

## **QING LU, Ph.D., P.E.**

### *Associate Professor*

Department of Civil and Environmental Engineering

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### **Education**

- Ph.D.** Civil Engineering, University of California, Berkeley, 2005
- M.A.** Statistics, University of California, Berkeley, 2004
- M.S.** Civil Engineering, University of California, Berkeley, 2002
- M.E.** Highway and Railway Engineering, Southeast University, China, 2000
- B.E.** Highway and Urban Road Engineering, Southeast University, China, 1997

### **Professional Experience**

- University of South Florida (2017.08-present)
  - Associate Professor, Civil and Environmental Engineering
- University of South Florida (2009.12-2017.08)
  - Assistant Professor, Civil and Environmental Engineering
- University of California Pavement Research Center (UCPRC), Davis/Berkeley
  - Laboratory Manager (2008.12-2009.12)
  - Project Manager (2007.12-2009.12)
  - Postdoctoral Scholar (2005.9-2007.11)
- University of California, Berkeley, Civil and Environmental Engineering
  - Graduate Student Researcher (2000.8-2005.8)
- Southeast University, China, Transportation College
  - Graduate Research Assistant (1997.9-2000.4)

### **Industry Experience**

- ChemCo Systems, California
  - Technical Manager (2007.5-2008.11)
- Nanjing 2nd Yangtse Bridge Construction Command, China
  - Assistant Researcher and Engineer (1999.5-2000.7)
- Ningma Freeway Construction Command, China
  - Interned as Assistant Engineer (1997.1-1997.5)

### **Current Areas of Interest**

Asphalt and asphalt mixture, sustainable pavement engineering, transportation infrastructure management, analysis and design of sustainable, environment-friendly, and resilient transportation infrastructure.

### **Registration**

Licensed Professional Civil Engineer, State of California (71563)

## **Professional Service**

- Member of the National Science Foundation (NSF) Panel for Smart and Connected Communities (S&CC): Transportation and Sharing Economy B, 2018.
- Member of the Annual Activity Committee of International Association of Chinese Infrastructure Professionals (IACIP) (2016-present)
- Member of the Academic Committee of International Conference on Road and Airfield Pavement Technology (ICPT) 2017 Conference. (2016-2017)
- Member of the Scientific Committee of the International Conference on “Urban Transport Strategies for Sustainable Development”, Kore University of Enna, Italy, December 14, 2016
- Member of EMI Mechanics of Pavements Committee, American Society of Civil Engineers (ASCE), 2015-present
- Member of the Editorial Board of the Journal of Transportation Research Part D: Transport and Environment, 2015-present.
- Member of the Editorial Board of the China Journal of Highway and Transport, 2015-present.
- Area Editor for the area of “Pavement and Materials Engineering, and Highway Construction and Maintenance” of 12<sup>th</sup>, 13<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> COTA International Conference of Transportation Professionals (CICTP), China, 2011, 2012, 2015, 2016.
- Conference Scientific Committee, International Airfield and Highway Pavements Specialty Conference, Miami, Florida, June 7-10, 2015
- Panel Member of the National Cooperative Highway Research Program (NCHRP) Project 10-93 “Measuring, Characterizing, and Reporting Pavement Roughness of Low-Speed and Urban Roads”. 2012-2015.
- Member of the National Science Foundation (NSF) Materials Engineering Processing Asphalt Unsolicited Panel, 2014.
- Session Chair, Technical Session 10: Transportation Infrastructure Design and Construction. 13<sup>th</sup> COTA International Conference of Transportation Professionals (CICTP 2013), Shenzhen, China, August 13-16, 2013.
- Served as an invited external reviewer for proposals submitted to the Portuguese Foundation for Science and Technology (FCT), 2012
- Member of Transportation Research Board (TRB) Committee on Surface Properties - Vehicle Interaction (AFD90) (TRB ID: 39358), 4/14/2012- now
- Member of Capstone Design Committee, CEE Department, USF, 2011
- Member of Laboratory Committee, CEE Department, USF, 2011

## **Journal Articles**

1. Lei Zhang, Qing Lu, Yongfu Ding, Pan Peng, Yu Yao. Design and Performance Simulation of Road Bioretention Media for Sponge Cities. *Journal of Performance of Constructed Facilities*. 2018.
2. Abdulrahman Al Fuhaid, Qing Lu, Sang Luo. Laboratory Evaluation of Biobased Epoxy Asphalt Binder (BEAB) for Asphalt Pavement. *Journal of Materials in Civil Engineering*. 2018.

3. Sang Luo, Zhendong Qian, Xu Yang, Qing Lu. Laboratory Evaluation of Double-layered Pavement Structures for Long-span Steel Bridge Decks. *ASCE's Journal of Materials in Civil Engineering*, 2017.
4. Mingyang Li, Lu Lu, Yisha Xiang, Suiyao Chen, Qing Lu. A Data Heterogeneity Modeling and Qualification Approach for Field Pre-assessment of Chloride-Induced Corrosion in Aging Infrastructures. *Reliability Engineering and System Safety*, 2017.
5. L. Guo, Q. Lu. Modeling a New Energy Harvesting Pavement System with Experimental Verification, *Applied Energy*, Volume 208, pp.1071-1082, 2017.
6. C. Xin, R. Guo, Z. Wang, Q. Lu, and P.S. Lin. The Effects of Neighborhood Characteristics and the Built Environment on Pedestrian Injury Severity: A Random Parameters Generalized Ordered Probability Model with Heterogeneity in Means and Variances, *Analytic Methods in Accident Research*, Volume 16, pp. 117-132, 2017.
7. S. Luo, Z. Qian, X. Yang, Q. Lu. Fatigue Behavior of Epoxy Asphalt Concrete and Its Moisture Susceptibility from Flexural Stiffness and Phase Angle. *Construction and Building Materials*, Vol. 145, pp. 506-517, 2017.
8. S. Luo, Q. Lu, Z. Qian, H. Wang, and Y. Huang. Laboratory Investigation and Numerical Simulation of the Rutting Performance of Double-Layer Surfacing Structure for Steel Bridge Decks. *Construction and Building Materials*, Vol. 144, pp 178-187, 2017.
9. C. Xin, Q. Lu, C. Ai, A. Rahman, and Y. Qiu. Optimization of Hard Modified Asphalt Formula for Gussasphalt Based on Uniform Experimental Design. *Construction and Building Materials*, Vol. 136, pp. 556-564, 2017.
10. L. Guo, Q. Lu. Potentials of Piezoelectric and Thermoelectric Technologies for Harvesting Energy from Pavements. *Renewable and Sustainable Energy Reviews*. Volume 72, 2017, pp. 761-773.
11. L. Zhang, Z. Ren, Q. Lu. Simulation of Mesofracture Process of Asphalt Mixture using Digital Image Processing and Extended Finite Element Method. *Journal of Testing and Evaluation*. Vol. 45, No. 1, 2017, pp. 281-293.
12. Q. Lu, J. Bors. Alternate uses of epoxy asphalt on bridge decks and roadways. *Construction and Building Materials*, Volume 78, March 2015, pp. 18-25.
13. M. Gunaratne, Q. Lu, J. Yang, J. Metz, W. Jayasooriya, M. Yassin, and S. Amarasiri. Hydroplaning Field Study. *Accident Reconstruction Journal*, Volume 25, Issue Number 1, 2015, pp. 23-25.
14. Z.D. Qian, Q. Lu. Design and laboratory evaluation of small particle porous epoxy asphalt surface mixture for roadway pavements. *Construction and Building Materials*, Volume 77, February 2015, pp. 110-116.
15. S. Luo, Q. Lu, and Z.D. Qian. Performance Evaluation of Epoxy Modified Open-graded Porous Asphalt Concrete. *Construction and Building Materials*, Volume 76, February 2015, pp. 97-102.

16. J.T. Zhang, J. Yang, N. Zuo, Q. Lu, X. Wang, and H.R. Zhu, Study on the shear dilation behaviour of asphalt mixture, *Road Materials And Pavement Design*. Vol. 16 , Iss. 1, 2015, pp. 200-213.
17. K.L. Wang, J. Yang, Q. Lu, X.Y. Gu, XH. Chen. Establishment of Microstructure of Asphalt Mixtures Based on Discrete Element Method. *Journal of Testing and Evaluation*. Vol. 42, No. 5, September 2014, pp. 1191-1202.
18. L.L. Chen, Z.D. Qian, and Q. Lu. Crack Initiation and Propagation in Epoxy Asphalt Concrete in Three-Point Bending Test. *Road Materials and Pavement Design*. DOI: 10.1080/14680629.2014.908132. <http://dx.doi.org/10.1080/14680629.2014.908132>. April 16, 2014.
19. B. Yu, Q. Lu. Estimation of albedo effect in pavement life cycle assessment. *Journal of Cleaner Production*. Volume 64, 1 February 2014, pp. 306-309.
20. B. Yu, Q. Lu. Empirical Acoustic Model for Asphalt Surface Mixes. *The Baltic Journal of Road and Bridge Engineering*. 8(3), 2013, pp. 151-157.
21. B. Yu, Q. Lu, and J. Xu. An improved pavement maintenance optimization methodology: Integrating LCA and LCCA. *Transportation Research Part A* 55, 2013, pp. 1-11.
22. B. Yu, Q. Lu. Empirical model of roughness effect on vehicle speed. *International Journal of Pavement Engineering*. DOI:10.1080/10298436.2013.
23. B. Yu, Q. Lu. Bayesian model for tyre/asphalt pavement noise. *Proceedings of the Institution of Civil Engineers*. <http://dx.doi.org/10.1680/tran.11.00040>. 2013.
24. L. Zhang, W. W. Wang, Q. Lu, and X. H. Chen. An Innovative Approach to Determine Deck Pavement Modulus and Interfacial Slip Stiffness Based on a Composite Beam Model. *Construction and Building Materials*. Volume 40, March 2013, pp. 411-418.
25. Lu, Q. Estimating Acoustic Performance Trends of Various Asphalt-Surface Mixtures Based on Field Measurement. *Pavement Performance: Current Trends, Advances, and Challenges, Selected Technical Papers STP1555*, ASTM International, West Conshohocken, PA, 2012, pp. 150-159.
26. B. Yu, Q. Lu. Life Cycle Assessment of Pavement: Methodology and Case Study. *Transportation Research Part D*. 17, 2012, pp. 380–388.
27. B. Yu, Q. Lu, and J. Yang. Evaluation of Anti-Reflective Cracking Measures by Laboratory Test, *International Journal of Pavement Engineering*, DOI:10.1080/10298436.2012.721547. 2012.
28. Lu, Q., Harvey, J. Laboratory Evaluation of Open-graded Asphalt Mixes with Small Aggregates and Various Binders and Additives. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2209, TRB, National Research Council, Washington, D.C., 2011, pp. 61-69.
29. Lu, Q., Harvey, J., Kohler, E., Rymer, B., and Motumah, L. Comparison of Tire-Pavement Noise Characteristics of Rubberized and Conventional Asphalt Concrete Mixes. *Noise Control Engineering Journal (NCEJ)*, the Institute of Noise Control Engineering of the USA (INCE/USA), 59 (3), May-June 2011, pp.219-227.

30. Ullidtz, P., Harvey, J., Basheer, I., Jones, D., Wu, R., Lea, J., Lu, Q. CalME: Mechanistic-Empirical Design Program for Flexible Pavement Rehabilitation. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2153, TRB, National Research Council, Washington, D.C., 2010, pp. 143-152.
31. Bendtsen, H., Kohler, E., Lu, Q., Rymer, B. California-Denmark Study on Acoustic Aging of Road Pavements. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2158, TRB, National Research Council, Washington, D.C., 2010, pp. 122-128.
32. Luo, S., Qian, Z.D., and Lu, Q. Research on Dynamic Modulus of Epoxy Asphalt Mixes by Dynamic Frequency Sweep Test. *Petroleum Asphalt*. Volume 24(4), 2010, pp. 55-58. (ISSN: 1006-7450)
33. Lu, Q., Zhang, Y., and Harvey, J. Estimation of Truck Traffic Inputs for M-E Pavement Design in California. *Transportation Research Record: Journal of the Transportation Research Board*, No. 2095, TRB, National Research Council, Washington, D.C., 2009, pp. 62-72.
34. Lu, Q., Ullidtz, P., Basheer, I., Ghuzlan, K., and Signore, J. CalBack: Enhancing Caltrans Mechanistic-Empirical Design Process with New Backcalculation Software. *Journal of Transportation Engineering, American Society of Civil Engineers (ASCE)*, Volume 135, Issue 7, 2009, pp. 479-488.
35. Ongel, A., Lu, Q., Harvey, J. Frictional Properties of Asphalt Concrete Mixes. Proceedings of Institution of Civil Engineers, *Transport 162 Issue TR1*, February 2009, pp. 19-26.
36. Lu, Q., Zhang, Y., and Harvey, J. Growth of Truck Traffic Volume for Mechanistic-Empirical Pavement Design. *International Journal of Pavement Engineering*, Taylor & Francis, London, UK, July 2008, pp 161-172.
37. Ongel, A., Kohler, E., Lu, Q., and Harvey, J. Comparison of Surface Characteristics and Pavement/Tire Noise of Various Thin Asphalt Overlays. *Road Materials and Pavement Design* Volume 9/2, April-June 2008, pp.333-344.
38. Lu, Q., Harvey, J. Characterization of Truck Traffic in California for Mechanistic Empirical Design. *Transportation Research Record: Journal of the Transportation Research Board*, No. 1945, TRB, National Research Council, Washington, D.C., 2006, pp. 61-72.
39. Lu, Q., Harvey, J. Evaluation of Hamburg Wheel Tracking Device Test by Laboratory and Field Performance Data. *Transportation Research Record: Journal of the Transportation Research Board*, No. 1970, TRB, National Research Council, Washington, D.C., 2006, pp. 25-44.
40. Lu, Q., Harvey, J. Long-term Effectiveness of Antistripping Additives: Laboratory Evaluation. *Transportation Research Record: Journal of the Transportation Research Board*, No. 1970, TRB, National Research Council, Washington, D.C., 2006, pp. 14-24.

41. Lu, Q., Harvey, J. Evaluation of Moisture Sensitivity of Hot Mix Asphalt by Flexural Beam Fatigue Test. *Asphalt Concrete: Simulation, Modeling, and Experimental Characterization. Geotechnical Special Publication No. 146*. American Society of Civil Engineers, 2006, pp. 124-133.
42. Fu, G., Yang, J., Lu, Q., Chen, R. In Depth Analysis on Interlayer Restraining Reflective Cracks. *Journal of Highway and Transportation Research and Development*. Vol. 4. Beijing, China. 2000.
43. Fu, G., Lu, Q., Yang, J., Chen, R. Stress Analysis on Interlayer Restraining Reflective Cracks. *Journal of Southeast University (Natural Science Edition)*. Vol. S1. Nanjing, China. 1999.
44. Lu, Q., Zhang, Y. Re pair of Reflection Cracking in Asphalt Overlays on PCC Pavements. *Journal of Foreign Highway*, Vol. 6. Hunan, China. 1998.

### **Peer Reviewed Conference Papers**

1. J. Harvey, R. Wu, I. Guada, Q. Lu, A. Ongel, A. Rezaei, E. Kohler & C. Reyes. Overview of California studies on noise reduction for asphalt and concrete surfaces. *Proceedings of the 10th International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2017)*, June 28-30, 2017, Athens, Greece.
2. S. Luo, and Q. Lu. Permanent Deformation of Two-Layer Surfacing Structures for Steel Bridge Decks. *Transportation Research Board 95th Annual Meeting*, Washington, DC, January 10, 2016.
3. Q. Lu, Guo, L.K., and B. Yu. Design Improvements of Retroreflective Raised Pavement Markers Based on Quantification of Their Physical Properties. *Transportation Research Board 95th Annual Meeting*, Washington, DC, January 10, 2016.
4. Guo, L.K., and Q. Lu. Potentials of Piezoelectric and Thermoelectric Technologies for Harvesting Energy from Pavements. *Transportation Research Board 95th Annual Meeting*, Washington, DC, January 10, 2016.
5. Guo, L.K., Q. Lu, Y.L. Zhang, and B. Yu. Comprehensive Study of Pendulum Impact Test for Raised Pavement Markers. *Transportation Research Board 94th Annual Meeting*, Washington, DC, January 17, 2015.
6. Guo, L.K., Q. Lu, and B. Yu. Study of External Factors on For Retroreflective Raised Pavement Marker Failures. *Transportation Research Board 94th Annual Meeting*, Washington, DC, January 17, 2015.
7. S. Luo, and Q. Lu. Performance evaluation of open-graded epoxy asphalt concrete with different nominal maximum aggregate sizes. *Transportation Research Board 94th Annual Meeting*, Washington, DC, January 17, 2015.
8. Qian, Z.D., and Q. Lu. Design and Laboratory Evaluation of Small Particle Porous Epoxy Asphalt Concrete. *Transportation Research Board 93rd Annual Meeting*, Washington, DC, January 14, 2014.

9. Guo, L.K., and Q. Lu. Geometric Design Improvement Of Retroreflective Raised Pavement Markers Based On A Full Factorial Experiment Of Stress Analysis. *Transportation Research Board 93rd Annual Meeting*, Washington, DC, January 14, 2014.
10. H. Bendtsen, J. Oddershede, Q. Lu, A. Rezaie. Prediction of Noise From Laboratory Produced Pavement Slabs. *InterNoise 2012*, New York City, USA, August 19-22, 2012.
11. Lu, Q., and Harvey, J. Laboratory Performance Comparison of Promising Asphalt Surface Mixes. *12th COTA International Conference of Transportation Professionals (CICTP 2012)*, Beijing, China, August 3-6, 2012.
12. Lu, Q., Luo, S., Harvey, J. Laboratory Evaluation of Performance of Open-graded Epoxy Asphalt Concrete. *ISAP 2012 International Symposium on Heavy Duty Asphalt Pavements and Bridge Deck Pavements*, Nanjing, China, May 23-25, 2012.
13. Lu, Q., Gaul, R. W., Bors, J. Alternate Uses of Epoxy Asphalt on Bridge Decks and Roadways. *ISAP 2012 International Symposium on Heavy Duty Asphalt Pavements and Bridge Deck Pavements*, Nanjing, China, May 23-25, 2012.
14. Yu. B., and Lu, Q. Individual Acoustic Models of Asphalt Surface Mixes at Various Frequencies. *Transportation Research Board 91st Annual Meeting*, Washington, DC, January 25, 2012.
15. Lu, Q., Wu, R.Z., and Harvey, J. Calibration of On-board Sound Intensity Measurements of Tire/Pavement Noise. *Transportation Research Board 91st Annual Meeting*, Washington, DC, January 24, 2012.
16. Lu, Q., and Harvey, J. Effect of Aggregate Type on Noise and Durability Performance of Open-graded Asphalt Mixes. *Transportation Research Board 91st Annual Meeting*, Washington, DC, January 23, 2012.
17. Lu, Q. Estimating Acoustic Performance Trend of Various Asphalt Surface Mixtures Based on Field Measurement. *ASTM Symposium: (E17) International Symposium on Pavement Performance: Trends, Advances, and Challenges*, Tampa, FL, December 5, 2011.
18. Lu, Q., Luo, S., Harvey, J. Compaction of Noise-Reducing Asphalt Mixes in the Laboratory. ASCE Conference Proceedings, *Road Pavement and Material Characterization, Modeling, and Maintenance (GSP 213)*, Proceedings of the 2011 Geohunan International Conference, Zhangjiajie, China, June 6-8, 2011.
19. Lu, Q., Kohler, E., Harvey, J. Field Investigation of Acoustic Performance of Various Asphalt Surface Mixes. ASCE Conference Proceedings. *ICCTP 2010: Integrated Transportation Systems—Green, Intelligent, Reliable*. Proceedings of the 10th International Conference of Chinese Transportation Association (ICCTP 2010), Beijing, China, August 4-8, 2010.
20. Lu, Q., Harvey, J., Kohler, E., Rymer, B., and Motumah, L. Comparison of Tire-Pavement Noise Characteristics of Rubberized and Conventional Asphalt Concrete

Mixes. *Proceedings of the 39th International Congress and Exposition on Noise Control Engineering (INTER-NOISE 2010)*, Lisbon, Portugal, June 13-16, 2010.

21. Bendtsen, H., Kohler, E., Lu, Q., Rymer, B. Acoustic Aging of Road Pavements. *Proceedings of the 39th International Congress and Exposition on Noise Control Engineering (INTER-NOISE 2010)*, Lisbon, Portugal, June 13-16, 2010.
22. Harvey, J., Q. Lu, J. D. Lea, R. Z. Wu, P. Ullidtz, and I. Basheer. Features of Mechanistic Empirical Asphalt Pavement Models for New Design and Rehabilitation in California. *Proceedings of the 11th ISAP International Conference on Asphalt Pavements*, Nagoya, Japan, August 1-6, 2010.
23. Lu, Q., Luo, S., Harvey, J. Compaction of Noise-Reducing Asphalt Mixtures in the Laboratory. CD-ROM, *Proceedings of the 89th Transportation Research Board Annual Meeting*, Washington D.C., January 2010.
24. Lu, Q., E. Kohler, A. Öngel, J. Harvey. Field Investigation of Tire/Pavement Noise and Durability for Asphalt Pavements with and without Asphalt Rubber. *Proceedings of Asphalt Rubber 2009 Conference*, Nanjing, China, November 2-4, 2009.
25. Lu, Q., Harvey, J., and Ullidtz, P. Stiffness Characterization with Falling Weight Deflectometer in Accelerated Pavement Testing. *Proceedings of 3rd International Conference on Accelerated Pavement Testing*, Madrid, Spain, October 2008.
26. Lu, Q., and Harvey, J. Inclusion of Moisture Effect in Fatigue Test for Asphalt Pavements. *Proceedings of the First International Symposium, Transportation and Development Innovative Best Practice 2008*, Beijing, China, April 2008, pp. 498-504.
27. Lu, Q., Signore, J., Basheer, I., Ghuzlan, K., and Ullidtz, P. CalBack: Enhancing Caltrans Mechanistic-Empirical Design Process with New Backcalculation Software. *Proceedings of the 87<sup>th</sup> Transportation Research Board (TRB) Annual Meeting*, Washington D.C., 2008.
28. Lu, Q., Harvey, J. Analysis of Moisture Ingress and Retention Processes in Asphalt Mixes with Nonlinear Mixed Effects Models. *Proceedings of the International Conference on Advanced Characterization of Pavement and Soil Engineering Materials (Athens-07')*, Athens, Greece, June 2007.
29. Lu, Q., Harvey, J. Influence of Air-void and Binder Contents on Moisture Sensitivity of Hot Mix Asphalt in Flexural Beam Fatigue Test. *Proceedings of the International Conference on Advanced Characterization of Pavement and Soil Engineering Materials (Athens-07')*, Athens, Greece, June 2007.
30. Lu, Q., Zhang, Y., and Harvey, J. Analysis of Truck Traffic Growth for the Mechanistic-Empirical Pavement Design Guide. CD-ROM, *Proceedings of the 86<sup>th</sup> Transportation Research Board (TRB) Annual Meeting*, Washington D.C., 2007.
31. Lu, Q., Harvey, J. *Inclusion of Moisture Effect in Fatigue Test for Asphalt Pavements*. CD-ROM, *Proceedings of the 86<sup>th</sup> Transportation Research Board (TRB) Annual Meeting*, Washington D.C., 2007.



32. Ongel, A., Kohler, E., and Lu, Q. Comparison of Surface Characteristics and Pavement/Tire Noise of Various Thin Asphalt Overlays. CD-ROM, *Proceedings of the 86<sup>th</sup> Transportation Research Board (TRB) Annual Meeting*, Washington D.C., 2007.
33. Lu, Q., Harvey, J. Field Investigation of Factors Associated With Moisture Damage in Asphalt Pavements. *Conference Proceedings of the 10<sup>th</sup> ISAP International Conference on Asphalt Pavements*, Quebec, Canada. August 2006.
34. Yang, J., Fu, G., Lu, Q., Chen, R., Deng, X. Deep Analysis on Interlayer Restraining Reflective Cracks in Asphalt Overlay on Old Concrete Pavement. Cracking in Pavements - Mitigation, Risk Assessment, and Prevention. ISBN: 2-912143-47-0. *Proceedings of the International RILEM Conference*, Limoges, France. May 2004.
35. Lu, Q., Zhang, Y. Analysis of Stress in Asphalt Overlays over Cracked Cement Concrete Slabs with 3-D FEM. *Proceedings of the 8th Annual National Conference of Highway Associations*. Nanjing, China. October 1998.

### Technical Reports

1. Lu, Q., M. Gunaratne, Y.Zhang, L. Guo, S. Uddin, and M. Hoque. *Improving Safety in Pavement Field Testing*. Report No. BDV 25-977-27, Department of Civil and Environmental Engineering, University of South Florida, September 2017.
2. Lu, Q. and L. K. Guo. *Field Test Method to Determine Presence and Quantity of Modifiers in Liquid Asphalt – Follow-up Data Analysis*. Report No. BDV25-977-20, Department of Civil and Environmental Engineering, University of South Florida, August 2015.
3. Lu, Q., M. Gunaratne, Y.L. Zhang, L. K. Guo, and B. Yu. *Quantification of the Physical Properties Required of Raised Pavement Markers and Accelerated Laboratory Testing*. Report No. BDK 84-977-23, Department of Civil and Environmental Engineering, University of South Florida, April 2014.
4. Gunaratne, M., Q. Lu, J. Yang, J. Metz, W. Jayasooriya, M. Yassin, and S. Amarsiri. *Hydroplaning on Multi Lane Facilities*. Report No. BDK 84 977-14, Department of Civil and Environmental Engineering, University of South Florida, November 2012.  
[http://www.dot.state.fl.us/research-center/Completed\\_Proj/Summary\\_RD/FDOT-BDK84-977-14-rpt.pdf](http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_RD/FDOT-BDK84-977-14-rpt.pdf).
5. Bendtsen, Hans, J. Oddershede, Q. Lu, and A. Rezaei. *Asphalt Pavement Texture and Noise: Laboratory Experiment with Acoustic Optimization Tool*. Vejdirektoratet, Report 436, Danish Road Directorate, 2013. (ISBN: 9788770607506)
6. Rezaei, Arash, J.T. Harvey, and Q. Lu. *Investigation of Noise and Ride Quality Trends for Asphaltic Pavement Surface Types: Five-Year Results*. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-12-31, 2012.
7. B. Yu and Q. Lu. *Life Cycle Assessment of Pavement Overlay Systems with Focus on Usage Phase*. Report: USF-CEEPL-001, Department of Civil and Environmental Engineering, University of South Florida, October 2011.

8. Lu, Q., J. Harvey, and R.Z. Wu. *Investigation of Noise and Durability Performance Trends for Asphaltic Pavement Surface Types: Four-Year Results*. UCPRC-RR-2010-05, University of California Pavement Research Center, Berkeley and Davis. April 2011.
9. Lu, Q., Fu, P.C., and Harvey, J. *Laboratory Evaluation of the Noise and Durability Properties of Asphalt Surface Mixes*. UCPRC-RR-2009-07, University of California Pavement Research Center, Berkeley and Davis. December 2009.
10. Bendtsen, H., Kohler, E., and Lu, Q. *Temperature influence on road traffic noise Californian OBSI measurement study*. Danish Road Directorate/Road Institute, DRI report, 2009.
11. Bendtsen, H., Lu, Q., and Kohler, E. *Acoustic aging of asphalt pavement: A Californian Danish comparison*. Danish Road Directorate/Road Institute, DRI report, 2009.
12. Lu, Q., Kohler, E and Harvey, J. *Investigation of Noise and Durability Performance Trends for Asphaltic Pavement Surface Types: Three-Year Results*. University of California Pavement Research Center, UC Davis and UC Berkeley for California Department of Transportation, Division of Research and Innovation, Office of Roadway Research. 2009.
13. Ongel, Harvey, J., Kohler, E., Lu, Q., and Steven, B. *Investigation of Noise, Durability, Permeability, and Friction Performance Trends for Asphaltic Pavement Surface Types: First- and Second-Year Results*. Research Report: UCPRC-RR-2007-03, University of California Pavement Research Center, Berkeley and Davis. February 2008.
14. Lu, Q. *Estimation of Truck Traffic Inputs Based on Weigh-in-Motion Data in California*. Technical Memo: UCPRC-TM-2008-08, University of California Pavement Research Center, Berkeley and Davis. January 2008.
15. Lu, Q., Jones, D., and Harvey, J. *Reflective Cracking Study: Backcalculation of HVS Test Section Deflection Measurements*. Research Report: UCPRC-RR-2007-08, University of California Pavement Research Center, Berkeley and Davis. November 2007.
16. Lu, Q. *Friction Testing of Pavement Preservation Treatments: Literature Review*. University of California, Pavement Research Center, Berkeley and Davis. September 2006.
17. Lu, Q., and Harvey, J. *Investigation of Conditions for Moisture Damage in Asphalt Concrete and Appropriate Laboratory Test Methods*. University of California, Pavement Research Center, Berkeley and Davis. November 2005.
18. Lu, Q., Harvey, J., Lea, J., Quinley, R., Redo, D., and Avis, J. *Truck Traffic Analysis using Weigh-In-Motion (WIM) Data in California*. Pavement Research Center, Institute of Transportation Studies, University of California, Berkeley. June 2002.
19. Lu, Q., and Harvey, J. *Mitigation and Test Methods of Moisture Sensitivity of Asphalt Mixture: Literature Review*. Pavement Research Center, Institute of Transportation Studies, University of California, Berkeley. March 2002.

### **Funded Research Projects**

1. CRISP Type 2: Integrative Decision Making Framework to Enhance the Resiliency of Interdependent Critical Infrastructures, National Science Foundation (Co-PI: Dr. Lu, \$ 1,963,542, Federal Fund, 2016-2020)
2. Best Practices for Construction and Repair of Bridge Approaches and Departures, Florida Department of Transportation (PI: Dr. Lu, \$149,593, State Fund, 2016 - 2017)
3. Improving Safety in Pavement Field Testing, Florida Department of Transportation (PI: Dr. Lu, \$92,953, Federal Fund, 2016 - 2017)
4. Field Test Methods to Determine Presence and Quality of Modifiers in Liquid Asphalt BDV25 977-06 Follow-up Data Analysis, Florida Department of Transportation (PI: Dr. Lu, \$4,744, State Fund, 2015)
5. Field Test Methods to Determine Presence and Quality of Modifiers in Liquid Asphalt, Florida Department of Transportation (PI: Dr. Lu, \$78,398, Federal Fund, 2014 - 2015)
6. Quantification of the Physical Properties Required of Raised Pavement Markers and Accelerated Laboratory Testing, Florida Department of Transportation (PI: Dr. Lu, \$195,473, Federal Fund, 2012 - 2014)
7. Hydroplaning on Multi Lane Facilities, Florida Department of Transportation, (Co-PI: Dr. Lu, \$172,717, Federal Fund, 2010)
8. Life Cycle Assessment of Pavement, internally funded by University of South Florida (PI: Dr. Lu, \$60,000, State Fund, 2010)
9. Laboratory Evaluation of the Noise and Durability Properties of Asphalt Surface Mixes, California Department of Transportation (Main Investigator: Dr. Lu, \$300,000, State Fund, 2009)
10. Investigation of Noise, Durability, Permeability, and Friction Performance Trends for Asphaltic Pavement Surface Types in California- Four consecutive years, California Department of Transportation through University of California Pavement Research Center (PI: Dr. Lu, \$54,000, State Fund, 2010)
11. Investigation of Conditions for Moisture Damage in Asphalt Concrete and Appropriate Laboratory Test Methods, California Department of Transportation (Main Investigator: Dr. Lu, \$1,000,000, State Fund, 2002-2005)