

## Ahmed Al-Bayati, Ph.D., PE, CHST

Kimmel School of Construction Management - College of Engineering and Technology  
Western Carolina University  
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### Education

#### **Interdisciplinary Ph.D. in Engineering and Applied Sciences (Construction Engineering)**

Civil and Construction Engineering Dept., Western Michigan University, Kalamazoo, MI, June 2017  
Dissertation: “**Managing Workforce Diversity in Construction to Improve Communication and Reduce Fatalities: Hispanic Workforce Focus**”

#### **Master of Construction Management – Department of Construction Management**

East Carolina University, Greenville, NC, May 2013

#### **Bachelor of Science in Civil Engineering – Civil Engineering Department**

Babylon University, Babil, Iraq, May 2003

### Research and Teaching Interests

**Research Interests:** Construction Cost Overrun, Construction Safety, Construction Safety Culture and Climate, Construction Quality Management, Delays in Construction Projects, Porous Concrete Design Construction and Maintenance (Green Infrastructure), Construction Workforce Diversity, The Use of Virtual Reality in Construction Management, Unmanned Aerial Vehicle Applications in Construction Management

**Teaching Interests:** Construction Safety, Construction Scheduling, Construction Cost Estimating Using Bluebeam and RS Means, Project Delivery Methods, Construction Research Methods, Permeable Pavements: Design, Construction, and Maintenance, Building Information Modeling (BIM)

### Peer-Reviewed Publications

#### Technical Paper

**Al-Bayati, A. J.** (2018) “ Satisfying the Need for Diversity Training for Hispanic Construction Workers and Their Supervisors at U.S. Construction Workplaces: A Case Study." *Journal of Construction Engineering and Management*. **Under Review**

**Al-Bayati, A. J.,** and Panzer, L. (2018) “Requirements and Practices of Underground Construction Activities: A Review of Recently Updated Act." *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*. **Under review**

**Al-Bayati, A. J.,** Albert, A. and Ford, G. (2018) “Safety Culture and Climate in Construction Workplaces: The Role of Management and Site Personnel." *Journal of Construction Management and Economics*. **Under review**

Pandit, B., Albert, A., Patil, Y., and **Al-Bayati, A. J.** “Impact of Safety Climate on Hazard Recognition and Safety Risk Perception.” *Safety Science*. **Under Review**

**Al-Bayati, A. J.,** and York, D. (2018) “Fatal Injuries among Hispanic Workers in the U.S. Construction Industry: Findings from FACE Investigation Reports." *Journal of Safety Research*. **In Press**

**Al-Bayati, A. J.,** and Al-Zubaidi, H. (2018). “Inventory of Nanomaterials in Construction Products for Safety and Health." *Journal of Construction Engineering and Management*, Technical Note, DOI: 10.1061/(ASCE)CO.1943-7862.0001547

- Al-Bayati, A. J., Abudayyeh, and Albert, A. (2018).** “Managing Active Cultural Differences in U.S. Construction Workplaces: Perspectives from Non-Hispanic Workers.” *Journal of Safety Research*. DOI: 10.1016/j.jsr.2018.05.004
- Al-Bayati, A. J., Abudayyeh, O., Fredericks, T., and Butt, S. (2017)** “Managing Cultural Diversity at U.S. Construction Sites: Hispanic Workers’ Perspectives.” *Journal of Construction Engineering and Management*. DOI: 10.1061/(ASCE)CO.1943-7862.0001359
- Al-Bayati, A. J., Abudayyeh, O., Fredericks, T., and Butt, S. (2017).** "Reducing Fatality Rates of the Hispanic Workforce in the U.S. Construction Industry: Challenges and Strategies." *Journal of Construction Engineering and Management*. DOI: 10.1061/(ASCE)CO.1943-7862.0001269

### **Conference Proceedings**

- Al Assdi, R. J., and **Al-Bayati, A. J. (2018).** “Using a Compact Ceramic System to Filter Raw Water in Iraq: Challenges and Opportunities.” *Proc. International Low Impact Development Conference*, ASCE, Nashville, Tennessee. DOI: 10.1061/9780784481783.001
- Bilal, G. A., Hashim, H., Comez, P., Abdel-Qader, I., and **Al-Bayati, A. J. (2018).** “Arc Flash Assessment: Two-Case Study of Public Service Facilities in Kalamazoo, Michigan.” *Proc. 7th Annual IEEE International Conference on Electro/Information Technology*, Rochester, Michigan. In Press
- Shirazinejad, R. and **Al-Bayati, A. J. (2018).** “Impact of advertising signs on freeway crashes within a certain distance in Michigan.” *Proc. Construction Research Congress*, ASCE, New Orleans, Louisiana. DOI: 10.1061/9780784481288.068
- Al-Bayati, A. J., Abudayyeh, O., Ahmed, S. (2017).** “Managing Workforce Diversity at Gulf Cooperation Council Construction Sites.” *Proc. of the 9th International Conference on Construction in the 21st Century (CITC-9)*, Dubai, United Arab Emirates.
- Al-Bayati, A. J., and Abudayyeh, O. (2016).** “Safety Challenges in the U.S. Construction Industry: The Hispanic Workforce Perspective.” *Proc. Construction Research Congress*, ASCE, San Juan, Puerto Rico, 2967-2971. DOI: 10.1061/9780784479827.295

### **In Preparation**

- Al-Bayati, A. J., and Butrouna, K.** “Graphite Impacts on Concrete’s Strength, Workability, and Conductivity.”
- Al-Bayati, A. J.** “Predicting Construction Projects’ Duration and Cost Overrun Using MATLAB Algorithms.”
- Ladewski, B., and **Al-Bayati, A. J.** “Expanding a Path Analytic Model of Quality Management to Include the Management of Safety.”
- Al-Bayati, A. J., and Obarr, K** “Evaluation of North Carolina Department of Labor’s 1.5 EMR Program: Successful Approaches for Contractors Safety Prequalification.”

### **Conference Presentations**

- “Safety Culture/Safety Climate at Construction Sites: An Assessment of a Practical Model.”**  
**Peer-Reviewed**

The NIOSH's National Occupational Injury Research Symposium (NOIRS), Morgantown, WV, October 2018.

**“Hispanic Workforce in the Construction Industry: Challenges & Opportunities.”**  
**Workshop**

2018 Safety+ National Symposium, the Voluntary Protection Programs Participants' Association, Inc. (VPPPA) and the Tennessee Safety & Health Conference, Nashville, TN, August 2018.

**“Managing Cultural Diversity at US Construction Sites: Hispanic Workers Perspective.”**  
**Peer- Reviewed**

The NIOSH 2<sup>nd</sup> International Symposium to Advance Total Worker Health, Bethesda, MD, May 2018.

**“Hispanic Workforce in the Construction Industry: Challenges and Strategies.”**  
**Keynote Speaker**

2017 ABC Carolinas Safety/ HR Conference, Concord, NC, September 2017.

**“Managing Active Cultural Differences on U.S. Construction Sites: Hispanic Workforce Focus.”**  
ASA Chicago Construction Expo & Safety Conference, Oakbrook Terrace, IL, March 2017.

**“The Hispanic Workforce in the US Construction Industry.”**  
Michigan Safety Conference, Grand Rapids, MI, April 2016.

**“Safety Challenges in the Construction Industry: The Hispanic Workforce Perspective.”**  
Construction Research Congress, American Society of Civil Engineers, San Juan, Puerto Rico, June 2016.

## Grants and Contracts

**A Pilot Training and Evaluation to Improve Roofers' Safety Using Virtual Reality (VR)**

Initial acceptance has been received  
Sponsor: Job-site Safety Institute.  
Role on Project: Principal/solo investigator  
Project Duration: 1– 10/2019  
(\$51,250)

**Pilot-test: The Spanish S-CATSC with Hispanic Construction Contractors and Workers**

Sponsor: Small Study Program, The Center for Construction Research and Training (CPWR)  
Role on Project: Co-PI with Dr. Luz S. Marin (PI, Indiana University of Pennsylvania)  
Project Duration: 6 - 9/2018.  
(\$39,316)

**Analyzing North Carolina 811 Data Using Quantitative Methods**

Sponsor: North Carolina Call before Dig  
Role on Project: Principal /solo investigator  
Project Duration: 3-12/2018  
(\$13,089.50)

**Grant Writer Travel Award (GWTA)**

Western Carolina University, Office of Research Administration. Grant funded the attendance of National Institutes of Health (NIH) seminar for new investigators in Washington D.C., May 2018.  
(\$1500)

**The Chancellor's Travel Fund**

Chancellor travel fund to Construction Research Congress in New Orleans, Louisiana, 2018.  
(\$1,200)

**Graduate Student Travel Grant**

Western Michigan University, Graduate College, 2016. (\$1200)

**Graduate Student Research Grant**

Western Michigan University, Graduate College, 2016. (\$960)

**Under Review****Silica Protection in The Construction Industry**

Susan Harwood Training Grant Program, FY 2018. The proposal has been submitted in collaborating with Dr. Behzad Esmaili from George Mason University.

**Research Projects****Kimmel School of Construction Management, Western Carolina University, 2018****“An Evaluation of 1.5 Modifier Rate Safety & Health Policy”**

The state of North Carolina requires businesses with a workers' compensation experience rate modifier (ERM) of 1.5 or higher to improve their workplace safety and health efforts. This study aims to evaluate legislation effectiveness. The evaluation can help identify the strengths and weaknesses of the current practices, as well as determine how to sustain the identified strengths and eliminate or reduce the influence of the unwanted weaknesses.

**“Pilot-test: The Spanish S-CATSC with Hispanic Construction Contractors and Workers”**

The goal is to translate and validate the Safety Climate Assessment Tool (S-CATSC) among a population of small Hispanic construction contractors and workers. Accordingly, interviews were conducted with Hispanic construction contractors and workers in Raleigh, NC and Charlotte, NC to validate the Safety Climate Assessment Tool (S-CATSC) Spanish version.

**“Analyzing North Carolina 811 Data Using Quantitative Methods”**

- Data Analysis: Finalized descriptive statistical review such as average, frequency, standard deviation, and confidence interval.
- Job Safety Analysis: Identified the root causes of underground damages through several site visits to workplaces.
- Follow-up Survey: Will be conducted for first-time callers to explore their experience with NC 811. The survey goal is to increase the overall effectiveness of NC 811's efforts.

**The City of Kalamazoo, Public Service Department, 2016****“Arc Flash Research Study”**

Prepared, coordinated and monitored an Arc Flash research study conducted by the Electrical Engineering Department at Western Michigan University to help the City of Kalamazoo improve its electrical safety program. The primary goal of the research study was to understand the application of NFPA E70 (2015 edition).

**“Hazard Communication Research Study”**

Prepared, coordinated, and monitored a Hazard Communication research study conducted by the Engineering Department at Western Michigan University to help the City of Kalamazoo improve its HazCom Safety program. The primary goal of this study was to provide a practical

interpretation of OSHA standards to aid the City of Kalamazoo in creating a useful inventory list of hazardous materials on site.

### **Civil and Construction Engineering Department, Western Michigan University, 2015**

“Modeling Emergency Medical Services (EMS) Traffic Crash Data Using Quantitative Methods”

Data Analysis: Finalized descriptive and inferential statistical tests such as *t*-test, ANOVA, and regression using SPSS statistical software.

### **Academic Teaching Experience**

#### **Assistant Professor - Kimmel School of Construction Management**

Western Carolina University - Fall 2017 – present

- CM 342 – Estimating II & Bidding (Spring 2018)  
Student evaluation: (3.2/4)  
This course involves the study of residential and commercial blueprints with an emphasis on quantity take off using Bluebeam and pricing using RSMeans. Topics cover most of the divisions of the Construction Specifications Institute (CSI)’s MasterFormat including general requirements, concrete, thermal and moisture protection, finishes, etc. The course also covers assemblies’ estimation for residential construction. The students must work in groups to provide a full estimation for a construction project at the end of the course.
- CM 362 – Construction Planning and Scheduling (Fall 2017)  
Student evaluation: (3.5/4)  
This course involves the study of work-breakdown structure (WBS) methods and activities relationships, such as finish to start and start to start. The course also covers the critical path method (CPM), program evaluation and review technique (PERT), schedule acceleration, earned value, and resource allocation and leveling. In addition, the course discusses in detail the concepts and calculations of construction projects’ profit, return on investment (ROI), and markup. The students must work in groups to provide a review of construction delays at the end of the course.
- CM 421 – Construction Human Factors/ Safety (Spring 2018; Fall 2017)  
Student evaluation: (3.7/4; 3.3/4)  
This course focuses on OSHA 1926 regulations for the construction industry. At the end of the course, the students should be able to discuss safety programs that are needed to mitigate the big four hazards in construction sites. They must also discuss at least eight possible safety programs and provide references to OSHA 1926.
- CM 562 – Construction Scheduling (Spring 2018)  
Student evaluation: (3.3/4)  
This course involves the study of work-breakdown structure (WBS) methods and activities relationships such as finish to start and start to start. The course also covers the critical path method (CPM), program evaluation and review technique (PERT), schedule acceleration, earned value, and resource allocation and leveling. In addition, the causes of construction project delays are investigated and presented by students.
- CM 621 – Construction Operations & Safety (Fall 2017)  
Student evaluation: (2.8/4)  
This course focuses on OSHA 1926 regulations for the construction industry. At the end of the course, the students should be able to discuss safety programs that are needed to mitigate the big four hazards in construction sites. In addition, they will be able to discuss and explain the theories and practices that have been developed to understand, analyze, and improve safety on construction projects.

- CM 653 – Research Methods in Construction (Spring 2018)  
Student evaluation: (3.4/4)  
This course focuses primarily on preparing students to conduct research projects in the construction domain. The course discusses basic statistical terminology, methods for obtaining and analyzing data, and communicating research findings with other researchers.
- CM 655 – Adv Topics in Construction  
This course allows graduate students to carry out a construction research study. This course should be taken after CM 653. The aim is to help students increase their knowledge and competency in a construction topic of their interest. The goal of this course is to contribute to the body of knowledge and presenting the finding(s) at a national conference.

### **Teaching Assistant - Civil and Construction Engineering Department**

Western Michigan University - Fall 2014 – Spring 2016

- CCE 3360 - Soil Mechanics Course
- CCE 3080 - Engineering Materials Course

### **Workshops/Short Courses**

#### **OSHA 30-Hour Construction Industry Course**

- Designed for construction workers, superintendents, site engineers, safety professionals, construction managers, plant engineers, and any other personnel who are responsible for workplace safety. Training includes topics such as OSHA standards, OSHA recordkeeping, excavation hazards, scaffolding hazards, confined space entry, personal protective equipment, and so forth.
  - Western Carolina University, Cullowhee, NC (July 2018)
  - Western Carolina University, Asheville, NC (March 2018)
  - Wake Tech Community College, Raleigh, NC (April 2014)

#### **Arc Flash Awareness**

- The ARC Flash Awareness Training aims to keep workers safe while working on or around electrically energized equipment. The course is structured to help companies fulfill requirements outlined in NFPA 70E – 2018 edition "Standard for Electrical Safety in the Workplace."
  - Western Carolina University, Asheville, NC (July 2018)

#### **Construction Project Management Training**

- Training consists of the following subjects: project planning and scheduling, follow-up and control techniques, cost control, and the administration of construction contracts.
  - Wake Tech Community College, Raleigh, NC (May 2014)

### **Professional Work Experience**

#### **Safety Coordinator, the City of Kalamazoo – Public Services, Kalamazoo, MI, 6/2016 – 7/2017**

- Ensured the development, implementation, and updating of required written safety and health programs and plans
- Conducted periodic walk-through safety inspections of all workplace facilities
- Ensured that quarterly safety training and all other specifically required training was provided for all employees
- Made critical decisions regarding development and implementation of compliance strategies to include identification of training requirements, setting training schedules, conducting safety training, and job safety analysis
- Conducted accident/injury investigations
- Carried out investigations into employee inquiries, suggestions, and complaints

- Developed, regularly reviewed and maintained applicable MIOSHA written compliance programs, e.g., Respiratory Protection, lock-out/tag-out, Permit-Required Confined Space Entry, Hazard Communication, etc.

**Site Safety Supervisor, Gaylor Electric, Dillon, SC, Two-Month Assignment 2014**

- Controlled hazardous working conditions and unsafe employee practices through site visits, safety plans, and education of all supervisory personnel
- Reinforced safety awareness in a manner that promoted cooperation and improved morale
- Created a working atmosphere that promoted openness and a high level of enthusiasm in the field
- Conducted work area inspections and assisted in personal injury investigations
- Provided onsite training and retraining if necessary

**Construction Inspector, A1-Consulting Group, Morrisville, NC, June 2013 – December 2013**

- Geotechnical and construction engineering inspection and materials testing services on projects such as Durham parks and recreation operations center
- Observed work in progress to ensure that procedures followed and materials used conformed to specifications
- Recorded quantities of materials received or used during specified periods
- Maintained daily log of construction and inspection activities and compared progress reports
- Inspected reinforcing to include proper placement, sizing, and orientation before placing concrete

**Civil Engineer, Provincial Reconstruction Team (PRT), Iraq, April 2006 - April 2010**

- Served as technical and field representative for the engineering team on the PRT
- Managed infrastructure projects from conception to construction
- Conducted meetings with contractors and high-level local government officials to discuss projects
- Coordinated scheduled inspections to identify and correct unsafe conditions
- Investigated accidents to determine the corrective actions
- Managed inventory, performed quantity estimation, prepared a daily progress report
- Guided the successful resolution of engineering problems and implementations at the site location

**Site Engineer, Tetra Tech, North Iraq, August 2004 – February 2006**

- Successfully managed various field activities in the construction of two medical clinics in northern Iraq with Tetra Tech (engineering, environmental, and construction firm based in Pasadena, CA)
- Managed site layout, surveying, managing labor issues, allocation and scheduling subcontractor work, quantity takeoff, record keeping and material management
- Instructed supervisors on safety responsibilities and enforce safety rules and regulations
- Attended job planning meetings to review work procedures and perform daily inspections
- Conducted Daily Quality Assurance inspections to ensure that blueprints were followed

**Professional Development****Bluebeam Extreme Conference (September 17-19, 2018)**

Organized by Bluebeam U.S., Austin, TX

**Green Infrastructure and LID Practice Construction Workshop (August 12, 2018)**

Organized by International Low Impact Development (LID) Conference, Nashville, TN

**Building a Stronger Curriculum - Kiewit Faculty Workshop (June 14 -16, 2018)**

Organized & sponsored by Kiewit Corporation, Omaha, NE

**NIH Regional Seminars on Program Funding and Grants Administration (May 2-4, 2018)**

Organized and National Institute for Occupational Safety and Health, the Office of Extramural Research (OER), Washington, D.C.

**Basic Blueprint Reading & Material Take-Off Course (February 16-17, 2018)**

Organized by Building Material Suppliers Association (BMSA), Hickory, NC

**OSHA #500 Trainer Course in Occupational Safety & Health Standards for Construction (August 14-17, 2017)**

Organized by Southeastern OSHA Training Institute, Myrtle Beach, SC

**Professional Licensures and Certifications****Professional Engineer (PE)**

The National Council of Examiners for Engineering and Surveying (NCEES)

**Construction Health and Safety Technician (CHST) Certification**

Board of Certified Safety Professionals (BCSP)

**Authorized OSHA Construction Outreach Trainer**

Southeastern OTI Education Center – North Carolina State University

**Safety Instructor**

Latino Workers Safety Center (LWSC) - OSHA Training Institute Education Centers

**Service****Departmental**

- Committee Member, Collegial Review Document Committee, WCU, 2017- Present
- Committee Member, Curriculum Committee, WCU, 2017- Present
- Committee Member, Assessment Committee, WCU, 2017- Present

**College**

- Dean's Faculty Advisory Committee – College of Engineering and Technology, WCU, 2017- Present
  - Chair of Distinguished Research and Scholarly Engagement Award

**Institutional**

- Committee Member, Academic Affairs Division, WCU, 2017 – Present
- Committee Member, Research and Scholarship Celebration (RASC) committee, WCU, 2017 – Present
- Committee Member, Academic Integrity Committee (AIC), WMU, 2014 – 2017

**Community**

- Reviewer, *Journal of Construction Engineering and Management*, American Society of Civil Engineers (ASCE). (August 1, 2016 - Present)
- Reviewer, *Journal of Management in Engineering*, American Society of Civil Engineers (ASCE). (August 1, 2016 - Present)
- Public Relations Officer, West Michigan American Society of Safety Engineers. (2016 -2017)

**Awards & Honors & Affiliations**

- Make a Difference Award, Graduate Student Association, Western Michigan University, 2016
- Member, American Society of Civil Engineers (ASCE)



- Member, American Society of Safety Engineer (ASSE)
- Member, American Society of Engineering Education (ASEE)
- Member, Construction Research Council (CRC)