

## **CURRICULUM VITAE**

### **DR. KAMAL HOSSAIN**

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## 1. Rank and Status

Assistant Professor (Tenure-Track), Department of Civil Engineering

Memorial University, St. John's, Newfoundland, Canada

## 2. Address and Contact

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Lab EN 1026C, S J Carew Building, 240 Prince Philip Dr, A1B 3X5, St. John's, Canada

Research Website <http://artel-mun.ca/>

## 3. Personal Information

Personal Born in December 1980 in Bangladesh; Married; Three Children

Home 19 Glenlonan St., St. John's, A1G 0B4, NL, Canada

Citizenship Canadian

## 4. Educations and Trainings

2016 - 2017 **University of Illinois at Urbana-Champaign, USA**  
Postdoctoral Training (Civil Engineering)

2013 - 2015 **University of Waterloo, Canada**  
Doctor of Philosophy (Civil Engineering)

2011 - 2013 **University of Waterloo, Canada**  
Master of Applied Science (Civil Engineering) (transferred to PhD)

1999 - 2005 **Bangladesh University of Engineering & Technology (BUET)**  
Bachelor of Science in Engineering (Civil Engineering)

## 5. Academic Appointments

9/2017 - Present **Assistant Professor**, Memorial University, NL, Canada

9/2016 - 8/2017 **Postdoctoral Fellow**, University of Illinois at Urbana-Champaign, IL, USA

1/2016 - 4/2016 **Lecturer**, University of Waterloo, ON, Canada

5/2016 - 8/2016 **Lecturer**, University of Waterloo, ON, Canada

1/2015 - 6/2016      **Postdoctoral Research Associate**, University of Waterloo, ON, Canada

## 6. Professional Appointments

5/2018 - Present      **Consultant**, Multi-Materials Stewardship Board (MMSB) of Government of Newfoundland and Labrador, NL, Canada

5/2018 - 8/2018      **Expert**, Nesbitt Coutler LLP Law Firm, Woodstock, ON, Canada

1/2005 - 4/2011      **Project Engineer/Construction Engineer**, Industries, Dhaka, Bangladesh

## 7. Public Services and Memberships

4/2018 - Present      **Standing Committee Member**, United States Transportation Research Board (TRB) Committee on Asphalt Sealants and Fillers for Joints and Cracks (AHD25)

4/2018 - Present      **Standing Committee Member**, United States Transportation Research Board (TRB) Committee on Pavement Maintenance (AHD20)

3/2018 - Present      **Technical Committee Member**, American Society of Civil Engineers (ASCE) Construction Institute Bituminous Materials Committee (BMC)

7/2017 - Present      **Research Task Force Lead and Academic Member**, Academy for Pavement Science and Engineering (APSE)

7/2017 - Present      **Member**, Canadian Technical Asphalt Association (CTAA)

## 8. Research Interests

- Pavement Materials; Recycled, Bio-based and Nanomaterials in Pavement Application
- Development of Performance-Based Pavement Mixture Designs
- Advanced Characterization and Performance Modeling of Asphalt and Mastic using AFM, ESEM, FTIR, DSC, GPC, TLC-FID
- Mechanical and Rheological Characterization of Asphalt, Additives, Polymers and Mixtures using Classical and Standard Tests
- Mechanics Based Pavement Structural Design Analysis for Enhanced Pavement Designs under Connected Vehicle Traffic System, Changing Climates, and Composite Pavement Environment
- Finite Element Analysis; Tire-Pavement Interaction, Pavement Constitutive Modeling
- Application of Nano-Technologies in Pavements and Development of Smart Pavements
- Pavement Recycling Technologies including WMA, CIR, HIR, FDR
- Transportation Sustainability, Life Cycle Analysis of Municipal Infrastructure Design Alternatives
- Highway Maintenance and Preservation Technologies
- Winter Road Operations; De-icing and Anti-icing Technologies; Road Safety
- Cold Region Pavement Designs and Climate Change Impacts on Transportation Infrastructures
- Pavement Asset Management; Pavement Distress & Condition Evaluation, Maintenance Strategies

## 9. Grant and Funded Projects

Year	Grantor/Research Supports; Program Type; Project Title	Role	Status
2018	NSERC; Discovery Grant; <i>Sustainable Road Pavement for Harsh Canadian Climates</i>	PI	Awarded
2018	NSERC; Early Career Researcher Grant Supplement	na	Funded
2018	Memorial University; Seed, Bridge and Multidisciplinary Fund; <i>Solar Reflective Additives for Pavement Mixture Design</i>	PI	Awarded
2018	Memorial University; Co-op Funding Program; <i>Life Cycle Environmental Impact Assessment of Various Pavement Maintenance Technologies – A Case Study for City of St. John's</i> ; Funding support to student	PI	Funded
2018	MUN-PDSIF; <i>Climate change impacts on pavement performance</i> ; Funding support to student	PI	Funded
2018	Memorial University; Co-op Funding Program; <i>Development of Pavement Damage Cost Using Long Term Pavement Performance (LTPP) Data: Canadian Test Section vs. US Test Sections</i> ; Funding support to student	PI	Funded
2018	Memorial University; Co-op Funding Program; <i>Innovative Use of Nano-Materials for Improving Asphalt Performance, Memorial University Co-op Funding Program</i> ; Funding support to student	PI	Funded
2017	Harris Center and Multi-materials Stewardship Board of Government of Newfoundland and Labrador, Stantec, Pardy's Waste Management; Waste Management Applied Research Fund; <i>Waste Cooking Oil in Construction of Asphalt Pavements</i>	PI	Awarded
2017	Memorial University; Faculty of Applied Science and Engineering Start-up Funding Program; <i>Pavement Damage Analysis for Various Pavement Design variables for Canadian Roads</i>	PI	Awarded

2016	NSERC; PDF; <i>Effect of Pavement Materials and Compositions on Self-deicing Road Systems</i>	PI	Awarded
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### 10. Grant Applications Under Review & In-Preparation

Year	Grantor/Research Supports; Project Title	Role	Status
2018	City of St. John's; Collaborative Research; <i>Investigation and Development of Improved Asphalt Mixture Specification for Pothole Repair and Sustainable Winter Road Maintenance</i>	PI	In preparation
2018	NSERC; RTI; Dynamic Testing System for Designing Durable Pavement Mixture Design	PA	Under review
2018	City of St. John's; Collaborative Research; <i>Development of Improved Asphalt Mixture for the City of St. John's: A Memorial University–City of St. John's Joint Study; Co-PI: Dr. C Bazan</i>	PI	Under review
2018	NL-Department of Transportation and Works; Collaborative Research; <i>Development of Improved Asphalt Mixture for Newfoundland Highways: A Memorial University—NL Department of Transportation and Works Joint Study; Co-PI: Dr. A Hussein, Dr. C Bazan, Dr. X Sanchez</i>	PI	Under review
2108	NSERC; CREATE; <i>Sustainable Technology Innovation &amp; Entrepreneurship; PI: Dr. C Bazan</i>	Co-PI	Unsuccessful
2017	Imperial Oil; Seed, Bridge and Multidisciplinary Fund; <i>Development of Asphaltic Materials with Autonomous Self-Healing Polymers (ASPs) for Pavement Application in Canada</i>	PI	Unsuccessful
2017	Memorial University; Seed; <i>Climate Change and Pavement Infrastructure of Canada: Investigation on Performance of Solar Reflective Materials</i>	PI	Unsuccessful

### 11. Recent Project Information

Year	Project/Research Title; Research Support; Role	Status
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2018	Application of Tire Derived Aggregates in Civil Engineering (Phase-I). Multi-Materials Stewardship Board of Government of Newfoundland and Labrador. Consultant	Complete
2018	Effect of Interface Bonds on Pavement Performance. FEAS, Memorial University. PI	Complete
2018	Field Inspection of Pavement Distresses in the Streets of City of St John's, FEAS, Memorial University. PI	Complete
2016 - 2017	Effect of Pavement Materials and Compositions on Self-deicing Road Systems. Natural Sciences and Engineering Research Council of Canada (NSERC), PDF. PI	Complete
2017 - 2017	Development of Long-Term Aging Protocol for Implementation of Illinois Flexibility Index (I-FIT). ICT R27-175. University of Illinois at Urbana – Champaign, Illinois Center for Transportation, USA. Visiting Research Scholar	Complete
2016 - 2017	Construction and Performance Monitoring of Various Asphalt Mixes. ICT R27-161. University of Illinois at Urbana – Champaign, Illinois Center for Transportation, USA. Visiting Research Scholar	Complete
2015 - 2016	Field Assessment of Three-Dimensional Surface Texture and Frictional Properties of Experimental Canadian Road Pavements at Center for Pavement and Transportation Technology (CPATT); Sustainable Snow and Ice Control for Improving Pedestrian Safety in Parking Lots and Sidewalks at Innovative Transportation System Solution Laboratory, University of Waterloo, Postdoctoral Research Associate	Complete
2011 - 2014	Optimum De-icing and Anti-icing for Parking Lots and Sidewalks, NSERC-CRD. University of Waterloo, ON, Canada. Graduate Researcher	Complete

## 12. Awards and Funding History

Year	Award/Funding Title	Organization	Amount
2018	NSERC Discovery Grant; Funding for five years - \$26,000/yr and ECR Grant \$12,500	Natural Sciences and Engineering Research Council of Canada	\$142,500

2018	Seed, Bridge, Multi-disciplinary Research Fund	MUN VPR Seed, Bridge, Multi-disciplinary Research Funding Program	\$10,000
2018	President's Doctoral Student Investment Fund (PDSIF) to Faculty; Funding for a PhD student for four years	PDSIF, Memorial University	\$30,000
2017	FEAS Startup Fund	FEAS Startup Funding Program, Memorial University	\$45,000
2017	Harris Center and Multi-materials Stewardship Board of Government of Newfoundland and Labrador Applied Research Fund	Harris Center and Multi-materials Stewardship Board of Government of Newfoundland and Labrador	\$15,000
2016	NSERC-PDF	Natural Sciences and Engineering Research Council of Canada	\$90,000
2016 - 2017	Visiting Research Scholar	University of Illinois at Urbana – Champaign	\$21,000
2015 - 2016	Postdoctoral Research Fellow	University of Waterloo	\$54,000
2014	Faculty of Engineering Scholarship	University of Waterloo	\$1,500 (3rd time)
2014	Doctoral Research Experience Award	University of Waterloo	\$2,000 (2 <sup>nd</sup> time)
2014	Faculty of Engineering Scholarship	University of Waterloo	\$1,500 (2 <sup>nd</sup> time)
2013	Doctoral Research Experience Award	University of Waterloo	\$2,000 (1 <sup>st</sup> time)
2013	Faculty of Engineering Scholarship	University of Waterloo	\$1,500 (1 <sup>st</sup> time)
2015 - 2014	Graduate Research Studentship	University of Waterloo	\$8,000



2014 - 2013	Graduate Research Studentship	University of Waterloo	\$23,000
2013 - 2012	Graduate Research Studentship	University of Waterloo	\$18,500
2012 - 2011	Graduate Research Studentship	University of Waterloo	\$16,500
2010	Most Innovative Engineer/Employee Award	Bay Development Ltd	BDT50,000

### 13. Teaching Interests

- Highway and Pavement Engineering
- Civil Engineering Materials
- Mechanics of Materials
- Sustainability Engineering
- Transportation Engineering

### 14. Courses Taught

Year	Course No.	Level	Course Name	Students	Institution
2018/2019	ENGI (In progress)	Graduate	Sustainable Infrastructure Management	na	Memorial University
2018/2019	ENGI 3703	Undergraduate	Surveying and Geomatics	60	Memorial University
2017/2018	ENGI 7745	Undergraduate	Highway Engineering	53	Memorial University
2017/2018	ENGI 4312	Undergraduate	Mechanics of Solids	89	Memorial University
2015/2016	CIVE 240	Undergraduate	Engineering and Sustainable Development	109	University of Waterloo
2015/2016	CIVE 440	Undergraduate	Transit Planning and Operations	58	University of Waterloo

## 15. Graduate Research Supervision

### 15.1 PhD Students

Start Year	Role	Status	Student	Previous Institute	Research Area
2018	Principal Supervisor	In progress	Surya Swarna	Indian Institute of Technology, India	Pavement mechanics and climate change impacts in pavement performance
2018	Co-supervisor	In progress	Farhana Akter	Norwegian University of Science & Technology, Norway	Optimization of oil/bituminous material recovery
2017	Principal Supervisor	In progress	Abdualmtlab Ali	University of Le Havre, France	Pavement mixture designs

### 15.2 Master's Students (Thesis based)

Start Year	Role	Status	Student	Previous Institute	Research Area
2019	Principal Supervisor	Incoming	Masud Rana	Rajshahi University of Engineering & Technology, Bangladesh	Pavement mechanics
2019	Principal Supervisor	Incoming	Shahbaz Khan	Central Road Research Institute, India	Pavement materials
2018	Principal Supervisor	In progress	Rakibul Alam	Bangladesh University of Engineering & Technology	Pavement management and road safety
2018	Principal Supervisor	In progress	Rayhan Ahmed	Chittagong University of Engineering & Technology, Bangladesh	Pavement materials
2018	Project Supervisor	In progress	Abhirup Dasgupta	KIIT University, Bhubaneswar, India	Nanotechnologies and nanomaterials

### 15.3 Undergraduate Research Students

Year	Program/ Course	Status	Student	Research Topic
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2018	ENGI 7745	Complete	Thomas et al.	Road safety audit in the roads around engineering building in MUN
2018	Co-op	Complete	Shady Soliman	Long Term Pavement Performance (LTPP) Data Analysis for Pavement Damage Cost
2018	Co-op	Complete	Tim Caudle	Life Cycle Environmental Impact Assessment (LCIA) for Various Pavement Maintenance Options using Athena LCA Tool
2018	Co-op	Complete	Michael Collins	Nano-materials for Improving Asphalt Binder Performance

## 16. Thesis Examination and Technical Review

### 16.1 Graduate Thesis Examination

Date	Examination Activity	Thesis Area/Sub-discipline	Role	Level	Student
2018	Thesis proposal	Materials, crumb rubber, synthetic fiber, dynamic loading effect	Chair	PhD	Baseem Aleem
2018	Thesis and defense examination	Mechanics, modeling structural capacity	Internal Examiner	PhD	Bipul Mondal
2018	Thesis and defense examination	Asphalt mix characterization, full-depth reclamation, cold-in-place recycling	External Examiner, École de technologie supérieure (ETS), University of Quebec	PhD	Apparao Gandhi
2018	Thesis examination	Mechanics, numerical modeling, statistical modeling	Internal Examiner	M.Eng.	Mohamed Said
2018	Thesis examination	Geotechnical engineering, numerical modeling	Internal Examiner	M.Eng.	Arman Riyadul

2018	Thesis examination	Asphalt characterization	Internal Examiner	M.Eng.	Haytem Geneve
2017	Thesis examination	Asphalt characterization	Internal Examiner	M.Eng.	Hekma Seddig
2017	Thesis examination	Phase change materials	Internal Examiner	M.Eng.	Abdalmawla Lasmar
2017	Comprehensive examination	Mechanics, numerical analysis	Chair	PhD	Ahmed Elruby
2017	Thesis examination	Asphalt characterization	Internal Examiner	M.Eng.	Ibrahim Futheiz

### 16.2 Journal Reviews

Journal/Conference/Organization	Reviews (2017-2018)	Role
International Journal of Pavement Engineering	2	Invited Reviewer
Construction and Building Materials	3	Invited Reviewer
Transportation Research Board Journal and Conference	9	Invited Reviewer
Canadian Society of Civil Engineering Conference	3	Invited Reviewer
Transportation Association of Conference	1	Invited Reviewer
Materials	3	Invited Reviewer
Canadian Journal of Civil Engineering	3	Invited Reviewer
Applied Sciences	2	Invited Reviewer
Sustainability	1	Invited Reviewer
Cold Region Science and Technology	1	Invited Reviewer
ASCE Journal of Materials	1	Invited Reviewer
ASCE Transportation & Development Institute: Highway and Airfield Conference	7	Scientific Reviewer

**16.3 Grant Reviews**

Organization	Grants	Year(s)	Role
University of Sharjah Grant Project Review	1	2018	Project Reviewer

**17. Service to Academic and Professional Societies and Committees****17.1 Roles in Conferences**

Conference	Date	Role
98 <sup>th</sup> Annual Meeting of Transportation Research Board (TRB) and Conference; JBS19-0003, Pothole Repairs and Patch Performance Lectern Session	2019 (January)	Presiding Officer
98 <sup>th</sup> Annual Meeting of Transportation Research Board (TRB) and Conference; AFK 20 Technical Session on Asphalt Binder Aging, Low Temperature Testing, High Temperature Testing, MSCR, Fatigue	2019 (January)	Presiding Officer
ASCE Transportation and Development Institute Highway and Airfield Conference, Chicago, IL, USA	2019 (July)	Scientific Committee Member
TRB AFK 20 PhD Student Research Workshop	2019 (January)	Abstract Review Committee Member
CSCE Annual Conference, Fredericton, NB, Canada	2018 (June)	Chair for Bituminous, Pavement and Geotechnical Materials Session (declined) and Technical Reviewer
International Pavement Life Cycle Assessment Symposium, Champaign, IL, USA	2017 (April)	Technical Session Volunteering Member
57 <sup>th</sup> Annual Illinois Bituminous Paving Conference, Champaign, IL, USA	2016 (December)	Technical Session Volunteering Member
3 <sup>rd</sup> Canada-China International Symposium on Winter Road Maintenance	2016 (June)	Technical Session Volunteering Member

**17.2 Internal Academic Committee**

<b>Committee</b>	<b>Year</b>	<b>Role</b>
Departmental Head Review Committee, ONAE	2018	Member (Dean's selection)
Standing Committee on Graduate Studies, FEAS	2018 - Present	Member At Large
Outstanding Teaching Assistants Selection Committee, FEAS	2018	Member
Memorial University Transportation Committee	2018 - Present	MUNFA Representative

**17.3 Service to Professional Societies**

<b>Organization</b>	<b>Year</b>	<b>Role</b>
United States Transportation Research Board (TRB)	2018 - Present	Standing Committee Member (AHD25-Asphalt Sealants)
United States Transportation Research Board (TRB)	2018 - Present	Standing Committee Member (AHD20; Pavement Maintenance)
American Society of Civil Engineers (ASCE) Construction Institute (CI) Committee on Bituminous Materials	2018 - Present	Member of Bituminous Materials Committee (BMC)
Academy for Pavement Science and Engineering (APSE)	2017 - Present	Research Task Force Lead and Academic Member (Membership ID: 40868853)
Canadian Technical Asphalt Association (CTAA)	2017 - Present	Member (Membership ID: G4307)
Transportation Association of Canada (TAC)	2017 - 2018	Member (Membership ID: 38233; Inactive,)
Professional Engineers and Geoscientists Newfoundland and Labrador (PEGNL)	2018 - Present	P.Eng. Member (Membership ID: 09190)
Project Management Institute (PMI) and NL-PMI Chapter	2015 – Present (PMI) 2018 – Present (NL-PMI)	PMP Member (Membership ID: 1802887)

**17.4 Other Service**

Service, Organization	Year	Role
Inquiry into the slip and fall incident in a parking lot pavement in Ontario; Nesbitt Coulter LLP	2018	Expert opinion to the court matter for Ontario Supreme Court of Justice

**18. Media Appearances**

- I. The Gazette, Text Interview, Infusion for innovation: impact of harsh climate on pavement performance and sustainability, NSERC Discovery Grant project, October 18, 2018: <https://gazette.mun.ca/research/infusion-for-innovation/>
- II. CBC, Radio Broadcast, Morning Show, and Text Interview, why line paint just won't stick to Newfoundland streets, June 18, 2018: <http://www.cbc.ca/news/canada/newfoundland-labrador/road-line-painting-problems-newfoundland-1.4672722>
- III. Ontario's Landscape Trade Publication, Safer sidewalks and parking lots, Special Issue for Canada's Snow Fighters, July-Aug 2013

**19. Publications, Technical Reports, Presentations**

Publication Type	Pre-2017	2017	2018	2019	Total
Papers in Preparation/Under Review	na	na	9		9
Peer-reviewed Journal Papers	6	1	3		10
Peer-reviewed Full Conference Papers	17	2	10		29
Peer-reviewed Conference Abstracts/Extended Abstracts	0	5	4		9
Chapters in Books	0	0	1		1
Technical Reports	3	0	1		4
Selected Oral Presentations/Talks/Lectures	4	3	5	2	14
Media Appearances	1	0	2		3

**19.1 Papers in Preparation/Under Review**

- [1]. Safi F, Al-Qadi I, **Hossain K**, Ozer H. (2018). Total Recycled Asphalt (TRA) Mixes' Characteristics and Field Performance. Accepted for Lectern Presentation in 98<sup>th</sup> Annual Meeting of TRB. Under Review for Publication in Transportation Research Record:

- Journal of the Transportation Research Board of National Academies of Science and Engineering.
- [2]. Singhvi, P., **Hossain, K.**, Karakas, A., Ozer, H., Al-Qadi, I. (2018). Impact of Long-term Aging on Rejuvenated Asphalt Binder's Chemistry and Rheology. In Preparation.
  - [3]. Swarna S T, **Hossain K**, Reddy M A, Pandey B B. (2018). A Mechanistic and Economical Analysis of Two-Lift Concrete Pavements. Road Materials and Pavement Design. Submitted.
  - [4]. Ali, A., **Hossain, K.**, Hussein, A., Dashman, H. (2018). Towards Development of PCI and IRI models for road networks in the City of St. John's, Newfoundland Canada. ASCE-T&DI International Airfield & Highway Pavements Conference, Chicago, IL, USA. Submitted.
  - [5]. Ahmed R B, **Hossain K**. (2018). Can WCO be an Asphalt Rejuvenator? In Preparation.
  - [6]. **Hossain K**, Bazan, C., Hussein, A., Swarna, S. T. (2018). Long Term Aging Protocol of Asphalt Mixture: A State-Of-The-Art Review. Construction & Building Materials. Under Review.
  - [7]. **Hossain K**, et al. (2018). Life Cycle Environmental Impact Assessment (LCIA) for Various Pavement Maintenance Options using Athena LCA Program. In Preparation for Journal Submission.
  - [8]. Ali A, et al. Development of PCI and IRI models for road networks in the City of St. John's. In Preparation for Journal Submission.
  - [9]. **Hossain K**, et al. (2018). Nanomaterials for Improving Asphalt Binder Performance. In Preparation for Journal Submission.
  - [10]. **Hossain K**, et al. (2018). Pavement Damage Cost Analysis using Long Term Pavement Performance Data. In Preparation for Journal Submission.

## 19.2 Peer-reviewed Journal Papers

- [11]. Safi, F., **Hossain, K.**, Wu, S., Ozer, H., Al-Qadi, I. (2018). A Model to Predict Creep Compliance of Asphalt Mixtures. *Construction and Building Materials*. Vol: 184, 374-381
- [12]. **Hossain K**, and Hossain, Z. (2018). A Synthesis of Computational and Experimental Approaches of Evaluating Chemical, Physical and Mechanistic Properties of Asphalt Binders. *Journal of Advances in Civil Engineering*. In Press.
- [13]. **Hossain K**, Karakas, A., Hossain, Z. (2018). Effects of Aging and Rejuvenation on Surface Free Energy Measurements and Adhesion of Asphalt Mixtures. *ASCE Journal of Materials in Civil Engineering*. Under Review. Revision Received.
- [14]. Hosseini, F., **Hossain, K.**, & Fu, L. (2017). Bio-based Materials for Improving Winter Pavement Friction. *Canadian Journal of Civil Engineering*, doi: 10.1139/cjce-2016-046
- [15]. **Hossain, K.**, Fu, L., Hosseini, F., Muresan, M., Donnelly, T., & Kabir, S. (2016). Optimum Winter Road Maintenance: Effect of Pavement Types. *Canadian Journal of Civil Engineering*, 2016, 43(9): 802-811, doi: 10.1139/cjce-2016-0010
- [16]. **Hossain, K.**, Fu, L., & Lake, R. (2015). Field Evaluation of the Performance of Alternative Organic Deicers for Winter Maintenance of Transportation Facilities. *Canadian Journal of Civil Engineering*, 2015, 42(7): 437-448, doi: 10.1139/cjce-2014-0423
- [17]. **Hossain, K.**, Fu, L., Donnelly, T., & Lamb, Z. (2015). Field Investigation on the



- Effectiveness of Pre-wetting Strategy for Snow and Ice Control of Transportation Facilities. *ASCE Journal of Cold Region Engineering, American Society of Civil Engineers*, doi: 10.1061/(ASCE)CR.1943-5495.0000101
- [18]. **Hossain, K.**, Fu, L., & Law, B. (2014). Winter Contaminants of Pavements: Friction Characteristics and Slipping Risk. *ASCE Journal of Cold Region Engineering, American Society of Civil Engineers*. doi: 10.1061/(ASCE)CR.1943-5495.0000083
- [19]. **Hossain, K.**, Fu, L., & Lu, C. (2014). Deicing Performance of Road Salts: Modeling and Applications. *Transportation Research Record: Journal of the Transportation Research Board of National Academics*, (2440), 76-84, doi: 10.3141/2440-10
- [20]. **Hossain, K.**, Fu, L., & Olesen, A. (2014). Effectiveness of Anti-icing Operations for Transportation Facilities. *Canadian Journal of Civil Engineering*, 2014, 41(6): 523-530, doi: 10.1139/cjce-2013-0587

### 19.3 Peer-reviewed Book Chapters

- [21]. **Hossain, K.**, Muresan, M., Fu, L. (2018). Chapter 20-Application Guideline for Optimal Deicing and Anti-icing. *Sustainable Winter Road Operations*. Wiley and Sons.

### 19.4 Peer-reviewed Full-length Conference Papers

- [22]. **Hossain K.**, Das P, Karakas A. (2018). Effect of Ultraviolet Aging on Rheological Properties of Asphalt Cement. *63rd Annual Conference of Canadian Technical Asphalt Association (CTAA)*. Regina, SK, Canada.
- [23]. Safi F, Al-Qadi I, **Hossain K.**, Ozer H. (2018). Total Recycled Asphalt (TRA) Mixes' Characteristics and Field Performance. *98th Annual Conference of Transportation Research Board (TRB) of National Academies of Science and Engineering*. Washington DC, USA.
- [24]. Swarna S T, **Hossain K.**, Reddy M A, Pandey B B. (2018). A Mechanistic Study of Two-Lift Concrete Pavements: Design & Economics. *98th Annual Meeting of the Transportation Research Board (TRB) of National Academics for Science and Engineering*. Washington DC, USA.
- [25]. Swarna, S.T., **Hossain, K.** (2018). Effect of Interface Bonds on Pavement Performance. Innovation and Technology: Evolving Transportation. *Transportation Association of Canada (TAC) Annual Conference*. Saskatoon, SK, Canada.
- [26]. Safiuddin, Md., **Hossain, K.**, Collins, C. M. (2018). Potential Applications of Self-Cleansing Nano Lotus Leaf Biomimicked Coating in Different Construction Sectors. 7th International Materials Specialty Conference, Canadian Society for Civil Engineering. Fredericton, NB, Canada
- [27]. Ali, A., **Hossain, K.**, Dhasmana, H., Safiuddin, M., Bazan, C., Hussein, A. (2018). Field Inspection and Classification of Pavement Distresses of St. John's City in Newfoundland Canada. 7th International Materials Specialty Conference, Canadian Society for Civil Engineering. Fredericton, NB, Canada
- [28]. **Hossain K.**, Karakas A, Singhvi P, Ozer H, Al-Qadi I. (2018). Effect of Aging and Rejuvenation on Surface Free Energy Measurements and Adhesive Property of Asphalt Binder. 97th Annual Conference of *Transportation Research Board (TRB) of National Academies of Science and Engineering*. Washington DC, USA.

- [29]. Safi, F., **Hossain, K.**, Wu, S., Ozer, H., Al-Qadi, I. (2018). A Model to Predict Creep Compliance of Asphalt Mixtures. 97th Annual Conference of *Transportation Research Board (TRB) of National Academics of Sciences and Engineering*, Washington, DC, USA
- [30]. Usaman T, Fu L, **Hossain, K.** (2018). Field Validation of Road Salt Model". *97th Annual Conference of Transportation Research Board (TRB) of National Academies of Science and Engineering*. Washington DC, USA
- [31]. Liu, Q., **Hossain, K.**, Baaj, H., Tighe, L., Shalaby, A. (2017). Field Assessment of Three-Dimensional Surface Texture and Frictional Properties of Experimental Canadian Road Pavements. *World Conference on Pavement and Asset Management*, June 12-16, Milan, Italy
- [32]. Muresan, M., **Hossain, K.**, Fu, L., Xie, R. (2017). Survey of Current Winter Maintenance of Parking Lots and Sidewalks in Municipals of Canada and the United States *Transportation Research Board 96th Annual General Meeting*, Jan 8-12, Washington DC, USA
- [33]. Moghaddam, T. B., H. Baaj, **Hossain, K.** (2016). Adoption of Statistical Analysis to Evaluate the Permanent Deformation of Polyethylene Terephthalate (PET) Modified Asphalt Mixtures. *Transportation Association of Canada Conference*, Sept. 24, Toronto, ON, Canada
- [34]. Hosseini, F., **Hossain, K.**, Fu, L., Li, D. S. (2016). Effect of Granularity of Materials and Pre-treatment on Deicing Performance. Proceeding of Transportation Research Board Conference. *95th Annual Conference of Transportation Research Board (TRB) of National Academies of Sciences and Engineering*, Washington DC, United States
- [35]. Muresan, M., **Hossain, K.**, Fu, L., Law, B. (2016). Survey of End-Users' Level of Service Requirements for Snow Control for Parking Lots and Sidewalks at Different Establishments in Canada. Proceeding of Transportation Research Board Conference. *95th Annual Conference of Transportation Research Board (TRB) of National Academies of Sciences and Engineering*, Washington DC, United States
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- [38]. **Hossain, K.**, Fu, L., Li, D. T., Kabir, S. (2015). Effect of Pavement Types on Snow Melting Performances of Salts. Proceeding of Transportation Research Board Conference. *94th Annual Conference of Transportation Research Board (TRB) of National Academics of Sciences and Engineering*, Washington DC, United States
- [39]. **Hossain, K.**, Fu, L., Li, D. S., Donnelly, T. (2015). Modeling the Snow Melting Performance of Road Salt: A Mechanistic-Empirical Approach. *American Society of Civil Engineers (ASCE) Cold Region Engineering. 16th International Conference on Cold Regions Engineering*, Salt Lake City, UT, United States
- [40]. Muresan, M\*, **Hossain, K.**, & Fu, L. (2015). A Model-Based Evaluation of an ECO-Driving System Using Connected Vehicle Technologies. *CSCE Annual Conference*. May

27-30, Regina, SK, Canada

- [41]. **Hossain, K.**, Fu, L., & Hosseini, F. (2015). A Large Scale Field Test for Snow and Ice Control in Parking Lots. *CSCE Annual Conference*. May 27-30, Regina, SK, Canada
- [42]. **Hossain, K.**, Fu, L., & Li, S.D. (2015). Modeling the Effect of Traffic on the Snow Melting Performance of Salts'. *Proceedings of the 94th Annual Conference of the Transportation Research Board*. Jan 11-15, Washington DC, USA
- [43]. **Hossain, K.**, Fu, L., Li, D. T., Kabir, S. (2015). Effect of Pavement Types on Snow Melting Performances of Salts. *Proceeding of Transportation Research Board Conference. 94th Annual Conference of Transportation Research Board (TRB) of National Academics of Sciences and Engineering*, Washington DC, USA
- [44]. **Hossain, K.**, Fu, L., Li, Donnelly, T., & Lamb, Z. (2015). To Pre-wet, or Not to Pre-wet: a Field Investigation. *Proceedings of the 94th Annual Conference of the Transportation Research Board*. Jan 11-15, Washington DC, USA
- [45]. **Hossain, K.**, Fu, L., Law, B. (2014). Winter Contaminants in Pavements: Classification, Friction Characteristics, and Slipping Risk. *Proceeding of Transportation Research Board Conference. 93<sup>rd</sup> Annual Conference of Transportation Research Board (TRB) of the National Academics of Sciences and Engineering*, Washington DC, United States
- [46]. **Hossain, K.**, Fu, L., Oleson, J. A. (2014). Experimental Study on Effectiveness of Anti-icing Operations. *Proceeding of Transportation Research Board Conference. 93rd Annual Conference of Transportation Research Board (TRB) of National Academies of Sciences and Engineering*, Washington DC, United States
- [47]. **Hossain, K.**, Fu, L. & Lake, R. (2014). A Comparison of Alternative Chemicals for Deicing Operations. *Proceedings of the 93rd Annual Conference of Transportation Research Board*. Jan 12-16, Washington DC, USA
- [48]. **Hossain, K.**, Fu, L., & Law, B. (2014). Parking Lots and Sidewalks under Winter Snow Events: Classification, Friction Characteristics, and Slipping Risk. *Proceedings of the 93rd Annual Conference of Transportation Research Board*. Jan 12-16, Washington DC, USA
- [49]. Fu, L., Omer, R., **Hossain, K.**, Jiang, C. (2013). An Experimental Study of Snow-Melting Performance of Salt for Snow and Ice Control of Parking Lots. *Proceeding of Transportation Research Board Conference. 92nd Annual Conference of Transportation Research Board (TRB) of National Academies of Sciences and Engineering*, Washington DC, United States
- [50]. Kwon, T., Fu, L., & **Hossain, K.** (2012). Effect of Inclement Weather Conditions on Macroscopic Traffic Behavior. *Proceedings of the 9th International Transportation Specialty Conference. Canadian Society of Civil Engineering*. June 6-9, Edmonton, Alberta, Canada

### 19.5 Peer-reviewed Abstracts/Extended Abstracts/Posters

- [51]. Ahmed, R., **Hossain, K.** (2018). Laboratory Characterization of WCO Rejuvenated Asphalt Binders. ASCE-T&DI International Airfield & Highway Pavements Conference, Chicago, IL, USA
- [52]. **Hossain, K.**, Karakas, A., Singhvi, P., Ozer, H., Al-Qadi, I. (2018). Effect of Aging and Rejuvenation on Surface Free Energy Measurements and Adhesive Property of Asphalt Binder. 97th Annual Conference of Transportation Research Board (TRB) of National Academies of Science and Engineering. Washington DC, USA

- [53]. Safi, F., **Hossain, K.**, Wu, S., Ozer, H., Al-Qadi, I. (2018). A Model to Predict Creep Compliance of Asphalt Mixtures. 97th Annual Conference of Transportation Research Board (TRB) of National Academies of Science and Engineering. Washington DC, USA
- [54]. Singhvi, P., **Hossain, K.**, Karakas, A., Ozer, H., Al-Qadi, I. (2017). Impact of Rejuvenators on the Binder Rheological and Chemical Characterization of Recycled AC Mixtures. American Society of Civil Engineers (ASCE) International Conference on Highway Pavements and Airfield Technology, Philadelphia, PA, USA. (Abstract and poster).
- [55]. **Hossain, K.**, Al-Qadi, I., Ozer, H. (2017). Pros and Cons of New Technologies Employed in Asphalt Binder Study. American Society of Civil Engineers, International Conference on Highway Pavements & Airfield Technology, August 27-30, Philadelphia, PA, USA. (Abstract and poster).
- [56]. **Hossain, K.**, Al-Qadi, I., Ozer, H. (2017). Effect of Heat Types on Asphalt Binder Morphology. American Society of Civil Engineers, International Conference on Highway Pavements & Airfield Technology, August 27-30, Philadelphia, PA, USA. (Abstract).
- [57]. **Hossain, K.**, Al-Qadi, I., Ozer, H. (2017). Effect of Thermal Aging on Asphalt Binder Using Environmental Scanning Electron Microscopy (ESEM). American Society of Civil Engineers (ASCE) International Conference on Highway Pavements and Airfield Technology, Philadelphia, PA, USA. (Abstract).
- [58]. Espinoza, A., **Hossain, K.**, Safi, F., Ozer, H., Al-Qadi, I. (2017). Evaluating Effect of Mix Formula Changes on Complex Modulus and Fracture Properties of Danish SMA Graded Asphalt Mixes. 92nd Annual Meeting and Technical Sessions of Association of Asphalt Paving Technology (AAPT), Long Beach, California, USA. (Abstract).

### 19.6 Project Reports

- [59]. **Hossain, K.** (2018). Applications of Tire Derived Aggregate in Newfoundland. Submitted to Multi-Materials Stewardship Board of Government of Newfoundland and Labrador. St. John's, NL, Canada
- [60]. **Hossain, K.**, Fu L. (2014). Optimal Snow and Ice Control for Parking Lot and Sidewalk Pavements. Submitted to Landscape Ontario, Milton, ON and SIMA, Wisconsin, USA
- [61]. Omer, R., Fu, L., **Hossain, K.**, Muresan, M., Hosseini, F. (2014). Evaluation and Optimization of Winter Pavement Maintenance of Railway Platforms. Submitted to Metrolinx, Toronto, ON
- [62]. **Hossain, K.**, Fu, L., Hosseini, F. (2014). Evaluation of Organic Additives for Anti-icing on Transportation Facilities. Submitted to Toronto Region Conservation Authority, Toronto, ON

### 19.7 Selected Oral Presentations/Talks/Lectures

- [63]. **Hossain, K.** "Effect of UV Aging on Rheological Properties of Asphalt Cement". 63<sup>rd</sup> Annual Meeting, Canadian Technical Asphalt Association (CTAA), Regina, SK, Nov. 14, 2018
- [64]. **Hossain, K.** "A Mechanistic Study of Two-Lift Concrete Pavements: Design & Economics". 98th Annual Meeting of Transportation Research Board (TRB) of National Academies for Science and Engineering, LECTERN Session. Washington DC, USA, Jan. 16, 2019

- [65]. **Safi, F. et al.** “Total Recycled Asphalt (TRA) Mixes’ Characteristics and Field Performance”. 98th Annual Meeting of the Transportation Research Board (TRB) of National Academies for Science and Engineering. Lectern Session. Washington DC, USA, Jan. 15, 2019
- [66]. **Hossain, K.** “Research Initiative for Sustainable Road Pavements for Newfoundland”, Transportation Committee of Memorial University, St. John’s, NL, May 31, 2018
- [67]. **Hossain, K.** “Sustainable Pavements and Winter Road Maintenance for Newfoundland”, Department of Public Works of City of St. John’s, March 23, 2018
- [68]. **Hossain, K.** “Pavement Research Initiatives for NL”, Department of Planning, Engineering & Regulatory Services, The City of St. John’s, Dec. 23, 2017
- [69]. **Hossain, K.** “Sustainable Pavements Materials, Designs and Performance Data”, Department of Physics and Oceanography, Memorial University, St. John’s, NL, Nov. 29, 2017
- [70]. **Hossain, K.** “Sustainable Pavements Designs: Data Need”, Stantec Inc., St. John’s, Nov. 21, 2017
- [71]. **Hossain, K.** “Advanced Data for Sustainable Pavement Designs”, DalTrack, Department of Civil Engineering, Dalhousie University, Halifax, NS, Nov. 14, 2017
- [72]. **Hossain, K.** “Protocol for Long-Term Aging of Asphalt Mixture using Semi-Circular Bending Test”, Illinois Center for Transportation, Urbana, United States, 2017
- [73]. **Hossain, K.** “Predicting Pavement Surface Temperature Using Metrological Data”, American Society of Civil Engineers (ASCE) Cold Regions Engineering Conference, Salt Lake City, Utah, USA, 2015
- [74]. **Hossain, K.** “A Mechanistic-Empirical Model for Predicting Deicing Performance of Road Salts”, American Society of Civil Engineers (ASCE) Cold Regions Engineering Conference, Salt Lake City, Utah, USA, 2015
- [75]. **Hossain, K.** “An Overview of Emerging Technologies for Sustainable Transportation”, Military Institute of Science and Technology, Dhaka, Bangladesh, 2015
- [76]. **Hossain, K.** “An Experimental Study on the Effectiveness of Anti-icing Operations on Asphalt Pavement”. 93<sup>rd</sup> Annual Conference of Transportation Research Board (TRB) of the National Academies of Sciences and Engineering, Lectern Session. Washington DC, USA, 2014
- [77]. **Hossain, K.** “Improving Winter Pedestrian Safety Through Optimal Deicing of Parking Lot and Sidewalk Pavements”, Presented at project sponsors’ meeting including Landscape Ontario, Region of Waterloo, Toronto Region Conservation Authority, and Snow and Ice Management Association from Wisconsin USA., Milton, Ontario, Canada, 2013

## 19.8 Dissertations

- [78]. PhD Thesis (2014): “Optimum Deicing and Anti-icing for Snow and Ice Control of Parking Lots and Sidewalks”, Department of Civil and Environmental Engineering, University of Waterloo, ON, Canada. **Committee Members: Dr. Liping Fu, Dr. Susan Tighe, Dr. Mark Knight, Dr. Boxin Zaho**

## 20. Other Information

### 20.1 Graduate and Postgraduate Research Supervisors

- Dr. Liping Fu, University of Waterloo, ON, Canada
- Dr. Hassan Baaj, University of Waterloo, ON, Canada
- Dr. Susan Tighe, University of Waterloo, ON, Canada
- Dr. Imad Al-Qadi, University of Illinois at Urbana-Champaign, IL, USA

### 20.2 Program and Course Development Activities

Initiative	Role	Supported by	Status
Advanced Road and Transportation Engineering Lab at MUN	Lead	Dean FEAS, Dept Head of Civil Engineering	In progress
Memorial University Road Research Program	Lead	Dean FEAS, Departmental Head of Civil Engineering	In progress
Graduate course on Sustainable Infrastructure Management	Instructor	Departmental Head of Civil Engineering	In progress

### 20.3 Technical Reviewer of Journals and Proceedings

- Transportation Research Record - Journal of Transportation Research Board (TRB) of National Academies of Sciences and Engineering
- Journal of Civil Engineering Materials, ASCE
- Canadian Journal of Civil Engineering (CJCE), National Research Press
- International Journal of Pavement Engineering, Tylor & Francis
- Construction and Building Materials, Elsevier
- Journal of Testing and Evaluation, ASTM
- Journal of Materials, Journal of Sustainability, Journal of Applied Sciences, MDPI
- Wiley and Blackwell Publications
- Conference Proceeding of Canadian Society for Civil Engineering (CSCE)
- Conference Proceeding of American Society of Civil Engineers (ASCE)
- Conference Proceeding of Transportation Association of Canada (TAC)
- Conference Proceeding of World Conference on Transport Research (WCTR)

### 20.3 Other Contributions to Societies/Organizations

- TRB Workshop Organizers
- AHD25, White Paper on Asphalt Sealant Technology Committee
- RILEM RC62 Research Contributor
- Vice President Communication, PMI Canada's Technology Triangle Chapter
- Vice President Communication, Civil and Environmental Engineering Student Association, University of Waterloo