LIANG CHERN CHOW

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EDUCATION

M.Sc., Civil Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 2014
B.Sc., Civil Engineering, University of Minnesota – Twin Cities, Minneapolis, MN, 2011

PROFESSIONAL REGISTRATION

Professional (Civil) Engineer, Minnesota (2016), California (2022)

PROFESSIONAL EXPERIENCE

Geotechnical Project Manager at Haley & Aldrich, Inc., Walnut Creek, CA, **2021 - present**
Geotechnical Engineer at American Engineering Testing, Inc., Saint Paul, MN, **2014 - 2021**
Design Engineer at Pintaras Jaya Bhd, Shah Alam (Malaysia), **2012**

RESEARCH EXPERIENCE

Co-Principal Investigator
American Engineering Testing, Inc., Saint Paul, MN Oct 2017 - Sep 2021
Aurora Solar Farm Frost Monitoring Project

- Investigated frozen soil-structural interaction of solar tracker pile foundations at six solar farms across Minnesota for five consecutive winters (until 2024). Performed literature review, planned, procured, subsurface investigation, field instrumentation, and creep testing programs of frozen soil samples.
- Used Python to reduce time-series data and developed correlations between measured frost, strain, and atmospheric data based on theoretical framework; prepared annual technical reports.

Eisenhower Bridge of Valor H-Piles Downdrag Monitoring Study

- Led geotechnical instrumentation monitoring program and dynamically tested four instrumented H-piles with PDA to various end-fixity conditions under the new abutment structure over the Mississippi River.
- Processed 3½ year of pile strain and settlement monitoring data and adopted current downdrag framework to calibrate resistance factors for bridge design in Minnesota.
- The success of the study won the American Council of Engineering Companies of Minnesota (ACEC/MN) 2020-2021 Engineering Excellence Award.

Graduate Research Assistant, Advisor: Dr. Erol Tutumluer,
University of Illinois at Urbana-Champaign, Dept. of Civil & Environmental Eng. Aug 2012 - Jul 2014
Permanent Deformation Behavior of Unbound Granular Materials and Rutting Model Development

- Studied the effects of permanent strain accumulations under cyclic triaxial loading with respect to mobilized shear stress over shear strength for sixteen granular materials of different origins/quarries.
- Analyzed and interpreted experimental data for developing the UIUC rutting model by using multiple linear regression technique with MATLAB; performed parametric study and calibrated regression coefficients with different gradations and imaging features.

PhD Student: Alfonso Cerna-Diaz, Advisor: Dr. Scott Olson Summer 2014
Evaluation of Cyclic Behavior of Dense Sands under Multidirectional Loading using Centrifuge Tests

- Processed bender element signal data using SeismoSignal program and derived seismic parameters.

Undergraduate Research Assistant
University of Minnesota – Twin Cities, Dept. of Civil & Environmental Eng.
Dr. Joseph Labuz Geomechanics Research Group Aug 2010 - May 2011
Undrained Behavior of a Granular Material subjected to a Freeze-Thaw Cycle

- Performed triaxial consolidated-undrained testing on two prepared frozen (then thawed at room temperature) specimens to study the mechanical response of saturated, densely compacted granular soil under rapid loading.
- Prepared report and presentation for the MnDOT Office of Materials & Road Research.

Dr. Lev Khazanovich's Pavement Research Group June 2010
The Effects of Implements of Husbandry on Pavement Performance
- Assisted graduate students in field installation of strain gage and pressure cells on pavement asphalt concrete and field data collection at the MnROAD research facility.

Dr. John Hourdos, Minnesota Traffic Observatory May 2010 - Mar 2011
- Field study of pedestrian and bicyclist risk in Minnesota roundabout crossings using video recording.
- Assisted in traffic modeling and simulating Twin Cities metropolitan freeway traffic flow by using Aimsun 6.

Dr. David Levinson's Research Group Mar 2010 - May 2010
Metropolitan Travel Survey Archive: Phase II
- Developed VBA and batch scripts to convert travel survey data for online analysis database.

Dr. Julian Marshall's Research Group Jul 2009 - Feb 2010
Undergraduate Research Opportunity Program
Impact of Emission Reduction on Exposures and Exposure Distribution
- Programmed in C++ and Portable Batch Script to execute CAMx for modeling air pollution in California's South Coast Air Basin.
- Prepared report and poster presentation at the 2010 Undergraduate Symposium.

PROFESSIONAL SERVICES

2023	Planning Committee, Uni. of Minn. 72nd Geotechnical Engineering Conference
2023	Past-President, Minnesota Geotechnical Society (2023 G-I Chapter Achievement Award)
2022	President, Minnesota Geotechnical Society
2022	Planning Committee, Uni. of Minn. 71st Geotechnical Engineering Conference
2021	Vice President, Minnesota Geotechnical Society
2021	Planning Committee, Uni. of Minn. 70th Geotechnical Engineering Conference
2020	Program Chair, Minnesota Geotechnical Society
2019 - present	Member, ASCE Geo-Institute (National) Soil Improvement Technical Committee
2019	Secretary, Minnesota Geotechnical Society

AWARDS & HONORS

2021	ACEC/MN, Engineering Excellence Awards
2020	National Science Foundation, NSF Graduate Research Fellowship (Honorable Mention)
2016	International Assoc. of Foundation Drilling (ADSC), Ohio Valley Thomas A. Buzek Scholarship
2016	Federal Highway Administration, Dwight David Eisenhower Graduate Fellowship
2009, 2010, 2011	University of Minnesota, Department of Civil Engineering Scholarship
2009, 2010, 2011	University of Minnesota, Sommerfled Undergraduate Scholarship
2009	University of Minnesota, Undergraduate Research Opportunity Program

CERTIFICATES & CONTINUING EDUCATION

2023	ML Specialization, Coursera
2022	Machine Learning, Kaggle
2021	Using Python for Research, PH526X, edX: HarvardX
2021	Vibrations and Waves, 8.03x, edX: MITx
2020	Reservoir Geomechanics (audit), Geophysx0001, edX: Stanford Online
2020	Fourier Series and Partial Differential Equations (audit), 18.03Fx, edX: MITx
2019	High-Strain Dynamic Foundation Testing, Pile Dynamics, Inc.
2019	NOLS Wilderness Medicine, Wilderness First Responder

2016	Rock Mechanics, CEGE 4311, University of Minnesota-Twin Cities
2015	Structural and Geotechnical Instrumentation, Campbell Scientific, Inc.
2015	*FLAC/FLAC 3D* Finite Difference Modeling, Itasca Consulting Group
2014	*GeoStudio* Geotechnical Finite Element Modeling, Geo-Slope International, Ltd

PUBLICATIONS

Peer-Reviewed Journal Papers

1. Qamhia, I, **Chow, LC**, Mishra, D, Tutumluer, E, (2017). "Dense-graded aggregate base gradation influencing rutting model predictions," Pavement Geomechanics Special Issue, *Transportation Geotechnics*, 13, 43-51: https://doi.org/10.1016/j.trgeo.2017.07.002
2. Qamhia, I, Tutumluer, E, **Chow, LC**, Mishra, D, (2016). "A framework to utilize shear strength properties for evaluating rutting potentials of unbound aggregate materials," *Procedia Engineering*, 143, 911-920: https://doi.org/10.1016/j.proeng.2016.06.155
3. **Chow, LC**, Mishra, D, Tutumluer, E (2014). "Framework for development of an improved unbound aggregate base rutting model for mechanistic-empirical pavement design," *Transportation Research Record: Journal of the Transportation Research Board*, No. 2401, 11-21: https://doi.org/10.3141/2401-02

Peer-Reviewed Conference Papers

1. Dasenbrock, DD and **Chow, LC** (2023). "Comparing downdrag design: Eisenhower Bridge of Valor," Proceedings of the University of Minnesota 71st Annual Geotechnical Engineering Conference.
2. Dasenbrock, DD, **Chow, LC**, Van Heuveln, D (2021). "Evolution of the dragload behavior during construction of four H-piles with different top load and end fixity conditions at a bridge abutment with embankment fill," *International Foundations Conference and Equipment Expo 2021*, ASCE, May 10-14, Dallas, TX: https://doi.org/10.1061/9780784483404.031
3. **Chow, LC**, Han, J, Reuter, GR (2020). "Field monitoring of negative skin friction on rigid inclusion columns under embankments," *Geo-Congress 2020*, ASCE, GSP, February 25-28, Minneapolis, MN: https://doi.org/10.1061/9780784482780.052
4. **Chow, LC**, Bentler, JG, Potter-Weight, A, Eller AJ (2020). "An overview of instrumentation and monitoring framework for rigid inclusions under embankments," Proceedings of the *University of Minnesota 68th Annual Geotechnical Engineering Conference*, February 27, Minneapolis, MN: https://doi.org/10.1061/9780784482841.013
5. **Chow, LC**, Bentler, JG, Lamb RA (2019). "Primary and post-surcharge secondary settlements of a highway embankment constructed over highly organic soils: a case history," *8th International Conference on Case Histories in Geotechnical Engineering*, Geo-Congress 2019, ASCE, March 24-27, Philadelphia, PA: https://doi.org/10.1061/9780784482070.011
6. Lamb, RA, **Chow, LC**, Bentler, JG (2018). "U.S. highway 14 embankment over soft soils – success with ground improvement and modern instrumentation," Proceedings of the *University of Minnesota 66th Annual Geotechnical Engineering Conference*, February 23, St. Paul, MN.
7. **Chow, LC** and Bentler, JG (2016). "Design and instrumentation of a widened interstate embankment constructed over soft floodplain soils," Proceedings of the *University of Minnesota 64th Annual Geotechnical Engineering Conference*, March 4, St. Paul, MN.
8. Mishra, D, **Chow, LC**, Tutumluer E (2015), "New model for improved rutting prediction in unbound aggregate layers for mechanistic-empirical pavement design," Proceedings of the *15th Pan-American Conference on Soil Mechanics and Geotechnical Engineering*, November 15-18, Buenos Aires, Argentina: https://doi.org/10.3233/978-1-61499-603-3-162
9. **Chow, LC**, Mishra, D, Tutumluer, E (2014). "Laboratory characterization of North Carolina base course aggregates for permanent deformation model development and calibration," Proceedings of the *12th ISAP Conference on Asphalt Pavement*, Raleigh, NC: eBook ISBN: 9780429226779

Technical Reports

1. **Chow, LC** and Bentler, JG (2018-2020). "Frost and foundation pile monitoring," Final Report, AET No. 01-07278.01, 01-20265.01-05, Submitted to Enel Green Power NA and BlackRock, Inc.
2. **Chow, LC,** Mishra, D, Tutumluer, E (2014). "Aggregate base course material testing and rutting model development," Final Report, FHWA/NC/2013-18, Submitted to NCDOT.

3. **Chow, LC,** and Labuz, JF (2011). "Undrained response of a granular base material subjected to freeze-thaw," Final Report, Submitted to MnDOT: Office of Materials and Road Research.

Invited Lectures & Presentations

1. "Evaluating the performance of retaining walls and embankments," Transportation Research Board (TRB) Webinar, September 15, 2021.
2. "Performance monitoring for drilled displacement rigid inclusions under embankments," Geo-Congress 2020, Minneapolis, MN, February 27, 2020.
3. "Myth Crushers: tertiary or secondary compressions?" Minnesota Geotechnical Society, Roseville, MN, January 15, 2020.
4. "Primary and post-surcharge secondary settlements on highly organic soils," Geo-Congress 2019, Philadelphia, PA, March 25, 2019.
5. "Nicollet bypass – instrumented embankment," University of Minnesota 66th Geotechnical Engineering Conference, St. Paul, MN, February 23, 2018.
6. "Field instrumentation and measurement in geotechnical applications," G&P Professionals Sdn. Bhd, Kuala Lumpur, Malaysia, November 24, 2017.
7. "Geotechnical instrumentation and monitoring systems," American Engineering Testing, Inc., St. Paul, MN, November 3, 2017.

VOLUNTEER & COMMUNITY SERVICE

2022	Dinghy Instructor, Cal Sailing Club, Berkeley, CA
2022 Summer	Volunteer, Summer at the Hidden Cafe, Berkeley, CA
2019 - 2021	Volunteer, Hennepin County Medical Reserve Corp, Minneapolis, MN
2018, 2019	Judge, GeoWall Regional Competition in Minnesota
2016 - 2018	Mathematics Grader, MATHCOUNTS multiple Chapter and State Competitions in Minnesota
2016 - 2019, 2021	Volunteer, *Civil Engineering Day* at the Science Museum of Minnesota
2010, 2011	Tutor, University of Minnesota Department of Civil Engineering
2010, 2011	Disaster Action Team, American Red Cross – Twin Cities
2009	Program Coordinator, University of Minnesota Malaysian Student Association