



Curriculum Vitae

Gerardo W. Flintsch, Ph.D., P.E.

Dan Pletta Professor of Engineering

The Via Department of Civil and Environmental Engineering

Director of the Center for Sustainable and Resilient Infrastructure

Virginia Tech Transportation Institute

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CONTENTS

1.	EXECUTIVE SUMMARY	3
2.	RESEARCH AND CREATIVE ACHIEVEMENTS.....	6
2.1	Sponsored research and other grant awards	6
2.1.1	<i>Funded External Research Projects (type I)</i>	<i>6</i>
2.1.2	<i>Funded External/Internal Research Projects (Type II)</i>	<i>10</i>
2.1.3	<i>Funded Internal Equipment Grants (Type III)</i>	<i>11</i>
2.2	Awards, prizes, and recognitions	11
2.3	List of scholarly contributions.....	12
2.3.1	<i>Book chapters.....</i>	<i>12</i>
2.3.2	<i>Books edited</i>	<i>13</i>
2.3.3	<i>Papers in refereed journals.....</i>	<i>13</i>
2.3.4	<i>Papers in refereed conference proceedings</i>	<i>23</i>
2.3.5	<i>Other reports and papers</i>	<i>36</i>
2.3.6	<i>Other Magazine Articles</i>	<i>40</i>
2.3.7	<i>Invited keynote presentations or lectures</i>	<i>41</i>
2.3.8	<i>Papers and posters presented at professional meetings (not listed before).....</i>	<i>44</i>
2.4	Editorship, curatorship, etc.	49
3.	CONSULTING	50
4.	TEACHING AND ADVISING	54
4.1	List of courses taught	54
4.2	Non-credit courses, workshops	54
4.2.1	<i>Since Joining Virginia Tech</i>	<i>54</i>
4.2.2	<i>Before Joining Virginia Tech</i>	<i>56</i>
4.3	Completed thesis, dissertations, and projects	57
4.3.1	<i>Ph.D. dissertations (as chair or co-chair).....</i>	<i>57</i>
4.3.2	<i>MS theses (as chair or co-chair)</i>	<i>58</i>
4.3.3	<i>MS projects</i>	<i>61</i>
4.3.4	<i>Undergraduate Projects.....</i>	<i>61</i>
	<i>Total number of graduate students:</i>	<i>61</i>
4.4	Postdoctoral fellow training and research	62
5.	SERVICE AND OUTREACH.....	63
5.1	International program accomplishments	63
5.1.1	<i>International recognition and awards.....</i>	<i>63</i>
5.1.2	<i>International research collaborations.....</i>	<i>63</i>
5.1.3	<i>Other international activities</i>	<i>65</i>
5.2	Professional service accomplishments	65
5.2.1	<i>Service as an officer of an academic or professional organization.....</i>	<i>65</i>
5.2.2	<i>Other service to one's profession or field</i>	<i>66</i>
5.3	Additional outreach and extension activities.....	67
5.4	University Service.....	67
5.4.1	<i>Department, college, and university service, including administrative responsibilities.....</i>	<i>67</i>
5.5	Contributions to diversity.....	68
5.6	Service to students	68
6.	LANGUAGES.....	70

1. EXECUTIVE SUMMARY

Areas of Interest

- Infrastructure sustainability and resiliency
- Asset management
- Vehicle-road interaction
- Pavement engineering and management
- Transportation safety

Education

- 1996 Ph.D., Civil Engineering, Arizona State University.
- 1991 M.S., Civil Engineering Arizona State University.
- 1987 Civil Engineer, Specialization: Transportation, Universidad Mayor del Uruguay.
- 1986 B.S., Civil Engineering, Universidad Mayor del Uruguay.

Professional experience

- 2021 – pr. **Dan Pletta Professor**, The Via Department of Civil and Environmental Engineering, *Virginia Polytechnic Institute and State University*
- 2010 – 21 Professor, The Via Department of Civil and Environmental Engineering.
- 2005 – pr. **Director, Center for Sustainable and Resilient Infrastructure**, VTTI
- 2003 – 10 Associate Professor, Via Department of Civil and Environmental Engineering.
- 2004 – 05 Roadway Infrastructure Group Leader, Virginia Tech Transportation Institute.
- 1997 – 03 Assistant Professor, Via Department of Civil and Environmental Engineering.
- 1991 - 97 Research Associate, Arizona DOT & Arizona State University (ASU)
- 1986 - 92 Pavement Evaluation Engineer, *Ministry of Transportation and Public Works of Uruguay*

Research

- ✓ Established and led the **Center for Sustainable and Resilient Infrastructure**, which includes the *Virginia Accelerate Pavement Testing Facility*, the *Advance Material Characterization Laboratory*, and the *Pavement Evaluation Laboratory*.
- ✓ **PI/Co-PI for \$43 million in research funding** from a variety of federal agencies (including NSF, NAS and FHWA), state DOTs, and private companies, including the following projects:
 1. *Continuous Pavement Friction Measurement and Pavement Friction Management for Safety*, FHWA, **Flintsch** (PI), De León, Jul 20 - Sep 22, \$626,600.
 2. *Pavement Structural Evaluation with Traffic Speed Deflection Devices (TSDDs) Pooled Fund Operation (TPF_5(385))*, Pooled-fund, **Flintsch** (PI), Katicha, Oct 18 – Sep 23, \$4,840,000.
 3. *Pavement Surface Properties Consortium –Managing the Pavement Properties for Improved Safety (TPF - 5(345))*, Pooled-fund, **Flintsch** (PI), McGhee (VTRC), de Leon, May 16 – Sep 21, \$1,422,000.
 4. *NCHRP Project 15-55, Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways*, NAS, **Flintsch** (PI), Ferris, Battaglia, Taheri, Jun 15 – Feb 21, \$500,000.
 5. *Operation and Management of the Virginia Accelerated Pavement Testing Facility*, VTRC, **Flintsch** (PI), de León, Katicha, May 15 – Jun 18, \$1,971,600.
 6. *Tire-Road Friction Estimation using Probe Vehicles*, NSF, **Flintsch** (PI), Taheri, Nov 14 - Oct 17, \$300,000.
- ✓ Led the establishment and operation of five national pooled funds with the Virginia DOT.

Scholarship

- ✓ **Published 298 peer-reviewed manuscripts**, including 129 journal papers and 169 peer-reviewed conference papers. Selected publications (* indicates students):
 1. Justo-Silva*, R., Ferreira, A., Flintsch, G.W., “Review on Machine Learning Techniques for Developing Pavement Performance Prediction Models,” *Sustainability*, 2021, vol. 13(9), 5248 [impact factor 3.25].
 2. Nazari*, A., Chen, L., Battaglia, F., Ferris, J., **Flintsch, G.W.**, Taheri, S. “Prediction of Hydroplaning Potential Using Fully Coupled Finite Element-Computational Fluid Dynamics Tire Models,” *ASME Journal of Fluids Engineering*, 2020, vol 142(10) [impact factor 2.06].
 3. Qiao*, Y., Santos, J., Stoner, A., **Flintsch, G.W.**, “Climate Change Impacts on Asphalt Road Pavement Construction and Maintenance: An Economic Life Cycle Assessment of Adaptation Measures in the State of Virginia, U.S.,” *Journal of Industrial Ecology*, 2019, vol 24(2) [impact factor 6.54].
 4. Khaleghian*, M., Ghasemalizadeh, O., Taheri, S., **Flintsch, G.W.** “A Combination of Intelligent Tire and Vehicle Dynamic based Algorithm to Estimate the Tire-Road Friction,” *SAE International Journal of Passenger Cars: Mechanical Systems*, 2019, vol 12(2), 81-97, 2019 [Arch T. Colwell Merit Award].
 5. Santos*, J.M., Ferreira, A., **Flintsch, G.W.**, “A multi-objective optimization-based pavement management decision-support system for enhancing pavement sustainability,” *Journal of Cleaner Production*, vol. 164, 2017, 1380-1393 [impact factor 7.25].
 6. Najafi*, S., **Flintsch, G.W.**, and Khalleghian, S., “Fuzzy logic inference-based Pavement Friction Management and real-time slippery warning systems: A proof of concept study,” *Accident Analysis & Prevention*, 2016, vol. 90, 41-49 [impact factor 3.66].
 7. Giustozzi*, F., Crispino, M., **Flintsch, G.W.**, “Multi-Attribute Life Cycle Assessment of Preventive Maintenance Treatments on Road Pavements for Achieving Environmental Sustainability,” *The International Journal of Life Cycle Assessment*, 2012, vol. 17, 409-419 [impact factor 4.31].
 8. **Flintsch, G.W.** and Chen*, C., “Soft Computing Applications in Infrastructure Management.” *ASCE Journal of Infrastructure Systems*, 2004, vol. 10, 157-166. [impact factor 1.80].
- ✓ **Delivered more than 280 presentations** (with his students and colleagues) at conferences or symposia, including 40 keynote/invited presentations. Examples include:
 1. “Managing Assets in the Age of Autonomous Vehicles, Intelligent Infrastructure and Human-Centered Communities,” *PIARC International Seminar on Asset Management*, Petaling Jaya, Malaysia, 2018.
 2. “Management of Pavement Assets in Virginia,” *International Symposium of the 32nd Japan Road Conference*, 2017, Tokyo, Japan.
 3. “Road Asset Management: Evolution and Trends,” *Asian Development Bank Forum*, 2010, Manila, Philippines.

Awards and recognitions (examples)

1. Appointed *Chair of the PIARC Committee TC 3.3 Asset Management* of the World Road Association (2020).
2. *Dean’s Award for Excellence in Research* (2019), Virginia Tech College of Engineering.
3. *H.W. Kummer Lecture Award* (2013), by ASTM International.
4. *Harter Rupert Award* (2012) TRB best paper on transportation noise.
5. Appointed *Member of the National Academy of Engineering of Uruguay* (2007).
6. *International Road Federation Fellow* (1990-91).

Teaching

- ✓ Taught several undergraduate and graduate classes:
 1. Civil Engineering Materials (CEE 3684)
 2. Infrastructure Condition Assessment (CEE 4634)
 3. Pavement Design (CEE 4664)
 4. Natural Disaster Mitigation and Recovery (CEE 4984), co-instructor
 5. Advanced Pavement Design (CEE 5674) (new course)

6. Bridge and Pavement Management Systems (CEE 5754) (new course)
7. Asphalt Technology (CEE 5764)
8. Sustainable Transportation Infrastructure (CEE 5784) (new course)

✓ **Advised 79 graduate students** (including 7 current and 8 at our international partners)

- 28 PhD (5 current); examples of current positions include:
 1. Filippo Giustozzi , Associate Professor , RMIT University, Australia
 2. Lucy Priddy , Program Officer, US Army Engineer Research and Development Center
 3. James Bryce, Assistant Professor, Marshall University
 4. Joao Santos, Assistant Professor, University of Twente
 5. Chen Chen, Country Director for Sri Lanka, Asian Development Bank
- 42 MS thesis and project (2 current)
- 9 MS class only

Outreach

- ✓ Delivered more than 40 workshops and outreach classes since joining Virginia Tech, including the following:
 1. *Road Asset Management*, 1.5-day training event for the Inter-American Development Bank, Washington, DC, 2016.
 2. *Transportation Asset Management* (with other Instructors) 1-week course for the *International Road Federation* in Abu Dhabi, UAE, 2013, and Riyadh, Kingdom of Saudi Arabia, 2011.
 3. *International Workshop on Sustainable Pavements* (with the University of Nottingham), 2.5-day international workshop sponsored by NSF and FHWA, Airlie, VA, 2010.
 4. *Workshop on Output- and Performance-based Road Contracts*, World Bank's *Transport Forum and Learning Week 2007*, Washington, DC.

Service

- ✓ Organized and chaired two international conferences in Virginia, which represent the main international events on pavement asset management and vehicle-pavement interaction.
 1. *9th International Conference on Managing Pavement Assets (ICMPA9)*, under the sponsorship of the *Transport Research Board, National Academy of Engineering*, May 2015, Alexandria, VA.
 2. *7th Symposium on Pavement Surface Characteristics (SURF 2012)* of the World Road Association (PIARC) Sep. 19-22, 2012, Norfolk, VA.
- ✓ Participated in 24 state, national and international technical and professional committees and sub-committees, including the following as chair:
 1. *American Society of Civil Engineers (ASCE)* committee on Infrastructure Systems (2008-2012)
 2. *World Road Association (PIARC)* committee TC 3.4 Asset Management (2020- present)
 3. *Transport Research Board (TRB)* committees AFD30 General and Emerging Pavement Design (2016-2020) and AKP10 Pavement Condition Evaluation (2021-present).
- ✓ Worked on collaborative educational activities with 11 foreign universities and served as co-advisor/ supervisor for 7 students in Argentina, Colombia, Italy, Mexico, Spain, and Portugal.

Diversity

- ✓ Recruited, supported and advised 17 students from underrepresented groups
- ✓ Supported the organization of several undergraduate recruiting events.
- ✓ Advised the VT Student Chapter of the Society of Hispanic Professional Engineers (SHPE).
- ✓ Participated in the CEE Department (chair) and College of engineering Diversity Committees.

2. RESEARCH AND CREATIVE ACHIEVEMENTS

2.1 Sponsored research and other grant awards

Dr Flintsch has been the **PI/Co-PI for \$43 million in research funding** from a variety of federal agencies (including NSF, NAS and FHWA), state DOTs. The main projects are summarized following.

2.1.1 Funded External Research Projects (type I)

Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
District-level Pavement Friction Management Program Implementation for the Virginia Department of Transportation (Phase 3)	VTRC	Flintsch	De León	May 21 - Jun 23	\$550,100
Evaluation of VDOT Chip Seal Practices: Materials and Design	VTRC	Flintsch	De León	Apr 21 - Feb 23	\$138,000
Implementation of TSD Data in the PMS and District Level Training	VTRC	Flintsch	Katicha	Mar 21 - Sep 23	\$286,200
FIBRA -Fostering the Implementation of Fibre-Reinforced Asphalt Mixtures by Ensuring its Safe, Optimized and Cost-Efficient Use	University of Cantabria / European Commission	Flintsch		Jan 21 - Mar 21	\$34,300
Pavement Surface Properties Consortium: Phase III - Managing the Pavement Properties for Improved Safety (TPF -5(463)) <i>(not all funds contracted yet)</i>	Pooled-fund - FHWA, VA, CT, IL, KS, MD, MS, OH, PA, SC, TX DOTs	Flintsch	McGhee (VTRC) de Leon	Sep 20 - Sep 25	\$1,000,000
NCHRP Project 9-62 - Rapid Tests and Specifications for Construction of Asphalt-Treated Cold Recycled Pavements, Phase IV	VTRC / NCHRP	Flintsch		Oct 20 - May 22	\$9,700
Continuous Friction Measurement and Pavement Friction Management Demonstration for the Kansas Department of Transportation	VTRC / KS DOT	Flintsch	De León	Aug 20 - Dec 20	\$110,000
Continuous Pavement Friction Measurement and Pavement Friction Management for Safety	FHWA	Flintsch	De León	Jul 20 - Sep 22	\$626,600
NCHRP Project 10-105: Verification of Traffic Speed Deflection Devices' (TSDDs) Measurements	Wood / NCHRP	Rada (Wood)	Nazarian (UTEP) Flintsch	May 20 - Oct 22	\$400,000
Support Profiler Verification at the Virginia Smart Road	Fugro	Flintsch		Mar 20 - Apr 20	\$21,500
District Level Implementation of Traffic Speed Deflectometer Testing	VTRC	Flintsch	Katicha	Mar 20 - May 20	\$270,100
Testing Smartphone-based Friction Estimator at the Virginia Smart Road	ARA/ ERDC	Flintsch		Feb 20 - Mar 20	\$24,800
FHWA Infrastructure Research and Technology Deployment Program	ICF / FHWA	Flintsch		Sep 19 - Sep 24	IDIQ

Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Pavement Structural Evaluation with Traffic Speed Deflection Devices (TSDDs) Pooled Fund Operation (TPF_5(385)) <i>(contracted through three separate contracts with VTRC)</i>	Pooled-fund -FHWA, AR, CA, GA, ID, IL, IN, KS, KY, LA, MI, MN, MO, MS, NC, NM, NV, OK, PA, SC, TN, TX, VA, VT DOTs	Flintsch	Katicha	Oct 18 – Sep 23	\$4,840,000
Monitoring the Behaviors of the Recycling Pavement Materials on Interstate 64	VTRC	Flintsch	Xue	Oct 18 – Feb. 20	\$93,200
Life-Cycle Impact Assessment of In Situ Recycled Pavement Sections	VTRC	Flintsch	Katicha	Oct 18 – Feb. 20	\$144,500
Hosting the Testing of FHWA RABIT™ Bridge Deck Assessment Tool Systems at the Virginia Smart Road	Pennoni (FHWA)	Flintsch		Aug 18 – Sep 18	\$12,000
Operation and Management of the Virginia Accelerated Pavement Testing Facility – Phase II	VTRC	Flintsch	Katicha Xue de León	Sep 18 – Aug 21	\$1,971,600
Test Performed on the Full-Scale Track of the VTTI with Asphalt Mixes Modified with Predigested Rubber (RARX)	Valoriza	Flintsch		Jun 18 – Dec 19	\$11,500
Pavement Friction Management Program Pilot Demonstration	VTRC	Flintsch	De León	Jan 18 – Jun 20	\$864,500
Network Level Pavement Structural Testing with the Traffic Speed Deflectometer	VTRC	Flintsch	Katicha	Jul 17 – Sep 19	\$1,136,200
NCHRP 09-62, Rapid Tests and Specifications for Construction of Asphalt-Treated Cold Recycled Pavements <i>(only VT funding reported; total project = \$999,737)</i>	NCHRP <i>[Subcontractor to VTRC]</i>	Diefenderfer (VTRC)	Flintsch	Jun 17 – May 20	\$127,200
Calibration, Certification, and Verification of Transverse Pavement Profile Measurements	FHWA	Ferris	Flintsch	May 17 – May 19	\$350,700
NCHRP 10-98, Protocols for Network-Level Macrottexture Measurement	NCHRP	Flintsch	de León	Sep 16 – Aug 19	\$500,000
Evaluation of Methods for Pavement Surface Friction Testing on Non-Tangent Roadways and Segments	NC DOT	Flintsch	de León	Aug 16 – Apr 17	\$123,000
Pavement Surface Properties Consortium – Managing the Pavement Properties for Improved Safety (TPF -5(345))	Pooled-fund -FHWA, VA, GA, SC, CT, MS, IL, OH, TX, MD, KS, ND DOTs	Flintsch	McGhee (VTRC) de Leon	May 16 – Sep 21	\$1,422,200
NCHRP Project 15-55, Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways	NCHRP	Flintsch	Ferris Battaglia Taheri	Jun 15 – Feb 21	\$500,000
Operation and Management of the Accelerated Pavement Testing Facility	VCTIR	Flintsch	de León Katicha	Mar 15 – Jun 18	\$1,989,100

Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
The Acceptance Testing and Demonstration of the Continuous Friction Measurement Equipment	FHWA	Flintsch	Smith (APTech)	Set 14 - May 18	\$712,600
Tire-Road Friction Estimation using Probe Vehicles	NSF	Flintsch	Taberi	Nov 14 - Oct 17	\$300,000
Measurement and Modeling of Water Film Thickness at Auto Crash Sites	Commercial Sponsor		de León Katicha	Mar 14 - Dec 14	\$136,200
Characterization of Dense Graded Mixes	VCTIR	Flintsch	Katicha	Dec 13 - May 14	\$149,900
Development of Enhanced Deterioration Curves	VCTIR	Flintsch	Katicha	Oct 13 - Mar 15	\$144,600
Sustainable Pavement & Railway International Training Network (EU, 7th Framework Project)	University of Nottingham	Flintsch		Oct 13 - Oct 17	Associate partner
Pavement Friction Management Program Pilot Demonstration	VCTIR	Flintsch	De León	Oct 13 - Jun 14	\$174,900
National UTC for State of Good Repair <i>(Only VT funding reported; total budget = \$2,828K)</i>	US DOT RITA [sub. to Rutgers University]	Roberts-Wollmann	Cousins Flintsch	Sep 13 - Sep 15	\$255,300
Demonstration of Network Level Pavement Structural Evaluation with Traffic Speed Deflectometer <i>(Only VT funding reported)</i>	FHWA [Subcontract to ESCInc]	Flintsch	Katicha	Sep 13 - Jul 16	\$200,600
Program Support for the FHWA Office of Asset Management (subcontractor)	SAIC	Flintsch		May 13 - May 18	IDIQ
Development of Pavement Structural Capacity Requirements: Implementation	VCTIR	Flintsch	Katicha	Dec 12 - May 14	\$81,900
National Sustainable Pavements Consortium (TPF-5(268))	Pooled-fund -FHWA, VA, PA, MS, WI DOTs	Flintsch	McGhee (VTRC)	Jul 12 - Dec 19	\$690,000
Environmental Factors Causing Fatigue in Equipment Operators during Winter Operation	MN DOT ClearRoads Consortium	Hickman	Flintsch Medina	Apr 12 - Jun 13	\$125,000
Tier 1 University Transportation Center - Advanced Operations Focused on Connected Vehicles/Infrastructure	RITA	Dingus	Doerzaph Flintsch Rakha Bowman	Jan 12 - Jan 16	\$13,795,200
High RAP, High Binder Asphalt Content Mixes	VCTIR	Flintsch	Katicha	Nov 11 - Apr 13	\$149,700
Field Support for VDOT Quiet Pavement Implementation Program	VCTIR	Flintsch	De León	Jul 11 - Sep 13	\$637,300
Best Practices and Performance Assessment for Preventive Maintenance Treatments	VCTIR	Flintsch	De León	Jul 11 - Jun 13	\$184,100
Development of Pavement Structural Capacity Requirements for Innovative Pavement Decision-Making and Contracting	VCTIR	Flintsch	Katicha	Apr 11 - Mar 13	\$97,000

Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Development of Pavement Friction Management Programs	FHWA	Flintsch	Smith (APT)	Nov 10 - May 15	\$131,300
Development of Continuous Deflection Device	SHRP 2	Flintsch	Ferne (TRL)	Mar 09 - Feb 11	\$250,000
Splash-Spray Assessment Tool Development Program	FHWA	Flintsch	Viner (TRL)	Sep 08 - Sep 13	\$794,700
Development of an Integrated Quality Index for Accepting Hot Mix Asphalt Materials and Construction	VTRC	Flintsch	de León	Nov 07 - Oct 09	\$122,600
Training Materials on Transportation Asset Management Data Collection for Supporting Decision Processes	FHWA	Flintsch		Oct 07 - Jun 08	\$30,500
NCHRP Synthesis 39-01, Quality Management of Pavement Condition Data Collection	NCHRP	Flintsch	McGhee (VTRC)	Oct 07 - Jun 08	\$30,000
Composite Pavements: Synthesis of Design and Construction Practices	VDOT	Flintsch	Wang	Feb 07 - Jan 08	\$30,200
Evaluation of Cargill Safelane Epoxy Overlay on the Smart Road	VDOT	Flintsch	de León	Nov 06 - Apr 07	\$61,300
Pavement Surface Properties Research Pool Fund Investigation at the Virginia Smart Road (TPF-5(141))	Pooled-fund -FHWA, VA, GA, SC, PA, CT, MS	Flintsch	McGhee (VTRC)	Aug 05 - Mar 16	\$1,890,600
Asphalt Materials Characterization in Support of Implementation of the proposed Mechanistic-Empirical Pavement Design Guide	VDOT	Flintsch	Loulizi	Jul 05 - Dec 06	\$100,000
Asset Management Data Collection for Supporting Business Decisions	FHWA	Flintsch		May 04 - May 06	\$77,300
Validation of the Mechanistic-Empirical Analysis Procedure to Determine In-place Hot-Mix Asphalt Layer Modulus for Rehabilitation Projects	VDOT	Flintsch	Loulizi	May 05 - Jun 06	\$60,000
Hosting of a Profiler's Comparison at the Virginia Smart Road	UMTRI/ FHWA	Flintsch		Apr 04 - Sep 04	\$30,100
Development of Premium Pavement Design	VDOT	Flintsch	Al-Qadi	Oct 03 - May 05	\$255,100
Development and Validation of a Testing Procedure to Estimate Hot-Mix Asphalt In-Situ Properties ¹⁶	VDOT	Flintsch	Al-Qadi	Oct 03 - Dec 04	\$117,500
REU Supplement for Soft Computing-Based Life-Cycle Cost Analysis of Transportation Infrastructure Investments	NSF	Flintsch		Jan 03 - Dec 03	\$7,200

Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Infrastructure Management Research and Education Workshop	NSF	Flintsch		Jan 03 - Dec 03	\$11,000
NCHRP Synthesis of Highway Practice 34-11, Geographic Information System Applications In Pavement Management	NCHRP	Flintsch		Sep 02- Dec 03	\$25,000
SGER: Soft Computing-Based Life-Cycle Cost Analysis of Transportation Infrastructure Investments	NSF	Flintsch		Sep 02- Dec 03	\$50,600
The Performance of Winter Maintenance Chemicals on Several Alternative Bituminous Concrete Surface Mixes	VDOT	Flintsch		Feb 02 - Jul 03	\$68,200
Effect of HMA Wearing Surface Characteristics on Pavement Macrotexture	VDOT	Flintsch		Jan 02 - Dec 02	\$42,700
Surface Characteristics of New SuperPave™ Pavement Mixes	Virginia's CIT	Flintsch	Al-Qadi	Sep 00 - Aug 01	\$35,800
NCHRP 6-14: Feasibility of Using Friction Indicators to Improve Winter Maintenance Operations and Mobility	NCHRP	Al-Qadi	Amana Flintsch Loulizi	Mar 00 - May 01	\$150,000
Analysis of the Performance of New Pavement Mixes	Virginia's CIT	Flintsch	Al-Qadi	Jul 99 - Jun 00	\$25,000
Smart Road Pavement Research, Flexible Pavement Instrumentation and Evaluation	VDOT	Al-Qadi	Flintsch	Jul 99 - Jun 03	\$1,060,000
Calibration of the HMS Salem Model	VDOT	de la Garza	Drew Flintsch	Aug 98 - Aug 99	\$43,500
In-situ Measurement of Pavement Response on the Smart Road	Virginia's CIT	Al-Qadi	Flintsch	Jul 98 - Jun 99	\$25,000
Total Type I					40,916,500

2.1.2 Funded External/Internal Research Projects (Type II)

Project Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Pavement Perspective on Reducing AV/CV Hydroplaning through Optimizing Lateral Positioning Pattern	SAFE-D UTC	Zhou (TTI)	Flintsch	May 17- Dec 18	\$278,400
Infrastructure Pavement Assessment and Management Applications Enabled by the Connected Vehicles Environment - Proof-of-Concept	CVI UTC	Flintsch	Smith (UVA)	Aug 12 - Dec 13	\$200,000
Assessment of Splash and Spray Potential of Experimental Quite Pavement Surfaces	MAUTC	Flintsch		Sep 12 - Jun 13	\$100,000

Project Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Training on Pavement Surface Characteristics	MAUTC	Flintsch		Sep 12 - Jun 13	\$50,000
Integrated Infrastructure Asset Monitoring, Assessment and Management	MAUTC	Wang	Flintsch	Jul 09 - Jun 12	\$120,000
Pavement Engineering and Research Program	VTI	Flintsch	Wang	Jul 06 - Jun 10	\$600,000
Surface Properties Research at the Virginia Smart Road	VTI	Flintsch		Jun 05 - Jun 06	\$25,000
Assessment of the Virginia Smart Road Flexible Pavement Sections after Five Years of Service	VTI	Flintsch	Loulizi	Jan 05 - Jun 05	\$81,300
Pavement Research and Winter Maintenance	VTI	Al-Qadi	Flintsch	Jul 02 - Sep 03	\$45,000
Controlled Field Evaluation of Emerging Weigh-in-Motion Technology	VTI	Al-Qadi	Flintsch	Jun 00 - Jul 01	\$50,000
Total Type II					\$1,549,700

2.1.3 Funded Internal Equipment Grants (Type III)

Project Name	Sponsor	PI	Co-PI(s)	Period	Total Budget
Acquisition of a Dynamic Friction Tester	SCHEV	Flintsch	Loulizi	Jun 04 – Jun 05	\$25,000
Acquiring SUPERPAVE™ Equipment	ASPIRES	Al-Qadi	Flintsch	Jan 00 – Dec 00	\$35,300
Material Testing System (MTS™) Upgrade	ASPIRES	Al-Qadi	Flintsch Duke	Jan 99 – Dec 99	\$59,400
Superpave Equipment	ASPIRES	Al-Qadi	Flintsch Auchey	Jan 98 – Dec 98	\$69,300
Total Type III					189,000

Total Funding: \$ 42,655,200

2.2 Awards, prizes, and recognitions

1. Appointed **Chair of the PIARC Committee TC 3.3 Asset Management** of the World Road Association), (2020) representing the American Association of State Highway and Transportation Officials (AASHTO).
2. **Arch T. Colwell Merit Award**, best 2019 paper in the SAE Intl. Journal of Passenger Cars - Mechanical Systems, “A Combination of Intelligent Tire and Vehicle Dynamic Based Algorithm to Estimate the Tire-Road Friction” (with S. Khaleghian, O. Ghasemalizadeh and S. Taheri)
3. **2019 Dean’s Award for Excellence in Research, Virginia Tech College of Engineering**

4. **H.W. Kummer Lecture Award (2013)**, recognition by ASTM International for his significant contribution to the advancement of vehicle-pavement systems.
5. *Jack H. Dillard Award (2013)* Virginia Center for Transportation Innovation and Research best report (with J. Bryce, S. Katicha and B. Diefenderfer)
6. *Harter Rupert Award (2012)* best paper on transportation noise by the TRB Committee ADC40 Transportation-Related Noise and Vibration (with K. McGhee, E. de León and D. Mogrovejo).
7. Appointed **Member of the National Academy of Engineering of Uruguay** (2007)
8. *Jack H. Dillard Award (2003)*, Virginia Transportation Research Council best report (with K. McGhee)
9. *Best Poster Award (2001)*, Theme 5: Adopting and Using Innovative Approaches, at the Fifth International Conference on Managing Pavements, Seattle, WA
10. **International Road Federation Fellow** (1990-91)
11. *Fifth National Highway Award (1990)*, by the Uruguayan Road Association
12. *Uruguayan Road Association Scholarship (1990)*
13. **Ibero-American Cooperation Institute Scholarship (1989)**

2.3 List of scholarly contributions

Citations: 4495 (as of 03/2022, Google Scholar)

h-Index: 37 (Google Scholar)

i10-index: 99 (Google Scholar)

<https://scholar.google.com/citations?user=aL9bVf8AAAAJ&hl=en>

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2.3.3 Papers in refereed journals

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5. McCarthy*, R. Flintsch, G.W. Katicha, S.W., de León Izeppi, E., Guo, F., "Determining Investigatory Levels of Friction with Crash Modelling," *International Journal of Pavement Engineering* (published online Feb 2021).
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6. Shrestha, S., Katicha, S.W., Flintsch, G.W., Diefenderfer, B.K., "Pavement Deterioration Modeling and Network-Level Pavement Management Using Continuous Deflection Measurements." *ASCE Journal of Infrastructure Systems*, 2021, vol. 27(3).
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2.3.7 Invited keynote presentations or lectures

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2. Flintsch, G.W. (2021). "Sustainable and Resilient Pavements: Innovation in Pavement Engineering and Asphalt Materials (Pavimentos Sostenibles y Resilientes: Innovación en Ingeniería de Pavimentos y Materiales Asfálticos)," **keynote presentation**, *XI Congreso Mexicano del Asfalto*. Cancun, Mexico.
3. Flintsch, G.W., "Big Data For Pavement Management, Challenges and Opportunities," **invited presentation**, *IRF Global R2T Conference* (virtual), International Road Federation, Alexandria, VA, July 7-9, 2021.
4. Flintsch, G.W., "Tendencias en la Gestión de Activos Viales (Trends in Road Asset Management)," **invited presentation**, Unidad de Mantenimiento Vial, Bogota Colombia (virtual), Mar 17, 2021.
5. Flintsch, G.W., "Sistemas Modernos de Administración de Activos Viales (Modern Road Asset Management Systems)," **invited presentation**, *PIARC Seminar*, Quito, Ecuador (virtual), Dec 16, 2020.
6. Flintsch, G.W., "Evolución y Tendencias en la Gestión de Activos Viales (Evolution and Trends in Road Asset Management)," **invited presentation**, *Pre-XVII Congreso Argentino de Vialidad y Tránsito*, Buenos Aires, Argentina (virtual), Nov 11-12, 2020.
7. Flintsch, G.W., "Gestión de Activos Viales en Tiempos de Vehículos Autónomos e Infraestructura Inteligente (Managing Assets in Times of Autonomous Vehicles and Intelligent Infrastructure)," **invited presentation**, *Intelligent Technologies Cycle*, ITS Argentina (virtual), Jul 29, 2020.
8. Flintsch, G.W., "Pavement Friction Discussion," **virtual invited presentation**, NIRA Dynamics, Linköping, Sweden (virtual), May 12, 2020.
9. Flintsch, G.W., "Update on VTTI Asphalt Research," **invited presentation**, *Mid-Atlantic Asphalt Expo & Conference*, Richmond, VA, Dec 11-12, 2019.
10. Flintsch, G.W., "Managing Assets in the Age of Autonomous Vehicles, Intelligent Infrastructure and Human-Centered Communities," **keynote speech**, *Deighton User Conference*, July 15-19, 2019, Boston, MA.
11. Flintsch, G.W., "Información para la Toma de Decisiones," (Information for Decision Making), **invited presentation**, *International Forum on Preservation of Urban Roads*, May 23 -24, 2019, Bogotá, Colombia.
12. Flintsch, G.W., "The Future of Road Engineering: The Road of the Future," **invited panel presentation**, *IRF Global Road2Tunnel Conference*, Las Vegas, NV, Nov. 7-9, 2018.

13. Flintsch, G.W., “PIARC Efforts for Training the Next Generation of Asset Managers,” **invited panel presentation**, *PIARC International Seminar on Asset Management: Global Approaches to Advance Road Asset Management*, Petaling Jaya, Malaysia, Oct. 29-31, 2018.
14. Flintsch, G.W., “Managing Assets in the Age of Autonomous Vehicles, Intelligent Infrastructure and Human-Centered Communities,” **invited presentation**, *PIARC International Seminar on Asset Management: Global Approaches to Advance Road Asset Management*, Petaling Jaya, Malaysia, Oct. 29-31, 2018.
15. Flintsch, G.W., “Gestión de Pavimentos en los Tiempos de los Vehículos Autónomos y la Infraestructura Inteligente,” (Pavement Management in the Age of Autonomous Vehicles and Intelligent Infrastructure), **keynote speech**, *XXI Colombian Pavement Engineering Symposium*, August 29 -31, 2018, Medellin, Colombia.
16. Flintsch, G.W., “Impacto de Incorporar la Seguridad Vial a la Gestión de Activos Viales,” (Impact of Incorporating Road Safety to Road Asset Management), **keynote speech**, *XXI Colombian Pavement Engineering Symposium*, August 29 -31, 2018, Medellin, Colombia.
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18. Flintsch, G.W., “Use of High Speed Deflectometers for Last Generation of Pavement Management” (Uso de los Deflectógrafos de Alta Velocidad para la Gestión de Pavimentos de Última Generación), **keynote presentation**, *International Symposium on Technological Innovation in Roadway*, Oct. 6-7, 2017, Guadalajara, Mexico.
19. Flintsch, G.W., “Activities of the AIPCR-PIARC related to Asset Management” (Actividades de la AIPCR-PIARC en el ámbito de la Gestión de Activos), **invited presentation**, *International HDM-4 Congress*, Sep. 26-27, 2017, Santiago, Chile.
20. Flintsch, G.W., “The Virginia Smart Road,” **keynote presentation**, *Ontario Road Builders Association - Innovation Convention*, Feb. 6-7, 2017, Toronto, Canada.
21. Flintsch, G.W., “The Role of the US in Road Research, Contributions from the Virginia Tech Transportation Institute,” **invited presentation**, *1st European Road infrastructure Congress*, Oct 18-20, 2016, Leeds, UK.
22. Flintsch, G.W., “Road Safety, Role of Research and Innovation,” **invited presentation**, *1st European Road infrastructure Congress*, Oct 18-20, 2016, Leeds, UK.
23. Flintsch, G.W., “Impact of Pavement Management on the Sustainability of our Roadway Networks” (Impacto de la Gestión de Pavimentos en la Sostenibilidad de Nuestras Redes Viales), **invited presentation**, *Construction Summit 2016*, Mar 16-17, 2016, San Jose, Costa Rica.
24. Flintsch, G.W., “Impact of Pavement Management on the Sustainability of our roadway Networks” (Impacto de la Gestión de Pavimentos en la Sostenibilidad de Nuestras Redes Viales), **invited presentation**, *10^o Congreso de la Vialidad Uruguaya*, , Oct 15-17, 2015, Montevideo, Uruguay.
25. Flintsch, G.W., “Asset Management: A Key Tool for Enhancing the Sustainability of our Transportation Infrastructure,” **invited presentation**, *Mid-Atlantic Transportation Sustainability UTC’s Green & Blue Highways Symposium* (offered also as a webinar), May 6, 2015, Arlington, VA.
26. Flintsch, G.W., “Some Lessons Learned from Surface Properties Research at the Virginia Smart Road,” **2013 H.W. Kummer Lecture**, *ASTM Committee E17 on Vehicle - Pavement Systems*, Jacksonville, FL, Dec 10, 2013.

27. Flintsch, G.W., “Pavement Management: Evolution and Tendencies” (Gestión de Pavimentos: Evolución y Tendencias), **invited presentation**, XIX Simposio Colombiano sobre Ingeniería de Pavimentos, Oct 22-25, 2013, Bogotá, Colombia
28. Flintsch, G.W., “Interaction between the Road Infrastructure and the Vehicles, Smart Highways and their Impact on Transportation Sustainability” (Interacción de la Infraestructura Vial con los Vehículos, Carreteras Inteligentes y su Impacto en la Sostenibilidad del Transporte), **invited presentation**, *Jornadas Internacionales del Asfalto*, Oct 8-12, 2012, Bogotá, Colombia.
29. Flintsch, G.W., “Tire-pavement Friction Management Programs for Improving Road Safety” (Programas de gestión de la fricción entre el neumático y el pavimento para mejorar la seguridad vial), **invited presentation**, *Jornadas Internacionales del Asfalto*, Oct 8-12, 2012, Bogotá, Colombia.
30. Flintsch, G.W., “Research, Development and Innovation in Civil Infrastructure Management” (Investigación, Desarrollo e Innovación en Gestión de Infraestructura Civil), **invited presentation**, Seminario Internacional sobre Gestión de Infraestructura, Aug 26, 2011, Bogotá, Colombia.
31. Flintsch, G.W., “Pavement Evaluation: Evolution and Tendencies” (Evaluación de Pavimentos; Evolución y Tendencias), **invited presentation**, *1st Transportation Infrastructure Congress CiTRANS*, Jun 15-16, 2011, San José, Costa Rica.
32. Flintsch, G.W., “Sustainable Pavements,” **invited presentation**, *2010 Arizona Pavements/ Materials Conference*, Nov 17, 2010, Tempe, AZ.
33. Flintsch, G.W., “Pavement Management and its Contribution to the Development of a Sustainable Road Infrastructure” (La Gestión de Pavimentos y su Contribución al Desarrollo de una Infraestructura Vial Sostenible), **keynote presentation**, *7^{as} Jornadas Internacionales del Asfalto, Pavimentos Ecológicos y Nuevas Tecnologías para la Construcción de Vías*, Aug 11, 2010, Cartagena, Colombia.
34. Flintsch, G.W., “Road Asset Management: Evolution and Trends,” **invited keynote presentation**, Clinic AC 6 Road Asset Management, May 25-27, 2010, Asian Development Bank Forum, Manila, Philippines.
35. Flintsch, G.W., “Sustainable Pavement Systems” (Sistemas de Pavimentos Sostenibles), **invited workshop presentation**, *XV Ibero-Latin-American Asphalt Congress (XV CILA)*, Nov 22-27, 2009, Lisboa, Portugal.
36. Flintsch, G.W., “Impact of the Adoption of Mechanistic-Empirical Design methods on Pavement Management” (Impacto de la Adopción de Métodos de Diseño Empírico-Mecanísticos en la Gestión de Pavimentos), **keynote presentation**, *7th Uruguayan Road Congress*, Oct 7-9, 2009, Montevideo, Uruguay.
37. Flintsch, G.W., “Trends in the Design of Flexible Pavements in the United States (Sistemas de Gestión de la Infraestructura Vial: Evolución y Tendencias),” **keynote presentation**, *XVII National Land Transportation Engineering Meeting*, Jul 23-25, 2008, Monterrey, Mexico.
38. Flintsch, G.W., “Mechanistic-Empirical Pavement Design and Performance Prediction, Opportunities and challenges for PMS,” **keynote speech**, *3rd European pavement and Asset management Conference*, Jul 7-9, 2008, Coimbra, Portugal.
39. Flintsch, G.W., “Characterization of Materials for Pavement Construction (Caracterización de los Materiales para la Construcción de Pavimentos),” **keynote speech**, *XIV Ibero-Latin-American Asphalt Congress (XIV CILA)*, Nov 18-23, 2007, La Havana, Cuba.

40. Flintsch, G.W., "Education and Training Opportunities," **invited plenary presentation**, *2007 National Conference on Pavement Management: PMS, Meeting Today's Needs and the Challenges of Tomorrow*, May 6-9, 2007, Norfolk, VA.
41. Flintsch, G.W., "Intelligent Highways: Searching for more Efficient and Durable Pavements," **keynote speech**, *Second Ibero-American Symposium on Pavement Engineering*, July 26-30, 2006, Quito, Ecuador.
42. Flintsch, G.W., "Smart Road Pavement Research," **invited plenary presentation**, *Eighth International Symposium of Civil Engineering*, Feb. 21 to 23, 2001, Monterrey, Mexico.
43. Flintsch, G.W., and Medina A., "The HDM-III Model and Its Application in Pavement Management," **invited lecture**, *First International Seminar PROVIAL of Uruguay*, World Bank, Punta del Este, Uruguay, Oct. 1994.

2.3.8 Papers and posters presented at professional meetings (not listed before)

Conference papers (accepted based on abstract; not a comprehensive list)

1. Flintsch, G.W. (2021). "Trends in Road Asset Management (Tendencias en la Gestión Vial)," Barranquilla, Colombia (presented remotely).
2. Flintsch, G.W. (2021). Protocols for Network-Level Macrotexture Measurement (NCHRP Project 10-98)," *AASHTO Committee on Materials and Pavements (COMP)*. Virtual.
3. Flintsch G., "Outcomes of NCHRP 15-55 Hydroplaning," *2020 Road Profiler User Group (RPUG) Conference*, Oct 13-15, 2020.
4. Flintsch, G.W. Katicha, S., Velez Rodriguez, K., "Impact of Pavement Surface Properties on Wet-weather Crashes," *ASCE T&DI International Airfield & Highway Pavements Conference*, Chicago, IL, July 21-24, 2019.
5. Flintsch, G.W., "US Experience on Using TSD-based Structural Indices for Network-Level Pavement Management," *9th European FWD User Group Meeting*, Darmstadt, Germany, April. 9, 2019.
6. Flintsch, G.W., Medina, A., Pereyra, A., Uechi, L., "State of the Practice on Transportation Asset Management in Latin America," *IRF Global Road2Tunnel Conference*, Las Vegas, NV, Nov. 7-9, 2018.
7. Flintsch, G.W., de León, E., Medina, A., "Proactive Pavement Friction Management in Virginia, A Key Tool for Reducing Crashes and Associated Fatalities," *IRF Global Road2Tunnel Conference*, Las Vegas, NV, Nov. 7-9, 2018.
8. Flintsch, G.W., "Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways - Project Update," *30th Road Profiler User Group Conference*, Rapid City, SD, Sep 19-21, 2018.
9. Flintsch, G.W., "Advancing Asset Management Research and Education Using Case Studies," *12th National Conference on Transportation Asset Management*, San Diego, CA, July 14-17, 2018.
10. Flintsch, G.W., Bongioanni, V., "Guidance to Predict and Mitigate Dynamic Hydroplaning on Roadways - Project Update," *8th Symposium on Pavement Surface Characteristics (SURF 2018)*, Brisbane, Australia, May 2-4, 2018.
11. Flintsch, G.W., Santos, J., Ferreira, A., "Multi-objective Optimization Approach for Sustainable Pavement Maintenance and Rehabilitation Programming." *11th National Conference on Transportation Asset Management*, July 10–12, 2016, Minneapolis, Minnesota.

12. Flintsch, G.W., Qiao, Y., "Impact of Climate Change on the Performance, Maintenance, and Life-Cycle Costs of Flexible Pavements." *11th National Conference on Transportation Asset Management*, July 10–12, 2016, Minneapolis, Minnesota.
13. Katicha, S., Flintsch, G.W., "Network Level Structural Evaluation with TSD device," *Pavement Evaluation 2014*, Blacksburg, VA, Sep. 15-18, 2014.
14. Katicha, S., Flintsch, G.W., "Use of Probe Vehicles to Measure Road Ride Quality," *Road Profiler User Group Meeting*, San Antonio, TX, Sep. 16 to 19, 2013.
15. de León Izeppi, E., Flintsch, G.W., "Profiler Certification Process at the Virginia Smart Road," *Road Profiler User Group Meeting*, San Antonio, TX, Sep. 16 to 19, 2013.
16. Flintsch, G.W., "Using Profile Data for Supporting Asset Management Decisions," *1st European Profiler User Group (ERPUG) Meeting*, Copenhagen, Denmark, Sep 10-12, 2013.
17. Bryce, J., Flintsch, G.W., Katicha, S.W., Diefenderfer, B.K., "Enhancing Network-level Decision Making through the Use of a Structural Capacity Index," *8th Annual Inter-University Symposium on Infrastructure Management*, June 2012, Atlanta, GA.
18. Flintsch, G.W., Giustozzi, F. Crispino, M., "Multi-Approach Life-Cycle Assessment Optimization to Incorporate Environmental," *9th National Conference on Transportation Asset Management - Making Asset Management Work in Your Organization*, April 16–18, 2012, San Diego, CA.
19. Dehghanisani, M., Flintsch, G.W. "Corridor-Level Performance Measures to Support Resource Allocation Strategies in Highways," *9th National Conference on Transportation Asset Management - Making Asset Management Work in Your Organization*, April 16–18, 2012, San Diego, CA
20. Dehghanisani, M., Flintsch, G.W., McNeil, S., "Condition of Roadways and the Dynamics of Highway System Performance: An Assessment Framework," *9th National Conference on Transportation Asset Management - Making Asset Management Work in Your Organization*, April 16–18, 2012, San Diego, CA
21. Highfield, C., Flintsch, G.W., "Incorporating Environmental Factors Into the Infrastructure Life-Cycle Analysis," *Green Streets and Highways Conference*, Nov 14-17, 2010, Denver, CO.
22. de León Izeppi, E.D., Flintsch, G.W., "Continuous Friction Measuring, Equipment (CFME) Loan Program: GripTester and DYNATEST HFT," *Pavement Evaluation 2010*, Roanoke, VA, Oct 24-26, 2010.
23. Flintsch, G.W., Ferne, B., Diefenderfer, B., "Use of Continuous Deflection Measurements for Network Level Pavement Analysis," *Pavement Evaluation 2010*, Roanoke, VA, Oct 24-26, 2010.
24. Najafi, S., Flintsch, G.W., de León, E.D., "Performance Characteristics of Continuous Friction Measurement Equipment (CFME)," *Pavement Evaluation 2010*, Roanoke, VA, Oct 24-26, 2010.
25. Najafi, S., Flintsch, G.W., de León, E.D., McGhee, K.K., "Speed Adjustment Factors for the Locked-wheel Skid Trailer," *The 21st Annual Road Profiler Users' Group Meeting*, Dec. 9-11, 2009, Atlanta, GA.
26. Shetty, S.S., Flintsch, G.W., de León Izeppi, E.D., McGhee, K.K., "Preliminary Results from the Profiler Certification Exercise at the Virginia Smart Road," *The 21st Annual Road Profiler Users' Group Meeting*, Dec. 9-11, 2009, Atlanta, GA.
27. Flintsch, G.W., Ferne, B., and Diefenderfer, B., "R06-F: Development of Continuous Deflection Sensors," *SHRP 2 Workshop on the Integration and Implementation of SHRP 2 Pavement Related Research*, Nov 17-18, 2009, Washington, DC.

28. Flintsch, G.W., Ferne, B., Diefenderfer, B., and Clark, T., "Use of Continuous Deflection Measurement for Network-Level Pavement Structural Assessment," *Developing a Research Agenda for Transportation Infrastructure Preservation and Renewal Conference*, Nov 12-13, 2009, Washington, DC.
29. Flintsch, G.W., and McGhee, K.K., "Quality Management Practices for Pavement Condition Data Collection," *8th National Conference on Transportation Asset Management - Putting the Asset Management Pieces Together*, Oct 19–21, 2009, Portland, OR.
30. Flintsch, G.W., "Impact of the Adoption of Mechanistic-Empirical Design methods on Pavement Management" (*Impacto de la Adopción de Métodos de Diseño Empírico-Mecanísticos en la Gestión de Pavimentos*)," 7th Uruguayan Road Congress, Oct 7-9, 2009, Montevideo, Uruguay.
31. Flintsch, G.W., "Managing the Quality of Pavement Condition Data," *2009 Southeastern States Pavement Management and Design Conference*, May 11-13, 2009, New Orleans, LA.
32. Nunez, O., Hudak, J., Gonzalez, O., Smith, B., and Flintsch, G.W. "Development of a Pavement Management System for the State of Icompa," Response to the Conference Challenge competition, *7th International Conference on Managing Pavement Assets*, Jun 24-28, 2008, Calgary, Canada.
33. Edwards, B., Husnain, T., Pilko, P., Tignor, S., and Flintsch, G.W. "Pavement Deterioration and Optimal Maintenance Strategies." Response to the Conference Challenge competition, *7th International Conference on Managing Pavement Assets*, Jun 24-28, 2008, Calgary, Canada.
34. Hudak, J., Flintsch, G.W., and McGhee, K.K., "State-of- the-practice on Quality Management of Pavement Condition Data," *2008 Southeastern States Pavement Management and Design Conference*, Jun 1-4, 2008, North Little Rock, AR.
35. Flintsch, G.W., Wu, Z., and Loulizi, A., "Performance-Based Optimization Decision-Support Model for Infrastructure Preservation and Renewal," *Urbistics International Conference*, Mar 9-12, 2008, Hammamet, Tunisia (in CD/DVD).
36. Flintsch, G. W., Chen, C., and Loulizi, A., "Soft Computing-Enhanced Engineering Economic Analysis Tools for Transportation Asset Management," *Urbistics International Conference*, Mar 9-12, 2008, Hammamet, Tunisia (in CD/DVD).
37. Flintsch G. W., and Wu, Z., "Using the Analytical Hierarchy Process and Goal Programming for Multi-objective Pavement Maintenance and Rehabilitation" *7th National Conference on Transportation Asset Management*, Nov 6-8, 2007, New Orleans, LA.
38. Nunez, O. (advised by Flintsch, G.W.) "Synthesis of Composite Pavement Systems: Design and Performance," *3rd Annual Inter-university Symposium on Infrastructure Management (AISIM)*, Virginia Tech, Jun 2, 2007, Blacksburg, VA ("best paper" award).
39. Wu, Z. (advised by Flintsch, G.W.) "Network-Level Optimization Model for Pavement Maintenance and Rehabilitation Programming," *3rd Annual Inter-university Symposium on Infrastructure Management (AISIM)*, Virginia Tech, Jun 2, 2007, Blacksburg, VA ("best paper" award).
40. Chen, C. (advised by Flintsch, G.W.) "Fuzzy Logic-based Risk Analysis Model for Life-Cycle Cost Analysis of Infrastructure Projects," *2nd Annual Inter-university Symposium on Infrastructure Management (AISIM)*, Jun 10, 2006, Newark, DE.
41. Wang, H. (advised by Flintsch, G.W.) "Investigation of Short and Long-Term Variations of Pavement Surface Characteristics at the Virginia Smart Road," *2nd Annual Inter-university Symposium on Infrastructure Management (AISIM)*, Jun 10, 2006, Newark, DE ("best paper" award).

42. Flintsch, G.W., "Alternative HMA Characterization for M-E Pavement Rehabilitation Design," *2006 Southeastern States Pavement Management and Design Conference*, May 7-10, 2006, Panama City, FL.
43. Chen, C., and Flintsch, G.W., "Sensitivity Analysis for Fuzzy Logic-based Life-cycle Cost Analysis Approach," *6th National Conference on Transportation Asset Management*, Nov 8-10, 2005, Kansas City, MO.
44. Pantelias, A., Flintsch, G.W., Chen, C., and Bryant, J.W., "Asset Management Data Collection for Supporting Decision Processes," *6th National Conference on Transportation Asset Management*, Nov 8-10, 2005, Kansas City, MO.
45. Flintsch, G. W. and Kuttesch, J., "Effect of Wet Pavement Skid Resistance on Wet Accident Rates on Virginia Highways," (invited presentation) at the MAUTC *Transportation Engineering and Safety Conference*, Dec 7-9, 2005, Pennsylvania State University, University Park, PA.
46. Flintsch G.W. and McGhee, K. K., "Pavement Surface Properties Consortium – A Research Program at the Virginia Smart Road," *2005 Road Profilers User Group (RPUG)*, Oct 2005, Columbus, OH.
47. Chen, C., and Flintsch, G.W., "Sensitivity Analysis for Fuzzy Logic-based Life-cycle Cost Tools for Transportation Asset management," *1st Annual Inter-university Symposium on Infrastructure Management (AISIM)*, University of Waterloo, Aug 6, 2005, Waterloo, ON, Canada.
48. Flintsch, G.W., "Development of Premium Pavement Designs: Field Investigation of High Performance Pavements in Virginia," *2005 Southeastern States Pavement Management and Design Conference*, Jun 19-22, 2005, Savannah, GA.
49. Flintsch, G.W., Ferreira A.J., Chen, Ch., and Medina, A., "Development of Enhanced Transportation Asset Management Tools using Soft Computing," *XIII Pan-American Conference on Traffic and Transportation Engineering (PANAM XIII)*, Sep 26-29, 2004, Albany, NY (extended abstract in CD-ROM).
50. McGhee, K.K., Flintsch, G.W., "Validation of High-Speed Texture Measuring Equipment for Use in Highway Applications," *5th Symposium on Pavement Surface Characteristics*, SURF 2004, Roads and Airports, World Road Association (PIARC), Jun 6-10th, 2004, Toronto, Canada (in CD/DVD).
51. Flintsch, G.W., Luo, Y. and Al-Qadi, I.L., "Effect of Pavement Temperature on Frictional Properties of Hot-Mix-Asphalt Pavement Surfaces," *5th Symposium on Pavement Surface Characteristics*, SURF 2004, Roads and Airports, World Road Association (PIARC), Jun 6-10th, 2004, Toronto, Canada (in CD/DVD).
52. Flintsch, G.W., Medina, A., Luongo, G., Ayerza, M., Barchesi, A., Krugman, M., and Enrich, P., "Analysis of Permanent Deformations on Route 2, Rodo – Palmitas," (in Spanish) *Second National Highways Congress*, Oct 26-28, 1998, Montevideo, Uruguay.
53. Flintsch, G.W., Zaniewski, and Medina A., "Remaining Service Life - A Powerful Pavement Management Tool," *Ninth Ibero-Latin American Asphalt Congress*, Nov 2-7, 1997, Asunción, Paraguay.
54. Medina, A., Mamlouk, M., and Flintsch, G.W., "Status of SuperPave™ Implementation, Latin America," invited lecture, *Latin American/U.S. Asphalt Technology Conference*, University of Texas, Oct-Nov, 1996, Austin, TX.

Other Presentations (not previously listed; not a comprehensive list)

1. Flintsch, G.W., “Assessing the Contribution of Pavements of Rolling Resistance, US and European Experiences,” *NAPA United States Asphalt Rolling Resistance Workshop*, Dec 14, 2017, Chicago, IL.
2. Flintsch, G.W., “SHRP 2 Research Update on Continuous Deflection Study,” *Workshop on Continuous Deflection Measurements for Highway Infrastructure Assessments, held at the 91st Annual Meeting of the Transportation Research Board, Washington, D.C., Jan. 22, 2012.*
3. Flintsch, G.W., “Sustainable Pavements: Technical Challenges and Research Needs,” invited presentation at the *2nd FHWA Sustainable Pavement Technical Working Group (SPTWG) Meeting*, Atlanta, GA, Nov 2, 2011.
4. Crispino, M. “Evaluation of Long-Term Environmental and Functional Benefits of an Innovative Photocatalytic Road Pavement,” *T&DI/ASCE 2010 Green Streets and Highways Conference*, Nov. 14-17, 2010, Denver, CO (presented by Flintsch, G.W.).
5. Bennett, C., “Data Collection Technologies for Road Management.” *7th International Conference on Managing Pavement Assets*, June 24-28, 2008, Calgary, Canada (presented by Flintsch, G.W.).
6. Bennett, C., “Data Collection Technologies for Pavement Management Systems.” *7th International Conference on Managing Pavement Assets*, June 24-28, 2008, Calgary, Canada (presented by Flintsch, G.W.)
7. de León, E.D., Flintsch, G.W., and K.K. McGhee, "Pavement Surface Properties Consortium Preliminary Research Findings," *15th Annual NASA/FAA Tire/Runway Friction Workshop*, May 12-16, 2008, Wallops Island, VA.
8. Flintsch, G.W., OPRCs Using Microenterprises (P08-0353) invited presentation, *Output- and Performance-Based Road Contracts Workshop* held at the *87th Annual Meeting of the Transportation Research Board*, Jan 13, 2008, Washington, DC.
9. Nunez O. and Flintsch, G.W., “Synthesis of Composite Pavement Systems: Design and Performance,” Paper P08-0055 (award winning AISIM paper), *87th Annual Meeting of the Transportation Research Board*, Jan. 13-17, 2008, Washington, DC.
10. Wu, Z. and Flintsch, G.W., “Network-Level Optimization Model for Pavement Maintenance and Rehabilitation Programming,” Paper P08-0056 (award winning AISIM paper), *87th Annual Meeting of the Transportation Research Board*, Jan. 13-17, 2008, Washington, DC.
11. Flintsch, G.W., “Infrastructure Management Systems: Evolution and Trends” (Sistemas de Gestión de Infraestructura: Evolución y Tendencias), Universidad Ricardo Palma, Jan 15, 2007, Lima, Perú.
12. Flintsch, G.W., and K.K. McGhee, "Pavement Surface Properties Consortium – A Research Program at the Virginia Smart Road," *13th Annual NASA Tire/Runway Friction Workshop*, May 22-26, 2006, NASA, Wallops Island, VA.
13. Flintsch, G.W., “The Virginia Smart Road: Searching for Long-lasting, Safe and Smooth Pavements,” *International Highway Engineering Exchange Conference*, Sep 10-14, 2006, Williamsburg, VA.
14. Flintsch, G.W., and Bryant, J.W., “Linking Data with Decision Making: Data Stewardship Issues,” invited state-of-the-art presentation at the *Data Stewardship: Meeting the Challenges of Enterprise Data Management Workshop*, *85th Annual Meeting of the Transportation Research Board*, Jan. 22, 2006, Washington, DC.

15. Bennett, C.R. and Flintsch, G.W., "Data Collection Technologies for Road Management," invited presentation at the *Automatic Survey of Pavement Distress Workshop, 85th Annual Meeting of the Transportation Research Board*, Jan. 22, 2006, Washington, DC.
16. Flintsch, G.W., "Roadway Management Systems: Evolution and Trends." invited presentation at the National Laboratory of Materials and Structural Models (LANAMME), University of Costa Rica, May, 2005, San Jose, Costa Rica.
17. Flintsch, G.W., and Chen Ch., "Computing Based Infrastructure Life Cycle Cost Analysis Tools," at the *ASCE 2004 Symposium on Information Technology in Civil Engineering* held in conjunction with the 2004 Annual Meeting of the American Society of Civil Engineers in Baltimore, MD.
18. Flintsch, G.W., " Geographic Information System Applications in Pavement Management, Project Update" Committee A2B01 on Pavement Management Systems, *83rd Annual TRB Meeting*, Jan., 2004, Washington, DC.
19. Flintsch, G.W., "Winter Maintenance Research at the Virginia Smart Road," American Institute of Chemical Engineering, East Tennessee Section, Mar. 12, 2003, Eastman Chemical Company, Kingsport, TN.
20. Flintsch, G.W., "Survey of State Practices on Geographic Information System Applications In Pavement Management," Committee A2B01 on Pavement Management Systems, *82nd Annual TRB Meeting*, Jan., 2003, Washington, DC.
21. Flintsch, G.W., "Pavement Surface Characteristics Research at the Virginia Smart Road," presentation at the *9th Annual NASA Tire/Runway Friction Workshop*, NASA Wallops Flight Facility, VA, May 13-17, 2002.
22. Flintsch, G.W., "Pavement Research at the Virginia Smart Road," at the Institute of Transportation Engineers chapter Meeting, Blacksburg, VA, Mar. 2001.
23. Davis, R., Flintsch, G.W., Prowell, B., and Al-Qadi, I.L., "Evaluation of Friction Characteristics of SuperPave™ Hot Asphalt Mixes at the Virginia Smart Road," Committee A2D03 on Surface Characteristics, *80th Transportation Research Board Meeting*, Washington, DC, Jan. 2001.
24. Flintsch, G.W., "Intelligent Infrastructure Asset Management Systems," *Second Intentional Workshop on Artificial Intelligence and Numerical Methods In Pavement and Geomechanical Engineering Systems*, Newark, DE, Aug. 11-12, 2000.
25. Flintsch, G.W., and Al-Qadi, I.L., "Smart Road Update," Committee A2K07 on Geosynthetics at the *79th Annual Meeting of the Transportation Research Board*, Washington, DC, Jan. 6-13, 1999.

2.4 Editorship, curatorship, etc.

- ✓ **Associate Editor**, *International Journal of Pavement Engineering*, Taylor & Francis (2015-2019); **Editorial Board Member**, *International Journal of Pavement Engineering*, Taylor & Francis. (since 2015).
- ✓ **Scientific Committee**, Ingeniería y Universidad: Engineering for Development, Pontificia Universidad Javeriana, Bogota, Colombia. (since 2012).

3. CONSULTING

2015 – pr. **Vice-President and Technical Director, *FM Consultants, LLC***
Blacksburg, VA.

Dr. Flintsch has consulted with several national and international organizations, including the following:

- 2021-pr. *The World Bank*, Washington, DC.
Prepared the terms of reference for the development and implementation of a road asset management system for the Ministry of Transportation of Uruguay.
- 2020-21 *Inter-American Development Bank*, Montevideo, Uruguay.
Conducted a diagnostic of the current asset management practices, systems, and information available, and prepared the terms of reference for the development and implementation of a road asset management system for the Ministry of Transportation and Public Works of Uruguay.
- 2019-pr. *Red Hill Valley Parkway Inquiry*, Hamilton / Toronto, Ontario, Canada.
Provided expert advice on friction related matters.
- 2019-20 *Inter-American Development Bank*, Panamá, Panamá.
Led a team that conducted a diagnostic of the current asset management practices, systems, and information available, and is prepared the documents for the development and implementation of a road asset management system for the Ministry of Public Works of Panama.
- 2018-19 *Applied Pavement Technologies, Inc.*, Champaign, IL
Subcontractor in a team that developed *Case Studies on Sustainable Pavement Practices* for the Federal Highway Administration. Led the development of a case study on *Improved Asphalt Pavement Sustainability through Perpetual Pavement Design*.
- 2018 *SACYR*, Madrid, Spain
Supported the development of a work program for the proposals for the concession of PPP circuits in Uruguay. Evaluated the quality and coherence of the 20-year maintenance and rehabilitation intervention plan and provided recommendations.
- 2017 *Corporación Andina de Fomento (CAF)*, Montevideo, Uruguay.
Reviewed equipment availability and developed specification for the purchase of equipment for assessing the functional and structural condition of roadways.
- 2016-17 *Applied Pavement Technologies, Inc.*, Champaign, IL
Subcontractor in a team that developed a *Roadmap for Sustainable Pavements* for the Federal Highway Administration.
- 2016-17 *Inter-American Development Bank*, Washington, DC.
Led a team that conducted a Sectorial Study to assess and document the state of the practice of asset management in the Latin American and Caribbean region.
- 2016 *Inter-American Development Bank*, Washington, DC.
Participated in the 2016 Transportation Week, supported the development of the program, prepared and delivered two tutorial presentations and oversaw a series of group discussions to identify possible concrete action that IDB can take to improve asset management practice in the Latin American and Caribbean region.
- 2015-16 *EUROCONSULT Group*, Santa Ana, CA.
Revised draft final report on Field Evaluation of Performance of Curviametro and provided recommendations for improvement.

- 2015 *Inter-American Development Bank*, Washington, DC.
Prepared and delivered a presentation at the IDB for the BBL session “*Gestión de Activos Viales en Latinoamérica y el Caribe vis à vis a Otros Países.*”
- 2015 *SACYR*, Madrid, Spain
Supported the development of a work program for a proposal for the concession Routes 21 and 24 in Uruguay by evaluating the quality and coherence of the 20-year maintenance and rehabilitation intervention plan.
- 2014-15 *Applied Pavement Technologies, Inc.*, Champaign, IL
Prepared and delivered two SHRP 2 webinars on Continuous Deflection Measuring Devices.
- 2014-pr. *AMEC Environment & Infrastructure, Inc.*, Beltsville, MD.
On-call consultant for the VDOT Pavement Design Services Contract.
- 2012-14 *Soil and Materials Engineers*, Plymouth, MI.
Providing expert advice on a FHWA-funded contract to develop a national Pavement Monitoring Guide for network-level pavement condition data for supporting the national Highway Pavement Monitoring Systems (HPMS).
- 2014 *Applied Pavement Technologies*, Urbana, IL.
Instructed two seminars for the National Academy of Sciences on the SHRP 2 projects Assessment of Continuous Pavement Deflection Measuring Technologies (R06F).
- 2013-14 *APSA Ltda. Gestión de Infraestructura*, Santiago, Chile.
Provided expert advice and guidance on a project to review and update the methodology used by the Ministry of Public Works of Chile for computing the total patrimonial value of the Chilean road network. Supported the literature review, conducted two workshops to scope and review the methodology and approach, and reviewed various reports and deliverables.
- 2012 *Fondo de Prevención Vial*, Bogotá, Colombia.
Developed and delivered two presentations on transportation infrastructure sustainability and impact of pavement friction on road safety.
- 2012 *Concar*, Lima, Peru
Developed and delivered a three day tailored training program on Roadway Infrastructure Management for the concessionaire staff and some of their clients.
- 2012 *Inter-American Development Bank*, Washington, DC.
Reviewed the term of reference (TOR) for the Development of a Road Management System for the National Highway Board of Costa Rica.
- 2011-13 *Universidad Del Norte*, Barranquilla, Colombia.
Provided training and support to the university and the National Road Institute (INVIAS) on the project: Desarrollo e Implementación de Sistemas de Gestión de Infraestructura Vial. Helped develop the terms of reference for the development of a national pavement management system and co-supervised several Master’s theses.
- 2011-12 *Opus International*, Wellington, New Zealand.
Participated in a World Bank project to evaluate performance-based contracting (PBC) practices, identify success factors, and develop guidance for agencies implementing PBCs. Reviewed and documented a contracts in Latin America and helped develop the project reports.
- 2006-07 *The World Bank*, Washington, DC.
Reviewed performance-based contracting (PBC) practices in Latin America and developed a PBC module for municipalities and local governments. This module was designed to help

- disseminate the relevant knowledge to other countries aiming at building capacities of small contractors and engaging them under small-scale road maintenance PBCs.
- 2005 *The World Bank*, Washington, DC.
Integrated a team that evaluated Road Management System in several countries and identified common success factors. Reviewed and documented practices in Argentina, Chile, Costa Rica, and Uruguay.
- 2004 *The World Bank*, Washington, DC.
Co-directed an international team that conducted a literature review and survey to establish the range of data collection technologies available for pavement, traffic and bridge evaluation, evaluated these technologies, and summarized the data.
- 1999 *National Highway Administration*, Ministry of Transportation and Public Works of Uruguay.
Prepared a five-year strategic plan for the establishment of a National Highway Research Program and conducted a workshop to identify potential research projects.
- 1999 *CSI Ingenieros Consultores*, Montevideo, Uruguay.
Pavement Management Specialist, project "Deflectometric Evaluation of the National Highway System." Reviewed existing processing software, recommended modifications, and collaborated with the development of a preliminary overlay design methodology.
- 1997 -98 *United Nations Office of Project Services (UNOPS)*.
Provided technical assistance to the Ministry of Transportation of Uruguay. Directed a team that conducted a comprehensive pavement condition evaluation and diagnostic of a section of Route No. 2.
- 1997 *CSI Ingenieros Consultores*, Montevideo, Uruguay.
Pavement expert for two projects: "Rehabilitation of Ruta 24, Section Ruta 2 – Ruta 25," - designed the pavement structure and supervised the economic analysis); and "Development of a Roadway Planning System for the DNV of Uruguay," - conducted a diagnosis of the existing pavement management system and provided recommendations.
- 1997 *United Nations Office of Project Services (UNOPS)*.
Provided technical assistance to the Ministry of Transportation of Guatemala in the areas of infrastructure management, pavement condition assessment, and highway investment planning. Prepared a diagnosis of the Pavement Management System, defined an appropriate pavement condition assessment methodology and designed a comprehensive asset management database.
- 1996 *National Highway Administration*, Ministry of Transportation and Public Works of Uruguay.
Performed a critical review of rational pavement design methodology, geometrical standards and pavement management practices, criteria, and procedures.
- 1995 - 97 *Pan-American Institute of Highways (PIH)*, National Highway Institute, FHWA.
Principal Investigator in a project to develop and deliver two Pavement Analysis and Design courses. Defined course outlines and prepared training materials and visual aids.
- 1994 - 95 *Roy Jorgensen Associates Inc.*
Pavement Management Specialist, project "Fortalecimiento de la Planificación del Mantenimiento Vial y Sistemas de Pesos en la República de Honduras, C.A.", to develop a pavement management and weight control system for the Secretary of Communication and Transportation of Honduras (funded by the IDB). Participated on the diagnosis, logical design, condition evaluations, and formulation of the Highway Infrastructure Rehabilitation Plan. Reports: *Diagnosis and Structural Evaluation of Paved Network*.

- 1994 *Consortio Vial del Centro, Inc.* Buenos Aires, Argentina.
Prepared several state-of-the-art technical reviews for a consortium that manages and operates toll-roads in Argentina.
- 1992 - 97 *Pan-American Institute of Highways (PIH)*. National Highway Institute, FHWA.
Principal Investigator in a project to develop and deliver a Pavement Management System course and hands-on workshop. Defined contents and prepared course materials, visual aids, student manual, practical exercises, and slide show.
- 1987 *Ing. Siegfried Flintsch SRL*. Montevideo Uruguay.
Assistant Design Engineer, "Proyecto de Caminería de la Zona Franca de Colonia." an infrastructure design project.
- 1982 - 87 *Coppola Serra SA* and *Ing. Siegfried Flintsch SRL*.
Participated in several minor infrastructure design and construction supervision projects.

4. TEACHING AND ADVISING

4.1 List of courses taught

1. Civil Engineering Materials (CEE 3684), since 1998.
2. Infrastructure Condition Assessment (CEE 4634), since 2005.
3. Pavement Design (CEE 4664), since 1997.
4. Natural Disaster Mitigation and Recovery (CEE 4984), co-instructor, 1999-2002
5. Advanced Pavement Design (CEE 5674) (new course)
6. Bridge & Pavement Management Systems (CEE 5674), since 1998
7. Advanced Pavement Design (CEE 5754), since 1999
8. Asphalt Technology (CEE 5764), since 2006.
9. Sustainable Transportation Infrastructure (CEE), since 2011
10. Advanced Infrastructure Management (CEE 57, since

4.2 Non-credit courses, workshops

4.2.1 Since Joining Virginia Tech

1. *Splash, Spray & Hydroplaning 101*, virtual learning webinar, *32nd Road Profiler User Group (RPUG) Virtual Conference*, Sep 15-16 & Oct 13-15, 2020.
2. *Asset Management*, virtual graduate summer class (32 hrs.) at the University of Cuenca, Cuenca, Ecuador, July 2020.
3. *Smart and Multifunctional Pavements*, co-organized a workshop at the *99th Annual Meeting of the Transportation Research Board*, Washington, DC, Jan 12-16, 2020.
4. *Comprehensive Pavement Assessments Using Continuous Deflection*, Transportation Research Board Webinar, May 30, 2019
5. *Use of Traffic-Speed Deflection Devices in Network-Level PMS Applications: Are We Ready?* Transportation Research Board Webinar, June 8, 2017.
6. *Challenges and Opportunities for Incorporating Sustainability into Pavement Management* (with S. Tighe and H. Zarghampour) workshop at the *World Conference on Pavement and Asset Management*, Baveno, Italy, June 12-16, 2017.
7. *Use of Traffic-Speed Deflection in Network-Level PMS Applications*, Transport Research Board webinar, Jun 8, 2017.
8. *Advanced Pavement Design*, week-long graduate course at the Universidad de Norte, Barranquilla, Colombia, Nov 28- Dec 2, 2016.
9. *Measurement and Evaluation of Pavement Splash and Spray*, Transport Research Board webinar, Aug 26, 2016.
10. *Road Asset Management*, 1.5-day training event on for the Inter-American Development Bank 2016 Transportation Week, May 14-15, 2016

11. *Highway Asset Management in Latin-America and the Caribbean in comparison with other Countries* (Gestión de Activos Viales en Latinoamérica y el Caribe vis à vis a Otros Países), Inter-American Development Bank Training Webinar, Washington, DC, Oct. 7, 2015.
12. *In-Place Pavement Recycling* (with Dr. S. Cross from ARRA), 1-day course offered under the sponsorship of the National Sustainable Pavement Consortium, Madison, WI, Mar. 31, 2015.
13. *Pavement Surface Characteristics and their Impact on Roadway Performance* (with Dr. E. de León), 1-day course offered under the sponsorship of the MAUTC, Charlottesville, VA, Feb. 24, 2015.
14. *Assessment of Continuous Pavement Deflection Measuring Technologies (R06F) & Implementation Activities* (with Dr. N. Sivaneswaran from FHWA), SHRP-2 Knowledge Transfer Webinar, Nov. 20, 2014.
15. *TRB's SHRP 2 Tuesday Webinar on Assessment of Continuous Pavement Deflection Measuring Technologies (R06F)*, June 23, 2014.
16. *Pavement Surface Characteristics and their Impact on Roadway Performance*, University of Costa Rica, San José, Costa Rica, Jul. 29-Aug. 1, 2013.
17. *Transportation Asset Management* (with other Instructors) for the *International Road Federation* and deliver it in:
 - Abu Dhabi, United Arab Emirates, Feb. 18-22, 2013.
 - Riyadh, Kingdom of Saudi Arabia, Dec. 18-20, 2011.
18. *Roadway Infrastructure Management* for *CONCAR* (private road operator), 3-day course offered in Lima, Peru, Oct. 15-17, 2012.
19. *Tutorial on Sustainable Infrastructure Management* at the 8th *International Conference on Managing Pavement Assets (ICMPA)*, Santiago, Chile, Nov. 15-19, 2011.
20. *Advanced Civil Infrastructure Systems*, collaborated with several colleagues to develop the course and taught one Module on *Deterioration Modeling* (1 day) delivered in:
 - Virginia Tech, Blacksburg, VA, June 2014 (organized and hosted the entire course)
 - Georgia Tech, Atlanta, GA, June 2012
 - University of Delaware, Newark, DE, Jun. 14-25, 2010.
21. *Infrastructure Management Systems*, week-long short course delivered in:
 - Asunción, Paraguay, Jul. 8-13, 2013.
 - Bogotá, Colombia, Jun. 20-25, 2011.
 - San José, Costa Rica, Aug. 3-6, 2010.
 - Montevideo, Uruguay, Jun. 23-25, 2010.
22. Organized an *International Workshop on Sustainable Pavements* (in cooperation with the University of Nottingham) to develop a *Research Agenda for Sustainable Pavements*, sponsored by NSF and FHWA, Airlie, VA, January 6-9, 2010.
23. Organized the *First World Bank – Virginia Tech Knowledge Exchange Workshop on Infrastructure Asset Management* (with several colleagues), World Bank, Washington, DC, and Apr 14, 2010.
24. Developed training materials for a workshop on *Transportation Asset Management Data Collection for Supporting Decision Processes*, sponsored by Federal Highway Administration.

25. *Quality Control of Pavement Condition Data Collection*, webinar offered Bucaramanga, Colombia, through distance learning, Apr. 4, 2009.
26. *Introduction to Mechanistic- Empirical Flexible Pavement Design*, 1-day workshop: Monterrey, Mexico, Jul. 24, 2008.
27. *Workshop on Output- and Performance-based Road Contracts*, World Bank's *Transport Forum and Learning Week 2007*, Washington, DC, Mar 30, 2007.
28. Developed a highway training program for the *Universidad del Valle*, Honduras including development of a curriculum and delivery of 6 short courses. Co-instructed the following courses:
 - *Hot-Mix Asphalt Design using SuperPave*, Tegucigalpa, Honduras (July 6-8, 2005).
 - *Flexible and Rigid Pavement Design*, Tegucigalpa, Honduras (August 15-19, 2005).
 - *Pavement Management Systems*, Tegucigalpa, Honduras (November 9-11 2005).
29. *Flexible Pavement Design Considering the SuperPave™ Methodology*, San José, Costa Rica, Nov., 2001.
30. *Mechanistic Pavement Flexible Design*, (with Dr. I. Al-Qadi), Blacksburg, VA, Mar. 5-7, 2001.
31. Developed and co-instructed a *Mechanistic Pavement Flexible Design* short course for VDOT pavement engineers in Blacksburg, VA (March 5-7, 2001).
32. *Flexible Pavement Design Considering the SuperPave™ Methodology*, San José, Costa Rica (November, 2001).

4.2.2 Before Joining Virginia Tech

33. Developed and delivered several short courses and workshop for the Pan-American Institute of Highways (FHWA) and the University of Texas at El Paso (22 courses in 11 countries)
 - *Flexible Pavements - Analysis, Design, Construction and Quality Control*, Presented in Montevideo, Uruguay (May, 1996), Chihuahua, Mexico (March, 1997 and May 1997), and Asunción, Paraguay (May, 1997).
 - *Pavement Management Systems Course*, Presented in: Montevideo, Uruguay (Aug., 1992 and Sept., 1995), San Juan, Argentina (Aug., 1992 and Mar., 1994), Tegucigalpa, Honduras (Nov., 1992), Panama City, Panama (Aug., 1993 and Feb., 1995), San José, Costa Rica (Oct., 1993), Caracas, Venezuela, (May, 1994 and Feb., 1995), Quito, Ecuador (June, 1994 and July, 1996), La Paz, Bolivia (Sept., 1994), Tarija, Bolivia (Oct., 1994), Asunción, Paraguay, (Dec., 1994), El Paso, Texas (June, 1995), Fortaleza, Brazil (Sept., 1995), and Rosario, Argentina (June, 1996).
 - *Pavement Management Systems Workshop*, Hands-on Workshop to complement the Pavement Management Systems Course; that has been presented in: San Juan, Argentina (Mar., 1994), Caracas, Venezuela (Feb., 1995), Panama City, Panama (Feb., 1995), Montevideo, Uruguay (Sept., 1995), Fortaleza, Brazil (Sept., 1995), Rosario, Argentina (June, 1996), and Quito, and Ecuador (July, 1996).
34. Delivered a course on *Pavement Analysis and Design Course*, Presented in Montevideo, Uruguay (Oct., 1995).
35. Developed and co-instructed a *GIS and Pavement Management Systems* short course organized by the Arizona Technology Transfer (T²) program, Tempe, AZ (May, 1996).

4.3 Completed thesis, dissertations, and projects

4.3.1 Ph.D. dissertations (as chair or co-chair)

Student Name	Dissertation Title	Completed
1. Tong, Bilin	Laboratory and Accelerated Testing of Optimized Hot Asphalt Mixed (tentative)	<i>Expected 05-2022</i>
2. Justo, Rita ⁽¹⁾	<i>Incorporating Safety into Network-Level Pavement Management</i>	<i>Expected 12-2022</i>
3. Scavone, Martin	Big Data for Pavements: Incorporating Traffic Speed Deflectometer Measurements into Project-Level Pavement Management Decisions	<i>Expected 05-2022</i>
4. Shrestha, Shivesh	Big Data for Pavements: Incorporating Traffic Speed Deflectometer Measurements into Network-Level Pavement Management Decisions	2021
5. Amarh, Eugene	Quantifying Service Life & Environmental Benefits of Asphalt Pavement Recycling	2021
6. Kenneth Velez-Rodriguez	Network-Level Systemic Approach for Identification of Locations with High Wet and Hydroplaning Crash Potential	2021
7. Lizasoain Arteaga, Esther ⁽²⁾	<i>Recommendations for the Application of the Life Cycle Assessment Methodology to Asphalt Pavements</i>	<i>2021</i>
8. Meroni, Fabrizio	Optimizing the Use of Reclaimed Asphalt Pavement (RAP) in Hot Mix Asphalt Surface Mixes	2020
9. Salado-Martinez, Freddie	Assessment of Fracture and Rutting Resistance of Asphalt Overlays Through Heavy Vehicle Simulator and Laboratory Testing: Synthetic Fiber and Rubber Modified SMA Mixes	2020
10. McCarthy, Ross	Investigation of Network Level Skid Resistance	2019
11. Musick Ryland	Network Roadway Surface Friction and Its Usage to Improve Safety and Project Performance along West Virginia Highways	2019
12. Bongioanni, Vincent	Enhancing Network-Level Pavement Macrotexture Assessment	2019
13. Pantuso, Antonio ⁽³⁾	<i>Identification of Cost-Effective Pavement Management Systems Strategies A Reliable Tool to Enhance Pavement Management Implementations</i>	<i>2018</i>
14. Joao, Santos ⁽⁴⁾	<i>A Comprehensive Life Cycle Approach for Managing Pavement Systems</i>	<i>2016</i>
15. Najafi, Shahriar	Pavement Friction Management (PFM) – A Step towards Zero Fatalities	2015
16. Qiao, Yaning ⁽⁵⁾	<i>Flexible Pavements and Climate Change. Impact of Climate Change on the Performance, Maintenance, and Life-cycle Costs of Flexible Pavements</i>	<i>2015</i>
17. Mogrovejo, Daniel	Enhancing Pavement Surface Macrotexture Characterization	2015
18. Evangelisti, Azzurra ⁽⁶⁾	<i>Evaluation of road Surface Macrotexture: Variability and Prediction Methods</i>	<i>2015</i>

Student Name	Dissertation Title	Completed
19. Bryce, James	Applying Pavement Life Cycle Assessment Results to Enhance Sustainable Pavement Management Decision Making	2014
20. Priddy, Lucy	Evaluation of Precast Portland Cement Concrete Panels for Airfield Pavement Repairs	2014
21. Dehghani, Mohammad	Parametric Analysis of Roadway Infrastructure Vulnerability	2013
22. Giustozzi, Filippo ⁽⁷⁾	Life Cycle Assessment of Sustainable Road Pavements: Carbon Footprinting and Multi-attribute Analysis	2012
23. Pagola, Marta ⁽⁸⁾	<i>Modelos de Comportamiento de Adherencia Neumático Calzada (Tire Pavement Friction Performance Models)</i>	2012
24. Diefenderfer, Stacey	Dynamic characterization of the hot-mix asphalt mixes used at the Virginia Smart Road	2009
25. Wu, Zheng	Hybrid multi-objective optimization models for managing pavement assets	2008
26. Katicha, Samer	Analysis of hot mix asphalt (HMA) linear viscoelastic and bi-modular properties using uniaxial compression and indirect tension (IDT) tests	2007
27. Chen, Chen	Soft computing-based life-cycle cost analysis tools for transportation infrastructure management	2007
28. De León, Edgar	Non-contact methods for detecting hot-mix asphalt non-uniformity	2006
29. Appea, Alexander ⁽⁹⁾	Validation of FWD testing results at the Virginia Smart Road: theoretically and by instrument responses	2003

⁽¹⁾ Co-advisor, at *Universidade de Coimbra*, Portugal

⁽²⁾ Co-advisor, at *Universidad de Cantabria*, Spain

⁽³⁾ External supervisor, *Sapienza University of Rome*, Italy

⁽⁴⁾ Co-advisor, at *Universidade de Coimbra*, Portugal

⁽⁵⁾ Co-advisor, at *University of Nottingham*, U.K.

⁽⁶⁾ External co-advisor, *University of Cassino and Southern Lazio*, Italy

⁽⁷⁾ Dual Ph.D. student, co-advised with M. Crispino, of *Politecnico di Milano*, Italy

⁽⁸⁾ Advisor, *Universidad Nacional de Rosario*, Argentina

⁽⁹⁾ Co-advised with Al-Qadi.

4.3.2 MS theses (as chair or co-chair)

Student Name	Thesis Title	Completed
1. Matics Janie	Laboratory Verification of Hot Mix Asphalt Balanced Mix Design in Virginia (<i>tentative</i>)	<i>Expected 05-2022</i>
2. Benavidez, Carolina	Instrumentation and In-service Response of Pavement with Semi-rigid Full Depth Reclamation (FDR) Base (<i>tentative</i>)	<i>Expected 8-2021</i>

Student Name	Thesis Title	Completed
3. Scavone, Martin	Implementation of a Mechanistic- Empirical Pavement Design Method for Uruguayan Roadways	2019
4. Maeger, Kyle	Enhancement of Network Level Macrotecture Measurement Practices through Deterioration Modeling and Comparison of Measurement Devices for Integration into Pavement Management Systems	2018
5. Barrantes, Silvia	Practical Method for Locked-Wheel and CFME Friction Measurement Interconversion	2017
6. Zimmerman, Cory	Performance Analysis and Modeling of Pavements with a Cold Central Plant Recycled Base under Accelerated Loading Testing	2017
7. Keene, Jacquelyn	Evaluation of the Repeatability and Reproducibility of Network-Level Pavement Macrotecture Measurement Devices	2017
8. Shrestha, Shivesh	Development of Structural Condition Thresholds for TSD Measurements	2017
9. Amarh, Eugene	Evaluating the Mechanical Properties and Long-Term Performance of Full Depth Reclamation - Stabilized Base Materials	2017
10. McCarthy, Ross	Performing Network Level Crash Evaluation Using Skid Resistance	2015
11. Ercisli, Safak	Development of Enhanced Pavement Deterioration Curves	2015
12. Bartku, Elaine	Local Government Guidelines for Selection of In-Situ Recycling Methods	2014
13. Boriack, Paul	Laboratory Study on the Effect of High Rap and High Asphalt Binder Content on of Asphalt Concrete Performance	2013
14. Hosten, Akyiaa	District Level Decision Making Tool for Preventive Maintenance Treatment Selection in Virginia	2013
15. Tomlinson, Christopher	The Effect of High RAP and High Asphalt Binder Content on the Dynamic Modulus and Fatigue Resistance of Asphalt Concrete	2012
16. Mogrovejo, Daniel	Effect of Air Temperature, Vehicle Speed, and Pavement Surface Aging on Tire/Pavement Noise Measured with On-Board Sound Intensity Methodology	2012
17. Valeri, Stephen	Analysis of the Use of Probe Vehicles for Road Infrastructure Data Analysis	2012
18. Bryce, James	A Pavement Structural Capacity Index for Use in Network-level Evaluation of Asphalt Pavements	2012
19. Cerea, Paolo ⁽¹⁾	<i>Preventive Maintenance Treatments on Road Pavements: Multi Approach Life-Cycle Assessment</i>	2011
20. Highfield, Crysta	Sustainable Pavement Construction: Developing a methodology for integrating environmental impact into the decision-making process	2011
21. Najafi, Shahriar	Evaluation of Continuous Friction Measuring Equipment (CFME) for Supporting Pavement Friction Management Programs	2010

Student Name	Thesis Title	Completed
22. Verhoeven, Jack	Framework for Rating Roadway Assets at the Corridor Level	2010
23. Gonzalez, Oscar	Evaluation of seasonal effects on pavement surface friction properties	2009
24. Roa, Julio	Field evaluation of high-friction surfaces	2008
25. Núñez, Orlando	Composite pavements: a technical and economic analysis during the pavement type selection process	2007
26. Fonseca, Andrea	Contemporary network theory: concepts and implications for transportation asset management	2007
27. Wang, Hao	Road profiler performance evaluation and accuracy criteria analysis	2006
28. Jeong, Myunggoo ⁽²⁾	Comparison of creep compliance master curve models for hot mix asphalt	2005
29. Pantelias, Aristeidis	Asset management data collection for supporting decision processes	2005
30. Gramajo, Carlos R.	Verification of mechanistic-empirical pavement deterioration models based on field evaluation of in-service pavements	2005
31. Kuttesch, Jeffrey S.	Quantifying the relationship between skid resistance and wet weather accidents for Virginia data	2004
32. Huang, ManQuan	Comparison of macrotexture measuring devices used in Virginia	2004
33. Luo, Yingjian	The effect of pavement temperature on frictional properties of pavement surfaces at the Virginia Smart Road	2003
34. Davis, Robin	Comparison of skid resistance and texture characteristics of different hot mix asphalt pavement surfaces	2001
35. Elseifi, Mostafa ⁽³⁾	Viscoelastic modeling of straight and modified binders at intermediate and high temperatures	1999

⁽¹⁾ Co-advisor, at Politecnico di Milano

⁽²⁾ Co-advised with Loulizi

⁽³⁾ Co-advised with Al-Qadi

4.3.3 MS projects

Student Name	Report Title	Completed
36. Tellatin, Luigi	Structural Assessment of Full-Depth Reclamation of Flexible Pavements. Study based on the performances of trial sections in Virginia	2015
37. Shetty, Sameer	Road Profiler Certification Approaches at Virginia Smart Road	2011
38. Hurdak, Jordan	Network-level pavement condition data collection quality management: current methods and practices	2008
39. McDonald, Christopher	Functional requirements of advanced traffic management systems for improving work zone traffic flow	2005
40. Desai, Vipul	Performance prediction models for flexible pavements	2004
41. Sagaya, Lanre	Evaluation of the HDM-IV as a Pavement Management Tool	2003
42. Rahman, Mohamad	Use of automatic pavement macrotexture measuring devices for HMA quality control	2002

4.3.4 Undergraduate Projects

Student Name	Report Title	Completed
1. Oxikbayev, Kabyl	Using Continuous Deflections Measurements to Enhance Pavement Management Decisions	May 21
2. Heydarian, Arsalan	Highway Economic Requirements System-State Version (HERS-ST) for highway investing planning	Dec 09
3. Naranjo, Scott	Effect of tire-pavement friction on stopping distance	Aug 09
4. McDonald, Alan	Measurements and applications of pavement surface properties	May 08
5. Gerrera, Giovanni	Surface properties evaluation at the Virginia Smart Road (in Italian)	Mar 08
6. Vrikkis, Michelle	Assessment of pavement management educational opportunities	May 07

Total number of graduate students:

M.S. Advised: 42 thesis or project (including 2 current)
9 course-only students

Ph.D. Advised: 28 (including 3 current)

M.S. Committee Member: 20+ students total

Ph.D. Dissertation Committee Member: 20+ students total

4.4 Postdoctoral fellow training and research

1. Student: Ross McCarthy
Degree and Institution, Ph.D., Virginia Tech
Employed: Nov 2019 - present
Publications: 5 journal and several peer-reviewed conference papers
Employment after leaving postdoctoral position: N/A
2. Student: Wilmar Fernandez-Gomez (Post-doctoral Visiting Scholar)
Degree and Institution, Ph.D., Universidad Javeriana
Employed: Nov 2015 - Jul 2017
Publications: 2 journal and several peer-reviewed conference papers
Employment after leaving postdoctoral position: Professor, Universidad Districtal, Bogota, Colombia.
3. Student: Wenjing Xue
Degree and Institution, Ph.D., Virginia Tech
Employed: Jun. 2015 - present
Publications: 10+ peer-reviewed journal and conference papers
Employment after leaving postdoctoral position: N/A
4. Student: Samer Katicha
Degree and Institution, Ph.D., Virginia Tech
Employed: Dec. 2007 – present
Publications: 20+ journal and 10+ peer-reviewed conference papers
Employment after leaving postdoctoral position: N/A
5. Student: Edgar de León
Degree and Institution, Ph.D., Virginia Tech
Employed: Oct. 20 06 - present
Publications: 20+ journal and 30+ peer-reviewed conference papers
Employment after leaving postdoctoral position: N/A
6. Student: Amara Loulizi
Degree and Institution, Ph.D., Virginia Tech
Employed: Aug 2004 – Jul 2006
Publications: 4 journal and 4 reports
Employment after leaving postdoctoral position: Professor, Ecole Nationale d'ingénieur de Tunis, Tunisia

5. SERVICE AND OUTREACH

5.1 International program accomplishments

5.1.1 International recognition and awards

1. *Member of the National Academy of Engineering of Uruguay*
2. Chair of the Committee TC 3.3 Asset Management of the World Road Association (see V.A).

5.1.2 International research collaborations

1. Collaborated with researchers at the Coimbra University, Portugal (since 2004, with prof. Adelino Ferreira and Luis Picado).
 - Produced 9+ join scholarly publications (listed in *V.B*).
 - Co-advised Ph.D. student Joao, Santos, who received a fellowship from the Portuguese Science Foundation to support his PhD, including 21 months at Virginia Tech.
 - Co-advised Ph.D. student Rita Justo-Silva.
3. Collaborated with researchers at l'Università di Messina, Italy (sine 2004, with prof. Franco Trifirò and Gaetano Bosurgi).
 - Produced 2 join scholarly publications (listed in *V.B*);
 - Hosted an undergraduate student at CSTI (May-Aug 2007).
4. Established a cooperation agreement with the *Universidad del Valle* in Tegucigalpa, Honduras.
 - The collaboration resulted in a successful grant to develop a Highway Training Program (2005), which included development of a curriculum and delivery of 6 short courses.
 - Lead the effort and co-instructed three of the courses (listed in *IV.B*).
5. Collaborated with researchers at *Universidad Javeriana*, Colombia (since 2007, with prof. Freddy Reyes).
 - Produced 2 join scholarly publication (listed in *V.B*).
6. Collaborated with researchers at *Politecnico di Milano*, Italy (since 2008, with prof. Maurizio Crispino)
 - Established of a collaborative dual Ph.D. degree.
 - Advised the first dual PhD student, F Giustozzi, in Civil and Environmental Engineering.
 - Received 1 visiting Ph.D. student and 2 M.S. students that completed part of their thesis working at Virginia Tech
 - Produced 12 join scholarly publications (listed in *V.B*).
7. Initiated collaboration with the Road and Pavement Engineering Chair at Technische Universität Darmstadt, Germany (since 2000, Prof. Stefan Bald).
 - Organized a 1.5 day workshop on the *Darmstadt Risk Analysis Model* in Blacksburg, VA on May 7-8, 2009.
 - Visited in 2019.
8. Established a research collaboration agreement with the TRL Inc. of the U.K. (since 2008).
 - This collaboration has resulted in three successful federal grants (listed in *V.C*).
 - Produced several join scholarly publications (listed in *IV.B*).

- Participated as an external adviser in the European project MIRAVEC: Modelling Infrastructure influence on RoAd Vehicle Energy Consumption (Nov 11-Oct 13); participated in the project meeting in June 2013 in Brussels, Belgium.
9. Established a cooperative research agreement with CORASFALTOS (2008-2016), which is one of the premier pavement research institutes in Colombia.
 - Organized a distance learning short course (listed in *III.C*).
 - Participated as a keynote and invited speaker in two of their meetings (see *IV.D*)
 - Hosted a 3-day visit (with included stops at FHWA and VCTIR) from 15 scientists and practitioners from as part of the U.S. Scanning tour.
 10. Established a collaboration agreement with the Nottingham Transportation Engineering Center (NTEC) at University of Nottingham, U.K. (since 2009).
 - Helped establish a university-wide collaborative agreement.
 - Collaborated in several proposals, including two successful submissions.
 - Organized a joint International Workshop on Sustainable Pavement Materials and Systems (with funding from NSF and FHWA).
 - Co-supervised and hosted two PhD students, Y. Qiao and K. Kuna, who have spent time as visiting students at Virginia Tech.
 - Supported a Virginia Tech M.S. student, R. McCarthy, who spent a semester at the University of Nottingham.
 - Produced 12 joint scholarly publications (listed in *V.B*).
 11. Initiated the establishment of a formal research and education collaboration agreement and supported the development of a dual Ph.D. degree with the Universidad Católica de Chile (since 2011, with profs. Hernán de Solminiac and Alondra Chamorro).
 - Participated in several exchange visits.
 12. Participated in a university-level collaboration with Universidad Austral, Valdivia, Chile (since 2011).
 - Received two visiting undergraduate students, Osvaldo Martinez (2020) and Victor Aguilar (2014).
 13. Initiated an informal collaboration with Universidad del Norte, Barranquilla, Colombia (since 2011, with profs. Luis Fuentes and Gilberto Martinez).
 - Organized several exchange visits.
 - Taught a graduate course.
 - Co-supervised a couple of MS theses.
 14. Initiated an informal collaboration with Universidad Politécnica de Madrid, Madrid, Spain (prof. Fernando Varela)
 15. Initiated an informal collaboration with Universidad de Cantabria, Santander, Spain (Since 2019, with prof. Daniel Castro).
 - Co-advised a Ph.D. student (Edith Lizasoain Arteaga) at Universidad de Cantabria, Santander, Spain, (current; see *III.H*).
 - Participated as a subcontractor in a project funded by the European Commission.
 16. Co-advised a Ph.D. student (Antonio Pantuso) at Universidad Roma La Sapienza, Roma, Italy, (completed; see *III.D*).

17. Advised a Ph.D. student (Marta Pagola) at the Universidad Nacional de Rosario, Argentina (completed; see *III.D*).
18. Co-advised a Ph.D. student (Ricardo Solorio) at the Universidad de Chihuahua, Chihuahua, Mexico, (completed; see *III.D*).
19. Advised a Dual M.S. student (Luigi Terapin) with Universidad of Trento, Trento, Italy (completed; see *III.D*).

5.1.3 Other international activities

1. Presented papers at many international meetings and conferences including eight invited keynote presentations (see *V.B*).
2. Delivered short courses in various countries (see *III.C*).
3. Consulted with several international and multinational companies and organizations, including The World Bank, the United Nations, Roy Jorgensen Associated, CSI Ingenieros Consultores, Euroconsult, SACYR, Opus International, and the Ministries of Transportation and Public Works of Uruguay, Costa Rica, Guatemala and Honduras, among others.
4. Hosted a 1-day visit from 17 scientists from the Forum of European Highway Research Laboratories (FEHR, representing Belgium, Australia, Germany, Denmark, U.S., Poland, France, the Netherlands, Norway, and Sweden) as part of a U.S. scanning tour.

5.2 Professional service accomplishments

5.2.1 Service as an officer of an academic or professional organization

American Society of Civil Engineers (ASCE)

1. Committee on Infrastructure Systems (**Chair**, 2008-2012; member since 2002).
2. Committees on Highway Pavements (*vice-chair* 2006-10; member 2001-2014).
3. Long Term Pavement Performance (LTPP) Task Committee (2001-2014).
4. Interlocking Concrete Block Standards Committee (2008-2010)

World Road Association / Permanent International Association of Road Congresses (PIARC)

5. Committee TC 3.4 Asset Management (**Chair**, 2020-2023)
6. Committee TC D.1 Asset Management (*English-Speaking Secretary and Co-chair*, 2015-2019)
7. Committee TC 4.1 Management of Road Assets (*English-Speaking Secretary and Co-chair*, 2012-2015)
8. Committee D.2 Road Pavements (*associate member*, 2007-2011)

Transport Research Board (TRB)

1. Committee Pavement Condition Evaluation (*member*, AFD20 2015-2020; AHP10 **Chair**, 2021-present).
2. Subcommittee AJE30(3) on Transportation Asset Management Education (**Chair**, 2018--present).

3. Committee on Transportation Asset Management (*member*, ABC40 2004-2007; AJE30 2020-present).
4. Committee AFD30 General and Emerging Pavement Design (**Chair**, 2016-2020).
5. Subcommittee AFD00(1) Sustainable Pavements (**Chair**, 2010-2016).
6. Committee AKP40 Pavement Structural Testing and Evaluation (2020-present)
7. Committee AFD40 Full-Scale Accelerated Pavement Testing (*member*, 2015-2020).
8. Committee AFD80 Pavement Structural Modeling and Evaluation (*member*, 2015-2018).
9. Committee AFD10 Pavement Management Systems (*member*, 2002-2011).
10. Committee AFD90 Surface Properties - Vehicle Interaction (*member*, 2006-2015)
11. Committee A2K05 on Modeling Techniques in Geomechanics (*member*, 2003-2008).

American Society of Testing Materials (ASTM)

12. Committee E-17 – Vehicle-Pavement Systems (*member*, since 2007)
 - Group II – Friction, Committee E-17 – Vehicle-Pavement Systems (*vice-chair*, 2011-13)

International Society for Maintenance and Rehabilitation of Transportation Infrastructure (iSMARTi)

13. Awards Committee (**Chair**, 2004-07)

Virginia Department of Transportation Research Advisory Committees

14. VDOT Asphalt Research Advisory Committee (ARAC) (*member*, 2005-2018)
15. VDOT Pavement Research Advisory Committee (PAVERAC) (*member*, 2005-present)

ITS America

16. Sustainability and Resiliency Standing Advisory Committee (*member*, 2021-present)

5.2.2 Other service to one's profession or field

Steering, Organizing, and Scientific Committees

1. **Co-Chair**, *International Symposium on Pavement, Roadway, and Bridge Life Cycle Assessment 2020*, January 13-15, 2021, Sacramento, CA.
2. **Chair**, *Pavement Evaluation 2019 National Conference*, Sep 17-19, 2019, Roanoke, VA.
3. **Co-Chair**, *World Conference on Pavement and Asset Management*, “Pushing the evolution of transportation infrastructures: let’s shape the future of pavement and asset management,” Baveno, Italy, June 12-16, 2017.
4. **Chair**, *9th International Conference on Managing Pavement Assets (ICMPA9)*, *Moving Pavement Management beyond the Short-Term: Embracing Innovation and Addressing Sustainability, Accountability, and Improved Performance*, May 2015, Alexandria, VA.
5. **Chair**, *Pavement Evaluation 2014*, Sep 15-19, 2014, Blacksburg, VA.

6. Sustainable Transport Technical Track Chair, *Technical & Scientific Committee of the 17th International Road Federation World Meeting*, Nov 9–13, 2013, Riyadh, Kingdom of Saudi Arabia.
7. **Chair**, *Virginia Pavement Recycling Conference*, Nov 26-27, 2012, Richmond, VA.
8. **Chair**, *7th Symposium on Pavement Surface Characteristics (SURF 2012)* of the World Road Association (PIARC) - Smooth, Safe, Quiet & Sustainable Travel through Innovative Technologies, Sep 19-22, 2012, Norfolk, VA.
9. **Tutorials International Chair**, *8th International Conference on Managing Pavement Assets*, Nov 15-19, 2011, Santiago, Chile.
10. **Chair**, *Pavement Evaluation 2010*, Oct 25-27, 2010, Roanoke, VA.
11. **Chair**, *2007 National Conference on Pavement Management: PMS, Meeting Today's Needs and the Challenges of Tomorrow*, May 6-9, 2007, Norfolk, VA. The conference was sponsored by the Federal Highway Administration and the Transportation Research Board.
12. **Chair**, *Infrastructure Management Research and Education Workshops*, a series of workshops sponsored by the National Science Foundation (initially) and the Transportation Research Board, which are held in conjunction with the Annual TRB Meeting (Jan 2003-2015). Shorter versions have been offered at the National Asset Management conferences.

5.3 Additional outreach and extension activities

- ✓ Organized an *International Workshop on Sustainable Pavements* (in cooperation with the University of Nottingham) to develop a *Research Agenda for Sustainable Pavements*, sponsored by NSF and FHWA, Airlie, VA, January 6-9, 2010.
- ✓ Organized the *First World Bank – Virginia Tech Knowledge Exchange Workshop on Infrastructure Asset Management* (with several colleagues), World Bank, Washington, DC, and Apr 14, 2010.
- ✓ Developed training materials for a workshop on *Transportation Asset Management Data Collection for Supporting Decision Processes*, sponsored by Federal Highway Administration.

5.4 University Service

5.4.1 Department, college, and university service, including administrative responsibilities

1. **Director**, *Center for Sustainable and Resilient Infrastructure*, Virginia Tech Transportation Institute (since Feb 06).
2. **Co-Chair**, Intelligent Design and Construction planning group of the Intelligent Infrastructure and Human-Centered Communities Destination Area (2016-17)
3. *CEE Department Diversity Committee* (2016-present, chair 2017-present)
4. *CEE Departmental Promotion & Tenure Committee* (2012-15; chair 2014-15)
5. *College Diversity Committee*, College of Engineering (since Aug 09)
6. *Curriculum Committee*, Department of Civil and Environmental Engineering (2006-16).

7. *Via Fellowship Committee*, Department of Civil and Environmental Engineering (2005-09, 2017-present).
8. *Transportation Infrastructure and Systems Engineering Program Coordinator* (2003-06).
9. *Group Leader, Roadway Infrastructure Group*, VTTI (2004-06)
10. *Admission Coordinator* for the Transportation Infrastructure and Systems Engineering Program (2000-04).
11. Served on six faculty search committees.
12. Managed the CE Materials Laboratory, Norris 129 (1998–00, and 2004–06, see *IV.H*).
13. College of Engineering Industrial Opportunities Open House organizing committee (1998-00)

5.5 Contributions to diversity

1. Faculty Advisor, *Society of Hispanic Professional Engineers*, Virginia Tech Chapter (1999-2011).
2. Participates in the *Hispanic Caucus* (founder member).
3. Mentored (and supported financially) 4 Hispanic undergraduate engineering students (one of them completed a M.S. under Flintsch’s supervision).
4. Advised (and supported financially) 8 Hispanic, 3 African-American and 6 women graduate students.
5. Participated in several mentoring and recruiting activities for minority students, including the *Preview Weekend* and the *Engineering Student Organization Fair* during mentoring week, among others.

5.6 Service to students

1. **Academic Advisor, *Society of Hispanic Professional Engineers*** (see *VII.C*)
2. **Academic Advisor, Virginia Tech Student Chapter for the American Transportation and Road Builders Association (ARTBA).**
 - Encouraged the students to establish the chapter under the leadership of Edgar de León (Ph.D. student) and has advised it since then.
3. **Academic Co-Advisor, Alliance of Transportation Engineering Students (ATES).** Created the group and has advised/co-advised it since then.
4. Helped secure a donation of \$25,000 per year (\$50,000 since May 2008) from SAIC Inc. for establishing the *SAIC Fellowship*; this fellowship will support one student per year working on Transportation Asset Management.
5. Advised student in preparing various papers that received awards/ recognitions:
 - Salado, F., 2017, received one of the three “best paper awards” at the *14th Annual Inter-University Infrastructure Management Symposium*, West Lafayette, IN
 - McCarthy, R., 2015, received one of the five “best paper awards” at the *12th Annual Inter-University Infrastructure Management Symposium*, Alexandria, VA
 - Mogrovejo, D., 2013, received one of the five “best paper awards” at the *11th Annual Inter-University Infrastructure Management Symposium*, Blacksburg, VA

- Bryce, J., 2012, received one of the five “best paper awards” at the *Ninth Annual Inter-University Infrastructure Management Symposium*, Atlanta, GA.
 - Mogrovejo, D., 2012 *IRF Student Essay Competition* best paper award in the Pavement Technology, Maintenance and Management for the paper “Effect of Air Temperature and Vehicle Speed on Tire Pavement Noise Measured with the On-Board Sound Intensity Methodology.
 - Najafi, S., 2011 *IRF Student Essay Competition* best paper award in the Pavement Technology, Maintenance and Management category for the paper "Evaluation of the Effect of Diamond Grinding and Grooving on Frictional Properties of Concrete Pavement."
 - Dehghanisani, M., 2010 *IRF Student Essay Competition* best paper award for the paper “Sustainable Cross-asset Management; A more Efficient Resource Allocation Process.”
 - Nunez, O., Alvarez, S., and Gonzales, O, 2008, first prize in the graduate category, *Eighth International Contest on LTPP Data Analysis* organized by the FHWA and ASCE.
 - Chen, C., 2008, second place in the graduate category, *Eighth International Contest on LTPP Data Analysis* organized by the FHWA and ASCE.
 - Chen, C., 2007 Transportation Applied Technology Student Paper Award in the structures and maintenance category, 56th Virginia Transportation Conference (VTC), Roanoke, VA.
 - Nunez O., 2007, received one of five “best paper awards” at the Fourth Annual Inter-University Infrastructure Management Symposium, Blacksburg, VA (paper title listed in *V.B.9*).
 - Wu, Z., 2007, received one of five “best paper awards” at the Fourth Annual InterUniversity Infrastructure Management Symposium, Blacksburg, VA (paper title listed in *V.B.9*).
 - de León, E. 2006 *Transportation Applied Technology Student Paper Award*, 55th Virginia Transportation Conference (VTC).
 - Wang, H., received one of five “best paper” awards at the 2nd Annual Inter-university Symposium on Infrastructure Management (AISIM) in Newark, DE (paper title listed in *V.B.9*).
6. Nominated and advised a student for a USDOT *Dwight David Eisenhower Transportation Program Grant for Research Fellowship*:
- Weeks, Nazana (awarder in 2014-15)
 - Bryce, James (awarded in 2012-13 and 2013-14).
 - Dehghani, Mohammedsaied (awarded in 2012-13)
 - Highfield, Crysta (M.S. Student) was selected for a project on “Assessing Sustainability: Pavement Construction and Network Sustainability Management.”
7. Nominated James Bryce for the (National Asphalt Pavement Association) *NAPA Fellowship* (awarded).
8. Nominated and supported students that have been selected for several International Road Federation programs:
- Esther Lizasoain Arteaga (Ph.D. student), 2020 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2020.
 - Shivesh Shrestha (Ph.D. student), 2018 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2018.
 - Safak Ercisli (M.S. student), 2015 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2015.
 - Denis De Cid (M.S. student), 2014 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2014.
 - Azzurra Evangelisti (Ph.D. student), 2013 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2013.
 - Lijie Tang (Ph.D. student), 2012 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2012.

- Daniel Mogrovejo (M.S. student), 2011 International Road Federation (IRF) *Executive Leadership Program*, Washington, DC in January, 2011.
- Sameer Shetty (M.S. student), 2010 International Road Federation (IRF) *Road Scholar Program*, Washington, DC in January, 2010.
- Yu Zhou (M.S. student), 2009 International Road Federation (IRF) *Executive Leadership Program*, Washington, DC in January, 2009.
- Julio Roa (M.S. student), 2008-09 IRF *Fellowship Program*.
- Oscar Gonzalez (M.S. student), 2007-08 IRF *Fellowship Program*.
- Julio Roa (M.S. student), 2008 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2008.
- Orlando Nuñez (M.S. student), 2007 International Road Federation *Executive Leadership Program*; Washington, DC in January, 2007.

6. LANGUAGES

Bi-lingual in English and Spanish (mother tongue).

Working knowledge of French and Portuguese.