

HYUN WOO “CHRIS” LEE, Ph.D., LEED AP BD+C

Associate Professor
Holder of P.D. Koon Professorship in Construction Management
Department of Construction Management (CM)
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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY
Ph.D., Engineering and Project Management Program in Civil Engineering 2012
M.S., Engineering and Project Management Program in Civil Engineering 2004

SEOUL NATIONAL UNIVERSITY, Seoul, Korea
B.S. in Engineering (Architectural Engineering) 1999

ACADEMIC POSITIONS

Associate Professor	University of Washington (UW)	2019 to date
P.D. Koon Professorship in Construction Management		2019 to date
Affiliated Faculty	Clean Energy Institute	2017 to date
Assistant Professor	University of Washington (UW)	2016 to 2019
Assistant Professor	Oregon State University (OSU)	2012 to 2015
Graduate Student Researcher	University of California, Berkeley	2009 to 2012
Graduate Student Instructor	University of California, Berkeley	2006
Graduate Student Researcher	University of California, Berkeley	2004 to 2005

INDUSTRY EXPERIENCE

Faculty Intern	Lease Crutcher Lewis, Seattle, WA	Summer 2017
Senior Estimator/Engineer	Shimmick Construction, Oakland, CA	2007 to 2010
Project Engineer	Tutor Perini Corporation, Las Vegas, NV	2006 to 2007
Consulting Intern	Peck & Hiller Company, Palo Alto, CA	2004
Field Engineer	Sambu Construction, Seoul, Korea	1999 to 2002

HONOR AND AWARDS

ASC Regional Teaching Award	2018
Excellence in Academic Research (UW CM)	2016, 2017, 2018
BE Collaboration Innovative	2017
2015 Outstanding Reviewer (ASCE J of CEM)	2016

NSF Travel Grant (CEC 2014)	2014
Early Career Award (ELECTRI International)	2013
Best Papers Award in IGLC 18	2010
1st Prize in Student Competition for Supply Chain Management, UC Berkeley	2004
Student CAD Competition, Seoul, Korea	
1st Prize in Presentation	1997
2nd Prize in Animation, and 3rd Prize in Presentation	1996

CLASSES TAUGHT

CM586	Utility Systems Construction	UW	2020
CM311	Construction Documents	UW	2020 to date
CM540	Sustainable Construction	UW	2017 to date
CM410	Construction Estimating II	UW	2016 to date
CM331	Construction Estimating I	UW	2016 to date
URBDP 498/ENGR 497, 297	Vertically Integrated Projects (co-teaching)	UW	2017
CEM342	Construction Estimating II	OSU	2013 to 2015
CE420/520	Engineering Planning	OSU	2014 to 2015
CCE529	Lean Construction	OSU	2012 to 2015
CCE102	Problem-solving and Technology	OSU	2013

EXTERNAL PROFESSIONAL SERVICE

Advisory Board, Lean Construction Journal	2020 to date
Assistant Specialty Editor, ASCE Journal of Construction Engineering and Management	2015 to date
Associate Editor, Journal of Built Environments	2017 to 2019
Associate Editor, Journal of Construction Engineering and Project Management	2015 to 2016
Journal Reviewer	
ASCE Journal of Construction Engineering and Management	
ASCE Journal of Management in Engineering	
ASCE Journal of Professional Issues in Engineering Education and Practice	
Construction Management Economics	
Automation in Construction	
Building Research & Information	
Energy Efficiency	
International Journal of Construction Education and Research	
Canadian Journal of Civil Engineering	
Journal of Cleaner Production	
Sustainable Cities and Society	
KSCE Journal of Civil Engineering	
International Journal of Geo-Information	
Reviewer, ASCE 2020 Construction Research Congress (CRC 2020)	2019
Session Chair, New Frontiers in Construction Conference (CERC)	2016 to 2017, 2019
Session Moderator, ASCE 2018 Construction Research Congress (CRC 2018)	2018
Reviewer, ASCE 2014 Construction Research Congress (CRC 2014)	2013
Education Committee, KACEPMA (Korean American Construction Engineering and Project Management Association)	2012 to 2013
Reviewer, 5 th International Conference on Construction Engineering and Project Management	2012

Workshop Organizer, Project Production Systems Laboratory (P2SL)	2011 to 2012
Reviewer, ASCE 2012 Construction Research Congress (CRC 2012)	2011
Reviewer, 18 th Annual Conference of the International Group for Lean Construction (IGLC 18)	2010

PROFESSIONAL AFFILIATIONS

Member, American Society of Civil Engineers (ASCE)
 Member, ASCE Construction Research Congress
 Academic Member, Lean Construction Institute
 Member, International Group for Lean Construction
 Member, Korea Institute of Construction Engineering and Management
 Member, Korea Institute of Building Construction
 Member, Korean-American Scientists and Engineering Association
 Member, Korean American Construction Engineering and Project Management Association
 Member, Korea Construction Engineering Association

UNIVERSITY SERVICE

CBE College Council	UW	2019 to date
CBE Curriculum Committee	UW	2019 to date
Faculty Advisor for MCA Team	UW	2016 to date
CBE Curriculum Committee Co-Chair	UW	2019 to 2020
Affiliated Faculty Advisor for UW Solar	UW	2017 to 2019
EarthLab Grant Program Reviewer	UW	2020
CERC Steering Committee	UW	2016 to 2017
School Head Search Committee	OSU	2014
Graduate Committee	OSU	2013 to 2014
Strategic Planning Committee	OSU	2012 to 2013

CERTIFICATIONS

LEED AP BD+C (11107379-AP-BD+C)	2018
FE/EIT in Civil Engineering (California)	2006
FE in Architectural Engineering, 1 st Degree (Korea)	1999

RESEARCH GRANTS AND PROJECTS

CURRENT PROJECTS

Funding Agency & Timeline	PI (and Co-PIs)	Title	Total Budget
Google Sept 2020 to date	PI: Kriegh, J. Co-PI: Lee, H.W.; Whittington, J.	A Proposal to Grow a Greener Data Center with Google	\$49,900
ZGF Sept 2020 to date	Student: Zhang, C. Advisor: Echenagucia, T.M. Co-advisor: Lee, H.W.	ARC Fellowship Project – Mass Timber Modularity	\$37,000
UW Population Health July 2020 to date	PI: Dermisi, S. Co-PI: Lee, H.W.	Economic Impact of Office Workplace Transformation due to COVID-19: How Can	\$24,959

	Collaborators: Kim, Y.; Whittington, J.; Proksch, G.	Buildings and Surrounding Areas Recover?	
Washington Labor and Industries July 2020 to date	PI: Lee, H.W. Co-PI: Gambatese, J.; Stuart, J.; Foley, K.	Developing a Prevention through Design (PtD) Guide for Mechanical/Electrical/Plumbing Worker Safety	\$173,779
Washington Labor and Industries July 2019 to date	PI: KCSC SME: Lee, H.W.	Cultural and Linguistically Competent Health and Safety Education and Outreach to Korean-American Businesses and Workers	\$148,695

SUBMITTED, DECISION PENDING

Agency & Submission Date	PI (and Co-PIs)	Title	Total Budget
NSF July 2020	PI: Dossick, C.S. Co-PI: Lee, H.W. 4 other Co-PI's and 1 senior personnel	SCC-CIVIC-PG Track A: Expanding Cyber-physical Mobility in Sustainable Transit Oriented Development	\$50,000

PAST PROJECTS

Funding Agency & Timeline	PI (and Co-PIs)	Title	Total Budget
CPWR Sep 2018 - Nov 2019	PI: Lee, H.W. Co-PI: Gambatese, J.	Prevention through Design (PtD) to Make Solar-Ready Houses Safe for Solar Workers	\$29,154
Washington Labor and Industries April 2018 - Sep 2019	PI: Lee, H.W. Co-PI: Gambatese, J.; Kim, Y.-W.; Stuart, J.	Develop a Lean Practice Manual for Improving the Safety of Electrical Construction Workers	\$149,827
UW Transportation Oct 2018 - June 2019	PI: Whittington, J. Co-PI: Lee, H.W.; Dermisi, S.	UW Transportation Electrification and Solar Study	\$53,259
RERI-LBNL-DOE Jun 2018 - May 2019	PI: Dermisi, S. Co-PI: Lee, H.W.; Choi, Y.	Effect of Energy Benchmarking and Disclosure on Office Building Marketability	\$49,915
Pankow-Skanska-Oregon DEQ Jan 2018 - Jan 2019	PI: Simonen, K. Co-PI: Lee, H.W.	Life Cycle Assessment (LCA) for Low Carbon Construction Commercial Office Building MEP & Interiors Data	\$40,000
UW College of Built Environments Jan 2017 - Feb 2018	PI: Lee, H.W. Co-PI: Dermisi, S.	Impact of Energy Benchmarking and Disclosure on the Performance of Office Buildings	\$14,000
CPWR Aug 2016 - Sep 2017	PI: Lee, H.W. Co-PI: Gambatese, J.	Applying Prevention through Design (PtD) to Solar Systems in Small Buildings	\$29,470
Skanska Jan - July 2017	PI: Dossick, C.S. Co-PI: Lee, H.W.	Preconstruction BIM Workflow	\$61,178
Oregon DOT July 2015 - March 2017	PI: Gambatese, J. Co-PI: Lee, H.W.	Work Zone Intrusion Alert Technologies: Assessment and Practical Guidance	\$239,327

PacTrans Jan 2015 - Nov 2016	PI: Lee, H.W. Co-PI: Arocho, I.	Fault Tree Analysis for Accident Prevention in Transportation Infrastructure Projects	\$29,999
US Army Corps of Engineers Nov 2015 - Sep 2016	PI: Dossick, C.S. Co-PI: Lee, H.W.	BIM to BUILDER Data Transfer	\$150,000
PacTrans July 2013 - March 2015	PI: Lee, H.W.	Investigating the Feasibility of Using QR (Quick Response) Codes for Construction Document Control in Highway Construction	\$20,000
ELECTRI International Aug 2013 - Jan 2015	PI: Lee, H.W.	Exploring the Opportunities for Applying Lean Principles to Electrical Prefabrication	\$7,000
City University of Hong Kong Feb 2013 - Jan 2014	PI: Kim, Y	Establishing Interdisciplinary Research Collaboration for Developing Sustainable Design Methods of Urban Housing Redevelopment	\$15,000
Oregon DOT Sep 2012 - Nov 2013	PI: Trejo, D.	Anti-stripping Additives for Reducing the Moisture Sensitivity of HMAC Mixtures	\$177,738

SUBMITTED, NOT SELECTED FOR AWARD (* indicates informal budgets)

Agency & Submission Date	PI (and Co-PIs)	Title	Total Budget
CPWR May 2020	PI: Lee, H.W. Co-PI: Kim, J.-E.	COVID-19: Evaluating Impact of N95 Face Masks on Human Performance in Construction	\$30,000
Microsoft February 2020	PI: Dossick, C.S. Co-PI: Kriegh, J.; Lee, H.W.	SoS Engineering Research for Growth of Cloud and AI	\$70,242
UW Population Health April 2020	Co-PI's: Grover, H.; Dermisi, S.; Lee, H.W.	Identifying Factors that Determine Recovery Time and Recovery Action of Office Employment/Markets and Buildings after COVID-19	\$32,109
CPWR December 2019	PI: Lee, Y.-C. Co-PI: Lee, H.W.; Rashidi, A.	Feasibility of Using Digital Twin for Construction Safety Assessment and Surveillance	\$30,000*
CPWR November 2019	PI: Lee, Y.-C. Co-PI: Lee, H.W.	Investigating the Risk of Drug Liberalization on the Construction Industry and Developing a Guideline for Continuous Drug Monitoring of Construction Workers	\$30,000*
Google October 2019	PI: Dossick, C.S. Co-PI: Lee, H.W.; Kriegh, J.A.	Cloud Infrastructure Research Consortium (CIRC) University of Washington's Team: Proposal for UW-Google Partnership	\$316,158
Samsung Engineering April 2019	PI: Lee, H.W.	Benchmarking US Best Practices in Pre-construction, IPD, and BIM	\$1,000,000
GLY Construction February 2019	PI: Dossick, C.S. Co-PI: Kim, Y.-W.; Lee, H.W.	Investigate the Economy and Reliability of Construction Equipment Rental Supply Chain	\$56,957
CPWR December 2018	PI: Lee, H.W. Co-PI: Gambatese, J.; Kim, Y.-W.; Osburn, L.	Alignment of Lean and Safety for Improving Safety Culture <i>(selected for the second round)</i>	\$570,893
NSF	PI: Norwood, R.A.	NSF Engineering Research Center for the Cloud	\$2,000,000*

December 2018	13 Co-PI's	Infrastructure Renewal Challenge (CIRC)	
UW Royalty Research Fund March 2018	PI: Lee, H.W.	Optimizing Commercial Solar Deployment Under Limited Capital: Portfolio-based Approach	\$39,992
Council on Tall Buildings and Urban Habitat March 2017	PI: Dermisi, S. Co-PI: Lee, H.W.	Effect of Energy Benchmarking and Disclosure on the Resiliency of High-Rise Office Buildings	\$20,000
ELECTRI International December 2016	PI: Kim, Y.-W. Co-PI: Lee, H.W.	Developing a Roadmap of Lean Implementation at the Organizational Level for Electrical Contractors	\$45,000
KONE April 2016	PI: Lee, H.W. Co-PI: Migliaccio, G.C.	Productivity Study on JumpLift	\$95,000
Construction Industry Institute March 2016	PI: Kim, Y.-W. Co-PI: Dossick, C.S.; Lee, H.W.	Statement of Qualifications and Interest for "Integrated Project Delivery for Industrial Projects"	\$200,000*
Construction Industry Institute March 2016	PI: Lee, H.W. Co-PI: Migliaccio, G.C.	Statement of Qualifications and Interest for "Corporate Best Practices for Successful Productivity Improvement Programs"	\$200,000*
Bullitt Foundation February 2016	PI: Lee, H.W. Co-PI: Kim, Y.-W.	Sunshine on School Education: Investigating Non-Financial Benefits of Solar Projects in K-12 Schools	\$40,000
Bullitt Foundation February 2016	PI: Lee, H.W. Co-PI: Meek, Cl; Kim, Y.-W.	Investigating Financial Risk Profiles of Energy User Behaviors in a Net-Zero Building: From the Perspective of MEETS	\$95,000
ELECTRI International December 2014	PI: Lee, H.W.	Investigating the Attributes of Successful Electrical Contractors in Integrated Project Delivery	\$42,000
ELECTRI International December 2014	PI: Lee, H.W.	Developing a Standardized Method to Track the Level and Productivity of Electrical Prefabrication	\$42,000
Oregon DOT November 2014	PI: Gambatese, J. Co-PI: Lee, H.W.	Prevention of Equipment Run-over/Back-over Incidents in Work Zones	\$150,000*
American Society of Safety Engineers September 2014	PI: Lee, H.W. Co-PI: Gambatese, J.	Application of Prevention through Design (PtD) to Solar Systems in Small Buildings	\$295,757
NSF August 2014	PI: Ryan, K.L. 9 Co-PI's Senior P.: Lee, H.W.	RSB: Multi-Hazard Performance and Sustainability Decision Support for Open First Story Buildings	\$1,199,912
US DOE April 2014	PI: Lee, H.W. Co-PI: Graham, J.	Developing a Spatiotemporal Assessment Model for Photovoltaic Investments (SAMPI)	\$260,000
NIOSH February 2014	PI: Lee, H.W. Co-PI: Gambatese, J.	Safety Guideline for Photovoltaic Installation in Terms of Roof Geometry	\$11,959
Korea Institute of Energy Research February 2014	PI: Lee, H.W.	Application of LiDAR to Develop a Spatiotemporal Solar Energy Audit Model at Community Level	\$95,000
Keck Foundation December 2013	PI: Lee, H.W. Co-PI: Graham, J.	Spatiotemporal Solar Audit Model for Long-term Citywide Renewable Energy Investment	\$805,913
Kunwon Engineering	PI: Lee, H.W.	Benchmarking Best Practices of US Construction	\$140,000

December 2013	Co-PI: Park, K.	Management Business (<i>selected for award, but stopped due to budget cut</i>)	
Oregon DOT November 2013	PI: Gambatese, J. Co-PI: Lee, H.W.	Wireless Sensing for Pavement Density Monitoring and Optimization	\$150,000*
Oregon DOT November 2013	PI: Lee, H.W.	Productivity Model for Automated Machine Guidance in Road Construction	\$150,000*
Oregon Watershed Enhancement Board October 2013	PI: Halama, J. Co-PI: Lee, H.W.	Watershed Restoration Benefit/Assessment/Prioritization Project Management Model (<i>selected for award, but stopped due to budget cut</i>)	\$195,480
US DOE April 2013	PI: Earth Advantage Co-PI: Lee, H.W.	DE-FOA-0829-1553: Energy Efficiency <i>On-Ramp</i> for Small Buildings (<i>selected as one of the finalists</i>)	\$5,300,000
Construction Industry Institute March 2013	PI: Gambatese, J. Co-PI: Lee, H.W.	Statement of Qualifications and Interest for “Adapting Your Organization to Benefit from New Technology and Innovation” (<i>received top score but topic not selected</i>)	\$200,000*
ELECTRI International November 2012	PI: Lee, H.W.	Management Training in the Era of Composite Crews	\$44,528

PUBLICATIONS

PEER-REVIEWED JOURNAL PUBLICATIONS (* indicates student- or postdoctoral advisees)

1. Choi, K., Bae, J., Yin, Y., **Lee H.W.** (final accept). “ACT2: Time-Cost Tradeoffs of Alternative Contracting Method.” *ASCE Journal of Management in Engineering*.
2. Droguett, B. X. R.*, Huang, M., **Lee, H.W.**, Simonen, K., Ditto, J. (2020). “Mechanical, Electrical, Plumbing and Tenant Improvements Over the Building Lifetime: Estimating Material Quantities and Embodied Carbon for Climate Change Mitigation.” *Energy and Buildings*, 226, 110324.
3. Nnaji, C.*, Karakhan, A., Gambatese, J., and **Lee, H.W.** (2020). “Case Study to Evaluate Work Zone Safety Technologies in Highway Construction.” *Practice Periodical on Structural Design and Construction*, 25(3), 05020004.
4. Lee, Y.-C., Shariatfar, M., Rashidi, A., **Lee, H.W.** (2020). “Evidence-Driven Sound Detection for Prenotification and Identification of Construction Safety Hazards and Accidents.” *Automation in Construction*, 113, 103127.
5. Ho, C.*, **Lee, H.W.**, and Gambatese, J. (2020). “Application of Prevention through Design (PtD) to Improve the Safety of Solar Installations on Small Buildings.” *Safety Science*, 125, 104633.
6. Nnaji, C.*, Gambatese, J., **Lee, H.W.**, and Zhang, F. (2020). “Improving Construction Work Zone Safety Using Technology: A Systematic Review of Applicable Technologies.” *Journal of Traffic and Transportation Engineering*, 7(1), 61-75.
7. Gomez Cunya, L.A.*, Fardhosseini, M.S.*, **Lee, H.W.**, and Choi, K. (2020). “Analyzing Investments in Flood Protection Structures: A Real Options Approach.” *International Journal of Disaster Risk Reduction*, 43(2), 101377.
8. Shang, L.* **Lee H.W.**, Dermisi, S., and Choe, Y., (2020). “Impact of Energy Benchmarking and Disclosure Policy on Office Buildings.” *Journal of Cleaner Production*, 250, 119500.
9. Park, K.*, **Lee, H.W.**, Lee, S.-H., and Choi, K. (2019). “Project Risk Factors Facing Construction Management Firms.” *International Journal of Civil Engineering*, 17(3), 305-321.

10. **Lee, H.W.**, Harapanahalli, B.A.*, Nnaji, C. *, Gambatese, J., and Kim, J.* (2018). “Feasibility of using QR Codes in Highway Construction Document Management.” *Transportation Research Record: Journal of the Transportation Research Board*, 2672(26), 114-123.
11. Kim, J.*, **Lee, H.W.**, Bender, W., and Hyun, C. T. (2018). “A Model for Collecting Replacement Cycles of Building Components: A Hybrid Approach of Indirect and Direct Estimations.” *ASCE Journal of Computing in Civil Engineering*, 32(6), 04018051.
12. Nnaji, C. *, Gambatese, J., and **Lee, H.W.** (2018). “Work Zone Intrusion: Technology to Reduce Injuries & Fatalities.” *Professional Safety*, 63(4), 36-41.
13. Nnaji, C. *, **Lee, H.W.**, Karakhan, A., and Gambatese, J. (2018). “Developing a Decision-Making Framework to Select Safety Technologies for Highway Construction.” *ASCE Journal of Construction Engineering and Management*, 144(4), 04018016.
14. Shakouri, M. *, **Lee, H.W.**, and Kim, Y.-W. (2017). “A Probabilistic Portfolio-based Model for Financial Valuation of Community Solar.” *Applied Energy*, 191(1), 709-726.
15. Gambatese, J., Pestana, C., and **Lee, H.W.** (2016). “Investigation of Alignment between Lean Principles and Practices and Worker Safety Behavior.” *ASCE Journal of Construction Engineering and Management*, 04016083.
16. Choi, K. and **Lee, H.W.** (2016). “Deconstructing the Construction Industry: A Spatiotemporal Clustering Approach to Profitability Modeling.” *ASCE Journal of Construction Engineering and Management*, 04016051.
17. Shakouri, M.* and **Lee, H.W.** (2016). “Mean-Variance Portfolio Analysis Data for Optimizing Community-based Photovoltaic Investment.” *Data in Brief*, 6(1), 840-842.
18. Choi, K., **Lee, H.W.**, Bae, J., and Bilbo, D. (2016). “Time-Cost Performance Effect of Change Orders from Accelerated Contract Provisions.” *ASCE Journal of Construction Engineering and Management*, 142(3), 04015085.
19. Kim, T.-H., **Lee, H.W.**, and Hong, S.-W. (2016). “Value Engineering for Roadway Expansion Project over Deep Thick Soft Soils.” *ASCE Journal of Construction Engineering and Management*, 142(2), 05015014.
20. Choi, K., **Lee, H.W.**, Mao, Z., Lavy, S., and Ryoo, B.Y. (2016). “Environmental, Economic, and Social Implications of Highway Concrete Rehabilitation Alternatives.” *ASCE Journal of Construction Engineering and Management*, 142(2), 04015079.
21. Shakouri, M. *, **Lee, H.W.**, and Choi, K. (2015). “PACPIM: New Decision-Support Model of Optimized Portfolio Analysis for Community-Based Photovoltaic Investment.” *Applied Energy*, 156(1), 607-617.
22. Choi, K., Kim, Y.H., Bae, J., and **Lee, H.W.** (2015). “Determining Future Maintenance Costs for Low-Volume Highway Rehabilitation Projects.” *ASCE Journal of Computing in Civil Engineering*, 04015055.
23. **Lee, H.W.**, Tommelein, I.D., and Ballard, G. (2015). “Target-Setting Practice for Loans for Commercial Energy Retrofit Projects.” *ASCE Journal of Management in Engineering*, 31(3), 04014046.
24. **Lee, H.W.**, Oh, H., Kim, Y., and Choi, K. (2015). “Quantitative Analysis of Warnings in Building Information Modeling (BIM).” *Automation in Construction*, 51(3), 23-31.
25. Xing, G., Kim, Y., and **Lee, H.W.** (2014) “Life-cycle Cost Analysis of Using Rainwater Harvesting Systems in Hong Kong Residential Buildings.” *Journal of The Korean Housing Association*, 25(3), 53-62.
26. Park, K. *, **Lee, H.W.**, and Kim, C.-D. (2014). “Developing User Interfaces of Modules for Mobile PMIS Based on Demand Analysis.” *Journal of the Korea Institute of Building Construction*, 14(3), 244-251. [In Korean]
27. Park, K. *, **Lee, H.W.**, and Kim, C.-D. (2014). “Assessment of Risk Management Practices of CM Enterprises: The Need for an Enterprise-level Risk Management Framework.” *Journal of the Korea Institute of Construction*

Engineering and Management, 15(3), 66-73. [In Korean]

28. Lee, H.W., Choi, K., and Gambatese, J. (2014). "Real Options Valuation of Phased Investments in Commercial Energy Retrofits under Building Performance Risks." *ASCE Journal of Construction Engineering and Management*, 140(6), 05014004.
29. Lee, H.W., Anderson, S., Kim, Y., and Ballard, G. (2013). "Advancing the Impact of Education, Training, and Professional Experience on Integrated Project Delivery." *ASCE Practice Periodical on Structural Design and Construction*. 19, SPECIAL ISSUE: Construction Engineering: Leveraging Project and Career Success, 8-14.
30. Lee, H.W., Tommelein, I.D., and Ballard, G. (2013). "Energy-related Risk Management in Integrated Project Delivery." *ASCE Journal of Construction Engineering and Management*, 139(12), A4013001.
31. Choi, K., Haque, M.E., Lee, H.W., Cho, Y.K., and Kwak, Y.H. (2013). "Macroeconomic Labor Productivity and Its Impact on Firm's Profitability." *Journal of the Operational Research Society*, 64(8), 1258-1268.
32. Lee, H.W., Tommelein, I.D., and Ballard, G. (2012). "Design of an Infrastructure Project Using a Point-based Methodology." *ASCE Journal of Management in Engineering*, 28(3), 291-299.
33. Kim, Y. and Lee, H.W. (2010). "Analyzing User Costs in a Hospital: Methodological Implication of Space Syntax to Support Whole-life Target Value Design." *Lean Construction Journal*, 2010 Issue, 55-65.

PEER-REVIEWED CONFERENCE PUBLICATIONS (* indicates student- or postdoctoral advisees)

1. Min, Y.* and Lee, H.W. (2020). "Social Equity of Clean Energy Policies in Electric-Vehicle Charging Infrastructure Systems." *2020 Construction Research Congress (CRC 2020)*, Tempe, AZ.
2. Fardhosseini, M.S.* Karji, A., Dossick, C.S., Lee, H.W., Jebelli, H., and Beatty, S. (2020). "The Cost-Effectiveness of Integrating Digital Fabrication for Concrete Formwork." *2020 Construction Research Congress (CRC 2020)*, Tempe, AZ.
3. Fardhosseini, M.S.*, Habibnezhad, M., Jebelli, H., Migliaccio, G., Lee, H.W., and Puckett, J. (2020). "Recognition of Construction Workers' Physical Fatigue Based on Three-axis Accelerometer Embedded in a Smartphone." *2020 Construction Research Congress (CRC 2020)*, Tempe, AZ.
4. Xie, Y., Lee, Y.-C., Shariatfar, M., Zhang, Z., Rashidi, A., Lee, H.W. (2019). "Historical Accident and Injury Database-driven Audio-based Autonomous Construction Safety Surveillance." *The 2019 ASCE International Conference on Computing in Civil Engineering (i3CE 2019)*, Atlanta, GA.
5. Fardhosseini, M.S.*, Dossick, C., Lee, H.W., DiFuria, R., Lohr, J., and Abdirad, H. (2019). "Automating the Digital Fabrication of Concrete Formwork in Building Projects: Workflow and Case Example." *The 2019 ASCE International Conference on Computing in Civil Engineering (i3CE 2019)*, Atlanta, GA.
6. Rodriguez B.X., Simonen K., Lee H.W., and Huang M. (2019). "Embodied Carbon in MEP Systems: A Simplified Life Cycle Assessment (LCA) Method for MEP Systems in Standard Commercial Office Buildings in the Pacific Northwest." *3rd International Graduate Student Symposium of the PhD Program at IIT College of Architecture*, Chicago, IL.
7. Shakouri, M.*. and Lee, H.W. (2018). "Economic Feasibility Analysis of Photovoltaic Systems Using Bayesian Networks." *Proc. 2018 Construction Research Congress (CRC 2018)*, New Orleans, LA, 564-573.
8. Ho, C.*, Lee, H.W., and Gambatese, J. (2018). "Improving the Safety in Solar Energy System Installations through Prevention through Design." *Proc. 2018 Construction Research Congress (CRC 2018)*, New Orleans, LA, 717-726.
9. Borhani, A.*, Dossick, C. S., Lee, H.W., and Osburn, L. (2018). "Developing a Collaboration Framework for Model-Based Estimating." *Proc. 2018 Construction Research Congress (CRC 2018)*, New Orleans, LA, 10-20.
10. Zhu, W.*, Lee, H.W., and Dossick, C. S. (2018). "Impact of Project Integration on Implementation of Model-

- based Estimating.” *Proc. 2018 Construction Research Congress (CRC 2018)*, New Orleans, LA, 619-627.
11. **Lee, H.W.**, Harapanahalli, B.A.*, Nnaji, C.*, Gambatese, J., and Kim, J.* (2018). “Feasibility of using QR Codes in Highway Construction Document Management.” *2018 Transportation Research Board (TRB) Annual Meeting*, Washington, DC, 17p.
 12. Nnaji, C.*, Gambatese, J., and **Lee, H.W.** (2018). “Evaluating Work Zone Intrusion Alert Technology: Recommendation for Future Development.” *2018 Transportation Research Board (TRB) Annual Meeting*, Washington, DC, 7p.
 13. Borhani, A.*, **Lee, H.W.**, Dossick, C.S., Osburn, L., and Kinsman, M. (2017). “BIM to Facilities Management: Presenting a Proven Workflow for Information Exchange.” *Proc. 2017 International Workshop on Computing in Civil Engineering (IWCCE2017)*, Seattle, WA, 51-58.
 14. Kim, Y.-W., Rezaqallah, K., **Lee, H.W.**, Angeley, J. (2016). “Integrated Project Delivery in Public Projects: Limitations and Opportunity.” *Proc. 24th Annual Conference of the International Group for Lean Construction (IGLC 2016)*, Boston, MA, 93-102.
 15. Choi, K., **Lee, H.W.**, Bae, J., and Ryu, K. (2015). “Investigating the Construction Industry from Key Performance Measurements.” *Proc. the 6th International Conference on Construction Engineering and Project Management (ICCEPM-2015)*, Busan, S.Korea.
 16. **Lee, H.W.**, Oh, H., Kim, Y., and Choi, K. (2014). “Investigating Warnings in Building Information Modeling.” *US-KOREA Conference 2014 (UKC 2014)*, San Francisco, CA.
 17. Gomez Cunya, L.A.*, **Lee, H.W.**, and Leon, A. (2014). “A Real Options-based Framework to Evaluate Investments in River Flood Control under Uncertainty.” *ASCE 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM) and 6th International Symposium on Uncertainty Modeling and Analysis (ISUMA)*, Liverpool, UK, 1465-1474.
 18. **Lee, H.W.**, Choi, K., Gambatese, J.A., and Kim, D. (2014). “Financial Valuation for Commercial Energy Retrofits under Private Risks.” *2014 Construction Research Congress (CRC 2014)*, Atlanta, GA, 524-533.
 19. **Lee, H.W.**, Kim, Y., Kim, D., and Choi, K. (2013). “LEED Perception Disparities: Designers versus Non-designers.” *Proc. the 5th International Conference on Construction Engineering and Project Management (ICCEPM-2013)*, 2013, Anaheim, CA, 50-55.
 20. **Lee, H.W.**, Ballard, G., and Tommelein, I.D. (2012). “Developing a Target Value Design Protocol for Commercial Energy Retrofits – PART 1.” *Proc. 2012 Construction Research Congress (CRC 2012)*, Purdue University, West Lafayette, IN, 1710-1719.
 21. **Lee, H.W.**, Ballard, G., and Tommelein, I.D. (2012). “Developing a Target Value Design Protocol for Commercial Energy Retrofits – PART 2.” *Proc. 2012 Construction Research Congress (CRC 2012)*, Purdue University, West Lafayette, IN, 1720-1729.
 22. **Lee, H.W.**, Tommelein, I.D., and Ballard, G. (2010). “Lean Design Management in an Infrastructure Design-Build Project – A Case Study.” *Proc. 18th Annual Conference of the International Group for Lean Construction (IGLC 18)*, Haifa, Israel, 113-122.
 23. Kim, Y. and **Lee, H.W.** (2010). “Analyzing User Costs in a Hospital: Methodological Implication of Space Syntax to Support Whole-life Target Value Design.” *Proc. 18th Annual Conference of the International Group for Lean Construction (IGLC 18)*, Haifa, Israel, 93-102.

TECHNICAL REPORTS (* indicates student- or postdoctoral advisees)

1. **Lee H.W.**, Gambatese, J., Min, Y. (2019). “Prevention through Design (PtD) to Make Solar-Ready Houses Safe for Solar Workers.” Final Project Report. CPWR, Silver Spring, MD.
2. **Lee H.W.**, Gambatese, J., Kim, Y.-W., Fardhosseini, M.S.*, Stuart, J., Reigelsperger, C. (2019). “Lean and Safety

- Manual for Electrical Construction.” Safety & Health Investment Projects (SHIP) Grant Program, Washington State Department of Labor and Industries, Olympia, WA.
3. Dermisi, S., **Lee H.W.**, Choe, Y., Shang, L.* (2019). “Effect of Energy Benchmarking and Disclosure on Office Building Marketability.” Final Project Report. Real Estate Research Institute, Chicago, IL.
 4. Simonen, K., **Lee H.W.**, Rodriguez, B.X.*, Huang, M. (2019). “Life Cycle Assessment (LCA) of Office Building Mechanical Electrical and Plumbing Systems.” Final Project Report. The Charles Pankow Foundation—Skanska USA—Oregon Department of Environmental Quality.
 5. **Lee, H.W.**, Gambatese, J., Ho, C.* (2017). “Applying Prevention through Design (PtD) to Solar Systems in Small Buildings.” Final Project Report. CPWR, Silver Spring, MD.
 6. Borhani. A.*, Dossick. C. S., **Lee, H.W.**, and Osburn, L. (2017). “MBEst: A Technical Report on Standardization of Model-based Estimating.” Final Project Report. Skanska.
 7. Gambatese, J., **Lee, H.W.**, and Nnaji, C.A.* (2017). “Work Zone Intrusion Alert Technologies: Assessment and Practical Guidance.” Final Project Report. Oregon Department of Transportation, Salem, OR.
 8. **Lee, H.W.** and Arocho, I. (2016). “Fault Tree Analysis for Accident Prevention in Transportation Infrastructure Projects.” Final Project Report. PacTrans. University of Washington, Seattle, WA.
 9. Dossick. C. S., **Lee, H.W.**, Borhani. A.*, Osburn, L., Angeley, J., and Kinsman, M. (2016). “BIM to BUILDER Workflow.” Final Project Report. US Army Corps of Engineers.
 10. Harapanahalli, B.A.* and **Lee, H.W.** (2015). “Quick Access to Construction Documents in Highway Construction Using Quick Response (QR) Codes.” Final Project Report. PacTrans. University of Washington, Seattle, WA.
 11. Yang, Y.*, **Lee, H.W.**, and Shakouri, M. (2014). “Exploring the Opportunities for Applying Lean Principles to Electrical Prefabrication.” Index #: F3406. NECA Publication, Washington, DC.
 12. Trejo, D., Porter, F., Chen, J., and **Lee, H.W.** (2013). “Comparison of Pelletized Lime with Other Anti-Stripping Additives.” Final Project Report. Oregon Department of Transportation, Salem, OR.
 13. Tommelein, I.D., Ballard, G., and **Lee, H.W.** (2011). Sections 2.3 and 3.3 of “Energy Risk Management in Commercial Mortgages: A Primer for Lenders.” Practical guideline prepared for Office of Energy Efficiency and Renewable Energy at U.S. Department of Energy.
 14. Tommelein, I.D., Ballard, G., and **Lee, H.W.** (2011). “Task 4: Target Value Design and Delivery Process to Incorporate Energy Efficiency Metrics.” Technical report prepared for Office of Energy Efficiency and Renewable Energy at U.S. Department of Energy.

PRESENTATIONS

ORAL PRESENTATIONS – CONFERENCE, SEMINAR, WORKSHOP, AND WEBINAR

1. “Path to High-Performance Green Buildings.” *Modern Method of Construction: Smart, Lean, and Green*, 3-Day Workshop for Korean Government Officials, November 12, 2019, Seattle, WA.
2. “Impact of Energy Benchmarking and Disclosure on the Performance of Office Buildings.” CBE Innovation Collaborative Presentation, March 6, 2018, Seattle, WA.
3. “Applying Prevention through Design (PtD) to Solar Systems in Small Buildings.” Webinar, December 13, 2017, CPWR. <<https://www.youtube.com/watch?v=nRuyKflw2yk&feature=youtu.be>>
4. “Remote Sensing for Activity-Based Carbon Tracking of Construction Equipment.” *New Frontiers in Construction Conference (CERC 2016)*, March 4, 2016, Seattle, WA.

5. "Background Knowledge and Training for Integrated Project Delivery." *New Frontiers in Construction Conference (CERC 2016)*, March 4, 2016, Seattle, WA.
6. "Investigating the Impact of Performance Risks on Energy Efficiency Investments: From Micro to Macro." Yonsei University, July 18, 2014, Seoul, Korea.
7. "Investigating the Impact of Performance Risks on Energy Efficiency Investments: From Micro to Macro." Seoul National University, June 30, 2014, Seoul, Korea.
8. "Financial Valuation for Commercial Energy Retrofits under Private Risks." *2014 Construction Research Congress (CRC 2014)*, May 20, 2014, Atlanta, GA.
9. "Advancing the Impact of Education, Training, and Professional Experience on Integrated Project Delivery." *2014 Construction Engineering Conference (2014 CEC)*, March 27, 2014, Seattle, WA.
10. "Exploring the Opportunities for Applying Lean Principles to Electrical Prefabrication." *The 2014 ELECTRI Council*, July 22, 2013, Chicago, IL.
11. "LEED Perception Disparities: Designers versus Non-designers." *The 5th International Conference on Construction Engineering and Project Management (ICCEPM-2013)*, January 9, 2013, Anaheim, CA.
12. "Developing a Target Value Design Protocol for Commercial Energy Retrofits – PART 2." *2012 Construction Research Congress (CRC 2012)*, May 23, 2012, Purdue University, West Lafayette, IN.
13. "Developing a Target Value Design Protocol for Commercial Energy Retrofits – PART 1." *2012 Construction Research Congress (CRC 2012)*, May 22, 2012, Purdue University, West Lafayette, IN.
14. "Application of Digital Quantity Takeoff to Estimating." February 28, 2012, Clemson University, Clemson, SC.
15. "DOE Finance Research – Incorporating Energy Efficiency into Commercial Mortgage Underwriting." *Project Production Systems Laboratory (P2SL) Annual Conference*, April 27, 2011. University of California, Berkeley, CA.
16. "Lean Design Management in an Infrastructure Design-Build Project – A Case Study." *18th Conference of the International Group for Lean Construction (IGLC 18)*, July 14-16, 2010. Technion – Israel Institute of Technology, Haifa, Israel.
17. "Lean Design Management in Infrastructure DB Proposal Process." *Project Production Systems Laboratory (P2SL) Annual Conference*, April 27, 2010. University of California, Berkeley, CA.

POSTER PRESENTATIONS (* indicates student- or postdoctoral advisees)

1. Min, Y.* and **Lee H.W.** (2019). "Social Equity of Clean Energy Policies in Residential Solar." *Energy and Society in Transition: 2nd International Conference on Energy Research and Social Science (ERSS2019)*, May 30, 2019, Tempe, AZ.
2. Rodriguez B.X., Simonen K., **Lee H.W.**, and Huang M. (2019). "Embodied Carbon in Heating, Ventilation and Air Conditioning (HVAC): A Simplified LCA Method for Standard and High Performance Hypothetical Office Buildings in the PNW." *New Frontiers in Construction Conference 2019 (NFCC '19)*, March 21, 2019, Seattle, WA.
3. Fardhosseini, S.*, Abdirad, H., Dossick, C., **Lee H.W.**, Difuria, R., Lohr, J., Beatty, S. (2019). "Using a Digital Fabrication Approach for Concrete Formwork in Building Projects: Workflow and Case Example." *New Frontiers in Construction Conference 2019 (NFCC '19)*, March 21, 2019, Seattle, WA.
4. Nnaji, C.*, Gambatese, J., and **Lee, H.W.** (2018). "Evaluating Work Zone Intrusion Alert Technology: Recommendation for Future Development." *2018 Transportation Research Board (TRB) Annual Meeting*, January 8, 2018, Washington, DC.
5. Chung, H.*, **Lee, H.W.**, and Gambatese, J. (2017). "Applying Prevention through Design to the Design and Installation of Solar Energy Systems for Residential Projects." *53rd Annual International Conference of the*

Associated Schools of Construction (ASC), April 6, 2017, Seattle, WA.

6. **Lee, H.W.** and Arocho, I. (2016). "Fault Tree Analysis for Accident Prevention in Transportation Infrastructure Projects." *2016 PacTrans Regional Transportation Conference (PacTrans 2016)*, October 14, 2016, Seattle, WA.
7. Kim, Y.-W., Rezqallah, K., **Lee, H.W.**, Angeley, J. "Integrated Project Delivery in Public Projects: Limitations and Opportunity." *24th Annual Conference of the International Group for Lean Construction (IGLC 2016)*, July 21, 2016, Boston, MA.
8. Shakouri, M. and **Lee, H.W.** "A Portfolio-Based Decision Model for Optimal Investment in Community Solar." *2015 Graduate Research Exposition*, March 4, 2015, Portland, OR.
9. Harapanahalli, B.A.* and **Lee, H.W.** "Quick Access to Construction Documents in Highway Construction Using Quick Response (QR) Codes." *2015 Graduate Research Exposition*, March 4, 2015, Portland, OR.
10. Gomez, L.*, **Lee, H.W.**, and Leon, A. "A Real Options-based Framework to Evaluate Investments in River Flood Control Under Uncertainty." *2014 Graduate Research Exposition*, March 7, 2014, Portland, OR.
11. Harapanahalli, B.A.* and **Lee, H.W.** "Quick Access to Construction Documents in Highway Construction Using Quick Response (QR) Codes." *2014 Graduate Research Exposition*, March 7, 2014, Portland, OR.
12. Yang, Y.* and **Lee, H.W.** "The Opportunities of Lean Principles to Electrical Prefabrication." *2014 Graduate Research Exposition*, March 7, 2014, Portland, OR.
13. Gomez, L.*, **Lee, H.W.**, and Leon, A. "A Real Options-based Framework to Evaluate Investments in River Flood Control Under Uncertainty." *The Water Research Symposium*, May 13, 2013, Oregon State University, Corvallis, OR.

ADVISORY

PHD COMMITTEE CHAIR

Student	School	Topic	Graduated
Sadra Fardhosseini	UW (co-chair with Prof. Dossick)	A Quantitative Analysis Study of the Impact of Integrating Digital Technology for Formwork Fabrication on Human Factors	Active
Yohan Min	UW	Diffusion Dynamics of Clean Energy Technologies in the Residential Built Environment	Active

PHD COMMITTEE MEMBER

Student	School	Title	Graduated
Chung Ho	UW	Supply Chain Optimization for Prefabrication with Multiple Fabrication Shops	Spring 2019
Kasim AlOmari	OSU	Degrees of Connectivity: Systems Model for Upstream Risk Assessment	Autumn 2017

PHD GRADUATE SCHOOL REPRESENTATIVE (UW)

Student	Dept.	Title	Graduated
Heta Kosonen	Civil Engr.	Pathways toward Rapid Wastewater Treatment Response During the Global Refugee Crisis	Spring 2018

POSTDOCTORAL ADVISING

Name	School	Topic	Duration
Jonghyeob Kim	UW	BIM-based Maintenance Information Management Model for Continuous Collection and Utilization of Maintenance Data	Aug 2016 to Dec 2017

Kyungmo Park	OSU	Investigation of Project Risk Factors Facing Construction Management Firms	Jan 2014 to Nov 2014
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VISITING PHD STUDENT ADVISING (UW)

Name	School	Topic	Duration
Yunhong Wang	Tsinghua University	Determinants of International Infrastructure Investment: Evidence from Chinese Contractors	Feb 2020 to date

MS THESIS COMMITTEE CHAIR

Student	School	Title	Graduated
Wenqi Zhu	UW	Impact of Project Integration on Implementation of Model-based Estimating	Autumn 2017

MS PROJECT REPORT COMMITTEE CHAIR

Student	School	Title	Graduated
Bharat Harapanahalli	OSU	Investigating the Feasibility of Using Quick Response Codes for Document Management in Highway Construction	Spring 2015
Yizhe Yang	OSU	Investigating the Relationship between Lean Principles and Electrical Prefabrication	Spring 2014

MS THESIS COMMITTEE MEMBER

Student	School	Title	Graduated
Jeremy Berke	UW	Solar Ready: Harmonizing the Solar Ready Scope for Safer & More Productive Solar Deployments	Summer 2018
Christopher Mak	UW	Implementing Temporary LED Construction Lighting	Spring 2017
Xiuqing Jin	UW	Climate-Specific Life-Cycle Cost Analysis of Different HVAC Systems	Winter 2017
Mihir Bharmal	UW	Information Exchange in the Design, Construction, Operation and Maintenance of Public Transit infrastructure	Winter 2016
Chukwuma Nnaji	OSU	Framework for Measuring Construction Project Performance using Energy	Spring 2015

MS RESEARCH PAPER CHAIR

Student	School	Title	Graduated
Zhila Mohammady	UW	Impact of Smart Metering on Energy Consuming Behaviors	Winter 2019
Michael McKenna	UW	Factors Contributing to the Trustworthiness of General Contractors	Autumn 2017
Vaishnavi Nevrekar	UW	Safe Working Practices to Prevent Accidents during Solar Panel Installation on Existing Houses	Winter 2017
Matthew Reed	UW	Implications of Autonomy for Professional Development	Winter 2017
Henrique Schuchovski	UW	Perception of Collaboration and Compensation on Integrated Projects from the General Contractor's Perspective	Autumn 2016

MENG EXAM COMMITTEE MEMBER OR CHAIR (OSU)

Student	Graduated	Student	Graduated
Gao Han	2015	Yakun Cheng	2015
James Pritchard	2015	Ryan Sutanto	2014

Nishant Vadlamudi (Chair)	2014	Shikhar Sandeep Goel	2014
Ding Liu	2014	Tainian Chen	2014
Anthony Peressini	2013	Paul Amort	2013
Robert Coleman	2013	Tom Sideras	2013
Alex Jamerson	2013	Paul Amort	2013
Thaphat Lekaegkarat	2012		

UNDERGRADUATE INDIVIDUAL STUDY ADVISOR (UW)

Student	Title	Quarter
Zachary Hoglund	Emerging Surveying Technologies	Spring 2020
Ryan Wilson	Changes on Campus: How the Triple Bottom Line is Driving New and Advanced Mechanical Strategies for Lab Spaces at the UW	Winter 2019
Zach Shoopman	Energy Services Company Project Risks	Winter 2018
Joseph Korchemniy	LEED Influences in South Lake Union (Seattle)	Winter 2018

UNDERGRADUATE CAPSTONE RESEARCH ADVISOR (UW)

Student	Department	Title	Graduated
Gigi Dawn	Environmental Studies	UW Energy Dashboard For Energy Transparency	Spring 2019

ARC FELLOWSHIP PROJECT ADVISING (CBE)

Student	Department	Title	Duration
Chuou Zhang	UW Architecture (co-advising with Prof. Echenagucia)	Mass Timber Modularity	Starting Sept 2020