Priyanka Sarker

3212 Nathan Newmark CE Lab, 205 N Mathews Ave, Urbana, IL 61801
psarker2@illinois.edu . www.priyankasarker.com . (330) 786-6765

EDUCATION

Ph.D. Candidate (ABD) in Civil and Environmental Engineering **May 2019**
University of Illinois at Urbana-Champaign

- Dissertation: "Analyses and Prediction of Granular Layer Rutting Trends in Airport Pavements due to Heavy Aircraft Wheel Loading and Wander Patterns"

M.S. in Civil Engineering **Aug 2012**
University of Akron

- Thesis: "Nighttime Visibility of Raised Pavement Markers and Wet Pavement Markings under Service Conditions"

B.Sc. in Civil Engineering **March 2009**
Bangladesh University of Engineering and Technology

- Thesis: "Numerical Simulation of Flexural Behavior of FRP strengthened RC Beams with ABAQUS"

SUMMARY OF RECORDS

Journal articles – **5** *(all published as the solo and/or lead graduate student)*
Research reports- **5**
Conference presentations– **12**
Grants – **1 (**Award amount $10,000, **successful**)

RESEARCH EXPERIENCE

Research Assistant, Civil and Environmental Engineering **Aug 2012-Present**
University of Illinois at Urbana-Champaign

2014-G-009: A Stress History Based Approach for Predicting Deformation Potentials of Granular Base and Subbase Layers in Airport Pavements; Funded by Federal Aviation Administration (FAA)

- Developed a data-driven airfield pavement damage evaluation approach using Full Scale Accelerated Pavement Testing database from the FAA's instrumented test facility called National Airport Pavement Test Facility (NAPTF) in New Jersey to predict deformation potentials of base/subbase granular layers airport pavements subjected to new-generation aircraft loading applied with wanders.

ICT R27-130: Nondestructive Testing Based Mechanistic-Empirical (ME) Pavement Overlay Design Development; Funded by Illinois Department of Transportation

- Developed mechanistic design concepts based Hot Mix Asphalt (HMA) overlay thickness design procedures using nondestructive Falling Weight Deflectometer (FWD) testing to improve Illinois Department of Transportation's (IDOT) current Pavement Management system.
- Led a team of research engineers and technicians to conduct FWD testing in 20 different locations in five different counties in Illinois.

ICT R27-168: Field Performance Evaluation of Sustainable Aggregate Byproduct Applications; Funded by Illinois Department of Transportation

- Participated in construction activities of full-scale test sections built with Quarry By-products (QB) or QB mix along with other typically used Illinois base course aggregates.

- Worked as a team member for maintaining quality control with nuclear density gauge, light-weight deflectometer, geo-gauge, and dynamic cone penetrometer.

ICT R27-124: Evaluation of Aggregate Subgrade Materials Used as Pavement Subgrade/ Granular Subbase; Funded by Illinois Department of Transportation

- Participated in construction activities of full-scale test sections built with typically used Illinois base course aggregates.
- Worked as a team member for maintaining quality control with nuclear density gauge, light-weight deflectometer, geo-gauge, and dynamic cone penetrometer.
- Helped with conducting initial rut measurement on constructed sections with customized slide-calipers dipstick.
- Conducted Falling Weight Deflectometer (FWD) tests on newly built pavement sections before trafficking started.
- Analyzed the FWD deflection basins to properly characterize the individual pavement layer properties.

Research Assistant, Civil Engineering **Aug 2010-July 2012**
University of Akron

FHWA/OH-2012/6: Performance Evaluation of Pavement Markings under Service Conditions; Funded by Ohio Department of Transportation

- Conducted feasibility and life cycle cost analyses study to evaluate the wet night performance of the various pavement markings to make recommendations regarding the future use of these materials in Ohio.

TEACHING EXPERIENCE

Teaching Assistant, Civil and Environmental Engineering **Aug 2014-Present**
University of Illinois at Urbana-Champaign
Courses: Transportation Soils (graduate level), Transportation Soil Stabilization (graduate level), and Transportation Engineering

- Taught classes as a substitute instructor in absence of the primary course instructor
- Graded assignments, term projects, and exam papers
- Tutored students with their assignments during office hour

Teaching Assistant, Civil Engineering **Aug 2010-July 2012**
University of Akron
Courses: Geotechnical Engineering Laboratory, Water Supply & Pollution Control, Statics, and Introduction to Civil Engineering

- Graded assignments, term reports, and exam papers
- Tutored students with their assignments during office hours

PROFESSIONAL EXPERIENCE

Civil Engineer, Engineering and Construction Management **June 2009- July 2010**
Bay Developments Ltd. Dhaka, Bangladesh

- Prepared engineering blueprints, Bill of Quantities (BOQ), and cost estimations using architectural and structural design drawings.
- Coordinated activities of surveyors, structural and geotechnical consultants and directing internal resources and vendors in the delivery of assigned construction tasks.
- Developed and maintained project database with timeline to track project status.

GRANTS

Airport Cooperative Research Program (ACRP) Graduate Research Award on Public-Sector Aviation Issues sponsored by Federal Aviation Administration (FAA) and Transportation Research Board (TRB) of National Academies of Sciences, Engineering and Medicine, $10,000 **2016-2017**

AWARDS

1. Winner (1st rank), 3-minute thesis competition: Concise Portrayal of Research Discovery to Non-specialist Audience Finalist, at the 98th Annual Meeting of Transportation Research Board of National Academies of Sciences, Engineering and Medicine **2019**
2. Ranked as an Excellent Teacher by Their Students, Civil & Environmental Engineering, University of Illinois at Urbana-Champaign **2018**
3. Top Ten Finalist, Society of Women Engineers (SWE) National Collegiate Rapid Fire Competition, WE17, Austin, TX ($500) **2017**
4. Paper selected as one of the theme papers of the 96th Annual Meeting of Transportation Research Board. *Theme: "Transportation Innovation: Leading the Way in an Era of Rapid Change"* **2017**
5. Selected to attend the Academic Leadership for Women in Engineering (ALWE) program, Collegiate Leadership Institute, Society of Women Engineers (SWE) **2016 & 2017**
6. ASSIST Travel Grant, National Science Foundation (NSF) ($4000) **2016 & 2017**
7. Selected to attend the Illinois Female Engineers in Academia Training (iFEAT) program, University of Illinois at Urbana-Champaign **2015**
8. Inducted Member of TAU BETA PI- The National Engineering Honor Society **2015**
9. Graduate School Fellowship, The University of Akron **2010-2012**
10. Board Scholarship, Bangladesh University of Engineering and Technology **2004-2009**

PUBLICATIONS

1. **Sarker, Priyanka**, and Erol Tutumluer. "Airfield Pavement Damage Evaluation Due to New-Generation Aircraft Wheel Loading and Wander Patterns." Transportation Research Record: Journal of the Transportation Research Board (2018).
2. Donovan, Phillip, **Priyanka Sarker**, and Erol Tutumluer. "Rutting prediction in airport pavement granular base/subbase: A stress history based approach." Transportation Geotechnics 9 (2016): 139-160.
3. **Sarker, Priyanka**, Debakanta Mishra, Erol Tutumluer, and Scott Lackey. "Overlay Thickness Design for Low-Volume Roads: Mechanistic-Empirical Approach with Nondestructive Deflection Testing and Pavement Damage Models." Transportation Research Record: Journal of the Transpiration Research Board 2509 (2015): 46-56.
4. Abbas, Ala R., **Priyanka Sarker**, and Andrew Frankhouser. "Performance Evaluation of Wet Pavement Markings in Ohio." Public Works Management & Policy 19 (2014): 180-197.
5. **Sarker, Priyanka**, Mahbuba Begum, and Sabreena Nasrin. "Fiber reinforced polymers for structural retrofitting: A review." J Civil Eng 39.1 (2011): 49-57

PEER REVIEWED CONFERENCE PRESENTATIONS

1. **Sarker, Priyanka,** Erol Tutumluer, and Navneet Garg. "Analyses of Airport Pavement Rutting Trends in FAA's NAPTF Construction Cycle 5 Pavement Test Sections." In ASCE International Conference on Highway Pavements and Airfield Technology, Chicago, IL 2019.
2. **Sarker, Priyanka**, Erol Tutumluer, and Navneet Garg. "Data Driven Rut Prediction Methodology for Airfield Flexible Pavements – Utilizing Full-Scale Accelerated Pavement Testing Data and General Linear Models." In Transportation Research Board 98th Annual Meeting. Washington, DC. 2019.
3. **Sarker, Priyanka,** Erol Tutumluer, and Navneet Garg. "Analyses and Prediction of Granular Layer Rutting Trends in FAA's NAPTF Construction Cycle 5 Pavement Test Section." In Transportation Research Board 97th Annual Meeting. Washington, DC. 2018.
4. **Sarker, Priyanka**, and Erol Tutumluer. "Airfield Pavement Damage Evaluation Due to New-Generation Aircraft Wheel Loading and Wander Patterns." In Transportation Research Board 97th Annual Meeting. Washington, DC. 2018.
5. **Sarker, Priyanka** and Erol Tutumluer. Investigation of Deformation Trends Observed in Pavement Test Section Unbound Aggregate Layers due to Heavy Aircraft Loading with Wander. In ASCE International Conference on Highway Pavements and Airfield Technology, Philadelphia, PA. 2017.
6. Donovan, Phillip, **Priyanka Sarker**, Erol Tutumluer. Rutting Prediction in Airport Pavement Granular Layers: A Stress History Based Approach. In The 3rd International Conference on Transportation Geotechnics. Portugal, 2016 (**Keynote Lecture**).
7. **Sarker, Priyanka**, Erol Tutumluer, and Scott Lackey. Nondestructive Deflection Testing based Mechanistic-Empirical Overlay Thickness Design Approach for Low Volume Roads: Case Studies. In The 3rd International Conference on Transportation Geotechnics. Portugal, 2016.
8. **Sarker, Priyanka** and Erol Tutumluer. Falling Weight Deflectometer (FWD) Testing based Mechanistic-Empirical Overlay Thickness Design Approach for Low Volume Roads in Illinois. In ASCE International Conference on Transportation & Development. Houston, TX. 2016.
9. Kazmee, Hasan, **Priyanka Sarker**, and Erol Tutumluer. Nondestructive Testing Based Design Considerations for Low Volume Roads Utilizing Unconventional Aggregate Subgrade Layers. In Geotechnical and Structural Engineering Congress, Phoenix, AZ. 2016.
10. **Sarker, Priyanka**, Debakanta Mishra, Erol Tutumluer, and Scott Lackey. Overlay Thickness Design for Low-Volume Roads: Mechanistic-Empirical Approach with Nondestructive Deflection Testing and Pavement Damage Models. In Transportation Research Board 94th Annual Meeting. Washington, DC. 2015.
11. **Sarker, Priyanka**, Ala R. Abbas, Paul Singh, and Jim Roth. Wet Night Performance of Pavement Markings in Ohio. In Transportation Research Board 91st Annual Meeting. Washington, DC. 2012.
12. Nasrin, Sabreena, Mahbuba Begum, and **Priyanka Sarker**. Fiber Reinforced Polymers for Structural Rehabilitation. The Third International Conference on Structure, Processing and Properties of Materials. Dhaka, Bangladesh. 2010.

RESEARCH REPORTS

1. Tutumluer, Erol, and **Priyanka Sarker**. "Development of Improved Overlay Thickness Design Alternatives for Local Roads". Illinois Center for Transportation/Illinois Department of Transportation, 2015.
2. Tutumluer, Erol, and **Priyanka Sarker**. "Development of Improved Pavement Rehabilitation Procedures Based on FWD Backcalculation." NEXTRANS Project 094IY04, USDOT Region V Regional University Transportation Center, 2015.
3. **Sarker, Priyanka**, and Erol Tutumluer "Falling Weight Deflectometer Testing for Overlay Thickness Design for Stabilized Subbase." Preliminary Testing Report Submitted to Ogle Highway Department, Ogle County, Illinois, November 2013.
4. Mishra, Debakanta, **Priyanka Sarker**, and Erol Tutumluer "Falling Weight Deflectometer Testing for Overlay Thickness Design." Preliminary Testing Report Submitted to Ogle County Highway Department, Ogle County, Illinois, September 2013.
5. Abbas, Ala R., and **Priyanka Sarker**. "Nighttime Visibility of 3M AWP and 3M 380WR ES Durable Tape Under Dry, Wet, and Rainy Conditions." Report No. FHWA/OH-2012/6. Ohio Department of Transportation, Research & Development, 2012.

INVITED TALKS

1. **Sarker, Priyanka,** and Erol Tutumluer. "Airfield Pavement Damage Evaluation Due to New-Generation Aircraft Wheel Loading and Wander Patterns." In AV070 Aircraft/Airport Compatibility committee meeting, 97th Annual Transportation Research Board Meeting. Washington, DC. 2018.
2. **Sarker, Priyanka.** Airfield Pavement Damage Evaluation Due to New-Generation Aircraft Wheel Loading and Wander Patterns. At Society of Women Engineers' Annual Conference (WE'17), Austin, TX. 2017.
3. **Sarker, Priyanka.** Analyses and Prediction of Granular Layer Rutting Trends in FAA'S NAPTF Construction Cycle 5 Pavement Test Sections. In Kent Seminar, Illinois Center of Transportation, Rantoul, IL. 2017.
4. **Sarker, Priyanka.** Analyses of Airfield Pavement Rutting Trends due to Heavy Aircraft Wheel loading with Wander. In 6th International Transportation PhD Student Symposium, Champaign, IL 2017.
5. **Sarker, Priyanka.** Mechanistic Design Based Overlay Thickness Design for Low-Volume Roads in Illinois using Nondestructive Testing. In the Symposium of Women Exploring Graduate Opportunities in Civil and Environmental Engineering. University of Illinois at Urbana-Champaign, Champaign, IL. 2016. (Poster)
6. **Sarker, Priyanka.** Overlay Thickness Design for Low Volume Road: A Mechanistic-Empirical Approach with Nondestructive Deflection Testing. In Kent Seminar, Illinois Center of Transportation, Rantoul, IL. 2014.
7. **Sarker, Priyanka**. Development of Improved Overlay Thickness Design Alternatives for Local Roads. In 2nd International Transportation PhD Student Symposium, Champaign, IL 2013.

LEADERSHIP

- **Young Member,** AV070 Aircraft/Airport Compatibility Committee of the Transportation Research Board of the National Academies of Sciences, Engineering, & Medicine. **2018-present**

	• **Communications Chair,** Fundraising Subcommittee, Society of Women Engineers, Graduate Community (GradSWE) at Illinois	**2016-2017**
	• **Secretary,** American Society of Civil Engineers Transportation and Development Institute School Chapter at Illinois, (ASCE T&DI School Chapter)	**2016- 2017**
	• **Social Media Coordinator,** American Society of Civil Engineers (ASCE) Transportation and Development Institute (T&DI) Highway & Pavement Committee	**2015- 2016**
COMMUNITY OUTREACH	• **Cultural Event Coordinator,** Bangladeshi Student Association at Illinois, University of Illinois at Urbana-Champaign	**2017 and 2018**
	• **Volunteer and Fundraising Coordinator,** weSTEM (Women Empowered in STEM) Conference, Champaign, IL	**2017**
	• **Volunteer and Coordinator,** The Symposium of Women Exploring Graduate Opportunities in Civil and Environmental Engineering. University of Illinois at Urbana-Champaign	**2016**
	• **Volunteer,** Illinois Bituminous Paving Conference	**2013-2015**
	• **Volunteer,** Illinois Transportation and Highway Engineering Conference	**2012 and 2015**
	• **Cultural Event Coordinator,** Bangladeshi Students Association, University of Akron	**2010-2012**
PROFESSIONAL SERVICE	• **Reviewer,** Transportation Research Board of the National Academies of Sciences, Engineering, & Medicine	**2018- present**
	• **Reviewer,** International Journal of Pavement Research and Technology, Elsevier publications	**2018-present**
	• **Judge,** Engineering Category, The Undergraduate Awards	**2017-2018**
	• **Reviewer,** Transportation Geotechnics, Elsevier publications	**2014- present**
PROFESSIONAL AFFILIATIONS	• American Society of Civil Engineers (ASCE)	**2010- present**
	• Institute of Transportation Engineers (ITE)	**2010-present**
	• Society of Women Engineers (SWE)	**2016-present**
MENTORING	• Sandhya Pai, Wenjing Li, and Sina Anesteh (Graduate)	**2016-2018**
	• Yuxuan Chen and Yexiao Zhang (Undergraduate)	
WORKSHOP	• **Teaching Workshop**, Teaching Assistant Training Program, The Graduate Academy for College Teaching, Center for Innovation in Teaching & Learning, University of Illinois at Urbana-Champaign, Champaign, IL, 2014	
CERTIFICATIONS	• **Engineer in Training (EIT)** Since May 2012.	