quality Control of Aggregates.** LanammeUCR 2004
- **Inspection of the Construction and Conservation of Asphalt Pavements.** LanammeUCR 2015
- **Superficial Regularity and Friction.** University of Costa Rica 2004.
- **Quality Management Systems for Accreditation of Testing Laboratories.** University of Costa Rica 2004.
- **Advanced Design of Pavements.** University of Costa Rica 2010-2011.
- **Design of Concrete Pavements.** University of Costa Rica 2010.
- **Introduction to the United States Pavement Design Mechanism Empirical Design Guide, MEPDG.** Pontificia Universidad Javeriana 2011.
- **Concepts of Mechanistic Design of Pavements and Introduction to Nanotechnology in Pavements.** Universidad Pontificia Bolivariana Seccional Bucaramanga November 2012.
- **Mechanistic Empirical Pavement Design Guide (MEPDG).** Universidad del Norte. Barranquilla, Colombia, September 2013.
- **Seminar "Estado del Arte del Diseño de Mezclas Asfálticas recicladas (RAP), una alternativa verde".** CORASFALTOS, Medellín, Colombia, October 2013.
- **Seminar Mechanistic Pavement Design for the company ITINERIS.** Bogotá, Colombia, October 2013.
- **Advanced Materials Characterization Course.** LanammeUCR, November 2014.
- **Retrocalculus of Modules in Flexible Pavements,** ANEIC and LanammeUCR Costa Rica.
- **Introduction to Mechanical-Empirical Pavement Design,** ANEIC-Costa Rica, 2012-2014.
- **ELMOD,** LanammeUCR, 2015
- **Course Viscoelasticity applied and modeling of viscoelastic linear damage** Dr. Thiago Aragão, LanammeUCR 2016
- **Mountain Roads Seminar (Seminario Carreteras de Montaña),** Design and Construction of stabilization works, Geological aspects - geotechnical and Risk management. San José, september 2017

X. REVIEWER OF SCIENTIFIC PUBLICATIONS

- AAPT: American Association of Asphalt Paving Technologists.
- Congreso Ibero Latinoamericano del Asfalto. CILA.
- Iberoamerican Committee, A0010, Transportation Research Board, TRB.

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- Bituminous Materials Committee, AFK20, Transportation Research Board, TRB.
- International Journal of Pavement Research and Technology (IJPRT).
- Engineering Magazine, Universidad de los Andes, Colombia.
- 8th International Conference on Managing Pavement.
- Geohunan 2011 International Conference.
- ASTM Journal of Testing and Evaluation.
- CONDBUILDMAT Construction and Building Materials
- EIA Universidad Antioquia
- Environmental Geotechnics
- ICMPA University of Maryland
- IJPRT International Journal of Pavement Research and Technology
- International Journal Of Pavemant Engineering
- ISAP International Society for Asphalt Pavements
- JTE Journal of Transportation Engineering.
- Material Research Society (MRS)
- Revista Chilena de Ingeniería
- DYNA Magazine
- "Reflexiones" Magazine: Faculty of Social Sciences
- RIOC Red Internacional de Organismos de Cuenca, Chile
- Siivroma 2012
- Universidad de los Andes, Bogotá
- Pontificia Universidad Javeriana, Bogotá
- Universidad Minho Portugal
- TRB, APD40
- TRB, AFK20
- TRB, AFK50
- Scientific Committee: Tenth International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA) 2017

XI. EDITORIAL BOARD MEMBER

- Road Materials and Pavement Design (RMPD). 2018-now
- International Journal of Pavement Engineering (IJPE). 2017-now.

XII. THESIS DIRECTION

Bachelor/Licence Thesis

1. University of Costa Rica. As Director in the thesis for Bachelor degree: "Desarrollo de un sistema piloto de administración de pavimentos en la ciudad de Puntarenas"; presented by Rodrigo Emanuel Arroyo Araya.
2. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Desarrollo de un sistema piloto de administración de pavimentos para el sector este de Escazú"; presented by Erika Jaikel Piza. 2001
3. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Efecto del tamaño máximo del agregado en mezclas asfálticas modificadas con polímeros", presented by Luis Gustavo Siles Agüero. 2002.
4. University of Costa Rica. As Director in the thesis for Bachelor degree: "Estudio estadístico comparativo de los métodos para determinar contenido de asfalto y granulometría en mezclas asfálticas" presented by Mauricio Salazar Blanco. 2003.
5. University of Costa Rica. As Director in the thesis for Bachelor degree: "Desarrollo de un sistema de administración de pavimentos en la ciudad de Liberia" presented by Juan Carlos Zúñiga Blanco. 2003.

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6. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Modelación de desempeño para mezclas asfálticas con graduación densa y agregado sedimentario"; presented by Elizabeth Carmona Arias. 2003.
7. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Efecto de las propiedades de los componentes de la mezcla asfáltica sobre la resistencia al deterioro por efecto del agua"; presented by Wendy Sequeira Rojas. 2004.
8. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Valoración de resistencia al daño por humedad y a la deformación permanente en mezclas asfálticas con matriz de agregado grueso de origen volcánico"; presented by José Pablo Aguiar Moya. 2004.
9. University of Costa Rica. As Director in the thesis for Bachelor degree: "Cuantificación del efecto de confinamiento de un geosintético en estructuras de pavimento"; presented by Paulina Leiva Padilla. 2011.
10. University of Costa Rica. As Director in the thesis for Bachelor degree: "Análisis integral y desarrollo de Plan Quinquenal para la Red Vial Cantonal de la Municipalidad de Flores, Heredia (2011)"; presented by Laura Díaz Aguilar. 2011
11. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Desarrollo de una metodología práctica para realizar gestión de pavimentos flexibles a nivel de red vial municipal a partir de inventarios de condición superficial"; presented by Luis Carlos Zamora Bustamante. 2011.
12. University of Costa Rica. As Director in the thesis for Bachelor degree: "Evaluación y comparación de las respuestas para el comportamiento de un pavimento flexible, usando la teoría de multicapa elástica, viscoelasticidad y elemento finito"; presented by Felipe Antonio Mena Corrales. 2012.
13. University of Costa Rica. As Director in the thesis for Bachelor degree: "Elementos fundamentales para el desarrollo de una guía de diseño de pavimentos empírico-mecánica para Costa Rica"; presented by José Pablo Vargas Hernández. 2013.
14. University of Costa Rica. As Director in the thesis for Bachelor degree: "Evaluación del comportamiento a la fatiga de una mezcla de concreto MR-4,5 MPa con adición de fibras de polipropileno"; presented by Sukti Monge Morales. 2013.
15. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Estudio comparativo del desempeño en laboratorio para concretos asfálticos de granulometría densa y granulometría discontinua"; presented by Gustavo Badilla Vargas. 2013.
16. Universidad Fidélitas. As Director in the thesis for Bachelor degree: "Desarrollo de Manual para la evaluación e inventario de pavimentos mediante la utilización de software de análisis de imágenes digitales georeferenciadas"; presented by Cristian Valverde Cordero. 2013.
17. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Propiedades mecánicas de acero de los tubos estructurales laminados en frío con sección cuadrada y rectangular fabricados en Costa Rica", presented by Carlos Andrés Gómez Godínez. 2013
18. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Comportamiento dinámico de limos volcánicos de estructura porosa en Cinchona", presented by Heylin Parra Calderón. 2013
19. University of Costa Rica. As Director in the thesis for Bachelor degree: "Desarrollo de una metodología para la obtención de curvas de deterioro en tramos de la Red Vial Nacional"; presented by Víctor Ullóa Beita. 2014.
20. University of Costa Rica. As Director in the thesis for Bachelor degree: "Determinación de la capacidad del georadar, GPR, dentro de los procedimientos empleados en el análisis de la Red Vial Nacional"; presented by Susana Valverde Masís. 2014.
21. University of Costa Rica. As Director in the thesis for Bachelor degree: "Efecto de la modificación con polímero en la resistencia a la fatiga de mezclas asfálticas en caliente de tamaños nominales 9.5 y 12.5 mm"; presented by July César Paniagua Fernández. 2014.
22. University of Costa Rica. As Director in the thesis for Bachelor degree: "Metodología para evaluar la susceptibilidad de accidentes de tránsito considerando parámetros de seguridad vial de la infraestructura en vías urbanas"; presented by Rosario Andrea Espinoza Carazo. 2014.
23. University of Costa Rica. As Director in the thesis for Bachelor degree: "Análisis micromecánico de matrices asfálticas finas para la obtención de módulos de cortante y flexión y generación de curvas maestras"; presented by Fabiola Miranda Argüello. 2014.

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24. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Caracterización del desempeño de mezclas asfálticas en caliente de tamaño nominal 9.5 mm con y sin la adición de polímero modificante"; presented by José Fabián Paniagua Fernández. 2014.
25. University of Costa Rica. As Director in the thesis for Bachelor degree: "Calibración inicial de un modelo de Índice de Fricción Internacional para los corredores viales de Mayr tránsito en Costa Rica"; presented by Mayra Lucía Morales Aguilar. 2015.
26. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Análisis experimental del comportamiento de las bases estabilizadas con cemento para carreteras ante cargas de fatiga"; presented by José Alfaro Martínez. 2015.
27. University of Costa Rica. As Director in the thesis for Bachelor degree: "Desarrollo de modelos estadísticos para la determinación de respuestas mecánica-críticas en pavimentos rígidos"; presented by Ricardo Quirós Orozco. 2015.
28. University of Costa Rica. As Director in the thesis for Bachelor degree: "Estudio del fenómeno de deformación permanente en mezclas asfálticas en caliente con ensayos empíricos de flujo y modelación de elemento finito"; presented by Jorge Arturo Castro Ortiz. 2015.
29. University of Costa Rica. As Director in the thesis for Bachelor degree: "Herramienta de cálculo complementaria a la nueva metodología de diseño mecanístico-empírico de pavimentos flexibles en Costa Rica"; presented by Christopher Trejos Castillo. 2015.
30. University of Costa Rica. As Adviser in the thesis for Bachelor degree "Determinación y análisis de los factores climáticos críticos para el diseño de pavimento flexibles en Costa Rica"; presented by Ariana Perera Lizano. 2015.
31. University of Costa Rica. As Adviser in the thesis for Bachelor degree: "Evaluación del desempeño y resistencia a la humedad de asfalto modificado con nanosílica y con nanosílica funcionalizada con ácido esteárico"; presented by Alejandra Baldi Sevilla. 2015.
32. University of Costa Rica. As Director in the thesis for Bachelor degree: "Metodología para la determinación de puntos críticos en las carreteras nacionales del país y las medidas generales correctivas considerando las condiciones geométricas de las carreteras"; presented by Luz Elena Segura Rodríguez. 2015.
33. University of Costa Rica. As Director in the thesis for Bachelor degree: "Caracterización de materiales en el diseño de pavimentos costarricenses"; presented by Carlos José Valenzuela Amores. 2016.
34. University of Costa Rica. As Director in the thesis for Bachelor degree: Estimación de la dosificación apropiada de ligante asfáltico en la rehabilitación de pavimentos flexibles con uso de geosintéticos, presented by Mario Solano. 2016.
35. University of Costa Rica. As Director in the thesis for Bachelor degree: "Modelo de desempeño en pavimentos rígidos"; presented by José Mauricio Miranda Villegas. 2016.
36. University of Costa Rica. As Director in the thesis for Bachelor degree: "Evaluación de mezclas asfálticas recicladas mediante la obtención de propiedades mecánicas y de desempeño y el retrocálculo de propiedades a partir de la caracterización de morteros asfálticos mediante un ensayo DMA"; presented by Miguel Ángel Zamora Herrera. 2016
37. University of Costa Rica. As Director in the thesis for Bachelor degree: "Evaluación del daño por humedad en mezclas asfálticas en sitio y modelado en laboratorio del proceso de daño determinado"; presented by Daniela García Hidalgo. 2016.
38. University of Costa Rica. As Director in the thesis for Bachelor degree: "Evaluación de la calidad constructiva de las capas de pavimentos flexible mediante el control de la rigidez en obra"; presented by Sebastián Amén. 2016.
39. University of Costa Rica. As Director in the thesis for Bachelor degree: Herramienta de cálculo complementaria a la nueva guía mecanístico-empírica de pavimentos rígidos de Costa Rica, presented by Felipe Vargas. 2016
40. University of Costa Rica. As Director in the thesis for Bachelor degree: Herramienta de cálculo para el diseño de sobrecapas asfálticas de pavimentos flexibles en Costa Rica, presented by Piero Laurent. 2017
41. University of Costa Rica. As Director in the thesis for Bachelor degree: Análisis de la influencia de la presión de inflado en el desempeño de los pavimentos flexibles en Costa Rica, presented by Daniel Clark. 2017

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42. University of Costa Rica. As Director in the thesis for Bachelor degree: "Contexto del índice de Regularidad Internacional (IRI) en los proyectos de rehabilitación carreteros, presented by Verónica Solís Salas. 2017
43. University of Costa Rica. As Director in the thesis for Bachelor degree: Análisis de la influencia de la geometría en los valores de índice de Regularidad Internacional (IRI), presented by José Madrigal.
44. University of Costa Rica. As Director in the thesis for Bachelor degree: Evaluación de la resistencia de fatiga por reflejo de grietas en sobrecapas asfálticas reforzadas con materiales geosintéticos. Mauricio Picado Muñoz.
45. University of Costa Rica. As Director in the thesis for Bachelor degree: Determinación de la energía de fractura en mortero asfáltico Stefanie Rivera Alvarado.

Master's Thesis

1. Universidad Nacional de Ingeniería, Nicaragua. As Director in the thesis for Master's Degree "Determinación Experimental a escala de laboratorio de la ley de Fatiga para mezcla asfáltica en caliente usada en Nicaragua", presented by Arlette Navarro Solís. 2013.
2. Universidad Nacional de Ingeniería, Nicaragua. Como Director en la Tesis de Maestría: "Consideraciones Teóricas para el desarrollo de una guía mecanicista de diseño de pavimentos flexibles para Nicaragua"; presentada por los ingenieros Evert Antonio Rivera González y Jacqueline de los Ángeles Rojas Collado. 2016.
3. University of Costa Rica. As asesor in the thesis for Master's Degree: "Evaluación de la resistencia al daño por humedad y desempeño de asfalto modificado con nanosilica, diatomita y diatomita hidrófoba", presented by Alejandra Baldí, 2016
4. Thesis presentation of Jose Corrales University of Hawaii
5. University of Costa Rica. As Director in the thesis for Master's Degree: "Técnicas de colocación de geosintéticos para refuerzo de pavimentos con sobrecapas asfálticas"; presentada por Paulina Leiva Padilla. 2017
6. University of Costa Rica. As Director in the Master's degree Thesis: "Definición de un modelo mecánico para la estimación del módulo de la mezcla asfáltica a partir de la caracterización avanzada de morteros asfálticos" presented by Fabiola Miranda.

In process:

1. University of Costa Rica. As Director in the Master's degree Thesis: "Propuesta para una guía de diseño mecanística-empírica para pavimentos flexibles y semi-rígidos de Costa Rica" presented by Eliécer Arias.

PhD Thesis

1. Pontificia Universidad Javeriana; Bogotá, Colombia. As Adviser in the PhD Thesis: "Environmental Aging of Asphalt Mixtures"; presented by Ing. Wilmar Darío Fernández Gómez. Colombia 2014.
2. Universidad Industrial de Santander. As Evaluator Jury of the PhD Thesis: "Effect of Physicochemical Heterogeneity on Adhesion Phenomenon between Bitumen and Aggregates in Asphalt Mixtures"; presented by Yuly Fernanda López Contreras. Colombia 2016.
3. Docinade Costa Rica. Modificación de Asfalto Ecuatoriano con Nano-arcillas. Ignacio Vladimir Cerón.

XIII. KEY-NOTE SPEAKER PRESENTATIONS:

Costa Rica

1. The Superpave Mix Design. For the Escuela de Caminos de Montaña, Argentina. 2007.
2. Forum of Road Technology Investigations. LanammeUCR, 2004, 2005, 2007, 2009, 2010.
3. Private Round Table, Road Infrastructure Challenges, ECOANALISIS, Theme: "Análisis de la Infraestructura Vial de Costa Rica". San José, Costa Rica. 18 of November, 2010.

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4. Modern technics of recycled asphaltic pavements design. 70^o Anniversary of the Engineer Faculty. San Pedro de Montes de Oca. 29 of March, 2011.
5. Seminar of Road Maintenance by Levels of Service, BID. 15 of november de 2012. Theme: "Conclusiones sobre la posible implementación del modelo de contratación de la conservación vial por niveles de servicio o resultados en Costa Rica."
6. Cámara Costarricense de la Construcción. Business breakfast. Disertation about the theme "Infraestructura Vial, Contribuyendo al desarrollo del país". February, 2013.
7. "Elecciones Infraestructura Vial" Forum, CIEP. March, 2013.
8. "Red Vial Cantonal" Forum, Theme:"Importancia y Características de la Red Vial Cantonal. Colegio Federado de Ingenieros y Arquitectos". April 2013.
9. Construction Summit Congress, Round Table "El futuro de la infraestructura en Costa Rica"(The future of the infrastructure in Costa Rica). August 2013.
10. BID Country's Team CCR Seminar. Exposition about the Transport Sector Overview (Overview of the Transport Sector), Jacó-Puntarenas. August 2013.
11. Small talk about Pavement Design, Universidad Latina Heredia. January 2014.
12. Small talk about Pavement Design, Universidad Latina San Pedro. January 2014.
13. Ecoanalysis Activity. Exhibitor of the Theme "Estado actual de la infraestructura en el país". San José. February 2014.
14. National Route N°32 Conversation. Teletica Cámara Costarricense de Construcción, San José. March 2014.
15. Conference "Infraestructura en Costa Rica - Retos del nuevo Congreso" (Infrastructure in Costa Rica- Challenges of the new Congress). LanammeUCR. April 2014.
16. IV Conference on Research in Political Science, CIEP-UCR. May 2014.
17. Opening ceremony Congress College of Civil Engineers, San José. May 2014.
18. Small talk "Mejores prácticas y experiencia del Lanamme en el tema de transparencia" (Best practices and experience of the Lanamme in the subject of transparency). Public-Private Participation Workshop; ALIARSE, San José. June 2014
19. Conference via streaming "Conceptualización y desarrollo del laboratorio a escala natural de pavimentos del Laboratorio Nacional de Materiales de la University of Costa Rica: el PAVELAB" (Conceptualization and development of the natural scale floor laboratory at the National Materials Laboratory of the University of Costa Rica: PAVELAB) in the first InterCILA 2.0. June 2014.
20. Dissertation in the Round Table: "El estado de la cuestión en Costa Rica en relación con la gestión de documentos, el acceso a la información y el uso de esa información en la toma de decisiones de los gobernantes" in the XXVI National Archivistic Congress. July 2014.
21. Speaker of the Inaugural Act "Seminario de Reparación y Restauración de Taludes" (Seminary of Slope Repair and Restoration), San José. September 2014.
22. Forum: Infraestructura vial de Costa Rica en una encrucijada: Propuesta para un cambio radical (Costa Rican highway infrastructure at a crossroads: Proposal for a radical change), Omar Dengo Heredia. October 2014.
23. Cámara de Comercio Británico-Costarricense. Panelist in the event "Claves para un Sistema de Alianzas Público-Privadas Exitoso" (Keys to a Successful Public-Private Partnership System), San José. October 2014.
24. Conversation MOPT-Zona Económica Especial de Cartago, Instituto Tecnológico de Costa Rica. October 2014.
25. 1st Latin American Congress of Quality Engineering for Construction, ANALISEC, San José. October 2014.
26. Forum "Retos de la Infraestructura vial de Costa Rica en una encrucijada: propuesta para un cambio radical" (Challenges of the road infrastructure in Costa Rica in a crossroad: proposal for a radical change), Universidad Nacional. October 2014.
27. Awareness-raising Workshop on Public Procurement "Cuestionamos lo que tenemos, para aportar y construir desde un diálogo propositivo", San José. November 2014.
28. Forum "Red Vial Nacional: su estado y política pública para su mejora" (National Road Network: its state and public policy for its improvement), Instituto Costarricense del Cemento y Concreto, San José, November 2014.

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29. National Forum: Construyamos una Política Industrial para Costa Rica; Panelist for the forum "Ejes transversales en la Política Industrial" and Exhibitor of the Theme "Infraestructura para un éxito en el industria nacional" (Infrastructure for national industry success) MEIC, San Jose. November 2014.
30. XXV Congress of Professionals of MOPT. Exhibitor in the Round Table; "Las obras de Infraestructura Urgentes para el país" (The Urgent Infrastructure Works for the country), San José. November 2014.
31. International Seminar on Utilities and Development Companies CIEP Theme: "La calidad del servicio de carreteras en Costa Rica" (The quality of road service in Costa Rica), CIEP, San José. February 2015.
32. Panelist of the Forum: "Retos de la infraestructura pública y la gestión empresarial para la mejora del servicio de autobús" (Challenges of public infrastructure and business management to improve bus service), ARESEP, San José. March, 2015.
33. VIII National Soils Congress; Panelist, "El ordenamiento territorial en Costa Rica" (Land use planning in Costa Rica) Exhibitor of the theme "Efecto de los caminos rurales sobre la erosión" (Effect of Rural Roads in erosion), Asociación Costarricense de la Ciencia del Suelo (ACCS), Barceló Tambor Costa Rica. March 2015.
34. Infrastructure Forum; Theme: "Estado de la Infraestructura costarricense" (Costa Rican infrastructure state), Ecoanálisis, San José. May 2015.
35. Seminar "Espacio Subterráneo Alternativo para el Desarrollo y la Movilidad" (Alternative Underground Space for the Development and Mobility). Exhibitor of the Theme: "La perspectiva técnica, como capacidad, impacto, visión integral de obras en el país, particularmente desde el Plan Nacional de Desarrollo" ("The technical perspective, as capacity, impact, comprehensive view of works in the country, particularly from the National Development Plan), San José. May 2015.
36. Construction National Congress "Infraestructura: Asociaciones Públicas Privada" (Infrastructure: Public Private Associations) Discussion Panelist Theme 1 "Diagnostico de la situación actual de Costa Rica" (Diagnostic of the actual situation in Costa Rica). Cámara Costarricense de la Construcción, San José. July 2015.
37. X Central American and Caribbean Congress on Project Management APCON 2015 Panelist del Forum "Soluciones y Perspectivas de la Inversión Pública en CR" (Solutions and Perspectives of Public Investment in CR) Colegio de Ingenieros Civiles CR. September 2015.
38. Congress of "Asociaciones Público Privadas: Una alternativa para el desarrollo de Infraestructura en Costa Rica" (Public Private Partnerships: An Alternative for Infrastructure Development in Costa Rica). Panelist of the Forum "Experiencias de APP en CR: Estudio de casos" (Experiences of APP in CR: Case study). Ministerio de Hacienda. October 2015.
39. Symposium Infrastructure and Territory, CIEP. Exhibior of the Theme: "Desafíos Institucionales en el territorio" (Institutional Challenges in the territory), San José. October 2015.
40. Seminar of Ethics for Engineering, Exhibitor of the Theme: "Cumplimiento profesional en la ingeniería" (Professional fulfillment in engineer), Instituto Tecnológico de Costa Rica. February 2016.
41. Panelist in the Conservatory: "Construyendo una hoja de ruta para el impulso al desarrollo de infraestructura nacional" (Building a roadmap for boosting national infrastructure development), Asamblea Legislativa. November 2015.
42. Panelist in the Forum. "Competitividad del sector de la construcción y retos de la infraestructura" (Competitiveness of the construction sector and infrastructure challenges), Visión Magazine, San José. February 2016.
43. Symposium; "Hacia una movilidad sostenible en el Gran Área Metropolitana" (Towards sustainable mobility in the GAM), Expositor, Theme: "Infraestructura de Transporte Público" (Infrastructure of the Public Transport", San José. May 2016.
44. Panelist in the Forum; "Propuestas para modernizar la infraestructura del transporte: Mejorando la competitividad y la calidad de vida de los ciudadanos", Theme: "Elementos técnicos de una política pública en infraestructura vial" (Technical elements of a public policy in road infrastructure), Asamblea Legislativa, San José. August 2016.
45. Panelist in the First Institutional Forum 2016, that under the title "Hacia el funcionamiento armónico del Estado para el logro de un desarrollo integral con equidad" (Towards the harmonious functioning of the State for the achievement of integral development with equity), Quinta Mesa Redonda titled "Planificación

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- integral y estratégica de obras públicas de infraestructura y transporte, con un enfoque de ordenamiento territorial que privilegie la movilidad y el desarrollo socioeconómico sostenible” (Integral and strategic planning of public infrastructure and transport works, with a spatial planning approach that favors mobility and sustainable socio-economic development). University of Costa Rica September 2016
46. Panelist at the forum: "Infraestructura y Construcción" (Infrastructure and Construction), Theme "Transversal para un desarrollo integral" (Transversal for an integral development). Decisiones Magazine, San José. September 2016.
 47. Forum: "La Necesidad de Reformas en el transporte vial" (The Need for Reforms in Road Transport) . Exhibitor, Theme "Consideraciones para una reforma del sector vial en Costa Rica" (Considerations for a reform of the road sector in Costa Rica), Asamblea Legislativa, San José. September 2016.
 48. XV Congress of Civil Engineering 2016 CIC, Lecture "No-Linealidad de materiales granulares y suelos en deflectometría" (Nonlinearity of granular materials and soils in deflectometry), lecture "Guía de diseño mecanístico empírico de pavimentos para CR" (Mechanistic-Empirical Pavement Design Guide for CR) San José. September 2016.
 49. V World Congress of Accelerated Pavement Tests (APT), LanammeUCR, September 2016.
 50. International Seminar on Project Financing: successful experiences in Latin America. October 2016
 51. International Congress on Sustainable Construction CICS2017 Plenary "Mobility, resilient systems and competitiveness". San José May 2017

International

52. Mountain Road Engineering School Theme: "Ensayos Superpave" (Superpave Tests) San Juan, Argentina. 5 de July, 2007.
53. Meeting of the Ibero-American Committee (A010) of the Transportation Research Board (TRB). Theme: "The LanammeUCR: Development of a scientific exchange model for roads in Latin America". Washington DC, USA. 14 January 2009.
54. International Road Federation Conference: "Preserving our Highway Infrastructure Assets"; Theme: "Asset Management Initial Experience of Costa Rica's local Governments", Orlando, Florida. 3-6 August 2010.
55. Panelist in "Panorama de las Actualidades de la Pavimentación Asfáltica" (Overview of Asphalt Paving Updates), Rio de Janeiro, Brasil. November 2011.
56. XVII Latin American Congress of Asphalt. CILA, Theme "Estado del Arte en caracterización de asfaltos y mezclas asfálticas" (State of the Art in characterization of asphalts and asphalt mixtures). Antigua, Guatemala. November 2013.
57. Conference: Accelerated Pavement Testing Part 1 Sponsored By Committee on Full - Scale Accelerated Pavement Testing, January 2014.
58. III International Symposium of Pavement Engineering, Theme: "Estado del Arte en caracterización de asfaltos y mezclas asfálticas" (State of the Art in characterization of asphalts and asphalt mixtures), Lima, Perú. July 2014.
59. X Latin American Congress of Students of Civil Engineering, Theme: " Estado del Arte en caracterización de mezclas asfálticas" (State of the Art in characterization of asphalt mixtures), Arequipa, Perú. 2014
60. 6th Latin American Seminar on Asphalt and IX International Asphalt Conference. CORASFALTOS. Theme: "Reciclado de Pavimentos" (Pavement Recycling), Medellín, Colombia. August 2014.
61. International Asphalt Conference, Medellín Colombia. August 2014.
62. Heavy Vehicle Simulator International Alliance Meeting (HVSIA), Gainesville, Florida. August 2014.
63. IV Regional Congress IRF of Latin American Roads: Theme: "Evaluación de métodos nuevos y existentes para pavimentos asfálticos reciclados y las propiedades del diseño de mezcla" (Evaluation of new and existing methods for recycled asphalt pavements and the properties of the mixing design), Lima, Perú. September 2014.
64. 1st Salvadoran Asphalt Congress (ASFALCA) El Salvador, Pre Congress "El Maravilloso Mundo del Asfalto" (The Wonderful World of the Asphalt). MSCR Presentation: from Penetration to Asphalt Performance, ISA, EL Salvador. November 2014.

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65. X Meeting of Civil Engineering, Expositor, Theme: "El estado del arte y caracterización de mezclas asfálticas" (The state of the art and characterization of asphalt mixtures), Universidad Peruana de Ciencias Aplicadas UPC, Lima, Perú. November 2014.
66. International Road Maintenance Seminar, Theme: "El modelo costarricense en evaluación avanzada y gestión de redes viales" (The Costa Rican model in advanced assessment and management of road networks), BID, Panamá. December 2014.
67. MOP, Panamá. Capacitor, Theme: "Caracterización de Materiales-Asfalto y Agregados" (Characterization of Materials-Asphalt and Aggregates). Panamá. March 2015.
68. Advice to the members of the Project Universidad del Cauca - Popayán - Colombia in the updating of capacity manuals and levels of service on roads and design of asphalts pavements with low, medium and high traffic volumes. April 2015.
69. 95th TRB Annual Meeting, Washington, D.C., January 2016
70. Road Materials and Pavement Design Workshop, Theme: "Calibration of a fatigue transfer function using accelerated pavement testing", La Universidad Federal de Ceará (UFC), Fortaleza, Brasil. March 2016.
71. International Seminar Theme: "Perspectivas de la Investigación del Diseño y los Materiales de Carreteras" (Perspectives of Design Research and Road Materials), Administradora Boliviana de Carreteras. March 2016.
72. 8th International Rilem Conference on Mechanics of Fracture and Loss of Pavement Adhesion (MCD2016), Theme: "Desarrollos recientes en los ensayos acelerados de Costa Rica como herramienta en el diseño de pavimentos" (Recent developments in Costa Rica's accelerated trials as a tool in pavement design) IFSTTAR, Nantes, Francia June 2016.
73. Magistral lecture to students of chemistry and related engineering both undergraduate and graduate Theme: "Estado del arte en caracterización de materiales para mezclas asfálticas, de la nano a la escala real" (State of the art in characterization of materials for asphalt mixtures, from nano to real scale), Universidad Industrial Santander, Bucaramanga Colombia, July 2016.
74. Expositor at the Technological Update Seminar, Escuela Militar de Ingeniería, Bolivia; Themes: "Caracterización de Cementos Asfálticos" "Diseño de Pavimentos", (Characterization of Asphalt Cements and Pavement Design). La Paz, Bolivia. August 2016.
75. 7th Technical Week of Asphalt, 10th International Asphalt Conference and the 7th Ibero-Latin American Asphalt Seminar, keynote talk "Desarrollo de nuevos materiales y gestión de la infraestructura vial" (Development of new materials and management of road infrastructure), Colombia, Bucaramanga, October 2016.
76. XVII Argentine Congress of Road and Traffic, lectures "Desarrollo de Pavimentos Flexibles y Semi-rígidos en Pista a Escala Real" (Development of Flexible and Semi-rigid Pavements in Real-Scale Track). Rosario Argentina, October 2016.
77. XVII Argentine Congress of Road and Traffic "Calibración de Funciones de Transferencia de la Guía de Diseño ME de Costa Rica para Fatiga y Deformación Permanente de Pavimentos Flexibles y Semi flexibles a través de la Pista a Escala Natural Acelerada, el Pavelab" (Transfer Function Calibration of the ME Design Guide for Fatigue and Permanent Deformation of Flexible and Semi Flexible Pavements through the Accelerated Natural Scale Track, the Pavelab), Rosario Argentina, October 2016.
78. 2nd Salvadoran Asphalt Congress, keynote talk "Calibración y Software de la Guía mecanicista de Diseño de Pavimentos de Costa Rica, el CR-ME 2016" (Calibration and Software of the Mechanic Guide of Pavement Design of Costa Rica, the CR-ME 2016), San Salvador, November 2016.
79. "I+D+i" Seminar in Infrastructure Universidad Técnica Federico Santa María, Chile, November 2016.
80. 7th Asphalt Technical Week and 10th International Asphalt Conference and 7th Ibero-Latin American Asphalt Seminar. Theme "Development of Fatigue and Permanent Deformation Transfer Functions for Flexible Pavement Design Through Accelerated Pavement Testing" Colombia. October 2016
81. XVII Argentine Congress of Roads and Traffic Topics. - Calibration of Transfer Functions of the ME Design Guide for Fatigue and Permanent Deformation of Flexible and Semi-Flexible Pavements through the Accelerated Natural Scale Track, the PaveLab. - Determination of a New Protocol for the Testing of Damage by Humidity of Asphalt Mixtures through Fundamental Properties (nano and micro scales) and Dynamics (macro scale). Argentina October 2016.

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82. II Salvadoran Congress of Asphalt Magistral presentation "Calibration and Software of the Pavement Design Guide CR-ME 16 and Technical Conference 4" Dynamic Module. "November 2016
83. Forum: "Hot Recycling: State of the Art and New RAP Challenges" (AAPT). California. March 2017.
84. Forum of Conservation of the Paved National Road Network (RVNP): existing management model and future perspectives Topic: Contract by service levels in NIC-28 road, Nicaragua. CGR August 2017
85. Use of Lime as an HMA Additive. Cementos Progreso. Guatemala. February 2018
86. Relatoría del CILA de Medellín. For Carlos Fonseca. Nicaragua, January 2018.
87. Use of geogrids as HMA interlayer reinforcement. For Tensor regional seminar. Roatán, Honduras, July 2018.
88. State of the Art on Pavements Materials Characterization: From nano-scale to full-scale testing. III Paraguayan Asphalt Conference. Ciudad del Este, Paraguay. October 2018.
89. Applications of the HMA Dynamic Modulus for pavements and materials design. For I Guatemalan Asphalt Conference. Guatemala, October 2019.
90. State of the art in the Characterization of Pavement Materials. Universidad Cooperativa de Colombia, November 2019.
91. Uso de Plástico Reciclado en Mezclas Asfálticas. Universidad Nacional Mayor de San Carlos, Lima, Perú, Junio 2020.
92. Intelligent Cities Conference, Costa Rica. October 2020.
93. The Concept of Sustainability on Infrastructure Projects. For Expo Construir LATAM. July 2020.
94. Modern Methods for Pavement Materials Evaluation. For COLEIC, Chilayo, Peru. August 2020.
95. Modern Methods for Pavement Materials Evaluation. For COECSUR, Peru. September 2020.
96. Modern Methods for Pavement Materials Evaluation. For Expo CONVIAL, Peru. August 2020.
97. Methods for Evaluating Fatigue Cracking in HMA. For FFING Universidad Cooperativa de Colombia. Novembre 2021.
98. A Sustainability Perspective of Transportation. For INVEMIL, Colombia. November 2020.
99. Hydrated lime applications in road construction. For Building Better Roads Forum – Holcim. November 2020.
100. The Concept of Sustainability in Road Projects. For Universidad Privada del Norte, Perú. October 2020.
101. Long Lasting Secondary Roads. For Isaac Newton University. Costa Rica, December 2020.
102. Performance-Based Maintenance Contracts. For PEC-UCR. August 2020.
103. ME Pavement Design. InterCILA, Webinar, November 2021.
104. ME Pavement Design. InterCILA, For PEC-UCR. August 2020.
105. Sustainability in Road Construction. For CADECO, Santa Cruz, Bolivia. July 2020.
106. Sustainability in Road Construction. III National Conference on Pavements. For ILLIEV, Peru. April 2020.
107. Recycled plastic as additive on HMA. For ESVIAL, Peru. June 2020.
108. Sustainable Road Construction. Universidad Mayor de San Marcos, Perú. November 2020.
109. Eco-friendly road infrastructure. For Expo-Construir. April 2021.
110. Modern Asphalt Rheology. For El Salvador Asphalt Institute, El Salvador. September 2020.
111. Recycled plastic as additive on HMA. For Universidad de San Carlos, Guatemala. 2021.
112. Accelerated pavement testing as tool to improve pavement engineering. For Federal University of Sao Paulo. October 2020.
113. ME Pavement Design. VI International Road Symposium. For IDEC VIAL, Peru. April 2020.
114. ME Pavement Design. IV National Conference on Pavements. For ILLIEV, Peru. April 2020.
115. Pavement Research in Latin-America: The experts talk. For Colombian School of Engineering. April 2021.
116. Recycled Asphalt Pavements. For the Civil Engineers Boards of Peru. April 2021.
117. Accelerated Pavement Testing. Engineering Week. Peru. June 2020.
118. Trends in Asset Management. For Universidad Distrital, Bogotá, Colombia. March 2021.
119. Sustainability in Road Construction. For COINCI, Ayacucho, Peru. April 2021.
120. An Holistic Vision on Pavement Engineering. CONIC, Peru. November 2021.
121. Applications of the Dynamic Modulus for HMA and the Resilient Modulus for Granular Materials. For APC, Paraguay, April 2021.

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122. The Infrastructure and Digital Connectivity Manner. VIII Costa Rican Encounter for Eventos Santander. July 2021.
123. Use of Secondary Materials for Road Infrastructure. For Andres Sotil, Peru. April 2021.
124. Use of Secondary Materials for Road Infrastructure. For International Road Maintenance Day -ITAFEC, webinar. April 2021.
125. Use of plastic waste as an HMA additive. Universidad Nacional del Centro del Perú. September 2021.
126. Accelerated pavement testing as tool to improve pavement engineering. For Federal University of Rio de Janeiro and Petrobras. May 2021.
127. Pavement Management Systems Basics. Isaac Newton University, Costa Rica. April 2022.
128. State of the Art in Pavement Materials. Board of Civil Engineers, Queretano, Mexico. May 2022.
129. Accelerated pavement testing as tool to improve pavement engineering. For IDEC-Vial, Colombia. May 2022.
130. Performance Based Road Contracts. Pichincha Board of Civil Engineers. Ecuador. May 2022.

XIV. AWARDS

- April 2009: **“Outstanding Professor of the year”** of the Civil Engineering School of the Nevada University in Reno (UNR). Prize awarded by the Association of Students of Civil Engineering of UNR and the American Society of Civil Engineers. In this award, he was the first Latino and first foreigner to win.
- 2018. **Award to the Innovation in Asphalt Pavements “Juan Antonio Fernandez Del Campo” from the Spanish Association of the Road**. This is the most important research award in the research field for pavements in Iberoamerica.
- June 2019. **Best poster award**. European Asphalt Technology Association (EATA). Granada, Spain.

XV. OTHER ACTIVITIES:

- Member of the Coordinating Committee for the drafting of the SIECA Manual of Specifications for Road and Bridge Construction, Central America, 2001
- Delegate and Representative of Costa Rica in the Technical Committee of the Ibero-American Asphalt Congress (CILA).
- Member of the International Executive Board of the International Road Federation (IRF). February, Washington D. C, 2010-2015
- Cathedric/Professor of the University of Costa Rica, from the month of May of 2013.
- Member of the Committee AFK20 (Bituminous Materials) of the Transportation Research Board (TRB) of the National Academy of Sciences (NAS) of the United States. 2011-2014.
- Founder of the Transport Infrastructure Congress (CiTRANS), San José Costa Rica 2011-2013-2015-2017
- Member of the Postgraduate Committee on Civil Engineering of the University of Costa Rica, 2011-2015
- President of the "Subcomision of Conferences of Internationals Accelerated Pavement Testing" of the AFD40, Accelerated Pavement Testing Committee of the Transportation Research Board (TRB) 2015
- Founding member of the Academy of Science and Pavement Engineering (APSE by its acronym). Chicago, Illinois October 2015.
- Appointed as Chairman of the International Heavy Vehicle Simulator Alliance (HVSIA), that is covered by the AFD40 Committee - Accelerated Real-Scale Pavement Tests – of the Transportation Research Board (TRB), September 2015.
- Full Member of the Scientific Committee AFD40 (Accelerated Pavement Testing) of the Transportation Research Board (TRB) of the National Academy of Sciences (NAS) of the United States, Washington D. C, 2014-2016

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- Member of the editing Commission of the section 400 of the Manual of Specifications for the Construction of Highways and Bridges of Costa Rica, 2009-2016
- Member of the editing Commission of the Empirical-Mechanistic Guide of Pavement Design of Costa Rica, 2010-2016
- Member of the Board of Directors of the International Society of Asphalt Pavements. January 2016.
- Chairman of the V Conference on Accelerated Pavement Testing, APT, San José, Costa Rica, 2020
- Chairman of the Sub Committee on International Activities of the AFD 40 of the TRB 2015-2017
- Co-chair of the VI Conference on Accelerated Pavement Testing, APT, Nantes, France, 2022

XVI. TRANSPORTATION RESEARCH BOARD (TRB) WORK

- Subcommittee AFD40(1) Subcommittee on Accelerated Pavement Testing International Conferences Chair 4/15/2015 - 4/15/2019
- Standing Committee AFD40 Standing Committee on Full-Scale Accelerated Pavement Testing (Merged with AFD80 to form Standing Committee on Pavement Structural Testing and Evaluation, AKP40, on 4/15/2020) Committee Research Coordinator 9/9/2014- 4/14/2020
- Standing Committee AFD40 Standing Committee on Full-Scale Accelerated Pavement Testing (Merged with AFD80 to form Standing Committee on Pavement Structural Testing and Evaluation, AKP40, on 4/15/2020) Member 4/15/2013- 4/14/2020
- Standing Committee AFK20 Standing Committee on Asphalt Binders (Changed to Standing Committee on Binders for Flexible Pavement, AKM20, on 4/15/2020) Member 4/15/2011 4/14/2020
- Standing Committee AFK40 Standing Committee on Surface Requirements of Asphalt Mixtures (Merged with AFK30 and AFK50 to form Asphalt Mixture Evaluation and Performance, AKM40, and Asphalt Materials Selection and Mix Design, AKM30, on 4/15/2020) Friend 8/6/2019 4/14/2020
- Standing Committee AKP40 Standing Committee on Pavement Structural Testing and Evaluation Committee Research Coordinator 4/15/2020 4/14/2022
- Standing Committee AKP40 Standing Committee on Pavement Structural Testing and Evaluation Member 4/15/2020 4/14/2022
- Standing Committee AKM30 Standing Committee on Asphalt Materials Selection and Mix Design Friend 4/15/2020 To Present
- Standing Committee AKM40 Standing Committee on Asphalt Mixture Evaluation and Performance Friend 4/15/2020 To Present