

## **ELIE Y. HAJJ**

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Pavement Engineering & Science Program  
Western Regional Superpave Center (WRSC)  
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### **EDUCATION**

- Ph.D. Civil Engineering University of Nevada, Reno 2005
- M.S.C.E. Civil Engineering University of Nevada, Reno 2002
- B.S.C.E. Civil Engineering Lebanese University, Lebanon 1999

### **PRINCIPAL FIELDS OF INTEREST**

Paving materials design and advanced characterization, engineered and sustainable paving materials, numerical modeling of asphalt pavement structures, pavement response to heavy loads, full-scale pavement structure testing, pavement maintenance and rehabilitation, computer applications in civil engineering.

### **CERTIFICATION**

- Engineer Intern, Nevada No. 0T4547

### **PROFESSIONAL EXPERIENCE**

- Associate Professor, Department of Civil and Environmental Engineering, University of Nevada, Reno (07/16-present)
- Assistant Professor, Department of Civil and Environmental Engineering, University of Nevada, Reno (07/11-06/16)
- Research Assistant Professor, Department of Civil and Environmental Engineering, University of Nevada, Reno (02/06-06/11)
- Nevada Technology Transfer Center, engineer and trainer (02/06-09/11)
- Pavement Services Manager & Lab Supervisor, Terracon Consulting Engineers and Scientists, NV (05/05-01/06)
- Laboratory Manager, Western Regional Superpave Center (WRSC), University of Nevada, Reno (08/04-04/05)
- Teaching Graduate Assistant, University of Nevada, Reno (08/04-05/05)
- Research Graduate Assistant, University of Nevada, Reno (08/01-04/05)
- Field Site Engineer, Campenon Bernard SGE – France, Cairo, Egypt Branch (1999-2000)

### **PROFESSIONAL MEMBERSHIP**

- American Society of Civil Engineers (ASCE), Affiliate Member (2017-present)
- Association of Asphalt Paving Technologists (AAPT), member (04/01/09-present)
- Executive Officer, Treasurer (Elected), Academy of Pavement Science and Engineering (APSE) (April 2017-present)
- Founding Member, Academy of Pavement Science and Engineering (APSE) (April 2017-present)
- International Society for Asphalt Pavements (ISAP), member (07/10/12-present)
- International Society for Asphalt Pavements (ISAP) Technical Committee Asphalt Pavements & Environment, Work Group (WG) 1 – Hot Recycling of RAP, Chair (2013-present)
- Transportation Research Board (TRB) Committees
  - AFK50, Chair (04/15/14-04/14/20)
  - AFK50, member (04/15/12-04/14/17)
  - AFK50, young member (05/18/11-04/14/12)
  - AFK30, member (04/15/10-04/14/16)
  - AFD80, member (04/15/12-04/14/18)
  - AFD80, young member (04/15/06-04/14/12)
- Nevada Alliance for Quality Transportation Construction, honorary member (04/01/06-present)

## **RESEARCH PROJECTS**

### **Active Research Projects**

Hajj, Elie (Principal). "Investigation of the rheological and adhesive/cohesive characteristics of crumb rubber modified asphalt binders mixed with warm mix asphalt additive and antistripping agent", Sponsored by Australian College of Kuwait, Kuwait Foundation for the Advancement of sciences (KFAS), \$17,160.00.

Submission Date: 2018

Date Awarded: 2019

End Date: 2020

Hajj, Elie (Principal). "Effect of Raveling on the Performance of Hot Mix Asphalt under Arid Climatic Conditions: Case Study in Kuwait (Phase I)", Sponsored by Australian College of Kuwait, Kuwait Foundation for the Advancement of sciences (KFAS), \$20,265.00.

Submission Date: 2018

Date Awarded: 2019

End Date: 2019

Hajj, Elie (Principal), Hand, Adam J (Co-Principal), Sebaaly, Peter E (Co-Principal). "Development and Deployment of Innovative Asphalt Pavement Technologies", Sponsored by FWHA, Federal, \$3,000,000.00.

Submission Date: 2017

Date Awarded: 2018

End Date: 2023

Hajj, Elie (Principal), Hand, Adam J (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (Carson City) FY19-FY20", Sponsored by Carson City County, Local, \$80,000.00.

Submission Date: 2018

Date Awarded: 2018

End Date: 2020

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal), Hand, Adam J (Co-Principal). "Pavement Design and Materials 18-19", Sponsored by Nevada DOT, State, \$150,000.00.

Submission Date: 2017

Date Awarded: 2018

End Date: 2020

Hajj, Elie (Co-Principal), Hand, Adam J (Principal), Sebaaly, Peter E (Co-Principal). "ASMG Cooperative Program R&D", Sponsored by All States Materials, Private Corporation, \$105,000.00.

Submission Date: 2018

Date Awarded: 2018

End Date: 2020

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal), Hand, Adam J (Co-Principal). "Pavement Technology (RTC) 19-20", Sponsored by Washoe County Regional Transportation Commission, Local, \$150,000.00.

Submission Date: 2018

Date Awarded: 2018

End Date: 2020

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal), Hand, Adam (Supporting), Siddharthan, Rajaratnam (Supporting). "Structural Coefficient for High Polymer Modified Asphalt Mixes", Sponsored by Florida DOT, State, \$249,796.

Submission Date: December 6, 2016

Date Awarded: March 7, 2017

End Date: June 6, 2019

Hajj, Elie (Co-Principal), Hand, Adam J (Principal), Sebaaly, Peter E (Co-Principal). "RAP Reset-Responsibly Optimizing RAP Use In HMA and Pavement Performance Life", Sponsored by Washington DOT, State, \$100,000.00.

Submission Date: 2017

Date Awarded: 2017

End Date: 2019

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal), Hand, Adam J (Co-Principal). "Cooperative Technical Agreement for Pavement Preservation", Sponsored by Nevada DOT, State, \$150,000.00.

Submission Date: 2017

Date Awarded: 2017

End Date: 2019

Hajj, Elie (Co-Principal), Hand, Adam J (Principal), Sebaaly, Peter E (Supporting). "NCHRP 10-100: Procedures and Guidelines for Validating Contractor Test Data", Sponsored by National Cooperative Highway Research Program, Federal, \$300,000.00.

Submission Date: 2016

Date Awarded: 2017

End Date: 2019

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "PES-UNR Program", Sponsored by Ergon Asphalt & Emulsions, Inc., Private Corporation, \$160000.

Submission Date: April 2016

Date Awarded: July 1, 2016

End Date: June 30, 2020

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "Enhanced Predictions of Vehicle Fuel Economy and Other Vehicle Operating Costs (DTFH61-14-R-00025)", Sponsored by FHWA, Federal, \$1,548,658.

Submission Date: July 15, 2014

Date Awarded: September 19, 2014

End Date: September 18, 2019

### **Completed Research Projects**

Hajj, Elie (Principal – UNR). "NCHRP 09-58: The Effects of Recycling Agents on Asphalt Mixtures with High RAS and RAP Binder Ratios", Sponsored by National Cooperative Highway Research Program (Subcontracted from Texas Transportation Institute), Federal, \$300,000.

Submission Date: October 17, 2013

Date Awarded: May 2, 2014

End Date: November 30, 2018

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "Microsurfacing, Slurry Seals and Chip Seal Quality Assurance Best Practices Tech Briefs", Sponsored by Nevada DOT, State, \$185,000.

Submission Date: June 25, 2015

Date Awarded: January 13, 2016

End Date: September 30, 2018

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Development of In-Place Density Method for Cold In-Place Recycling", Sponsored by University Transportation Center (SOLARIS), Federal/State, \$101,272.

Submission Date: September 3, 2015

Date Awarded: March 1, 2016

End Date: September 30, 2018

Hajj, Elie (Principal), Motamed, Ramin (Co-Principal). "Resilient Modulus Prediction Models of Unbound Materials for Nevada", Sponsored by University Transportation Center (SOLARIS), Federal/State, \$94,331.

Submission Date: September 3, 2015

Date Awarded: March 1, 2016

End Date: September 30, 2018

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "Evaluation of Soil Water Characteristic Curves (SWCC) in Pavement ME for Nevada's Unbound Materials", Sponsored by Nevada DOT, State, \$155,079.

Submission Date: January 22, 2016

Date Awarded: August 2, 2016

End Date: September 30, 2018

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (DCPW)", Sponsored by Douglas County, Local, \$90,000.

Submission Date: May 11, 2016

Date Awarded: September 1, 2016

End Date: August 31, 2018

Hajj, Elie (Principal), Siddharthan, Rajaratnam (Co-Principal). "BROAD AGENCY ANNOUNCEMENT, NO. DTFH61-12-R-00055, Pavement Assessment: Topic 2: Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements", Sponsored by FWHA, Federal, \$299,772.

Submission Date: September 27, 2012

Date Awarded: August 19, 2013

End Date: July 31, 2018

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (Carson City) 16-18", Sponsored by Carson City County, Local, \$80,000.

Submission Date: May 4, 2016

Date Awarded: July 1, 2016

End Date: June 30, 2018

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Development of Mix Design and Structural Design Procedures for Cold In-Place Recycling", Sponsored by Nevada DOT, State, \$150,136.

Submission Date: June 17, 2015

Date Awarded: March 9, 2016

End Date: June 30, 2018

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (RTC) 16-18", Sponsored by Washoe County Regional Transportation Commission, Local, \$150,000.

Submission Date: May 2, 2016

Date Awarded: June 14, 2016

End Date: June 30, 2018

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "FAA Pavement Evaluation and Design Model", Sponsored by Federal Aviation Administration (FAA), Federal, \$100,000.

Submission Date: July 28, 2016

Date Awarded: September 10, 2016

End Date: March 9, 2018

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Characterization of Unbound Materials (Soils/Aggregates) for Mechanistic-Empirical Pavement Design Guide (MEPDG)", Sponsored by Nevada DOT, State, \$147,936.

Submission Date: January 22, 2016

Date Awarded: July 22, 2016

End Date: December 31, 2017

Hajj, Elie (Principal), Siddharthan, Rajaratnam (Co-Principal). "Mechanistic-Based Pavement Damage and Associated Cost from OS/OW Vehicles in NV", Sponsored by Nevada DOT, State, \$193,411.

Submission Date: June 3, 2013

Date Awarded: January 7, 2014

End Date: September 30, 2017

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Design and Materials Research 15-17", Sponsored by Nevada DOT, State, \$150,000.

Submission Date: June 22, 2015

Date Awarded: October 1, 2015

End Date: June 30, 2017

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Caltrans Curriculum Development", Sponsored by Caltrans, (Subcontracted from California State University Long Beach), State, \$102,673.

Submission Date: June 25, 2015

Date Awarded: January 4, 2016

End Date: 2017

Hajj, Elie (Principal). "Evaluation of TechniSoil G5®", Sponsored by TechniSoil Industrial, Private Corporation, \$26,000.

Submission Date: May 15, 2015

Date Awarded: May 20, 2015

End Date: December 31, 2016

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (DCPW) 14-16", Sponsored by Douglas County, Local, \$90,000.

Submission Date: June 21, 2014

Date Awarded: September 1, 2014

End Date: August 31, 2016

Hajj, Elie (Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (Carson City) 14-16", Sponsored by Carson City County, Local, \$90,000.

Submission Date: April 29, 2014

Date Awarded: July 1, 2014

End Date: June 30, 2016

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology (RTC) 13-16", Sponsored by Washoe County Regional Transportation Commission, Local, \$150,000.

Submission Date: July 1, 2013

Date Awarded: February 11, 2014

End Date: June 30, 2016

Hajj, Elie (Principal). "Influence of Gilsonite on HMA", Sponsored by American Gilsonite Company, Private Corporation, \$42,800.

Submission Date: September 4, 2013

Date Awarded: September 1, 2014

End Date: June 30, 2016

Hajj, Elie (Principal). "Laboratory Evaluation of Thin Asphalt Overlays for Pavement Preservation in Nevada", Sponsored by University Transportation Center (SOLARIS), Federal/State, \$68,378.

Submission Date: January 31, 2014

Date Awarded: November 1, 2014

End Date: January 31, 2016

Hajj, Elie (Principal), Sanders, David H (Co-Principal). "Development of Specifications for Engineered Cementitious Composites for Use in Bridge Deck Overlays", Sponsored by Nevada DOT, State, \$150,747.

Submission Date: April 20, 2012

Date Awarded: March 12, 2013

End Date: October 31, 2015

Hajj, Elie (Principal – UNR). "01-50: Quantifying the Influence of Geosynthetics on Pavement Performance", Sponsored by National Cooperative Highway Research Program (Subcontracted from Texas Transportation Institute), Other, \$188,375.

Submission Date: December 9, 2010

Date Awarded: September 1, 2011

End Date: September 30, 2015

Hajj, Elie (Principal). "Evaluation of HMA Mixture for Kern County Intersections", Sponsored by Kern County Roads Department, California, Other, \$35,000.

Submission Date: December 17, 2013

Date Awarded: April 29, 2014

End Date: February 28, 2015

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Design and Materials Research 13-15", Sponsored by Nevada DOT, State, \$150,000.

Submission Date: June 20, 2013

Date Awarded: August 22, 2013

End Date: June 30, 2015

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Preventive Maintenance", Sponsored by Nevada DOT, State, \$175,000.

Submission Date: June 2011

Date Awarded: December 21, 2011

End Date: June 30, 2014

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Design and Materials Research 11-13", Sponsored by Nevada DOT, State, \$150,000.

Submission Date: July 2011  
Date Awarded: December 6, 2011  
End Date: June 30, 2013

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Co-Principal). "Pavement Technology 11-13", Sponsored by Washoe County Regional Transportation Commission, Local, \$150,000.

Submission Date: May 2011  
Date Awarded: September 8, 2011  
End Date: June 30, 2013

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Develop a PWL System for Dense graded HMA Construction, Including Pay Factors", Sponsored by Nevada DOT, State, \$298,984.

Submission Date: February 2009  
Date Awarded: July 1, 2010  
End Date: December 31, 2014

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Pavement Design and Materials Research 09-11", Sponsored by Nevada DOT, State, \$150,000.

Submission Date: July 2009  
Date Awarded: August 24, 2009  
End Date: June 30, 2011

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Evaluation of Warm Mix Asphalt Concrete Pavement in South Dakota Conditions", Sponsored by South Dakota DOT, State, \$140,000.

Submission Date: July 3, 2008  
Date Awarded: October 15, 2008  
End Date: February 28, 2015

Hajj, Elie (Principal), Siddharthan, Raj V. (Co-Principal). "Evaluating the Impact of Lime on Pavement Performance", Sponsored by National Lime Association, Private Industry, \$100,000.

Submission Date: February 2, 2007  
Date Awarded: July 1, 2007  
End Date: June 30, 2009

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Pavement Design and Materials Research 07-09", Sponsored by Nevada DOT, State, \$300,000.

Submission Date: June 2007  
Date Awarded: July 1, 2007  
End Date: June 30, 2009

Hajj, Elie (Co-Principal), Sebaaly, Peter E (Principal). "Use of Reclaimed Asphalt Pavements (RAP) in Airfields HMA Pavements", Sponsored by Airfield Asphalt Pavement Technology Program, FAA, Federal, \$110,000.

Submission Date: October 4, 2006  
Date Awarded: January 2, 2007  
End Date: February 29, 2008



## **INDUSTRY EXPERIENCE**

### *City of Reno Phase II Streets Rehabilitation – Reno, Nevada (Terracon Consulting Engineers and Scientists)*

Provided pavement evaluation and pavement design for approximately 3,300 feet of residential streets. Involved in the geotechnical engineering study and laboratory testing including recommendations regarding the design and construction of respective pavement sections.

### *PAIKI Eastern Sierra Rancherías – Bridgeport, Big Pine, and Benton, California (Terracon Consulting Engineers and Scientists)*

Provided flexible pavement evaluation and design for improvements to both existing roadways and new roadways. Involved in the geotechnical engineering study and laboratory testing. Design and construction recommendations were according to the Standard Specifications for Construction of Roads and Bridges for Federal Highway Projects, FP-03.

### *Cashill Boulevard Reconstruction – Reno, Nevada (Terracon Consulting Engineers and Scientists)*

Provided oversight and design for complete reconstruction of approximately 7,500 lineal feet of existing roadway. Included pulverization and removal of the existing pavement section, mechanical stabilization of underlying subgrade soils, and replacement of aggregate base and asphalt concrete pavement. Provided field and laboratory testing services related to Cement Amended Recycled Asphalt Base (CARAB) as an alternate form of aggregate base for this project.

### *Ryland Street Reconstruction – Reno, Nevada (Terracon Consulting Engineers and Scientists)*

Provided laboratory testing of Cement Amended Recycled Asphalt Base (CARAB) as an alternate form of aggregate base for this project.

### *Ames Construction I-580 Freeway – Carson City, Nevada (Terracon Consulting Engineers and Scientists)*

Provided laboratory testing and data analysis to resolve freeway base material inconsistencies.

### *El-Azjar Road Tunnel – Cairo, Egypt (Campeon Bernard SGE)*

Worked as a site engineer on this project which consisted of two underground tunnels containing roads, 1.6 miles each, constructed using the Tunnel Boring Machine (TBM). Supervised more than 50 field technicians while working day and night shifts.

## **PUBLICATIONS**

### **Refereed Journal Papers**

1. *Habbouche, J., Hajj, E. Y., Piratheepan, M., Sebaaly, P. E., & Morian, N. E. (2019). [Field Performance and Economic Analysis of Rehabilitated Pavement Sections with Engineered Stress Relief Course Interlayers](#). Transportation Research Record.*
2. *Poumoman, S., Hajj, E. Y., Morian, N., & Martin, A. E. (2018). [Impact of Recycled Materials and Recycling Agents on Asphalt Binder Oxidative Aging Predictions](#). Transportation Research Record, 2672(28), 277–289.*
3. *Batioja-Alvarez, D., Kazemi, S.-F., Hajj, E. Y., Siddharthan, R. V., & Hand, A. J. T. (2018). [Statistical Distributions of Pavement Damage Associated with Overweight Vehicles: Methodology and Case Study](#). Transportation Research Record, 2672(9), 229–241.*
4. *Habbouche, J., Hajj, E. Y., Sebaaly, P. E., & Piratheepan, M. (2018). [A critical review of high polymer-modified asphalt binders and mixtures](#). International Journal of Pavement Engineering, 1–17.*
5. *Habbouche, J., Hajj, E. Y., Sebaaly, P. E., & Morian, N. E. (2018). [Damage Assessment for ME Rehabilitation Design of Modified Asphalt Pavements: Challenges and Findings](#). Transportation Research Record, 2672(40), 228–241.*
6. *Bazi, G., Hajj, E. Y., Ulloa-Calderon, A., & Ullidtz, P. (2018). [Finite element modelling of the rolling resistance due to pavement deformation](#). International Journal of Pavement Engineering, 1–11.*



7. Garcia Cucalon, L., Kaseer, F., Arámbula-Mercado, E., Epps Martin, A., Morian, N., Pournoman, S., & Hajj, E. Y. (2018). [The crossover temperature: significance and application towards engineering balanced recycled binder blends](#). *Road Materials and Pavement Design*, 1–22.
8. Batioja-Alvarez, D. D., Kazemi, S.-F., Hajj, E. Y., Siddharthan, R. V., & Hand, A. J. T. (2018). [Probabilistic Mechanistic-Based Pavement Damage Costs for Multitrip Overweight Vehicles](#). *Journal of Transportation Engineering, Part B Pavements*, ASCE, 144(2).
9. Gu, F., Luo, X., Luo, R., Hajj, E. Y., & Lytton, R. L. (2017). [A mechanistic-empirical approach to quantify the influence of geogrid on the performance of flexible pavement structures](#). *Transportation Geotechnics*, 13, 69–80.
10. Alavi, M., Hajj, E. Y., & Sebaaly, P. E. (2017). [A comprehensive model for predicting thermal cracking events in asphalt pavements](#). *International Journal of Pavement Engineering*, 18(9), 871–885.
11. Sebaaly, P. E., Hajj, E. Y., Sathanathan, T., & Shivakolunthar, S. (2017). [A comprehensive evaluation of moisture damage of asphalt concrete mixtures](#). *International Journal of Pavement Engineering*, 18(2), 169–182.
12. Sun, Y., Xu, H., Wu, J., Hajj, E. Y., & Geng, X. (2017). [Data Processing Framework for Development of Driving Cycles with Data from SHRP 2 Naturalistic Driving Study](#). *Transportation Research Record*, 2645(1), 50–56.
13. Habbouche, J., Hajj, E. Y., Morian, N., Sebaaly, P. E., & Piratheepan, M. (2017). [Reflective Cracking Relief Interlayer for Asphalt Pavement Rehabilitation: From Development to Demonstration](#). *Road Materials and Pavement Design*, 18(sup4), 30–57.
14. Hajj, E. Y., Sanders, D. H., & Weitzel, N. D. (2016). [Evaluation of Modified Engineered Cementitious Composite with Local Materials](#). *Transportation Research Record*, 2577(1), 78–87.
15. Gu, F., Luo, X., Luo, R., Lytton, R. L., Hajj, E. Y., & Siddharthan, R. (2016). [Numerical Modeling of Geogrid-Reinforced Flexible Pavement and Corresponding Validation using Large-Scale Tank Test](#). *Construction and Building Materials*, 122, 214–230.
16. Habbouche, J., Hajj, E. Y., and P. E., Sebaaly. “Laboratory and Economic Evaluations of Thin Lift Asphalt Overlay for Pavement Preservation,” *Advances in Civil Engineering Materials*, Vol. 5, No. 1, 2016, pp. 303-324, DOI: 10.1520/ACEM20160025, ISSN 2165-3984.
17. Hajj, E. Y., Batioja-Alvarez, D., and R. V., Siddharthan. “Assessment of Pavement Damage from Bus Rapid Transit: Case Study for Nevada,” *Transportation Research Record: Journal of the Transportation Research Board*, No. 2591, Vol. 3, Transportation Research Board of the National Academies, Washington, D.C., 2016, pp. 70–79, DOI: 10.3141/2591-09, ISSN: 0361-1981.
18. Lo Presti, D., Jiménez del Barco Carrión, A., Airey, G., and E. Y., Hajj. “Towards 100% recycling of reclaimed asphalt in road surface courses: binder design methodology and case studies,” *Journal of Cleaner Production*, Vol. 131, 2016, pp. 43-51, DOI: 10.1016/j.jclepro.2016.05.093.
19. Siddharthan, R. V., Nassimifar, M., Tan, X., and E. Y., Hajj. “Investigation of Impact of Wheel Wander on Pavement Performance,” *International Journal of Road Materials and Pavement Design*, RMPD, Volume 18, Issue 2, 2017, pp. 390-407. DOI:10.1080/14680629.2016.1162730.
20. Morian, N., Zhu, C., and E. Y., Hajj. “Rheological Indices: Phenomenological Aspects of Asphalt Binder Aging Evaluations,” *Transportation Research Record: Journal of the Transportation Research Board*, No. 2505, Vol. 1, Transportation Research Board of the National Academies, Washington, D.C., 2015, pp. 32–40, DOI: 10.3141/2505-05, ISSN: 0361-1981.
21. Alavi, M. Z., Morian, N., Hajj, E. Y., and P. E., Sebaaly. “Influence of Asphalt Binder Oxidative Aging on Critical Thermal Cracking Characteristics of Asphalt Mixtures,” *Journal of the Association of Asphalt Paving Technologists*, AAPT, Vol. 84, 2015, p. 28, ISSN: 0270-2932.
22. Sebaaly, P. E., Hajj, E. Y., and M., Piratheepan. “Evaluation of selected warm mix asphalt technologies,” *International Journal of Road Materials and Pavement Design*, RMPD, Vol. 16, No. S1, 2015, pp. 475-486. DOI:10.1080/14680629.2015.1030825.
23. Chamoun, Z., Souliman, M., Hajj, E. Y., and P. E., Sebaaly. “Evaluation of Select Warm-Mix Additives with Polymer and Rubber Modified Asphalt Mixtures,” *Canadian Journal of Civil Engineering*, 42(6), 2015, pp. 377-388, DOI: 10.1139/cjce-2013-0512.
24. Souliman, M., Piratheepan, M., Hajj, E. Y., Sebaaly, P. E., and W., Sequeira. “Impact of Lime on the Mechanical and Mechanistic Performance of Hot Mixed Asphalt Mixtures.” *International Journal of Road Materials and Pavement Design*, RMPD, Vol. 16, Issue No. 2, 2015, pp. 421-444, DOI: 10.1080/14680629.2015.1017520.
25. Alavi, Z., Pouranian, M. R., and E. Y., Hajj. “Prediction of Asphalt Pavement Temperature Profile with Finite

- Control Volume Method,” Transportation Research Record: *Journal of the Transportation Research Board*, No. 2456, Transportation Research Board of the National Academies, Washington, D.C., 2014, pp. 96–106, DOI: 10.3141/2456-10, ISSN: 0361-1981.
26. Sanjeevan, S., Piratheepan, M., **Hajj, E. Y.**, and A., Bush. “Cold-in-place Recycling in Nevada: Field Performance Evaluation over the Past Decade,” Transportation Research Record: *Journal of the Transportation Research Board*, No. 2456, Transportation Research Board of the National Academies, Washington, D.C., 2014, pp. 146–160, DOI: 10.3141/2456-15, ISSN: 0361-1981.
  27. Morian, N., Alavi, Z. M., **Hajj, E. Y.**, and P. E., Sebaaly. “Evolution of Thermo-viscoelastic Properties of Asphalt Mixtures with Oxidative Aging,” Accepted for publication in the Transportation Research Record: *Journal of the Transportation Research Board*, No. 2447, Vol. 4, Transportation Research Board of the National Academies, Washington, D.C., 2014, pp. 1–12, DOI: 10.3141/2447-01, ISSN: 0361-1981.
  28. Souliman, M., Suwal, R., and **E. Y., Hajj**. “General Guidelines to Highway Agencies to Enhance their Local Pavement Rating Systems: A Case Study of Nevada’s Pavement Rating System,” *International Journal of Pavement Research and Technology*, IJPRT, Vol. 7, No. 5, 2014, pp. 305-316, ISSN 1997-1400.
  29. Souliman, M., **Hajj, E. Y.**, and P. E., Sebaaly. “Impact of Antistrip Additives on the Long-Term Aging Rheological Properties of Asphalt Binders.” *Journal of Materials in Civil Engineering*, ASCE, July 16, 2014, DOI: 10.1061/(ASCE)MT.1943-5533.0001111.
  30. Mensching, D. J., Daniel, J. S., Bennert, T., Medeiros Jr., M.S., Elwardany, M. D., Mogawer, W., **Hajj, E. Y.**, and M. Z. Alavi. “Low Temperature Properties of Plant-Produced RAP Mixtures in the Northeast.” *International Journal of Road Materials and Pavement Design*, RMPD, Vol. 15, Supplement 1, Special Issue: Papers from the 89<sup>th</sup> AAPT, 2014, pp. 1-27. DOI: 10.1080/14680629.2014.926617.
  31. **Hajj, E. Y.**, Souliman, M. I., and E., Cortez. “Influence of Warm-Mix Additive on Mechanistic, Economical, and Environmental Attributes of a Polymer-Modified Asphalt Mixture.” *Advances in Civil Engineering Materials*, ASTM, Vol. 3, No. 1, 2014, DOI: 10.1520/ACEM20130099.
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### Peer-Reviewed Conference Papers

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2. Nimeri, M., Nabizadeh, H., **Hajj, E. Y.**, Siddharthan, R., & Elfass, S. A. (2018). Nucleus approach for pavement analysis under superheavy load. In: Masad E., Bhasin A., Scarpas T., Menapace I., Kumar A. (eds) *Advances in Materials and Pavement Performance Prediction (AM3P)*. Taylor & Francis Group, London, pp. 527–530.
3. Siddharthan, R. V., Hajj, E. Y., & Nasimifar, M. (2018). Moving deflectometer devices to predict critical pavement responses. In: Masad E., Bhasin A., Scarpas T., Menapace I., Kumar A. (eds) *Advances in Materials and Pavement Performance Prediction (AM3P)*. Taylor & Francis Group, London, pp. 75–78.
4. **Hajj, E. Y.**, Piratheepan, M., and P. E., Sebaaly. "Performance Evaluation of a Polymer Binder Stabilized Aggregate Mixture: A Pilot Study," *International Conference on Highway Pavements & Airfield Technology*, ASCE T&DI, August 27-30, Philadelphia, PA, Submitted December 19, 2016.
5. Kazemi, S. F., Hand, A. J. T., **Hajj, E. Y.**, Sebaaly, P. E., and R. V., Siddharthan. "Modeling Interface Debonding Between Asphalt Layers under Dynamic Aircraft Loading," *International Conference on Highway Pavements & Airfield Technology*, ASCE T&DI, August 27-30, Philadelphia, PA, Submitted December 19, 2016.
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11. Sebaaly, P. E., **Hajj, E. Y.**, and M., Piratheepan. "Impact of Gilsonite on the Performance of Un-Modified and Polymer-Modified Asphalt Mixtures," *Proc. of the ISAP Symposium on "From Molecules to Innovative*

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1. Siddharthan, R.V., **Hajj, E. Y.**, and N. Rasanayagam. "Response and Performance of Layered Systems under 3D Contact Stress Distribution," Proc. of the 44th Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, March 2012.
2. Morian, N., **Hajj, E. Y.**, Glover, C., and P.E. Sebaaly. "Influence of Aggregate Type on Binder Aging in HMA Mixtures," Proc. of the 44th Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, March 2012.
3. Alavi, M. Z, **Hajj, E. Y.**, Hanz, A., and H. Bahia. "Influence of Aggregate, Binder, and Warm-Mix Additive Interaction on Moisture Resistance of Asphalt Mixtures," Proc. of the 44th Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, March 2012.
4. **Hajj, E. Y.**, P. E., Sebaaly, L., Loria, S., Kass, and T. Liske. "Impact of High RAP Content on the Performance Characteristics of Asphalt Mixtures in Manitoba," Proc. of the Annual Conference of the Transportation Association of Canada, Edmonton, Alberta, Sep. 11-14, 2011, in CD-ROM.
5. Saadeh, S., Eljairi, O., Kramer, B., and **E. Y. Hajj**. "Development of Quality Control Test Procedure for Characterizing Fracture Properties of Asphalt Mixtures." Proc. of the Engineering Mechanics Institute, EMI, Boston, USA, 2011, in CD-ROM, pp. 199-216.
6. Sebaaly, P. E., Thushanthan, P., and **E. Y. Hajj**. "Estimating HMA Pavement Performance Under Non-Standard Stress Distributions." Proc. of the Engineering Mechanics Institute, EMI, Boston, USA, 2011, in CD-ROM, pp. 217-231.
7. Loria, L., Navas, A., Sebaaly, P., and **E. Y. Hajj**. "Review and Improvement of Performance Prediction Models for Flexible Pavements Using Statistical Techniques," Proc. of the XV Iberoamerican Conf. of Asphalt, CILA, Portugal, 2009, in CD-ROM, Paper 1039.
8. Loria, L., Navas, A., Sebaaly, P., and **E. Hajj**. "Long-Term Performance of Reflective Cracking Mitigation Techniques in the State of Nevada," Proc. of the XV Iberoamerican Conf. of Asphalt, CILA, Portugal, 2009, in CD-ROM, Paper 1043.

### Articles, Magazines, Broadcasts, and Multimedia Productions

1. [Increased Life Cycles And Improved Performance Are Driving Today's Pavement Innovation](#). Engineering News-Record (ENR), April 29–May 6, 2019.
2. Live radio interview, 9:30 am PDT, October 30, 2018. Spoke with anchors Stan Bunger and Holly Quan, KCBS Radio in San Francisco.



3. [Where does your recycled plastic go? Perhaps into future highways.](#) Ashley Halsey III, The Washington Post, published 3:00 pm PDT, Sunday, October 28, 2018.
4. **Hajj, E. Y.**, Asphalt Academia, Asphalt: the Magazine of the Asphalt Institute, October 22, 2015.
5. **Hajj, E. Y.**, Loria, L., and P. E. Sebaaly. "[Wait Before First Slurry Seal Application](#)," Pavement Preservation Journal, FP<sup>2</sup> Inc., Winter 2013, Vol. 6, Issue No. 4
6. **Hajj, E. Y.**, Loria, L., and P. E. Sebaaly. "[Optimum Time for Slurry Seal Depends on Original Build Date](#)," Pavement Preservation Journal, FP<sup>2</sup> Inc., Spring 2013, Vol. 6, Issue No. 1.
7. **Hajj, E. Y.**, Loria, L., and P. E. Sebaaly. "[Performance Evaluation of Asphalt Pavement Preservation Activities](#)," Texas Pavement Preservation Center, TxDOT, Issue 18, Spring 2010.
8. **Hajj, E. Y.**, and P. E. Sebaaly. "[Runaway Talent Show: Reclaimed Asphalt Pavement Has Gained a Sure-Footed Hold on the Airfield Market](#)," Roads & Bridges, Article 10752, , May 2009.

### Select Technical and Research Reports

#### Published

1. **Hajj, E. Y.**, Siddharthan, R. V., Nabizadeh, H., Elfass, S., Nimeri, M., Kazemi, S. F., Batioja-Alvarez, D. D., & Piratheepan, M. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume I: Final Report](#), Report No. FHWA-HRT-18-049, Federal Highway Administration, Washington, DC, pp. 117. (Section 508 Compliant).
2. Nimeri, M., Nabizadeh, H., **Hajj, E. Y.**, Siddharthan, R. V., Elfass, S., & Piratheepan, M. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume II: Appendix A, Experimental Program](#), Report No. FHWA-HRT-18-050, Federal Highway Administration, Washington, DC, pp. 110. (Section 508 Compliant).
3. Nimeri, M., Nabizadeh, H., **Hajj, E. Y.**, Siddharthan, R. V., & Elfass, S. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume III: Appendix B, Superheavy Load Configurations and Nucleus of Analysis Vehicle](#), Report No. FHWA-HRT-18-051, Federal Highway Administration, Washington, DC, pp. 90. (Section 508 Compliant).
4. Nabizadeh, H., **Hajj, E. Y.**, Siddharthan, R. V., & Elfass, S. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume IV: Appendix C, Material Characterization for Superheavy Load Movement Analysis](#), Report No. FHWA-HRT-18-052, Federal Highway Administration, Washington, DC, pp 34. (Section 508 Compliant).
5. Nabizadeh, H., **Hajj, E. Y.**, Siddharthan, R.V., Nimeri, M., Elfass, S., & Piratheepan, M. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume V: Appendix D, Estimation of Subgrade Shear Strength Parameters Using Falling Weigh Deflectometer](#), FHWA-HRT-18-053, Federal Highway Administration, Washington, DC, pp. 47. (Section 508 Compliant).
6. Nabizadeh, H., Nimeri, M., **Hajj, E. Y.**, Siddharthan, R. V., Elfass, S., & Piratheepan, M. (In Press). Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume VI: Appendix E, Ultimate and Service Limit Analyses, Report No. FHWA-HRT-18-054, Federal Highway Administration, Washington, DC. (Section 508 Compliant).
7. Nabizadeh, H., Siddharthan, R. V., Elfass, S., & **Hajj, E. Y.** (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume VII: Appendix F, Failure Analysis of Sloped Pavement Shoulders](#), Report No. FHWA-HRT-18-055, Federal Highway Administration, Washington, DC, pp. 51. (Section 508 Compliant).
8. Nabizadeh, H., Elfass, S., **Hajj, E. Y.**, Siddharthan, R. V., Nimeri, M., & Piratheepan, M. (In Press). Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume VIII: Appendix G, Risk Analysis of Buried Utilities Under Superheavy Load Vehicle Movements, Report No. FHWA-HRT-18-056, Federal Highway Administration, Washington, DC. (Section 508 Compliant).
9. Batioja-Alvarez, D. D., **Hajj, E. Y.**, & Siddharthan, R. V. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume IX: Appendix H, Analysis of Cost Allocation Associated with Pavement Damage Under a Superheavy Load Vehicle Movement](#), Report No. FHWA-HRT-18-057, Federal Highway Administration, Washington, DC, pp. 52. (Section 508 Compliant).

10. Kazemi, S. F., Nabizadeh, H., Nimeri, M., Batioja-Alvarez, D. D., **Hajj, E.Y.**, Siddharthan, R. V., & Hand, A. J. T. (2018). [Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements, Volume X: Appendix I, Analysis Package for Superheavy Load Vehicle Movement on Flexible Pavement \(SuperPACK\)](#), Report No. FHWA-HRT-18-058, Federal Highway Administration, Washington, DC, pp. 47. (Section 508 Compliant).
11. **Hajj, E. Y.**, Xu, H., Bailey, G., Sime, M., *Chkaiban, R.*, Kazemi, S. F., & Sebaaly, P. E. (*In Press*). Enhanced Prediction of Vehicle Fuel Economy and other Operating Costs, Phase I: Modeling the Relationship between Vehicle Speed and Fuel, Technical Report, Federal Highway Administration, Washington, DC, pp. 135.
12. **Hajj, E. Y.**, Sime, M., *Chkaiban, R.*, Bailey, G., Xu, H., & Sebaaly, P. E. (*In Press*). Enhanced Prediction of Vehicle Fuel Economy and other Operating Costs, Phase II: Modeling the Relationship between Pavement Roughness, Speed, Roadway Characteristics and Vehicle Operating Costs, Technical Report, Federal Highway Administration, Washington, DC, pp. 255.
13. **Hajj, E. Y.**, Graham, L., Heitzman, M. A., Hand, A. J. T., Weitzel, D., & Tran, N. H. (2018). [Chip Seal Quality Construction: State-of-the-Practice](#), Technical Brief, Nevada Department of Transportation Maintenance Division, 1263 S. Stewart St. Carson City, NV 89712.
14. **Hajj, E. Y.**, Graham, L., Heitzman, M. A., Hand, A. J. T., Weitzel, D., & Tran, N. H. (2018). [Slurry Seal Quality Construction: State-of-the-Practice](#), Technical Brief, Nevada Department of Transportation Maintenance Division, 1263 S. Stewart St. Carson City, NV 89712.
15. **Hajj, E. Y.**, Graham, L., Heitzman, M. A., Hand, A. J. T., Weitzel, D., & Tran, N. H. (2018). [Micro Surfacing Quality Construction: State-of-the-Practice](#), Technical Brief, Nevada Department of Transportation Maintenance Division, 1263 S. Stewart St. Carson City, NV 89712.
16. **Hajj, E. Y.**, Graham, L., Heitzman, M. A., Hand, A. J. T., Weitzel, D., & Tran, N. H. (2018). Thin Loft Asphalt Overlay Quality Construction: State-of-the-Practice, Technical Brief, Nevada Department of Transportation Maintenance Division, 1263 S. Stewart St. Carson City, NV 89712.
17. Sebaaly, P. E., **Hajj, E. Y.**, Faeth, B., Diaz, C., Pandey, S., Piratheepan, M. (2016). Washoe RTC Pavement Technology Research: New Technologies, Cold In-Place Recycling, and Warm Mix Asphalt. Final Report, Washoe County Regional Transportation Commission (RTC), p. 77.
18. **Hajj, E. Y.**, Piratheepan, M. (2016). Evaluation of TechniSoil G5® Stabilized Aggregate Mixture. Final Report, TechniSoil Global Inc., p. 26.
19. Von Quintus, H., Hall, K. D., Fee, F., Coleri, E., Heitzman, M., May, R., Morian, N., **Hajj, E. Y.** (2016). Integrating Asphalt Mixture Design, Structural Design, and Construction Quality Control. Transportation Research Circular, Issue No. E-C209, Transportation Research Board, p. 36, DOI: 10.17226/23572, ISSN: 0097-8515.
20. Xu, H., Zong, T., **Hajj, E. Y.**, Sebaaly, P. E. (2016). Enhanced Prediction of Vehicle Fuel Economy and Other Vehicle Operating Costs: Task 2a - b: Driving Cycle Development-Partial/No Access Facility. Final Report, Federal Highway Administration (FHWA) Project DTFH61-14-C-00044, p. 406.
21. Xu, H., Zong, T., **Hajj, E. Y.**, Sebaaly, P. E. (2016). Enhanced Prediction of Vehicle Fuel Economy and Other Vehicle Operating Costs: Task 1c - d: Driving Cycle Development for the Controlled Access Facilities. Final Report, Federal Highway Administration (FHWA) Project DTFH61-14-C-00044, p. 228.
22. **Hajj, E. Y.**, Sebaaly, P. E., Habbouche, J. (2016). Laboratory Evaluation of Thin Asphalt Concrete Overlays for Pavement Preservation. Final Report, SOLARIS Consortium, Tier 1 University Transportation Center, p. 60.
23. Sebaaly, P. E., **Hajj, E. Y.**, Weitzel, D., Belancio, G. (2016). Effectiveness of Cape Seal Pavement Preservation Technique in Northern Nevada. Final Report, SOLARIS Consortium, Tier 1 University Transportation Center, p. 88.
24. **Hajj, E. Y.**, Sebaaly, P. E., Nabhan, P. (2015). Manual for Designing Flexible Pavements in Nevada Using AASHTOWare Pavement-ME Design. Final Report, Nevada DOT, p. 107.
25. Sebaaly, P. E., **Hajj, E. Y.** (2016). Evaluation of Gilsonite-Modified Asphalt Mixtures. Final Report, American Gilsonite Company, p. 53.
26. **Hajj, E. Y.**, Sibaja, L. M. (2015). Evaluation of the Rutting Resistance of Asphalt Mixtures from Kern County. Final Report, Kern County Roads Department, p. 26.
27. Sebaaly, P. E., **Hajj, E. Y.**, Souliman, M. (2015). Evaluation of Warm Mix Asphalt Concrete Pavement in South Dakota Conditions. Final Report, South Dakota DOT, p. 218.
28. Xu, H., Tian, Z., **Hajj, E. Y.**, Sebaaly, P. E. (2014). Task 1a.-b: Interim Progress Report on Proposed Driving

- Cycles and Data Sources. Enhanced Prediction of Vehicle Fuel Economy and Other Vehicle Operating Costs, U.S. Department of Transportation, FHWA, p. 43.
29. Piratheepan, M., Sebaaly, P. E., **Hajj, E. Y.**, Selvaratnam, S. (2014). Evaluation of Long-Term Performance of Cold In-Place Recycling Pavements in Nevada. Final Report, Nevada DOT, p. 48.
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  31. Souliman, M. I., **Hajj, E. Y.**, Sebaaly, P. E., Nabhan, P. (2013). Implementation of Pavement-ME for Nevada's Conditions. Final Interim Report, Nevada DOT, p. 184.
  32. Souliman, M., **Hajj, E. Y.**, Sebaaly, P. E. (2012). Effectiveness of Single and Sequential Applications of Slurry Seals on Asphalt Pavements in the Truckee Meadows Region. Final Report, Washoe Regional Transportation Commission, p. 34.
  33. **Hajj, E. Y.**, Ulloa, A., Sebaaly, P. E. (2012). Flow Number Experiment: Asphalt Mixtures Critical Temperatures for Rutting Evaluation. Final Report, FHWA Asphalt Mixture and Construction Expert Task Group, p. 45.
  34. **Hajj, E. Y.**, Cortez, E. (2012). Evaluation of the Cecabase™ RT Warm-Mix Additive. Final Report, CECA Arkema Group, p. 36.
  35. **Hajj, E. Y.**, Sebaaly, P. E., Schlierkamp, R., Cortez, E. (2011). Laboratory Evaluation of HMA Mixes Manufactured with PG64-28NV and PG64-28PM Polymer-Modified Asphalt Binders. Final Report, Washoe Regional Transportation Commission, p. 27.
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  38. **Hajj, E. Y.**, Sebaaly, P. E., Kasozi, A. (2009). Laboratory Evaluation of WMA Mixture on Chism Street in Reno Nevada. Final Report, City of Reno.
  39. **Hajj, E. Y.**, Sebaaly, P. E., Borroel, C. (2009). "Pavement Design and Materials Research: 2007-2009 Activities," Final Report, Materials Division, Nevada DOT, p. 111.
  40. **Hajj, E. Y.**, Loria, L., Sebaaly, P. E. (2009). Performance Evaluation of NDOT Pavement Maintenance Activities. Final Report, Nevada DOT, p. 76.
  41. **Hajj, E. Y.**, Sebaaly, P. E., Kasozi, A. (2009). Evaluation of Warm Mix Asphalt Concrete Pavement in South Dakota Conditions: Summary of Literature Review. Final Report, SD2008-03, South Dakota DOT, Pierre, SD, p. 47.
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  46. Sebaaly, P. E., El. Tannoury, G., **Hajj, E. Y.** (2007). Laboratory Evaluation of HMA for Nevada's Intersections – Phase II Study. Final Report, Nevada DOT.
  47. **Hajj, E. Y.**, Sebaaly, P. E., Shresta, R. (2007). A Laboratory Evaluation on the Use of Recycled Asphalt Pavements in HMA Mixtures. Final Report, Washoe Regional Transportation Commission, p. 81.
  48. **Hajj, E. Y.**, Sebaaly, P. E., Tannoury, G. (2007). Variability of the Moisture Sensitivity of Field HMA Mixes. Final Report, Washoe Regional Transportation Commission, p. 17.
  49. Sebaaly, P. E., **Hajj, E. Y.**, Bazi, G., Perez, J. (2005). Pavement Design and Materials Research. Final Report 2003-2005, Nevada DOT, p. 58.
  50. Sebaaly, P. E., Wacker, B., **Hajj, E. Y.**, Dunn, M. (2005). Implementation of Superpave Mix Design and Analysis Procedures for the State of Nevada. Final Report No. 1393-7, Vol. 5, Nevada DOT, p. 44.
  51. **E. Y. Hajj.** "Hot Mix Asphalt Mixtures for Nevada's Intersections," Ph.D. Dissertation, Department of Civil and Environmental Engineering, University of Nevada, Reno, 2005.

52. E. Y. Hajj. "Fatigue Resistance of Nevada's Hot Mix Asphalt Mixtures," Master of Science Thesis, Department of Civil and Environmental Engineering, University of Nevada, Reno, 2003.

## **PROFESSIONAL PRESENTATIONS**

### **Professional Meetings**

1. Hajj, E. (Presenter & Author), 17<sup>th</sup> Meeting of the Sustainable Pavements Technical Working Group, Non-Academic, "100% RAP Recycling with Synthetic Binder", Invited, Reno, Nevada. (May 8, 2019)
2. Hajj, E. (Presenter & Author), Sebaaly, P. E. (Author Only), Habbouche, J., Pacific Coast Conference on Asphalt Specifications (PCCAS), Non-Academic, "Structural Coefficient for High Polymer Modified Asphalt Mixes (Agreement No. BE321)", Invited, Reno, Nevada. (April 25, 2018).
3. Hajj, E. (Presenter & Author), Morian, N. (Author Only), Pourmoman, S., Habbouche, J., Batioja-Alvarez, D., Pacific Coast Conference on Asphalt Specifications (PCCAS), Non-Academic, "Low Temperature Behavior of Asphalt Binders, Mortars, & Mixtures with High Recycled Materials Content", Invited, Reno, Nevada. (April 24, 2018).
4. Hajj, E. (Presenter & Author), Rocky Mountain West Pavement Preservation Partnership Annual Meeting (RMWPPP), Non-Academic, "Timing of Preservation Treatments", Invited, Seattle, Washington. (October 25, 2017).
5. Hajj, E. (Presenter & Author), Eurovia Company Annual Meeting, Non-Academic, Other, "PES Program Overview & Update on Select Research Topics", Invited, Reno, Nevada. (May 11, 2017).
6. Hajj, E. (Presenter & Author), Pavement Preservation Expert Task Group (PPETG), Non-Academic, "Pavement Preservation Construction Quality Assurance Best Practices", Invited, Reno, Nevada. (March 7, 2017).
7. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Invited Speaker, "Pavement Design and Materials Research Update", Asphalt Institute Summer Meeting, Invited, North Lake Tahoe, Nevada. (August 20, 2015).
8. Hajj, E. (Presenter & Author), Bituminous Materials Committee (BMC), ASCE, "Pavement Temperature Profile Prediction: Temperature Estimate Model for Pavement Structures – TEMPS", Invited, Washington DC. (January 10, 2015).
9. Hajj, E. Y. (Presenter & Author), Guest Speaker, "Research Updates at UNR – Concrete Pavements and Materials", Sierra Nevada Concrete Association (SNCA), Invited, Reno, Nevada. (October 28, 2014).
10. Hajj, E. (Presenter & Author), Alavi, M. Z. (Author Only), Sebaaly, P. E. (Author Only), Kazemi, S. F. (Author Only), FHWA Asphalt Binder Expert Task Group, Non-Academic, Panel, "Pavement Temperature Profile Prediction Model", Invited, Baton Rouge, Louisiana. (September 17, 2014).
11. Hajj, E. Y. (Presenter & Author), Alavi, M. Z. (Author Only), Morian, N. (Author Only), Sebaaly, P. E. (Author Only), Kazemi, S. F. (Author Only), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, Panel, "Thermal Cracking Analysis Model and Pavement Temperature Profile Prediction Model", Invited, Baton Rouge, Louisiana. (September 18, 2014).
12. Hajj, E. Y. (Presenter & Author), Luncheon Speaker, "Program and Research Update – Western Regional Superpave Center – UNR", American Public Works Association (APWA) Northern Nevada Branch, Invited, Reno, Nevada. (February 20, 2014).
13. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Academic, Panel, "Determining Thermal Cracking Properties of Asphalt Mixtures Through Thermally Induced Stress and Strain", Invited, Fall River, Massachusetts. (September 20, 2013).
14. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Academic, Panel, "Prediction of Asphalt Pavement Temperature Profile Using the Finite Control Volume Method (FCVM)", Invited, Fall River, Massachusetts. (September 20, 2013).
15. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, "Validation of the Mechanistic-Based Approach to Evaluate Critical Conditions of Hot Mix Asphalt Mixtures", Invited, Fall River, Massachusetts. (September 19, 2013).
16. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, "Determining Thermal Visco-elastic Properties of Asphalt Mixtures Using Uniaxial Thermal Stress and Strain Test (UTSST)", Invited, Minneapolis, Minnesota. (September 26, 2012).
17. Hajj, E. Y. (Presenter & Author), The 2012 Pavement Performance Symposium, Non-Academic, Symposium, "Effect of Aggregate, Binder, and Warm-Mix Additive Interaction on the Durability of Asphalt Mixtures", Invited, Laramie,



- Wyoming. (July 12, 2012).
18. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, Other, "3D-Move Status: Standalone Deliverable, Workshop, Access, Documentation", Invited, Baton Rouge, Louisiana. (March 23, 2012).
  19. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, Other, "ARC Database: Database Structure, Demonstration, Near/Long Term Access", Invited, Baton Rouge, Louisiana. (March 23, 2012).
  20. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, Other, "Results and Findings of FN Test Experiment", Invited, Baton Rouge, Louisiana. (March 20, 2012).
  21. Hajj, E. Y. (Presenter & Author), Ekedahl, M. V. (Author Only), FHWA Asphalt Binder Expert Task Group, Non-Academic, "ARC Database Status Report and Presentation", Invited, Fall River, Massachusetts. (September 23, 2011).
  22. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, "3D-Move Analysis Software Status", Invited, Fall River, Massachusetts. (September 20, 2011).
  23. Hajj, E. Y. (Presenter & Author), Ekedahl, M. V. (Author Only), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, "ARC Database Status Report and Presentation", Invited, Fall River, Massachusetts. (September 20, 2011).
  24. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, "Equivalent Loading Frequencies to Simulate Asphalt Layer Pavement Responses under Dynamic Traffic Loading", Invited, Phoenix, Arizona. (March 18, 2011).
  25. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Binder Expert Task Group, Non-Academic, "ARC Database: Overview and Updates", Invited, Phoenix, Arizona. (March 16, 2011).
  26. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, "Vehicle-Pavement Interaction: ARC Year 5 Plan Overview", Invited, Phoenix, Arizona. (March 15, 2011).
  27. Hajj, E. Y. (Presenter & Author), Ulloa, A. (Author Only), AFD80 Technical Committee Annual Meeting, Non-Academic, "Loading Frequencies for the Asphalt Layer to Simulate the AC Critical Pavement Responses under Dynamic Loading", Invited, Washington D.C. (January 25, 2011).
  28. Hajj, E. Y. (Presenter & Author), FHWA Warm Mix Asphalt Technical Working Group, Non-Academic, "Impact of WMA Additives on Modified Asphalt Mixtures", Invited, Oklahoma, City, Oklahoma. (October 28, 2010).
  29. Hajj, E. Y. (Presenter & Author), FHWA Recycled Asphalt Pavement Expert Task Group, Non-Academic, "Updates on Laboratory Testing of RAP Mixtures from Manitoba Test Sections", Invited, Oklahoma, City, Oklahoma. (October 27, 2010).
  30. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, "Updates on ARC Work Element E2d: Thermal Cracking Testing of Asphalt Mixtures", Invited, Wisconsin, Madison. (September 21, 2010).
  31. Hajj, E. Y. (Presenter & Author), FHWA Recycled Asphalt Pavement Expert Task Group, Non-Academic, "Impact of Extraction Techniques on Aggregate Physical Properties", Invited, Auburn, Alabama. (May 19, 2010).
  32. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, "Pavement Response Model to Dynamic Loads", Invited, Irvine, California. (February 26, 2010).
  33. Hajj, E. Y. (Presenter & Author), FHWA Warm Mix Asphalt Technical Working Group, Non-Academic, "Evaluation of the WMA Foaming Technique with 15% RAP", Invited, Seattle, Washington. (December 15, 2009).
  34. Hajj, E. Y. (Presenter & Author), FHWA Recycled Asphalt Pavement Expert Task Group, Non-Academic, "Impact of Extraction Techniques on Aggregate Physical Properties", Invited, Manchester, New Hampshire. (April 22, 2009).
  35. Hajj, E. Y. (Presenter & Author), FHWA Asphalt Mixture and Construction Expert Task Group, Non-Academic, "ARC Updates: Critically Designed Mixtures", Invited, Irvine, California. (February 27, 2009).
  36. Hajj, E. Y. (Presenter & Author), FHWA Fundamental Properties and Advanced Models Expert Task Group, Non-Academic, "ARC Updates: Validation", Invited, Irvine, California. (February 24, 2009).
  37. Hajj, E. Y. (Presenter & Author), AFK30 Technical Committee Annual Meeting, Non-Academic, "Laboratory Evaluation of Nevada's HMA Mixtures Using Tire Rubber Modified Binders", Invited, Washington D.C. (January 16, 2008).

## Seminar

1. Hajj, E. (Presenter & Author), Institute of Transportation Studies at UC Davis (ITS-Davis) Seminar, "[New Relationship Models between Vehicle Speed Profile, Roadway Characteristics, Pavement Roughness, and Vehicle Operating Costs](#)", Invited, Davis, California. (April 26, 2019).
2. Hajj, E. (Presenter & Author), Seminar, Centre for Pavement and Transportation Technology, University of Waterloo, "Thermal Cracking Resistance Index Threshold for Assessing Asphalt Mixture Brittleness with Field Validation", Invited, Waterloo, Canada. (April 17, 2019).
3. Hajj, E. (Presenter & Author), Kent Seminar Series, Illinois Center for Transportation, University of Illinois, Non-Academic, Seminar, "[Analysis Procedures for Evaluating Superheavy Load Movement on Flexible Pavements: SuperPACK](#)", Invited, Urbana-Champaign, Illinois. (March 29, 2018).
4. Hajj, E. Y. (Presenter & Author), École National des Travaux Public de l'État (ENTPE), Academic, Seminar, "Approach for Quantifying the Effect of Binder Oxidative Aging on the Viscoelastic Properties of Asphalt Mixtures", Invited, Lyon, France. (April 12, 2013).

## Conferences and Workshops

### Lectern/Podium Presentations

1. Hajj, E. (Presenter Only), 2018 WRAPP Pavement Preservation Workshop, Non-Academic, Workshop, "Education & the Future of Pavement Preservation Round Table: PES Program at UNR", Invited, Concord, California. (February 7, 2018).
2. Hajj, E., Hands-on Workshop on Modeling Tools to Evaluate Low Temperature Cracking in Asphalt Mixtures, Academic, Workshop, "UTSST Test, Theory, and Data Analysis", Invited, Reno, Nevada. (April 6, 2017).
3. Nabizadeh, H. (Presenter & Author), Hajj, E. (Presenter & Author), Siddharthan, R. (Author Only), Nimeri, M. (Author Only), Elfass, S. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Modified Wedge Method for the Investigation of Side Slope Failure in Flexible Pavements Subjected to Heavy Vehicle Loads", Accepted. (January 14, 2019).
4. Nimeri, M. (Presenter & Author), Hajj, E. (Presenter & Author), Nabizadeh, H. (Author Only), Siddharthan, R. (Author Only), Elfass, S. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Load Nucleus Approach for Flexible Pavement Responses Under Complex Vehicles Moves", Accepted. (January 14, 2019).
5. Chkaiban, R. (Presenter & Author), Hajj, E. (Presenter & Author), Bailey, G. (Author Only), Sime, M. (Author Only), Xu, H. (Author Only), Kazemi, S.-F. (Author Only), Sebaaly, P. E. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Effect of Road Level of Service on Compact Car Fuel Economy", Accepted. (January 15, 2019).
6. Kaseer, F. (Presenter & Author), Bajaj, A. (Author Only), Martin, A. E. (Author Only), Mercado, E. M. (Author Only), Hajj, E. Y. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Strategies for Incorporating High Reclaimed Asphalt Pavement Contents in Asphalt Mixtures", Accepted. (January 15, 2019).
7. Habbouche, J. (Presenter & Author), Hajj, E. (Presenter & Author), Piratheepan, M. (Author Only), Sebaaly, P. E. (Author Only), Morian, N. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Field Performance and Economic Analysis of Rehabilitated Pavement Sections with Engineered Stress Relief Course Interlayers", Accepted. (January 15, 2019).
8. Carvajal, M. E. (Author Only), Hajj, E. (Presenter & Author), Morian, N. (Author Only), Martin, A. E. (Author Only), The 2019 TRB Annual Meeting, Non-Academic, Conference, "Development of a Cracking Resistance Index Threshold for Assessing Low-Temperature Thermal Cracking with Field Validation", Accepted. (January 15, 2019).
9. Nimeri, M. (Author Only), Hajj, E. (Presenter & Author), Nabizadeh, H. (Author Only), Siddharthan, R. (Author Only), Elfass, S. A. (Author Only), AM3P conference, Non-Academic, Conference, "Nucleus Approach for Pavement Analysis under Superheavy Load (SHL)", Accepted. (April 18, 2018).
10. Siddharthan, R. (Author Only), Hajj, E. (Presenter & Author), Nasimifar, M. (Author Only), AM3P conference, Non-Academic, Conference, "Moving Deflectometer Devices to Predict Critical Pavement Responses", Accepted. (April 16, 2018).

11. *Batioja-Alvarez, D. (Author Only), Kazemi, S.-F. (Author Only), Hajj, E. (Presenter & Author), Hand, A. J. (Author Only), Siddharthan, R. (Author Only)*, AM3P conference, Non-Academic, Conference, "Case study for overweight vehicle pavement damage associated costs", Accepted. (April 16, 2018).
12. Hajj, E. (Presenter & Author), Morian, N. (Author Only), *Pournoman, S. (Author Only), Habbouche, J. (Author Only), Batioja-Alvarez, D.*, 93rd AAPT Annual Meeting and Technical Sessions, Non-Academic, Conference, "Low Temperature Behavior of Asphalt Binders, Mortars, & Mixtures with High Recycled Materials Content", Accepted. (March 21, 2018).
13. Hajj, E. (Presenter & Author), 2018 Utah Asphalt Conference, Non-Academic, Conference, "Achieving Construction Quality For Chip Seals, Slurry Seals, & Thin Lift Asphalt Concrete Overlays", Invited. (February 22, 2018).
14. *Batioja, D. (Author Only), Kazemi, S.-F. (Presenter & Author)*, Hajj, E. (Author Only), Siddharthan, R. (Author Only), Hand, A. J. (Author Only), The 2018 TRB Annual Meeting, Non-Academic, Conference, "Statistical Distributions of Pavement Damage Associated with Overweight Vehicles: Methodology and Case Study", Accepted. (January 9, 2018).
15. *Pournoman, S. (Presenter & Author)*, Hajj, E. (Presenter & Author), Morian, N. (Author Only), Epps Martin, A. (Author Only), The 2018 TRB Annual Meeting, Non-Academic, Conference, "Impact of Recycled Materials and Recycling Agents on Asphalt Binder Oxidative Aging Predictions", Accepted. (January 9, 2018).
16. *Nabizadeh, H. (Presenter & Author)*, Hajj, E. (Author Only), Siddharthan, R. (Author Only), *Nimeri, M. (Author Only)*, Elfass, S. A. (Author Only), The 2018 TRB Annual Meeting, Non-Academic, Conference, "Application of Light Weight Deflectometer to Estimate the Strength Parameters of Subgrade with Softening Behavior", Accepted. (January 9, 2018).
17. *Habbouche, J. (Presenter & Author)*, Hajj, E. (Presenter & Author), Sebaaly, P. E. (Author Only), Morian, N. (Author Only), The 2018 TRB Annual Meeting, Non-Academic, Conference, "Damage Assessment for M-E Rehabilitation Design of Modified Asphalt Pavements: Challenges and Findings", Accepted. (January 8, 2018).
18. Hajj, E. (Presenter & Author), Rocky Mountain Asphalt User Producer Group (RMAU/PG) 26<sup>th</sup> Annual Conference, Non-academic, Conference, "UNR Superpave Center Update – Exciting New Projects and Research", Invited. (October 19, 2017)
19. Hajj, E. (Presenter & Author), Sebaaly, P. E. (Author Only), Piratheepan, M. (Author Only), 10th International Conference on the Bearing Capacity of Roads, Railways & Airfields, Non-Academic, Conference, "Performance Evaluation of a 100% Recycled Asphalt Pavement Mixture using a Polymer Binder: A Pilot Study", Accepted. (June 29, 2017).
20. *Nabizadeh, H. (Author Only)*, Hajj, E. (Presenter & Author), Siddharthan, R. (Author Only), Elfass, S. A. (Author Only), *Nimeri, M.*, 10th International Conference on the Bearing Capacity of Roads, Railways & Airfields, Non-Academic, Conference, "Application of Falling Weight Deflectometer for the Estimation of In-situ Shear Strength Parameters of Subgrade Layer", Accepted. (June 29, 2017).
21. *Habbouche, J. (Presenter & Author)*, Hajj, E. (Author Only), Morian, N. (Author Only), Sebaaly, P. E. (Author Only), Piratheepan, M. (Author Only), Association of Asphalt Paving Technologists Annual Meeting, Non-Academic, Conference, "Reflective cracking relief interlayer for asphalt pavement rehabilitation: from development to demonstration", Accepted. (March 20, 2017).
22. Sebaaly, P. E. (Author Only), Hajj, E. (Presenter & Author), Weitzel, D. (Author Only), Belancio, G. (Author Only), Gibson, S. (Author Only), 96th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Effectiveness of Cape Seal Pavement Preservation Technique Using Long-Term Performance Data", Accepted. (January 11, 2017).
23. Bazi, G. (Presenter & Author), Hajj, E. (Author Only), Ulloa Calderon, A. (Author Only), Ulidtz, P. (Author Only), 96th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Finite Element Modeling of Rolling Resistance due to Pavement Deformation", Accepted. (January 10, 2017).
24. Morian, N. (Presenter & Author), *Pournoman, S. (Presenter & Author)*, Hajj, E. (Presenter & Author), Sebaaly, P. E. (Author Only), 96th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Assessment of Asphalt Binder Cracking Indicators: Pilot Study", Accepted. (January 10, 2017).
25. *Sun, Y. (Presenter & Author)*, Xu, H. (Author Only), Wu, J. (Author Only), Hajj, E. (Author Only), Geng, X. (Author Only), 96th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Data Processing Framework for Driving Cycle Development with Naturalistic Driving Study Data", Accepted. (January 9, 2017).



26. Hajj, E. (Author Only), Morian, N. (Presenter & Author), 96th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Potential Updates to Oxidation Progression in Pavement ME Methodologies", Invited. (January 8, 2017).
27. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), 2016 International Symposium on Asphalt Emulsion Technology, Non-Academic, Other, "Performance Evaluation of Pavement Preservation Techniques used in Nevada over a 15 Year Period", Invited, International Bitumen Emulsion Federation. (November 4, 2016).
28. Nabizadeh, H. (Author Only), Hajj, E. Y. (Presenter & Author), Siddharthan, R. (Author Only), Elfass, S. A. (Author Only), Sebaaly, P. E. (Author Only), 5th International Conference on Accelerated Pavement Testing, Non-Academic, Conference, "Estimation of In-Situ Shear Strength Parameters for Subgrade Layer Using Non-destructive Testing", Accepted, LannameUCR. (September 16, 2016).
29. Nasimifar, M. (Author Only), Siddharthan, R. (Presenter & Author), Hajj, E. Y. (Author Only), Motamed-Chaboki, R. (Author Only), 5th International Conference on Accelerated Pavement Testing, Non-Academic, Conference, "Investigation of 3D-Move Responses Under Traffic Speed Deflection Devices (TSDDs)", Accepted, LannameUCR. (September 16, 2016).
30. Alavi, M. Z. (Author Only), Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), 8th RILEM International Conference on Mechanisms of Cracking and Debonding in Pavements, Non-Academic, Conference, "Significance of Oxidative Aging on the Thermal Cracking Predictions in Asphalt Concrete Pavements," Accepted, Nantes, France. (June 7, 2016).
31. Habbouche, J. (Presenter & Author), Hajj, E. Y. (Author Only), Sebaaly, P. E. (Author Only), 95th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Laboratory Evaluation of Thin Hot-Mix Asphalt Overlays for Pavement Preservation," Accepted, Washington, D.C. (January 13, 2016).
32. Hajj, E. Y. (Author Only), Batioja-Alvarez, D. (Presenter & Author), Siddharthan, R. V. (Author Only), 95th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Assessment of Pavement Damage from Bus Rapid Transit: Case Study for State of Nevada," Accepted, Washington, D.C. (January 13, 2016).
33. Hajj, E. Y. (Presenter & Author), Kazemi, S. F. (Author Only), Sebaaly, P. E. (Author Only), Alavi, M. Z. (Author Only), 95th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Temperature Estimate Model for Pavement Structures – TEMPS -," Accepted, Washington, D.C. (January 12, 2016).
34. Sebaaly, P. E. (Presenter & Author), Hajj, E. Y. (Author Only), Hitti, E. (Author Only), Rubberized Asphalt Rubber 2015, Non-Academic, Conference, "Performance of Tire Rubber-Modified Asphalt Binder in Warm Mix Asphalt Mixtures", Accepted, Las Vegas. (October 5, 2015).
35. Alavi, M. Z. (Presenter & Author), Hajj, E. (Author Only), 2015 Airfield & Highway Pavement, Non-Academic, Conference, "Evolution of Asphalt Mixtures Viscoelastic Properties due to Continuing Oxidative Aging", Accepted, Miami, Florida. (June 8, 2015).
36. Hajj, E. Y. (Presenter & Author), Performance-Based Cold In-Place Recycling (CIR) for Nevada, Non-Academic, Conference, "Results from Local Testing and Recent Studies Involving CIR. Targeted Performance Goals, Targeted Performance Specifications, Targeted Long Term Performance of CIR", Invited, Reno, Nevada. (March 3, 2015).
37. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author), ARC deliverables/Products Presentations and Workshops, Non-Academic, Workshop, "ARC Deliverables - University of Nevada", Invited, Washington, D.C. (January 15, 2015).
38. Hajj, E. Y. (Presenter & Author), Pacific Coast Conference on Asphalt Specifications (PCCAS), Non-Academic, Conference, "Cold In-Place Recycling: Mix Design and Properties", Invited, Reno, Nevada. (October 7, 2014).
39. Morian, N. (Presenter & Author), Alavi, M. Zia (Author Only), Hajj, E. (Author Only), Petersen Asphalt Research Conference, Non-Academic, Conference, "Investigation of Aggregate Adhesion and Mixture Characteristics on the Hardening Susceptibility of Asphalt Binders", Accepted, Laramie, Wyoming. (July 15, 2014).
40. Alavi, M. Zia (Presenter & Author), Hajj, E. (Author Only), 12th ISAP conference on Asphalt Pavements, Non-Academic, Conference, "Effect of Cooling Rate on the Thermo-Volumetric, Thermo-Viscoelastic, and Fracture Properties of Asphalt Mixtures", Accepted, Raleigh, North Carolina. (June 2, 2014).
41. Hajj, E. Y. (Presenter & Author), Nevada Transportation Conference, Session 4: Research, Non-Academic, Conference, "Pavements/Materials Research Updates", Invited, Las Vegas, Nevada (April 9, 2014)
42. Ulloa, A. (Presenter & Author), Hajj, E. (Author Only), Sebaaly, P. E. (Author Only), Diaz, C. (Author Only), 93rd Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Influence of Aggregate

- Characteristics, Asphalt Binder, and Mixture Properties on Rutting Performance of Hot-Mix Asphalt", Accepted, Washington, D.C. (January 15, 2014).
43. Piratheepan, M. (Presenter & Author), Sanjeevan, S. (Author Only), Hajj, E. (Author Only), Bush, A. (Author Only), 93rd Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Cold in-place recycling (CIR) technique in Nevada: field performance evaluation for a decade of in-service period", Accepted, Washington, D.C. (January 13, 2014).
  44. Hajj, E. Y. (Presenter & Author), Cold Recycle – Engineered Emulsions Local Conference, Non-Academic, Conference, "Research, testing, performance guidelines, long-term performance criteria", Invited, Reno, Nevada. (December 4, 2013).
  45. Hajj, E. Y. (Presenter & Author), 22nd Annual Rocky Mountain Asphalt User/Producer Group (RMAU/PG) Meeting, Non-Academic, Conference, "UNR SUPERPAVE Center Update: Exciting New Projects and Research", Invited, Reno, Nevada. (October 16, 2013).
  46. Farrar, M. (Presenter & Author), Hajj, E. Y. (Author Only), Planche, J. P. (Author Only), Alavi, Z. (Author Only), 5th European Asphalt Technology Association, Non-Academic, Conference, "A Method to Estimate the Thermal Stress Build-up in an Asphalt Mixture from a Single Cooling Event", Accepted, Braunschweig, Germany. (June 4, 2013).
  47. Hajj, E. Y. (Presenter & Author), Alavi, Z. (Author Only), Morian, N. (Author Only), Sebaaly, P. E. (Author Only), 5th European Asphalt Technology Association, Non-Academic, Conference, "Effect of Select warm-mix Additives on Thermo-Viscoelastic Properties of Asphalt Mixtures", Accepted, Braunschweig, Germany (June 4, 2013).
  48. Hajj, E. Y. (Presenter & Author), Rocky Mountain Asphalt User/Producer Group (RMAU/PG) and Western Cooperative Test Group (WCTG), Non-Academic, Conference, "Update on RAP and Warm Mix Research", Invited, Phoenix, Arizona. (March 13, 2013).
  49. Hajj, E. Y. (Presenter & Author), Utah Asphalt Conference, Non-Academic, Conference, "Performance Evaluation of Surface Treatments", Invited, Salt Lake City, Utah. (March 27, 2013).
  50. Hajj, E. Y. (Presenter & Author), Utah Asphalt Conference, Non-Academic, Conference, "When Slurry Seal Becomes A Cost-Effective Surface Treatment", Invited, Salt Lake City, Utah. (March 27, 2013).
  51. Hajj, E. Y. (Presenter & Author), Fifty-second annual asphalt conference, Non-Academic, Conference, "Findings in WMA Project", Invited, Pierre, South Dakota. (April 3, 2013).
  52. Hajj, E. Y. (Presenter & Author), Fifty-second annual asphalt conference, Non-Academic, Conference, "Warm Asphalt in the Dakotas", Invited, Pierre, South Dakota. (April 3, 2013).
  53. Hajj, E. Y. (Presenter & Author), 92nd Annual Meeting of the Transportation Research Board, Academic, Conference, "Comparison between Mechanistic Properties of Laboratory and Field-Produced Warm-Mix Asphalt Mixtures from Manitoba, Canada", Accepted, Washington, D.C. (January 16, 2013).
  54. Hajj, E. Y. (Presenter & Author), 92nd Annual Meeting of the Transportation Research Board, Academic, Conference, "Influence of BituTech RAP Bioasphalt on Viscoelastic Properties of Reclaimed Asphalt mixtures", Accepted, Washington, D.C. (January 16, 2013).
  55. Hajj, E. Y. (Presenter & Author), 92nd Annual Meeting of the Transportation Research Board, Academic, Conference, "Influence of Cecabase on Mechanistic, Economical, and Environmental Attributes of Polymer-Modified Asphalt Mixture", Accepted, Washington, D.C. (January 16, 2013).
  56. Hajj, E. Y. (Presenter & Author), 2012 Arizona Pavements/Materials Conference: "100 Years of Progress...The Journey Continues," Non-Academic, Conference, "Manitoba RAP Binder and Mix Evaluation", Invited, Phoenix, Arizona. (October 31, 2012).
  57. Sebaaly, P. E. (Author Only), Hajj, E. (Author Only), Hitti, E. (Presenter & Author), Asphalt Rubber Conference 2012, Non-Academic, Conference, "Performance of Recycled Rubber Modified Binders in Warm Mix Asphalt Mixtures", Accepted, Munich, Germany. (October 25, 2012).
  58. Saadeh, S. (Presenter & Author), Eljairi, O. (Author Only), Kramer, B. (Author Only), Hajj, E. Y. (Author Only), Four-point Bending conference, Non-Academic, Conference, "Development of quality control test procedure for characterizing fracture properties of asphalt mixtures", Accepted, Sacramento, California. (October 9, 2012).
  59. Piratheepan, M. (Author Only), Sebaaly, P. E. (Author Only), Hajj, E. Y. (Presenter & Author), Second International Symposium on Asphalt Pavements and Environment, Non-Academic, Conference, "Mix Design of Cold In-Place Recycling", Accepted, Fortaleza, Brazil. (October 1, 2012).
  60. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Morian, N. (Author Only), Piratheepan, M. (Author

- Only), Second International Symposium on Asphalt Pavements and Environment, Non-Academic, Conference, "Performance of Hot and Warm Asphalts with Reclaimed Asphalt Pavements in Nevada", Accepted, Fortaleza, Brazil. (October 1, 2012).
61. Hajj, E. Y. (Presenter & Author), Workshop on RAP Recycling, Non-Academic, Workshop, "Mechanical Properties of mixtures Containing RAP", Invited, Fortaleza, Brazil. (September 30, 2012).
  62. Alavi, M. Z. (Presenter & Author), Morian, N. (Author Only), Hajj, E. Y. (Author Only), Petersen Asphalt Research Conference, Non-Academic, Conference, "Effect of Oxidative Aging on the Relaxation Spectrum of Asphalt Mixtures Obtained from Dynamic Modulus Test", Accepted, Laramie, Wyoming. (July 11, 2012).
  63. Morian, N. (Presenter & Author), Hajj, E. Y. (Author Only), Sebaaly, P. E. (Author Only), The 2012 Petersen Asphalt Research Conference, Non-Academic, Conference, "Significance of Mixture Parameters on Binder Aging in HMA Mixtures", Accepted, Laramie, Wyoming. (July 11, 2012).
  64. Sebaaly, P. E. (Presenter & Author), Hajj, E. Y. (Author Only), Hitti, E. (Author Only), 5th Eurasphalt and Eurobitume Congress, Non-Academic, Conference, "Mechanistic Properties of Warm Mix Asphalt Mixtures", Accepted, Istanbul, Turkey. (June 14, 2012).
  65. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), West, R. (Author Only), Morian, N. (Author Only), Loria, L. (Author Only), 87th AAPT Annual Meeting and Technical Sessions, Non-Academic, Conference, "Recommendations for the Characterization of RAP Aggregate Properties Using Traditional Testing and Mixture Volumetrics", Accepted, Austin, Texas. (April 4, 2012).
  66. Alavi, M. Z. (Presenter & Author), Hajj, E. Y. (Author Only), Hanz, A. (Author Only), Bahia, H. (Author Only), 44th Annual Symposium on Engineering Geology and Geotechnical Engineering, Non-Academic, Seminar, "Influence of Aggregate, Binder, and Warm-Mix Additive Interaction on Moisture Resistance of Asphalt Mixtures", Accepted, Reno, Nevada. (March 22, 2012).
  67. Ulloa, A. (Presenter & Author), Hajj, E. Y. (Author Only), 44th Annual Symposium on Engineering Geology and Geotechnical Engineering, Non-Academic, Seminar, "Laboratory Evaluation of HMA Mixtures for High Temperature Stability", Accepted, Reno, Nevada. (March 22, 2012).
  68. Siddharthan, R. (Presenter & Author), Hajj, E. Y. (Author Only), Rasanayagam, N. (Author Only), 44th Annual Symposium on Eng. Geology and Geotechnical Eng., Non-Academic, Seminar, "Response and Performance of Layered Systems under 3D Contact Stress Distribution", Accepted, Reno, Nevada. (March 22, 2012).
  69. Hajj, E. Y. (Presenter Only), Pavement Preservation Workshop, Non-Academic, "UNR Report: Slurry and Micro Surfacing Performance", California Chip Seal Association, Invited, Sacramento, California. (February 10, 2012).
  70. Hajj, E. Y. (Presenter & Author), Loria, L. (Author Only), Sebaaly, P. E. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Estimating Effective Performance Grade of Asphalt Binders in High-RAP Mixtures Using Different Methodologies: Case Study", Accepted, Washington, D.C. (January 24, 2012).
  71. Alavi, M. Z. (Author Only), Hajj, E. Y. (Author Only), Hanz, A. (Presenter & Author), Bahia, H. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Evaluating Adhesion Properties and Moisture Damage Susceptibility of Warm-Mix Asphalts Using Bitumen Bond Strength and Dynamic Modulus Ratio Tests", Accepted, Washington, D.C. (January 24, 2012).
  72. Hajj, E. Y. (Presenter & Author), Thushanthan, P. (Author Only), Sebaaly, P. E. (Author Only), Siddharthan, R. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Influence of Tire-Pavement Stress Distribution, Shape, and Braking on Asphalt Pavement Performance Predictions", Accepted, Washington, D.C. (January 24, 2012).
  73. Loria, L. (Author Only), Hajj, E. (Author Only), Sebaaly, P. E. (Presenter & Author), Cortez, E. M. (Author Only), Gibson, S. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Effective Timing of Sequential Slurry Seal Applications on Asphalt Pavement Performance", Accepted, Washington, D.C. (January 24, 2012).
  74. Ulloa, A. (Author Only), Hajj, E. (Presenter & Author), Siddharthan, R. (Author Only), Sebaaly, P. E. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Establishing Equivalent Loading Frequencies in Static Multilayer Analyses to Simulate Dynamic Responses in Asphalt Layer", Accepted, Washington, D.C. (January 24, 2012).
  75. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Pacific Coast Conference on Asphalt Specifications (PCCAS), Non-Academic, Conference, "Updates on Asphalt Research Consortium", Invited,

- Reno, Nevada. (October 25, 2011)
76. Hajj, E. Y. (Presenter & Author), Chia, C. (Author Only), Sebaaly, P. E. (Author Only), Kasozi, A. (Author Only), Gibson, S. (Author Only), Second International Conference on Warm-mix Asphalt, Non-Academic, "Properties of Foamed Warm-Mix Asphalt Incorporating Recycled Asphalt Pavement from Two Field Projects – Case Studies", Accepted, Saint Louis, Missouri. (October 12, 2011).
  77. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Hitti, E. (Author Only), Borroel, C. (Author Only), 86th AAPT Annual Meeting and Technical Sessions, Non-Academic, "Performance Evaluation of Terminal Blend Tire Rubber HMA and WMA Mixtures – Case Studies", Accepted, Tampa, Florida. (March 29, 2011).
  78. Hajj, E. Y. (Presenter Only), Nevada Transportation Conference, Non-Academic, "WMA Experience in Nevada", Invited, Reno, Nevada. (March 22, 2011).
  79. Morian, N. (Author Only), Hajj, E.Y. (Presenter & Author), Glover, C. (Author Only), Sebaaly, P. E. (Author Only), Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Oxidative Aging of Asphalt Binders in Hot Mix Asphalt Mixtures", Accepted, Washington, D.C. (January 25, 2011).
  80. Hajj, E. Y. (Presenter & Author), Loria, L. (Author Only), Sebaaly, P. E. (Author Only), Borroel, C. (Author Only), Levia, P. (Author Only), Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Optimum Time for Application of Slurry to Asphalt Concrete Pavements", Accepted, Washington, D.C. (January 25, 2011).
  81. Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Pacific Coast Conference on Asphalt Specifications (PCCAS), Non-Academic, Conference, "Updates on Asphalt Research Consortium ", Invited, Reno, Nevada. (November 9, 2010)
  82. Hajj, E. Y. (Presenter Only), Pavement Preservation Workshop, Non-Academic, "Modified Binder Chip Seals", California Chip Seal Association, Invited, Seaside, California. (January 21, 2010).
  83. Sebaaly, P. E. (Author Only), Hajj, E. Y. (Presenter & Author), Weitzel, D. (Author Only), 10th International Conference on Asphalt Pavements, "A Superpave Volumetric Mix Design for Nevada's Conditions", Accepted, Quebec City, Quebec. (August 16, 2006).
  84. Hajj, E. (Presenter & Author), Sebaaly, P. E. (Author Only), Siddharthan, R. (Author Only), Mechanics and Materials Conference, McMat, "Response of Asphalt Pavement Mixture Under a Slow Moving Truck", Accepted, Baton Rouge, Louisiana (June 2, 2005).

#### Poster Presentations

85. Sebaaly, P. E. (Author Only), Hajj, E. Y. (Presenter & Author), 8<sup>th</sup> RILEM International Conference on Mechanisms of Cracking and Debonding in Pavements, Non-Academic, Conference, "Impact of Additives on the Cracking Resistance of Asphalt Mixtures," Accepted, Nantes, France. (June 7, 2016).
86. Hajj, E. Y. (Author Only), Sanders, D. H. (Author Only), Weitzel, N. D. (Presenter & Author), 95th Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Evaluation of Modified Engineered Cementitious Composite Using Local Materials," Accepted, Washington, D.C. (January 11, 2016).
87. Siddharthan, R. (Presenter & Author), Tan, X. (Author Only), Hajj, E. (Author Only), 93rd Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Investigation of Transverse Wheel Wander Using Monte Carlo Simulation", Accepted, Washington, D.C. (January 13, 2014).
88. Alavi, M. Zia (Presenter & Author), Pouranian, M. R. (Author Only), Hajj, E. (Author Only), 93rd Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Prediction of Asphalt Pavement Temperature Profile Using the Finite Control Volume Method", Accepted, Washington, D.C. (January 13, 2014).
89. Morian, N. (Presenter & Author), Alavi, M. Zia (Author Only), Hajj, E. (Author Only), Sebaaly, P. E. (Author Only), 93rd Annual Meeting of the Transportation Research Board, Non-Academic, Conference, "Evolution of Thermo-Viscoelastic Properties of Asphalt mixtures with Oxidative Aging", Accepted, Washington, D.C. (January 14, 2014).
90. Morian, N. (Author Only), Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), 92nd Annual Meeting of the Transportation Research Board, Academic, Conference, "Significance of Mixture Parameters on Binder Aging in Hot-Mix-Asphalt Mixtures", Accepted, Washington, D.C (January 15, 2013).
91. Aguiar-Moya, J. P. (Author Only), Loria-Salazar, L. (Presenter & Author), Salazar, J. (Author Only), Villegas, E. (Author Only), Corrales-Azofeifa, J. P. (Author Only), Hajj, E. Y. (Author Only), Transportation Research Board (TRB) 92nd Annual Meeting, Non-Academic, Conference, "Evaluation of Adhesion Properties of Costa Rican



- Asphalt Mixtures Using Bitumen Bond Strength and Contact-Angle Measurement Tests," Accepted, Washington, D.C. (January 15, 2013).
92. Sebaaly, P. E. (Author Only), Hajj, E.Y. (Author Only), Porras, J. (Presenter & Author), Corrales, J. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Laboratory Evaluation of Hot-Mix Asphalt Mixtures for Reflective Cracking Interlayers", Accepted, Washington, D.C. (January 24, 2012).
  93. Porras, J. (Presenter & Author), Hajj, E. Y. (Author Only), Sebaaly, P. E. (Author Only), Kass, S. (Author Only), Liske, T. (Author Only), Transportation Research Board (TRB) 91st Annual Meeting, Non-Academic, Conference, "Performance Evaluation of Field-Produced Warm-Mix Asphalt Mixtures in Manitoba", Accepted, Washington, D.C. (January 24, 2012).
  94. Cortez, E. M. (Presenter & Author), Hajj, E. Y. (Author Only), Sebaaly, P. E. (Author Only), Alavi, M. Z., Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Investigating Low-Temperature Properties of Cylindrical Superpave Gyrotory-Compacted Asphalt Concrete Specimens using the Thermal Stress-Restrained Specimen Test (TSRST)", Accepted, Washington, D.C. (January 25, 2011).
  95. Kasozi, A. (Author Only), Hajj, E. Y. (Presenter & Author), Sebaaly, P. E. (Author Only), Elkins, J., Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Evaluation of Foamed Warm-Mix Asphalt Incorporating Recycled Asphalt Pavement for Volumetric and Mechanical Properties", Accepted, Washington, D.C. (January 25, 2011).
  96. Loria, L. (Presenter & Author), Hajj, E. (Author Only), Sebaaly, P. E. (Author Only), Barton, M. (Author Only), Kass, S. (Author Only), Liske, T. (Author Only), Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Performance Evaluation of Asphalt Mixtures with High RAP Content", Accepted, Washington, D.C. (January 25, 2011).
  97. Cortez, E. M. (Presenter & Author), Hajj, E. (Author Only), Sebaaly, P. E. (Author Only), Transportation Research Board (TRB) 90th Annual Meeting, Non-Academic, "Pavement Temperature Rates in the Intermountain Region of the United States", Accepted, Washington, D.C. (January 25, 2011).

### Webinars

1. Hajj, E. (Presenter & Author), Nabizadeh, H. (Presenter & Author), Kazemi, S.-F. (Presenter & Author), TRB Webinar, Non-Academic, "Evaluation of Superheavy Load Movement on Flexible Pavements", Accepted, Online. (April 23, 2019). (372 Attendees)
2. Hajj, E. (Presenter & Author), Xu, H. (Presenter & Author), Sime, M. (Presenter & Author), TRB Webinar, Non-Academic, "[Modeling the Relationship Between Vehicle Speed & Fuel Consumption](#)", Accepted, Online. (March 14, 2018). (155 Attendees)
3. Hajj, E. (Presenter & Author), Morian, N. (Presenter & Author), Alavi, M. Z. (Presenter & Author), TRB Webinar, Academic, Other, "Comprehensive Analysis of Thermal Cracking in Asphalt Concrete Pavements", Accepted, Transportation Research Board. (March 8, 2016).

## **PROFESSIONAL SERVICE AND OUTREACH**

### Professional Activities

#### Professional

- Founding Member, [Academy of Pavement Science and Engineering](#) (APSE). (April 2017–Present). Executive Officer, Treasurer (Elected), Academy of Pavement Science and Engineering (APSE). (April 2017–Present).
- Member of Advisory board for the project "ALLBACK2PAVE: Toward a sustainable 100% recycling of reclaimed asphalt in road pavements", The University of Nottingham, United Kingdom. (2013 - Present).
- Chair, TRB committee, AFK50: Characteristics of Asphalt Paving Mixtures to Meet Structural Requirements. (2014 - Present).
- Chair, TRB subcommittee, AFK50(2): Integration of Bituminous Paving Mixture Characteristics with Pavement Structural Design. (2011 - 2014).
- Secretary, TRB subcommittee, AFK50(2): Integration of Bituminous Paving Mixture Characteristics with

- Pavement Structural Design. (2009 - 2011).
- Attendee, Meeting, NCHRP Special Meeting on National Training: Challenges and Opportunities. (2013).
  - Moderator, Fifth Technical Session, "Performance Evaluation," Association of Asphalt Paving Technologists (AAPT) 82nd Annual Business Meeting and Technical Sessions, Denver, Colorado, April 10, 2013.
  - Member, ISAP scientific committee for the 2nd International Symposium on Asphalt Pavements and Environment to be held in Fortaleza, Brazil on October 3-5, 2012.
  - Co-editor, ASCE Geotechnical Special Publication (GSP) 223: Road Materials and New Innovations in Pavement Engineering. Proc. of the 2011 GeoHunan International Conference II: "Emerging Technologies for Design, Construction, Rehabilitation, and Inspections of Transportation Infrastructure," ISBN 9780784411742, Hunan, China, Jun. 9-11, 2011.
  - Chair, Session T2S13: "Asphalt Binder and Mixture Characterization" at the 2011 GeoHunan International Conference II: "Emerging Technologies for Design, Construction, Rehabilitation, and Inspections of Transportation Infrastructure," Hunan, China, Jun. 9-11, 2011.
  - Member, FHWA Asphalt Mixture and Construction Expert Task Group, Flow Number Task Group. (2010 - Present).

#### Public/Community/Outreach

- Member, Advisory & Scientific Committees, "Advances in Materials and Pavement Performance Prediction," Doha, Qatar. (2018)
- Member, Scientific Committee, "International Conference on Highway Pavements and Airfield Technology" of the Transportation & Development Institute (T&DI) of ASCE, Philadelphia, Pennsylvania, USA. (2017).
- Member, Scientific Committee, "Tenth International Conference on the Bearing Capacity of Roads, Railways and Airfields," Athens, Greece. (2017)
- Member, Scientific Committee, "Pavement Life-Cycle Assessment," Champaign, Illinois, USA. (2017).
- Member, Technical Committee, "International Symposium on Systematic Approaches to Environmental Sustainability in Transportation," Fairbanks, Alaska. (2015)
- Member, Emmon's Award Committee, Association of Asphalt Paving Technologists (AAPT). (2013 - 2014).
- Chair, Emmon's Award Committee, Association of Asphalt Paving Technologists (AAPT). (2015).
- Organizer, Workshop on *A Step Forward Toward A Better Understanding of the Blending Between Recycled and Virgin Asphalts*, International Society for Asphalt Pavements (ISAP) Working Group 1 (WG1) on "Hot Recycling," Raleigh, North Carolina. (2014).
- Member, planning committee for Nevada Transportation Conference. (2013 - Present).
- Member, planning committee for Utah Asphalt Conference (2013 - Present).
- Member, organizing committee for the one-day workshop on RAP Recycling, International Society for Asphalt Pavements (ISAP), Brazil Fortaleza, September 30, 2012.
- Member, planning committee for the 2nd International Conference on Warm Mix Asphalt (WMA), St. Louis, Missouri, October 11-13, 2011.

#### **Editorial Activities**

##### Editorial review service for the following journals

- Associate Editor, International Journal of Pavement Engineering (IJPE). (2015 - Present)

##### Technical review service for the following journals

- Advances in Civil Engineering Materials, ASTM (ACEM)
- Canadian Journal of Civil Engineering
- Construction and Building Materials
- International Journal for Traffic and Transport Engineering (IJTTE)

- International Journal of Pavement Engineering (IJPE)
- International Journal of Pavement Research and Technology (IJPRT)
- International Journal of Road Materials and Pavement Design (RMPD)
- Journal of Materials in Civil Engineering, ASCE
- Journal of Performance of Constructed Facilities, ASCE
- Journal of Testing and Evaluation (JoTE), ASTM
- Journal of the Association of Asphalt Paving Technologists (AAPT)
- Journal of the Transportation Research Board
- Journal of Transportation Engineering, ASCE
- International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM)

Technical review service for the following granting agencies

- National Science Foundation, NSF:
  - Catalyzing New International Collaboration (CNIC) program.
  - Materials Engineering and Processing (MEP).
  - Structural Materials and Mechanics (SMM) program.
- Ministry of Science and Innovation (MSI), Wellington, New Zealand.
- METTRANS Transportation Center, Joint partnership of the University of Southern California (USC) and California State University Long Beach (CSULB).
- Research Grants Council (RGC), Honk Kong.

**Administrative Assignments**

- Member, Campus Affairs Committee (CAC), Faculty Senate Committee, University of Nevada, Reno. (2014 - 2017).
- Member, CEE Space Committee, Civil and Environmental Engineering Department, University of Nevada, Reno. (2013 - Present).
- Member, CEE Strategic Planning Committee, Civil and Environmental Engineering Department, University of Nevada, Reno. (2013 - Present).
- Member, CEE Undergraduate Committee, Civil and Environmental Engineering Department, University of Nevada, Reno. (2013 - Present).
- Member, Transportation Faculty Search Committee, Civil and Environmental Engineering Department, University of Nevada, Reno. (2012 - 2013).

**GRADUATE STUDENT ADVISORY COMMITTEES**

**Dissertation Committee Chair**

In-Process. Student home department: Civil Engineering. December 15, 2017 – Present.  
Advised: Rami Chkaiban

Completed. Student home department: Civil Engineering. January 15, 2016 – May 15, 2019.  
Advised: Johnny Habbouche

Completed. Student home department: Civil Engineering. January 15, 2014 – December 15, 2017.  
Advised: Dario Batioja

Completed. Student home department: Civil Engineering. August 15, 2013 – December 15, 2017.  
Advised: Hadi Nabizadeh

Completed. "Comprehensive Methodologies for Analysis of Thermal Cracking in Asphalt Concrete Pavements". Student



home department: Civil Engineering. January 15, 2010 - August 15, 2014.

Advised: Mohammad Zia Alavi (Postdoctoral Scholar, UC Davis Pavement Research Center)

Completed, "Development of a Mechanistic-Based Approach to Evaluate Critical Conditions of Hot Mix Asphalt Mixtures".

Student home department: Civil Engineering. January 15, 2010 - May 15, 2013.

Advised: Alvaro Ulloa Calderon (Project Engineer, Dynatest Consulting, Inc., California)

Completed, "Designing a System for HMA Containing a High Percentage of Reclaimed Asphalt Pavement (RAP) Material".

Student home department: Civil Engineering. May 15, 2008 - May 15, 2011.

Advised: Luis G. Loria Salazar (Director of Transportation Center, LanammeUCR, Costa Rica)

### **Dissertation Committee Member**

In-Process. Student home department: Civil Engineering. January 15, 2016 - Present.

Advised: Mohamed Nimeri

Completed. Student home department: Civil Engineering. January 15, 2014 – May 15, 2018.

Advised: Guangchuan Yang

Completed. Student home department: Civil Engineering. January 15, 2014 – May 15, 2017.

Advised: Seyed Farzan Kazemi

Completed, "Influence of mixture characteristics on the oxidative aging of asphalt binders". Student home department: Civil Engineering. May 15, 2008 - May 15, 2014.

Advised: Nathaniel Morian

Completed, "Modeling the Temporal Priority Reversal Phenomenon at Roundabouts". Student home department: Civil Engineering. December 31, 2013.

Advised: Samuel Ahiamadi

Completed, "Fatigue et propriétés viscoélastiques des bitumes et mastics bitumineux". Student home department: Ecole Nationale des Travaux Publics de L'Etat (ENTPE), Lyon, France. April 12, 2013. (Invited)

Advised: Maël Buannic

### **Master's Thesis Committee Chair (Plan A)**

In-Process. Student home department: Civil Engineering. August 15, 2018 – Present.

Advised: Ahmed Warrag

In-Process. Student home department: Civil Engineering. August 15, 2018 – Present.

Advised: Ghadi El Sebaaly

Completed. Student home department: Civil Engineering. August 15, 2016 – May 15, 2018.

Advised: Sarah Stolte

Completed. Student home department: Civil Engineering. December 15, 2015 – May 15, 2018.

Advised: Lauren Graham

Completed. "Oxidative Aging of Binders with High Recycled Asphalt Materials". Student home department: Civil Engineering. December 15, 2014 – May 15, 2017.

Advised: Sara Pournoman

Completed. "Evaluating Superheavy Load Movement on Flexible Pavements: Identifying Load Nucleus and Elements of Bearing Capacity Investigation". Student home department: Civil Engineering. August 15, 2014 - August 15, 2016.

Advised: Mohamed Nimeri

Completed. "Implementation of a Pavement Management System for Local Counties". Student home department: Civil Engineering. August 15, 2014 – May 15, 2016.

Advised: Luis Mariano Sibaja Vargas

Completed. "Evaluation of Thin Asphalt Overlays for Pavement Preservation in Nevada". Student home department: Civil Engineering. August 15, 2014 – December 15, 2015.

Advised: Jhony Habbouche

Completed. "Calibration of the AASHTO MEPDG for Flexible Pavements to Fit Nevada's Conditions". Student home department: Civil Engineering. August 15, 2013 - August 15, 2015.

Advised: Peter Nabhan

Completed. "Development of Specifications for Modified Engineered Cementitious Composites (MECC) for use as Bridge Deck Overlays in Nevada". Student home department: Civil Engineering. August 15, 2013 – December 15, 2015.

Advised: Nicholas Weitzel

Completed, "Evaluation of Pavement Rating System for Flexible Pavements in Nevada". Student home department: Civil Engineering. January 15, 2012 – December 15, 2014.

Advised: Roshan Suwal

Completed, "Field Performance of Asphalt Pavements with New Technologies in Northern Nevada". Student home department: Civil Engineering. August 15, 2011 - December 15, 2014.

Advised: Benjamin Michael Faeth

Completed, "Impact of the Variation in Dynamic Vehicle Load on Flexible Pavement Responses". Student home department: Civil Engineering. August 15, 2011 - December 31, 2013.

Advised: Ahsan Uz Zaman

Completed, "Evaluation of WMA Technologies and Recycled Asphalt Pavement on Nevada Aggregates". Student home department: Civil Engineering. August 15, 2011 - December 31, 2013.

Advised: Kevin Morgan

Completed, "Long-Term Performance Evaluation of Cold In-Place Recycling (CIR) Technique in Nevada". Student home department: Civil Engineering. August 15, 2011 - December 31, 2013.

Advised: Sanjeevan Selvaratnam

Completed, "Mechanical Properties of HMA Mixtures in Nevada to be used in the Mechanistic-Empirical Pavement Design Guide". Student home department: Civil Engineering. August 15, 2009 - August 21, 2012.

Advised: Teresa Feaster

Completed, "Mechanistic Properties of Field and Laboratory-Produced Warm Mix Asphalt Mixtures from Manitoba, Canada". Student home department: Civil Engineering. February 15, 2010 - December 31, 2011.

Advised: Juan Diego Porras

Completed, "Designing Cold Mix Asphalt and Cold In-Place Recycling Using Superpave Gyratory Compactor". Student home department: Civil Engineering. August 15, 2008 - December 31, 2011.

Advised: Murugaiyah Piratheepan

Completed, "Development of Pavement Performance Evaluation Subroutines for 3D-Move Analysis Software". Student home department: Civil Engineering. August 15, 2009 - August 15, 2011.

Advised: Vijayathanan Noel Vijayaruban

Completed, "Develop a Laboratory Mixing Procedure for Hot Mix Asphalt Containing RAP Materials". Student home department: Civil Engineering. August 15, 2009 - August 15, 2011.

Advised: Matthew Barton

Completed, "Impact of Contact Stress Distribution and Pattern on Asphalt Pavement Performance Using 3D-Move Analysis Software." Student home department: Civil Engineering. August 2007 - December 2010.

Advised: Thushanthan Palasantharan (Engineer, Rone Eng. Services)

Completed, "Impact of Anti-Strip Additives on Performance of Asphalt Pavements." Student home department: Civil Engineering. January 2007 – May 2010.

Advised: Thileepan Sathanathan (Sr. Geotechnical/Structural Engineer, Houston Offshore Eng., TX)

Completed, "Impact of Anti-strip Additives on Long-term Aging Properties of Asphalt Mixtures." Student home department: Civil Engineering. January 2007 – December 2009.

Advised: Sivakulan Shivakolunthar (Sr. Staff Geotechnical Engineer, URS Corp.)

Completed, "Characteristics of Dynamic Triaxial Testing of Asphalt Mixtures." Student home department: Civil Engineering. August 2007 – December 2009.

Advised: Alvaro Ulloa Calderon

Completed, "Use of Reclaimed Asphalt Pavements (RAP) in Airfields HMA Pavements." Student home department: Civil Engineering. August 2006 – August 2008.

Advised: Kandiah Pratheepan (Engineer, Earth Mechanics Inc.)

#### **Master's Thesis Committee Member (Plan A)**

In-Process. Student home department: Civil Engineering. January 15, 2018 - Present.

Advised: Habtamu Merga

In-Process. Student home department: Civil Engineering. August 15, 2018 - Present.

Advised: Michael Hartley

In-Process. Student home department: Civil Engineering. August 15, 2018 - Present.

Advised: Sailesh Bista

In-Process. Student home department: Civil Engineering. August 15, 2018 - Present.

Advised: Vlademir Abou Sejaam

In-Process. Student home department: Civil Engineering. January 15, 2019 - Present.

Advised: Kiran Bhandari

In-Process. Student home department: Civil Engineering. January 15, 2019 - Present.

Advised: Michel El Sebaaly

In-Process. Student home department: Civil Engineering. January 15, 2019 - Present.

Advised: Nicole Elias

In-Process. Student home department: Civil Engineering. January 15, 2019 - Present.  
Advised: Stephanos Khalil

Completed. Student home department: Civil Engineering. January 15, 2017 - May 15, 2018.  
Advised: Federico Ayala

Completed. Student home department: Civil Engineering. January 15, 2017 - May 15, 2018.  
Advised: Alberto Elbejjani

Completed. Student home department: Civil Engineering. January 15, 2017 - May 15, 2018.  
Advised: Elise Mansour

Completed. Student home department: Civil Engineering. January 15, 2017 - May 15, 2018.  
Advised: Daniela Maria Montenegro

Completed. Student home department: Civil Engineering. August 15, 2016 – May 15, 2018.  
Advised: Prathapan Ragavan

Completed. Student home department: Civil Engineering. August 15, 2016 – December 15, 2017.  
Advised: Rami Ckaiban

Completed. Student home department: Civil Engineering. December 15, 2015 – December 15, 2017.  
Advised: Jorge Castro Ortiz

Completed. "Evaluation of Nevada's Warm Mix Asphalt Mixtures with Recycled Asphalt Pavements". Student home department: Civil Engineering. January 15, 2014 – August 15, 2016.  
Advised: Balasekaram Jayaprakas

Completed. "Performance Characterization of Recycled Asphalt Pavements with Warm Mix Asphalt Technologies". Student home department: Civil Engineering. January 15, 2014 – May 15, 2016.  
Advised: Sandeep Pandey

Completed. "Evaluation of Thermal Oxidative Aging Effect on the Rheological Performance of Modified Asphalt Binders". Student home department: Civil Engineering. August 15, 2013 – December 15, 2015.  
Advised: Cheng Zhu

Completed. "Design of Cold-In-Place Recycling (CIR) Using Superpave Gyrotory Compactor". Student home department: Civil Engineering. January 15, 2013 – August 15, 2015.  
Advised: Saroj Thapa

Completed. "Evaluation of Warm Mix Additives for Use in Modified Asphalt Mixtures". Student home department: Civil Engineering. August 15, 2012 – August 15, 2015.  
Advised: Rukesh Maharjan

Completed, "Evaluation of Warm Mix Asphalt Technologies and Recycled Asphalt Pavements in Truckee Meadows, Nevada". Student home department: Civil Engineering. August 15, 2011 - December 31, 2013.  
Advised: Cristian Diaz

Completed, "Applying the Design Science Paradigm to Create a Conceptual Data Warehouse Design Methodology". Student home department: Accounting & Information Systems. August 15, 2013.  
Advised: Michael V. Ekedahl

Completed, "Numerical Modeling of the Characteristics Seismic Behavior of Retaining Walls". Student home department:

Civil Engineering. August 15, 2011 - June 15, 2013.  
Advised: Graziella Sebaaly

Completed, "Evaluation of Warm Mix Additives for Use in Modified Asphalt Mixtures". Student home department: Civil Engineering. August 15, 2010 - March 31, 2013.  
Advised: Zahi Chamoun

Completed, "Comparative Evaluation of Field and Laboratory-Produced Foamed Asphalt Mixture from Reno, Nevada". Student home department: Civil Engineering. January 15, 2010 - August 17, 2012.  
Advised: Christine Chia

Completed, "A New Method of Data Storage". Student home department: Electrical Engineering. August 15, 2010 - April 27, 2012.  
Advised: Joelle Z. Sebaaly

Completed, "PWL System for Dense graded Hot Mix Asphalt Construction in Nevada". Student home department: Civil Engineering. August 15, 2009 - August 15, 2011.  
Advised: Roger Schlierkamp

Completed, "Evaluation of Warm Mix Asphalt Concrete Mixtures in South Dakota". Student home department: Civil Engineering. August 15, 2009 - August 15, 2011.  
Advised: Taha Hussain

Completed, "Evaluation of Warm Mix Additives for Use in Modified Asphalt Mixtures". Student home department: Civil Engineering. August 15, 2008 - August 15, 2011.  
Advised: Corina Borroel

Completed, "Pavement Response Model to Dynamic Loads". Student home department: Civil Engineering. January 15, 2008 - August 15, 2011.  
Advised: Rasanayagam Nitharsan

Completed, "Properties of Warm Mix Asphalt from two field projects: Reno, NV and Manitoba, Canada." Student home department: Civil Engineering. January 2008 - August 2010.  
Advised: Andrew Kasozi

Completed, "Environmental Conditions and Binder Aging Characteristics in the Intermountain Region of the United States." Student home department: Civil Engineering. August 2007 - December 2009.  
Advised: Edward Cortez

Completed, "Impact of Lime on the Mechanical Properties of HMA Mixtures in Nevada." Student home department: Civil Engineering. August 2007 – December 2009.  
Advised: Wendy Sequeira

Completed, "Techniques to Mitigate Reflective Cracking in HMA Pavements." Student home department: Civil Engineering. January 2006 - May 2008.  
Advised: Luis G. Loria Salazar

Completed, "Evaluation of Terminal-Blend Rubber HMA Mixtures." Student home department: Civil Engineering. January 2006 - May 2007.  
Advised: Haissam Sebaaly

Completed, "Effect of Geotextile Fabrics on Reflective Cracking of Hot Mix Asphalt Overlays in Washoe County, Nevada."

Student home department: Civil Engineering. January 2006 - May 2007.  
Advised: Nathan Morian

Completed, "Unbound Materials Resilient Modulus Testing for Truckee Meadows Area." Student home department: Civil Engineering. January 2006 - August 2007.  
Advised: Aravinthan Thuraiajah

Completed, "Designing HMA Mixtures for Nevada's Intersections." Student home department: Civil Engineering. January 2006 - December 2007.  
Advised: George El Tannoury

Completed, "Laboratory Characterization of Nevada's HMA Mixtures for Mechanistic Empirical Design." Student home department: Civil Engineering. August 2005 - December 2006.  
Advised: Ziad Bou Jaoude

## **TEACHING**

### **Courses Taught**

- CEE 377 (Undergraduate): Construction Materials
- CEE 427 (Undergraduate): Capstone Design Project – Pavement Section
- CEE 431/631 (Undergraduate/Graduate): Pavement Design and Analysis
- CEE 732 (Graduate): Bituminous Materials and Mixtures
- CEE 733 (Graduate): Advanced Pavement Design
- CEE 734 (Graduate): Pavement Reconstruction, Rehabilitation, and Maintenance
- CEE 735 (Graduate): Pavement Management
- CEE 771 (Graduate): Advanced Topics in Pavement Engineering
- CEE 771 (Graduate): Advanced Modeling and Analysis of Bituminous Materials