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EDUCATION

North Carolina State University; Raleigh, NC
MCE, North Carolina State University, December 2004
B.S. in Civil Engineering, December 2002

United States Military Academy; West Point, NY
Transfer, July 1997 – April 2000

PROFESSIONAL EXPERIENCE

Institute for Transportation Research and Education, North Carolina State University; Raleigh, NC
Director – Highway Systems, Oct. 2015 – present
Program Manager – Transportation Systems Innovation Program, June 2012 – present
Program Manager – Fundamental Engineering Principles (FEP) Training Program, June 2012 – present
Senior Research Associate, Oct. 2007 – June 2012
Research Associate, Feb. 2005 – Oct. 2007
Research Assistant, Jan. 2003 – Feb. 2005
Graduate Research Assistant, Jan. 2000 – Dec. 2002

RESEARCH INTERESTS

Unconventional Interchange/Intersections, relating to safety, operational, and even economic impacts by recommending geometric modifications that reduce motorist delay, especially along the mainline. Recent focus has been on Superstreets (or Restricted Crossing U-Turns – RCUT) and Diverging Diamond Interchanges.

Traffic Safety, specifically with respect to countermeasures implemented on various types of roadways. Worked on several projects related to pedestrian safety, specifically dealing with ADA. Other safety topics include bicycle safety and network screening methods for identification of roadway safety hot spots.

Urban Streets, primarily signal related impacts such as timing and coordination considerations, treatment evaluation, related issues, and fundamental concepts and applications that provide guidance to practitioners. Use of macro/microscopic software programs for evaluating treatments.

Signal Hardware and IT applications, especially the development of useful applications for the collection or monitoring of various traffic data at unusual locations.

PEER REVIEWED PUBLICATIONS

Journal Articles

Cunningham, C.M., Chae, K, Schroeder, B., Salamati, K., and C. Vaughan (in progress). *Evolution of Yield Detection Algorithm to Aid Roundabout Crossings for Pedestrians Who are Blind*, Journal of Visual Impairment and Blindness (JVIB).

Yeom, C. and **C.M. Cunningham** (in progress). *Additional Lost Time Comparison between Analytical and Field Estimation Approaches at DDI's*. Journal of Transportation Engineering.

Vaughan, C., Searcy, S., Bert, S., Findley, D., Foyle, E., Crnes, C., Pincus, T., Coley, A., Manfredi, Z, and **C.M. Cunningham** (in progress). *Assessment of Automated Sign Retroreflectivity Measurement*. American Society of Civil Engineers.

Warchol, S., Chase, T., and **C.M. Cunningham** (in progress). *DDI Signal Phasing Scheme Evaluation using Microsimulation*. Transportation Research Board: TRR Issue XXXX, TRB, Washington, D.C. *Recipient of Best Paper Award from TRB Joint Traffic Simulation Subcommittee.

Davis, J., **Cunningham, C.M.**, Findley, D.J., Searcy, S., Martin, J., and L. Watkins (2017). *Relating Public Opinions of Roadway Assets to Field Data Using Surveys and Focus Groups*. Transportation Research Board: TRR Issue 2613, TRB, Washington, D.C.

Graves, T., Kelly, B., and **C.M. Cunningham** (2016), *An Assessment of Highway Capacity Manual Default Saturation Flow Rates to those in North Carolina*, Institute for Transportation Engineers (ITE) Journal, Volume 86.¹

Yeom, C., Schroeder, B.J., **Cunningham, C.M.**, Salamati, K., and N. Roupail (in press). *Lane Utilization Model Development for Diverging Diamond Interchanges*. Transportation Research Board.

Warchol, S., Schroeder, B.J., and **C.M. Cunningham** (2016). *Impact of Off-Ramp Geometric Treatments at Diverging Diamond Interchanges on Queue Spillback*. Transportation Research Board: TRR Issue 2556, TRB, Washington, D.C.^{1,2}

Kim, S., Warchol, S., Schroeder, B.J., and **C.M. Cunningham** (2016). *An Innovative Method for Remotely Fine Tuning Offsets along a DDI Corridor*. Transportation Research Board: TRR Issue 2557, TRB, Washington, D.C.

Cunningham, C.M., Schroeder, B.J., Warchol, S., Philips, S., Urbanik, T., and A. Tanaka (2016). *DDI Signal timing Fundamentals, Concepts, and Recommended Applications*. Transportation Research Board: TRR Issue 2557, TRB, Washington, D.C.

Hummer, J.E., **Cunningham, C.M.**, Srinivasan, R., Warchol, S., Edara, P., Claros, B., and C. Sun (2016). *Safety Evaluation of Seven of the Earliest Diverging Diamond Interchanges Installed in the US*. Transportation Research Board: TRR Issue 2583, TRB, Washington, D.C.¹

Holzem, A., Hummer, J.E., **Cunningham, C.M.**, O'Brien, S., Schroeder, B., and K. Salamati (2015). *Pedestrian and Bicyclist Accommodations on Superstreets*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2486, TRB, Washington, D.C.¹

Jackson, K., and **C.M. Cunningham** (2015). *Non-motorized Site Selection Methods for Continuous and Short-Duration Volume Counting*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2527, TRB, Washington, D.C.¹

Yeom, C., Hummer, J.E., Schroeder, B.J., **Cunningham, C.M.**, Vaughan, C., and N. Roupail (2015). *Empirical Before-After Comparison of the Operational Performance of Diverging and Conventional Interchanges*. Journal of Transportation of the Institute of Transportation Engineers. Volume 7, Issue 1.¹

Cunningham, C.M., Findley, D.J., Hovey, K., Foley, P.B., Smith, J., Fowler, T.J., Chang, J., and J.E. Hummer (2015). *Improved Asset Management and Inventory Development Through Sample Analysis and Vendor-Client Communication*. Journal of Infrastructure Systems. ¹

Vaughan, C., Jagadish, C., Bharadwaj, S., **Cunningham, C.M.**, Schroeder, B.J., Hummer, J.E., Findley, D., and N. Roupail (2015). *Long-Term Monitoring of Wrong-Way Maneuvers at Diverging Diamond Interchanges*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2484, TRB, Washington, D.C. ¹

Yeom, C., Schroeder, B.J., **Cunningham, C.M.**, Vaughan, C., Roupail, N., and J.E. Hummer (2014). *Lane Utilization at Two-lane Arterial Approaches to Double Crossover Diamond (DCD) Interchanges*. Transportation Research Board. Recipient of the Highway Capacity Committee's Best Paper Award. ^{1,2}

Yeom, C., Schroeder, B.J., **Cunningham, C.M.**, Vaughan, C., Roupail, N., and J.E. Hummer (2014). *Extended Abstract - Lane Utilization at Two-lane Arterial Approaches to Double Crossover Diamond (DCD) Interchanges*. Transportation Research Circular No. E-C190, TRB. ¹

Haley, R., Ott, S., Hummer, J.E., Foyle, R., and **C.M. Cunningham** (2015). *Resident, Commuter, and Business Perceptions of New Superstreets*, Journal of Transportation Engineering, Volume 141, Issue 7. American Society of Civil Engineers. ¹

Chang, J., Findley, D.J., **Cunningham, C.M.**, Tsai, M.K. (2014). *Considerations for Effective Lidar Deployment by Transportation Agencies*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2440, TRB, Washington, D.C. ¹

Jackson, K., **Cunningham, C.M.**, Yeom, C., Hummer, J.E., and A. Kirk (2014). *Public Perception of Double Crossover Diamond Interchanges*. Journal of Transportation of the Institute of Transportation Engineers, Institute of Transportation Engineers. ITE Vol. 4, No. 1. ¹

Cunningham, C.M., Chang, J., Findley, D.J., Vaughan, C., Hekele, A., and C. Tatham (2013). *Public Opinions of Roadway Assets – Roadway Review as a New Survey Method*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2361, TRB, Washington, D.C. ¹

Cunningham, C.M., Miller, M.A., Findley, D.J., Schroder, B.J., Katz, D., Foyle, R.S., Smith, S., and D. Carter (08/2013). *Business Perceptions of Access Management Techniques*. Public Works Management and Policy. American Public Works Association. ¹

Findley, D.J., **Cunningham, C.M.**, Chang, J.C., Hovey, K.A., and M.A. Corwin, M.A (2013). *Effects of License Plate Attributes on Automatic License Plate Recognition*. Submitted for Publication by the Transportation Research Record: Journal of the Transportation Research Board: TRR Issue 2327, TRB, Washington, D.C. ¹

Salamati, K., Schroeder, B., Roupail, N., **Cunningham, C.**, Zang, Y., Kaber, D. (2013). *Simulator Study of Driver Responses to Pedestrian Treatments at Multilane Roundabouts*. Journal of the Transportation Research Board: TRR Issue 2312, TRB, Washington, D.C. ¹

Findley, D.J., **Cunningham, C.M.**, Schroeder, B.J., Vaughan, C.L., and T.J. Fowler (2013). *Structural and Safety Investigation of Statewide Weathered Steel Beam Guardrail Performance in North Carolina*, Journal of the Transportation Research Board: TRR Issue 2309, TRB, Washington, D.C.¹

Findley, D.J., **Cunningham, C.M.**, Letchworth, W., and M. Corwin (2012). *Trip Generation Characteristics of Power Centers*. Journal of Transportation of the Institute of Transportation Engineers, Institute of Transportation Engineers. ITE Vol. 4, No. 1.¹

Cunningham, C.M., Schroeder, B.S., Vaughan, C., and R. Hughes (2012). *Is TACT Effective in Changing Driver Behavior: Evidence from North Carolina TACT III Effort*, Journal of the Transportation Research Board: TRR Issue 2265, TRB, Washington, D.C.¹

Salamati, K., Schroeder, B., Roupail, N., **Cunningham, C.M.**, Long, R., and J. Barlow (2012). *Development and Implementation of a Conflict-based Assessment of Pedestrian Safety (CAPS) to Evaluate Accessibility of Complex Intersections*, Journal of the Transportation Research Board – TRR Issue 2264, TRB, Washington, D.C.¹

Scott, A., Barlow, J., Guth, D., Bentzen, B., **Cunningham, C.M.**, and R. Long (2011), *Nonvisual Cues for Maintaining Heading During Street Crossings*, Journal of Visual Impairment and Blindness (JVIB).¹

Scott, A., Barlow, J., Guth, D., Bentzen, B., **Cunningham, C.M.**, and R. Long (2011), *Nonvisual Cues for Aligning to Cross Streets*, Journal of Visual Impairment and Blindness (JVIB).¹

Haley, R., Ott, S., Hummer, J.E., **Cunningham, C.M.**, Foyle, R., and B.J. Schroeder (2011). *Operational Effects of Signalized Superstreets in North Carolina*, Journal of the Transportation Research Board – TRR Issue 2223, TRB, Washington, D.C.¹

Ott, S., Haley, R., Hummer, J.E., Foyle, R., and **C.M. Cunningham** (2012). *Safety Effects of Unsignalized Superstreets in North Carolina*, Accident Analysis and Prevention, Volume 45.*

Cunningham, C.M., Findley, D.J., Schroeder, B., and R. Foyle (2011), *Traffic Operational Impacts of Contemporary Multi-Pump Island Fuel Centers*, Institute for Transportation Engineers (ITE) Journal, Volume 81.¹

Findley, D.J., **Cunningham, C.M.**, and Hummer, J.E. (2010), *Comparison of Mobile and Manual Data Collection for Roadway Components*, Transportation Research Part C: Emerging Technologies, Elsevier.¹

Cunningham, C.M. and J.E. Hummer (2010), *Evaluating the Effectiveness of Red Light Running Camera Enforcement in Raleigh, North Carolina*, Journal for Transportation Safety and Security, Taylor and Francis.¹

Cunningham, C.M., Moon, J.P., and J.E. Hummer (2008). *An Analysis of Automated Speed Enforcement Cameras in Charlotte, NC*. Journal of the Transportation Research Board – TRR Issue 2078, TRB, Washington, D.C.¹

Baek, J.D., Hummer, J.E., Williams, B., and **C.M. Cunningham** (2006). *Reasonable Speeds on Suburban Multilane Highways with Curbs*. Journal of the Transportation Research Board – TRR Issue 1969, TRB, Washington, D.C.¹

Hummer **et. al** (2005). *User Perceptions of the Quality of Service on Shared Paths*, Journal of the Transportation Research Board – TRR Issue 1939, TRB, Washington, D.C.¹

¹ *PDF of paper is available upon request*

^{1,2} *Award of Recognition*

Proceedings

Chang, J.C., Findley, D.J., **Cunningham, C.M.**, and Tsai, M.K. (2014). *Considerations for Effective LiDAR Deployment by Transportation Agencies*. Proceedings of the Transportation Research Board 92nd Annual Meeting. Transportation Research Board. National Research Council. Jan. 13, 2014. Washington, DC.

Findley, D.J., **Cunningham, C.M.**, Chang, J.C., Hovey, K.A., and M. Corwin (2013) *Effects of License Plate Attributes on Automatic License Plate Recognition*. Proceedings of the Transportation Research Board 91st Annual Meeting, TRB, Washington, D.C.

Vaughan, C., **Cunningham, C.M.**, Schroeder, B.J., and J. Hummer. *Empirical Study and Assessment of the Operational Performance of Double Crossover Diamond Interchanges (2014)*. Proceedings of the Transportation Research Board 92nd Annual Meeting, TRB, Washington, D.C.

Cunningham, C.M., Chang, J.C., Findley, D.J., Hekele, A., and Tatham, C. (2013). *Public Opinions of Roadway Assets Using a New Method - The Roadway Review*. Proceedings of the Transportation Research Board 91st Annual Meeting. Transportation Research Board. National Research Council. Jan. 14, 2013. Washington, DC.

Hummer, J.E., **Cunningham, C.M.**, Schroeder, B.J., Vaughan, C.L., Findley, D.J., Jackson, K., and F. Gontaruk (2012). *Early Findings on the Operational Impacts of Double Crossover Diamond Interchanges*. Institute of Transportation Engineers Conference, Atlanta, GA.

Cunningham, C.M., Phillips, S., and B.J. Schroeder (2012). *Recommendations for Corridor and Signal Timing Improvements at Diverging Diamond Interchanges (DDI's)*. Traffic Signal Systems Mid-Year Meeting, TRB, Irvine, CA.

Findley, D.J., **Cunningham, C.M.**, Schroeder, B.J., Vaughan, C.L., and Fowler, T.J. (2012). *Structural and Safety Investigation of Statewide Weathered Steel Beam Guardrail Performance in North Carolina*. Proceedings of the Transportation Research Board 91st Annual Meeting. Transportation Research Board. National Research Council. Jan. 24, 2012. Washington, DC.

Cunningham, C.M., Miller, M.A., Findley, D.J., Schroeder, B.J., Katz, D., Foyle, R.S., Smith, S., and D. Carter (2011). *Economic Effects of Access Management Techniques in North Carolina*. Proceedings of the Transportation Research Board 90th Annual Meeting, TRB, Washington, D.C.

Salamati, K., B. Schroeder, N. M. Roupail, **C. Cunningham**. *Simulator Study of Driver Yielding Behavior to Pedestrians at Roundabouts*, NCSITE Annual Meeting, November 2011, Raleigh NC

Findley, D.J., **Cunningham, C.M.**, and Hummer, J.E. (2010), *Comparison of Mobile and Manual Data Collection for Roadway Components*, Asset Management Conference and Expo, FHWA/NCDOT, Durham, N.C.

Cunningham, C.M., Moon, J.P., and J.E. Hummer (2007). *An Analysis of Automated Speed Enforcement Cameras in Charlotte, NC*. Proceedings of the Transportation Research Board 87th Annual Meeting, TRB, Washington, D.C.

Cunningham, C.M. and J.E. Hummer (2006), *Evaluating the Effectiveness of Red Light Running Camera Enforcement in Raleigh, North Carolina*, NC Section of American Society of Civil Engineers, Annual Conference.

Foyle, R.S., Fain, S.J., and **C.M. Cunningham** (2006). *Sensitivity Analysis of Highway Capacity Manual Input Variables and LOS Analysis Tool for Four Facility Types in North Carolina*, Proceedings of the Transportation Research Board 85th Annual Meeting., TRB, Washington, D.C.

Baek, J.D., Hummer, J.E., Williams, B., and **C.M. Cunningham** (2005). *Reasonable Speeds on Suburban Multilane Highways with Curbs*. Proceedings of the Transportation Research Board 85th Annual Meeting, TRB, Washington, D.C.

Books and Chapters

Findley, D.J., Schroeder, B.J., **Cunningham, C.M.**, Brown, T.H. *Highway Engineering: Planning, Design, and Operations*. 1st Edition. Butterworth-Heinemann. Elsevier. 2016.

Schroeder, B., **C. Cunningham**, D. Findley, and R. Foyle. *ITE Manual of Transportation Engineering Studies*. Institute of Transportation Engineers. Washington, D.C. December 2010.

Cunningham, C.M. (2010). *Intersection and Driveway Studies*. Chapter 6 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Traffic Control Device Studies*. Chapter 7 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Compliance with Traffic Control Devices*. Chapter 8 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Freeway and Managed Lanes*. Chapter 10 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Traffic Collision Studies*. Chapter 17 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Alternative Safety Studies*. Chapter 18 in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2010). *Survey Design Alternatives*. Appendix B in the *ITE Manual of Transportation Engineering Studies*. ITE, Washington, D.C.

Cunningham, C.M. (2005). *Evaluating the Use of Red light Running Photographic Enforcement Using Collisions and Red Light Running Violations*. Master's Thesis. North Carolina State University.

REPORTS AND OTHER PUBLICATIONS

Cunningham, C.M., Warchol, S., Schroeder, B.J., Schroeder, Tanaka, A., Phillips, S., and T. Urbanik. (pending). *Guidance for Traffic Signals at Diverging Diamond Interchanges and Adjacent Intersections*. Web-based

updates to the Federal Highway Administration *Diverging Diamond Interchange Information Guide*, Chapters 5 and 7.

Schroeder, B.J., Hughes, R., Barlow, J., Long, R., and **C.M. Cunningham, C.M.** (2017). *Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities: A Guidebook*. National Cooperative Highway Research Program (NCHRP) Research Report 834.

Cunningham, C.M., Findley, D., Davis, J., Searcy, S., and J. Martin (2016). *Public Opinions of Roadway Assets using Roadway Reviews and Focus Groups*. North Carolina Department of Transportation. FHWA/NC 2016-04. August 2016.

Cunningham, C.M., Davis, J., Aghdashi, B., Chase, T., Kim, S., and T. Nye (2016). *Public Opinions of Roadway Assets using Roadway Reviews and Focus Groups*. North Carolina Department of Transportation. FHWA/NC 2016-04. August 2016.

Cunningham, C.M., Findley, D., Davis, J., Searcy, S., and J. Martin (2016). *Planning Level Evaluation of the Effects of Ramp Metering on North Carolina Freeway*. North Carolina Department of Transportation. FHWA/NC 2016-04. November 2016.

Warchol, S, Chase, T., **Cunningham, C.M.**, and B. Schroeder (2016). *Exploring Corridor Operations in the Vicinity of a Diverging Diamond Interchange (DDI)*. North Carolina Department of Transportation. FHWA/NC 2014-13. June 2016.

Davis, J., Aghdashi, B., **Cunningham, C.M.**, and D. Findley, D. (2016). *Evaluation of Life Cycle Impacts of Intersection Control Type Selection*. North Carolina Department of Transportation. FHWA/NC 2014-11. May 2016.

Vaughan, C., Searcy, S., **Cunningham, C.M.**, and D. Findley (2016). *Assessment of Automated Sign Retroreflectivity Measurement*. North Carolina Department of Transportation. FHWA/NC 2014-32. May 2016.

Vaughan, C., Chase, T., Warchol, S., and **C.M. Cunningham**. (2015). *Reducing Aggressive Driving Behavior in the Vicinity of Trucks Using Real-Time Feedback*. North Carolina Department of Transportation. September 2015.

Hummer, J.E., **Cunningham, C.M.**, Srinivasan, R., Rao, S., and S. Warchol (2015). *TECHBRIEF – Field Evaluation of Diverging Diamond Interchanges (Safety)*. Federal Highway Administration. FHWA DTFH6-10-C-00030.

Hummer, J.E., **Cunningham, C.M.**, Srinivasan, R., Rao, S., and S. Warchol (2015). *Safety Evaluation of Seven of the Earliest Double Crossover Interchanges Installed in the US*. Federal Highway Administration. FHWA DTFH6-10-C-00030.

Cunningham, C.M. and B.J. Schroeder (2014). *Diverging Diamond Interchange Information Guide*. Federal Highway Administration. Part of Full Report documenting Alternative Intersection and Interchange Guidelines.

Sallade, S., Vaughan, C., Chase, T., Warchol, S., and **C.M. Cunningham** (2015). *Reducing Aggressive Driving Behavior – Clearly Conveying Enforcement Wave Initiatives to Citizens using Portable Message Signs*, North Carolina Governor’s Highway Safety Program Final Report.

Hummer, J.E., **Cunningham, C.M.**, Srinivasan, R., Rao, S., and S. Warchol (2015), *TECHBRIEF – Field Evaluation of Diverging Diamond Interchanges (Operations)*. Federal Highway Administration. FHWA DTFH6-10-C-00030.

Cunningham, C.M., Schroeder, B.J., Hummer, J.E. Vaughan, C., Yeom, C., Salamati, K. Findley, D.J. (2014), *Field Evaluation of Double Crossover Diamond Interchanges – Interim Report 2*. Federal Highway Administration. FHWA DTFH6-10-C-00030.

Cunningham, C.M., Findley, D.J., Foley, P.B., and J. Chang (2013). *Comparison of Mobile Asset Data Collection Vehicles to Manual Collection Methods*. North Carolina Department of Transportation. FHWA/NC 2011-02. February 2013.

Chang, J.C., Tsai, M.K., Findley, D.J., and **C.M. Cunningham** (2012). *Infrastructure Investment Protection with LiDAR*. North Carolina Department of Transportation. FHWA/NC 2012-15. October 2012.

Findley, D.J., **Cunningham, C.M.**, Chang, J.C., Hovey, K.A., and Corwin, M.A. (2012). *Effects of License Plate Attributes on Automatic License Plate Recognition*. North Carolina Department of Transportation. Division of Motor Vehicles.

Findley, D.J., **Cunningham, C.M.**, Chang, J.C., Hovey, K.A., and Corwin, M.A. American Association of Motor Vehicle Administrators (AAMVA) (2012). *Best Practices Guide for Improving Automated License Plate Reader Effectiveness through Uniform License Plate Design and Manufacture. Appendix F: North Carolina State University Study on Effects of License Plate Attributes on ALPR*.

Long, R., Barlow, J., Guth, D., Schroeder, B., **Cunningham, C.M.**, Salamati, K., and D. Kim (2012). *Evaluating Pedestrian Safety Improvements: Final Report*. Road Commission of Oakland County, RC-1585.

Cunningham, C.M., Hummer, J.E., Chang, J., Katz, D., Vaughan, C. Findley, D.J., Schroeder, B.J., and D. McAvoy (2012). *All-Weather Paint for Work Zones – Field Evaluation in North Carolina and Ohio*. Final Report submitted to FHWA, Highways for Life Program.

Findley, D.J., **Cunningham, C.M.**, Foyle, R., Demers, A., List, G., Stone, J., Dobie, K., Hall, W., Hauser, E., Kemmsies, W., and M. Smith (2011), *Economic Contribution of the North Carolina Ports*, Final Report.

Cunningham, C.M., Miller, M., Findley, D., Schroeder, B., Katz, D., Foyle, R., Smith, S. and D. Carter (2010), *Economic Effects of Access Management Techniques in North Carolina*. FHWA/NC/2009-12.

Schroeder **et. al.** (2010). *NCHRP Report 674: Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Impairments*. Transportation Research Board, Washington, D.C. 2011.

Hummer, J.E., Haley, R., Ott, S. **Cunningham, C.M.**, and R. Foyle (2009), *Superstreet Benefits and Capacities*, FHWA/NC/2009-06.

Hughes, R., **Cunningham, C.M.**, Vaughan, C., and B. Schroeder (2009), *Efforts to Evaluate the Feasibility of Using Video Image Processing Capabilities for the Automated Detection of TACT Driver Behaviors*, submitted to FMCSA on behalf of NCSHP.

Hummer, J.E. Findley, D.J., and **C.M. Cunningham** (2008). *Asset Management Inventory and Data Collection*. FHWA/NC/2008-15.

Hummer, J.E., Findley, D.J., and **C.M. Cunningham** (2008). *Comparison of Automated and Manual Data Collection for Roadside Elements*. Highway Asset Inventory and Data Collection National Workshop – Durham, NC.

Cunningham, C.M. and J.E. Hummer (2004). *Evaluating the Use of Red Light Running Photographic Enforcement Using Collisions and Red Light Running Violations*, North Carolina Governor’s Highway Safety Program Final Report.

Cunningham, C.M., Moon, J.P., and J.E. Hummer (2005). *An Evaluation of the Safety Effects of Speed Enforcement Cameras*, North Carolina Governor’s Highway Safety Program Final Report.

Rouphail, N.M., Foyle, R.S., **Cunningham, C.M.**, and S.J. Fain (2006). *NCDOT Level of Service Software Program for Highway Capacity Manual Planning Applications*, FHWA/NC/2006-06.

Hummer **et. al** (2006). *Evaluation of Safety, Design, and Operation of Shared-Use Paths*. FHWA-HRT-05-137.

Cunningham, C.M., Findley, D.J., and R.S. Foyle (2008). *Pedestrian Operations at Single Point Interchanges*. FHWA/NC/2008-08.

Cunningham, C.M., Findley, D.J., and R.S. Foyle (2008). *Traffic Operational Impacts of Contemporary Multi-Pump Fueling Centers*. FHWA/NC/2007-15.

Hummer **et. al** (2004). *Effects of Increased U-turns at Intersections on Divided Facilities and Median Divided Versus Five-Lane Undivided Benefits*. FHWA/NC/2004-07.

Milazzo **et. al** (2001). *Overcoming Obstacles to the Use of Traffic Signal Detector Data for Traffic Forecasting*. FHWA.

RESEARCH PROJECTS

The Use of Right Turn Flashing Yellow Arrows and Leading Pedestrian Intervals (Co-PI)
Nov. 2013 – Dec. 2019 NCDOT

Post-Installation Evaluation of the Effects of Ramp Metering in North Carolina
Aug. 2017 – Oct. 2018 NCDOT

Designing Message Delivery with Manual and Fully Automated Driving (Co-PI)
Mar. 2017 – Feb. 2019 NCDOT

Planning Level Guidance on Selecting the Optimum Service Interchange Design (PI)
Aug. 2017 – Feb. 2019 NCDOT

Reasonable Alternatives for Grade-Separated Intersections (Co-PI)
Aug. 2017 – July 2019 NCDOT

Traffic Signal Preemption Clearances at Highway-Rail Grade Crossings

Aug. 2017 – July 2019 NCDOT

Guidelines for Left Turn Signal Phasing Options by Time of Day: A Safety and Operational Study

Aug. 2017 – July 2019 NCDOT

Radar Detection Evaluation

Aug. 2015 – July 2017 NCDOT

Bicycle and Pedestrian Data Collection (Co-PI)

Nov. 2013 – Dec. 2019 NCDOT

Rail Corridor Trespass Severity Assessment (PI)

Aug. 2016 – July 2017 NCDOT

Rail Corridor Trespass Severity Assessment (PI)

Aug. 2016 – July 2018 NCDOT

NCHRP 3-113b: An Assessment of Safety and Geometric Design Criteria for Diverging Diamond Interchanges (PI)

Nov. 2015 – Oct. 2017 NCHRP

Public Opinions of Roadway Assets using Roadway Reviews and Focus Groups (PI)

Aug. 2015 – July 2016 NCDOT

Planning Level Evaluation of the Effects of Ramp Metering on North Carolina Freeways (PI)

Aug. 2015 – July 2016 NCDOT

Reducing Aggressive Driving Behavior in the Vicinity of Trucks Using Real-Time Feedback (PI)

Oct. 2014 – Sept. 2015 NCGHSP

Reduction in Railroad Right-of-Way Trespassing Incidents (PI)

Sept. 2014 – Aug. 2016 NCDOT

The Effects of Late Lane Merges on Travel Times (Co-PI)

Sept. 2014 – Aug. 2016 NCDOT

NCHRP 3-113a: Guidance for Traffic Signals at Diverging Diamond Interchanges and Adjacent Intersections (PI)

June 2014 – May 2016 NCHRP

Assessment of Automated Sign Retroreflectivity Measurement (PI)

Feb. 2014 – Aug. 2015 NCDOT

TOPR #62 – Develop Alternative Intersections Informational Guides (Co-PI)

Aug. 2013 – Feb. 2014 FHWA

Evaluation of Life Cycle Impacts of Intersection Control Type Selection (PI)

Aug. 2013 – Aug. 2015 NCDOT

Exploring Corridor Operations in the Vicinity of a Diverging Diamond Interchange (DDI) (Co-PI)

Aug. 2013 – Aug. 2015 NCDOT

TOPR #34 - Accelerating Roundabout Implementation in the United States (Co-PI)

Sept. 2011 – Feb. 2014 FHWA

TOPR #2 - Guidance for Alternative Intersections (Co-PI)

May 2013 – Dec. 2015 FHWA

NCHRP 3-78b - Guidelines for the Application of Crossing Solutions at Roundabouts and Channelized Turn Lanes to Assist Pedestrians with Vision Disabilities – (Co-PI)

May 2013 – Aug. 2015 NCHRP

A Multi-Pedestrian Counting System Using Fusion of Stereo Camera and Laser Scanner

April 2012 – Dec. 2013 FHWA

Work Zone Traffic Analysis & Impact Assessment

Feb. 2012 – Aug. 2012 NCDOT

Effects of License Plate Attributes on Automatic License Plate Recognition (Co-PI)

February 2012 – June 2012 NCDMV

Pedestrian and Bicycle Accommodations on Superstreets (Co-PI)

Aug. 2011 – Aug. 2013 NCDOT

Infrastructure Investment Protection with High Density Surveys (HDS) (Co-PI)

Aug. 2011 – Aug. 2012 NCDOT

NCDOT Roadway Reviews (Co-PI)

June 2011 – Dec. 2011 NCDOT

Road Commission for Oakland County Pedestrian Hybrid Beacon (PHB) and Rectangular Rapid Flashing Beacon (RRFB) Study (Co-PI)

Feb. 2009 – Nov. 2011

NCHRP 3-100 - Evaluating the Performance of Corridors with Roundabouts

May 2011 – Dec. 2012 National Academy of Science

Field Evaluation of Double Crossover Diamond Interchanges (Co-PI)

Oct. 2010 – Dec. 2014 FHWA

Performance of Weathered Steel Guardrail in North Carolina (Co-PI)

Aug. 2010 – Feb. 2011 NCDOT

Economic Contribution of the North Carolina Ports (Co-PI)

Feb. 2010 – Jan. 2011 NCDOT

Comparison of Data Collection Vehicles to Human Collection Methods (PI)

Aug. 2010 – June 2012 NCDOT

NCHRP 3-78a: Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities

Feb. 2005 – Mar. 2010 National Academies of Science

ITE Manual of Transportation Studies (Co-PI)

Dec. 2008 – Dec. 2009 Institute for Transportation Engineers

Economic Impacts of Access Management (Co-PI)

Aug. 2008 – Aug. 2010 NCDOT

Superstreet Benefits and Capacities (Co-PI)

Aug. 2008 – Aug. 2010 NCDOT

All-Weather Paint for Work Zones: Field Evaluation in North Carolina (Co-PI)

Mar. 2008 – Sep. 2010 3M Traffic Safety Systems Division on behalf of FHWA Highways for Life

Camera-Based Detection for TACT III Enforcement Evaluation (Co-PI)

Jan. 2010 – Sep. 2010 NC State Highway Patrol – FMCSA

TACT II Enforcement Evaluation Program (Co-PI)

Apr. 2009 – Sep. 2009 NC State Highway Patrol – FMCSA

Pedestrian Safety Evaluation on Hillsborough Street Corridor

July 2007 – July 2008 City of Raleigh

Blind Pedestrian Access to Complex Intersections

Aug. 2004 – June 2012 National Institutes of Health

Investigation of Highway Asset Inventory and Data Collection Methods (Co-PI)

Feb. 2009 – Dec. 2009 SHRP 2

Pedestrian Operations at Single Point Interchanges (Co-PI)

July 2009 – Dec. 2009 NCDOT

Traffic Operational Impacts of Contemporary Multi-Pump Island Fuel Centers (Co-PI)

July 2006 – Dec. 2007 NCDOT

Evaluation of Safety, Design, and Operations of Shared-Use Paths

January 2004 – July 2006 FHWA

Expanding the Use of Photographic Enforcement to Enhance Traffic Safety in North Carolina (Co-PI)

Oct. 2002 – Sept. 2004 NC Governor's Highway Safety Program

An Evaluation of the Safety Effects on Speed Enforcement Cameras (Co-PI)

Oct. 2003 – Sept. 2005 NC Governor's Highway Safety Program

Reasonable Speeds on Curb and Gutter Facilities (Co-PI)

July 2003 – March 2005 NC DOT

Effects of Increased U-Turns at Intersections on Divided Facilities and Median Divided versus Five-Lane Undivided Benefits

July 2002 – June 2004 NC DOT

Traffic Signal Center Site Development (PI)

Oct. 2002 – June 2004 NC Governor's Highway Safety Program

NC Level of Service (LOS) Program Development

July 2002 – Mar. 2005 NC DOT

Overcoming Obstacles to the Use of Traffic Signal Detector Data for Traffic Forecasting

July 1999 – June 2001 NC DOT

PRESENTATIONS

Evaluation of Life Cycle Impacts of Intersection Control Type Selection. 96th Transportation Research Board Annual Meeting, Presentation to Access Management Committee. January 2017.

Relating Public Opinions of Roadway Assets to Field Data using Surveys and Focus Groups. 96th Transportation Research Board Annual Meeting. January 2017.

DDI Signal Timing Fundamentals, Concepts, and Recommended Applications. 95th Transportation Research Board Annual Meeting. January 2016.

Impact of Off-Ramp Geometric Treatments at Diverging Diamond Interchanges on Queue Spillback. 95th Transportation Research Board Annual Meeting. January 2016.

Safety Evaluation of Seven of the Earliest Diverging Diamond Interchanges Installed in the US. 95th Transportation Research Board Annual Meeting. January 2016.

Traffic Signals: Understanding and Dealing with Traffic Signals from an Orientation and Mobility Perspective. Southeast Orientation and Mobility Association (SOMA) Conference. March 2016.

Guidelines for the Application of Crossing Solutions at Roundabouts and Channelized Turn Lanes to Assist Pedestrians with Vision Disabilities. Southeast Orientation and Mobility Association (SOMA) Conference. March 2016.

Innovative Intersections and Interchanges from an Orientation and Mobility Perspective. Southeast Orientation and Mobility Association (SOMA) Conference. March 2016.

Evaluation of Life Cycle Impacts of Intersection Control Type Selection. NCDOT Roundtable Meeting. Cary, NC. September 2015.

Reduction in Railroad Right-of-Way Trespassing Incidents. 2015 Right of Way Fatality and Trespass Prevention Workshop. Charlotte, NC. August 2015.

One vs. Two Controller Options at Closely Spaced Intersections. NCSITE Signal Systems User Group Meeting. Greensboro, NC. May 2015.

FHWA Alternative Intersection Informational Guides. Webinar as part of TOPR#62. Online. August 2014.

Guidelines for Pedestrian Signal and Push Button Location. NCSITE Signal Systems User Group Meeting. Raleigh, NC. May 2014.

Safety Effects of Unsignalized Superstreets in NC. 2014 Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Common Problems at Double Crossover Diamond (DCD) Interchanges and Nearby Intersections. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Impact of Superstreet Operations on Pedestrians and Bicyclists. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Observations of Pedestrian and Bicycle Behavior and Facilities at Double Crossover Diamond (DCD) Interchanges. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Operational Effects of Signalized Superstreets in NC. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Signal Phasing Options at Double Crossover Diamond (DCD) Interchanges using a Single Controller. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

FHWA Alternative Intersection Informational Guides. Webinar as part of TOPR#62. Alternative Intersections & Interchanges Symposium. Salt Lake City, UT. July 2014.

Adapting Orientation and Mobility to Changes in the Built Environment. AER International Orientation and Mobility Conference. New Orleans. December 2013.

Traffic Signals: Understanding and Dealing with Traffic Signals as an Orientation and Mobility Specialists. AER International Orientation and Mobility Conference. New Orleans, LA. December 2013.

Accessibility Issues: Quiet Cars, Unconventional Intersections, and the Future. AER International Orientation and Mobility Conference. New Orleans, LA. December 2013.

Focus Group Input on Superstreet Pedestrian and Bicycle Facilities. Presentation to pedestrian and bicycle advocacy group. Durham, NC City Hall. July 2013.

Traffic Operational Impacts of Contemporary Multi-Pump Island Fuel Centers. Presentation to NCSITE ITE Users Group. James B. Hunt Jr Library. Raleigh, NC. June 2013.

Geospatial Transportation Mapping Association. Annual Meeting. Washington, DC. March 2013.

DCD/DDI Signal Timing and Lessons Learned. NCSITE Signal Systems & ITS/Tolls User Group Joint Meeting Presentation to NCSITE. Raleigh, NC. March 2012.

Effects of License Plate Attributes on Automatic License Plate Recognition. 92nd Transportation Research Board Annual Meeting. January 2013.

Focus Group Input on Double Crossover Diamond (DCD) Interchanges. Presentations three community and professional groups in Missouri (2) and Tennessee (1). 2011-2012.

Public Opinions of Roadway Assets Using a New Method – The Roadway Review. 92st Transportation Research Board Annual Meeting. January 2013.

How Traffic Signals Work and Why You Should Learn About Them. Southeast Orientation and Mobility Association (SOMA) and the Central Mid-Atlantic Orientation and Mobility Association (COMA) Conference.. September 2012.

Modern Roundabouts – A Discussion of Safety, Efficiency, and Accessibility Tradeoffs. Southeast Orientation and Mobility Association (SOMA) and the Central Mid-Atlantic Orientation and Mobility Association (COMA) Conference.. September 2012.

Effects of License Plate Attributes on Automatic License Plate Recognition. American Association of Motor Vehicle Administrators Conference. August 2012.

Recommendations for Corridor and Signal Timing Improvements at Diverging Diamond Interchange (DDI). TRB Traffic Signal Systems Mid-Year Meeting. July 2012.

Field Evaluation of Restricted Crossing U-Turn Intersections – The Maryland Experience. TRB Access Management Conference. July 2012.

Restricted Crossing U-Turn (RCUT) Intersection Safety Analysis – The North Carolina Experience. TRB Access Management Conference. July 2012.

Performance of Weathered Steel Guardrail. NCSITE Mid-Year Meeting. 2011.

Structural and Safety Investigation of Statewide Weathered Steel Beam Guardrail Performance in North Carolina. 91st Transportation Research Board Annual Meeting. January 2012.

Economic Effects of Access Management Techniques in North Carolina. 90th Transportation Research Board Annual Meeting. January 2011.

Automated Asset Inventory Data Collection. NC GIS Conference. 2009.

Highway Asset Inventory & Data Collection National Workshop, Roadside Elements Technical Session Report Out. AASHTO, FHWA, NCDOT, NCSU, TRB. September 2008.

Automated Asset Inventory Technologies: A Comparison of Manual and Automated Methods. NCSITE Annual Meeting. 2008.

An Instructor's Guide to Traffic Signal Actuation, North Central Orientation and Mobility Association, Kalamazoo, MI. September 2010.

Traffic Engineering 101, North Central Orientation and Mobility Association, Kalamazoo, MI. September 2010.

Economic Effects of Access Management Techniques, 9th National Conference on Access Management, Natchez, Mississippi. October 2010.

NC in the Future – Project Phoenix/Ideas and Careers for the Future, Sustainable Transportation, Wake-Rolesville Middle School. June 2010.

An Evaluation of the Safety Effects on Speed Enforcement Cameras. 88th Transportation Research Board Annual Meeting. January 2009.

An Overview of the Safety Effects of Automated Enforcement Techniques. ASCE Conference, 2007.

Traffic Operational Impacts of Contemporary Multi-Pump Fuel Centers. Southern District ITE Meeting. June 2008.

Focus Group Input on Automated Speed Enforcement Installations in Charlotte, NC. Presentations to a community and professional group in Charlotte, NC. June 2008.

Tools for Aiding Visually Impaired Pedestrians at Unique Crossings. Association for Education and Rehabilitation (AER) of the Blind and Visually Impaired Conference. 2008.

NHTSA Strategic Meeting on Speed. Impacts of Automated Speed Enforcement, 2008.

Reasonable Speeds on Suburban Multilane Highways with Curbs. 85th Transportation Research Board Annual Meeting. January 2006.

Focus Group Input on Red Light Camera Installations. Presentations to six community and professional groups. Greenville, Raleigh, and Charlotte, NC. June 2005.

TEACHING ACTIVITY AND WORKSHOP DEVELOPMENT

Professional Enhancement Program
Instructor

Jan. 2004 – Present NCDOT
Professional Engineering (PE) Exam Review
August 2012 – Present NCDOT

Fundamental Engineering Principles Program.
Courses including: Mathematics, Physics, Horizontal and Vertical Alignment, Highway Design, Statics,
Strength of Materials, Structure Design, Fluid Mechanics
Program Manager/Instructor
Jan. 2003 – Present NCDOT

Highway Engineering Concepts
Topics including: Transportation Planning; Horizontal and Vertical Alignment, Highway Design, Statics,
Strength of Materials, and Structure Design
Jan. 2007 – Present, NCDOT

National Highway Institute IDIQ

Highway Safety and Business, Public Administration, and Quality Training
2012-2017

Maintenance Academy Course, National Highway Institute
Course Development Activities
Jan. 2008 – Jan. 2009

North Carolina State University Civil, Construction, and Environmental Engineering Department

CE214: Statics, NCSU
Adjunct Professor
Spring 2007

CE502: Highway Operations, NCSU
Visiting Lecturer
Spring 2008, 2010

CE503: Highway Design, NCSU
Visiting Lecturer
Spring 2013 (x2)

CE509: Traffic Safety, NCSU
Visiting Lecturer
Spring 2006, 2013 (twice)

CE706: Advanced Traffic Control, NCSU
Visiting Lecturer
Spring 2008, 2009, 2010

Principles, Detection, and Timing of Traffic Signals
Developer and Co-Instructor
2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2011, 2013, 2016, 2017

Proven Safety Countermeasures for Roadway Safety Problems in North Carolina.
Accelerating Safety Activities Program (ASAP). Federal Highway Administration.
Information Sharing on Roadway Departure, Intersection, and Pedestrian Issues and Solutions.
2013, 2014

Traffic Signal 101
North Carolina Local Technical Assistance Program (LTAP)
Developer
2012

Synchro/SimTraffic Basic, Intermediate, & Advanced Training
Developer/Instructor
Jan., Mar., June, & Oct. 2008, Mar. & Sept. 2009, 2010, 2011, 2012

Division Street and Driveway Access Handbook Training
Developed and Guest Instructor
Dec. 2004 – June 2007 (14 workshops)

Introduction to Site Development and Highway Access Concepts
Development Only
2014, 2015, 2016

Traffic Signal Inspection Training
Developed and Guest Instructor
Dec. 2005 – June 2007 (20 workshops)

COMMITTEE AND PANEL ACTIVITIES

Transportation Research Board

Member, 2001 – Present

Member, Access Management Committee (AHB70), 2010 – Present

Member, Intersections Joint Subcommittee, 2012-Present

Member, Traffic Law Enforcement Committee (ANB40), 2005 – 2012

Friend, Operational Effects of Geometrics (AHB65), 2009 – Present

Friend, Signal Systems Committee (AHB25), 2011 – Present

Friend, Maintenance and Operations Management Committee (AHB10), 2013 – Present

Panel Member, NCHRP 15-49: Geometric Design Guidelines for Managed Lanes

North Carolina Section – Institute for Transportation Engineers

Member of Section, 2007 – Present

Member, Traffic Engineering Council, 2008 – Present

Member, Traffic Planning Council, 2008 – 2010

Member, Simulation and Capacity Models Users Group, 2009 – Present

Member, Trip Generation Task Force, 2008 – 2012

Member, Traffic Analysis Tools Task Force, 2013 - Present

Chair, Saturation Flow and Queue Task Force, 2012 – 2013

Chair, Signal Systems User Group, 2013 – Present

Other Involvement

National Highway Transportation Safety Administration (NHTSA) Panel Meeting on *Speed and Other Unsafe Driving Behaviors*, 2008

Federal Railroad Administration (FRA) Panel discussion on *Right of Way Fatality and Trespass Events*. Charlotte, NC. August 2015.

Paper Reviewer

Transportation Research Board

ANB40 – Traffic Law Enforcement

AHB70 – Access Management

AFB10 – Geometric Design

AFB65 – Operational Effects of Geometrics

American Society of Civil Engineers – Journal of Transportation Engineering

Journal of Transportation Safety and Security

VOLUNTEER ACTIVITIES

ASCE NC State University Young Member Competition Mentor

Carolinas Conference at the University of South Carolina, 2013

National Future City Competition Mentor

Wake Forest Rolesville Middle School, 2012 – 2014

Centennial Campus Magnet Middle School, 2011 – 2012

Academy of Information Technology (AOIT) Summer Internship Mentor

Calvin Schneider, 2014

Chris Carnes, 2013

Kaitlyn Tsai, 2011

Community Service Volunteer

Stop Hunger Now, 2010, 2011– 2012

Meals on Wheels, 2009, 2011

Habitat for Humanity, 2006

ITRE Community Service Coordinator, 2008 – 2009

CONFERENCES ATTENDED

Transportation Research Board (TRB)

Urban Streets Symposium, 2017

3rd International Conference on Access Management, 2016

Alternative Intersections and Interchanges Symposium, 2014

Annual Meeting, 2002 – 2017

Traffic Signal Systems Mid-Year Meeting, 2012

Access Management Conference, 2010, 2012

National Roundabout Conference, 2005

North Carolina Section – Institute of Transportation Engineers (NCSITE)

Annual Meeting, 2009 – 2016

Signal Systems Users Group Forums (led multiple since 2010)

NCSITE Signals and ITS Joint User Group Meeting (April 2016)

The Fusion of All Things Urban Streets (August 2015)

Unique Signal Timing Coordination Considerations (May 2015)

Unique Signal Timing Considerations (October 2014)

Facility Implementation Considerations: New Laws and Pedestrian Accommodations (May 2014)

Simulation and Capacity (SimCap) Users Meeting, 2010, 2013

Mid-Year Meeting, May 2010

Other Engineering Related Conferences

4th Annual Transportation Curriculum Coordination Council (TC3) Meeting (AASHTO). April 2017.

Right of Way Fatality and Trespass Prevention Workshop (FRA). Charlotte, NC. 2015

The American Railway Engineering and Maintenance-of-Way Association, Chicago, IL. 2014

NC GIS Conference, Raleigh, NC. 2009

Southern District ITE Meeting, Charleston, SC. 2008

American Society of Civil Engineers (ASCE), Wilmington, NC. Annual Meeting, 2007

Orientation and Mobility

Southeast Orientation and Mobility Association (SOMA), 2016

AER International Orientation and Mobility Conference, 2013

Southeast Orientation and Mobility Association and the Central Mid-Atlantic Orientation (SOMA/COMA) and Mobility Conference, 2012

International Mobility Conference – New Zealand, 2012

North Central Orientation and Mobility Association (NCOMA) – Walk Proud, 2010

NC Association for Education and Rehabilitation (NCAER) Conference, 2008

WORKSHOPS ATTENDED

2016	Quickstart Module 3: Finance, Marketing, Communication in the Workplace
2014	Workplace Violence Prevention
2013	When a Crash Becomes a Case – Studies in Transportation Litigation
2013	NHI – Developing a Pedestrian Safety Action Plan
2012	NHI - Instructor Development Course
2012	Equal Opportunity Instruction

2010	Update on 2010 Highway Capacity Manual
2009	VISSIM
2009	Pedestrian Road Safety Audits
2008	SIDRA
2004, 2008	Synchro/SimTraffic 7 – Levels I, II, and III
2006	Grants 101: Professional Grant Proposal Writing Workshop
2005	Traffic Signal Workshop, National Institute for Advanced Transportation Technology (NIATT)
2004	7 Habits of Highly Effective People – Stephen R. Covey
2003	Principles, Detection, and Timing of Traffic Signals
2002	Modern Roundabout Design Workshop

HONORS

Outstanding Paper Award. *DDI Signal Phasing Scheme Evaluation using Microsimulation*. TRB Joint Traffic Simulation Committee, AHB45(1). 2017 Transportation Research Board Annual Meeting.

Outstanding Paper Award. *Lane Utilization at Two-lane Arterial Approaches to Double Crossover Diamond (DCD) Interchanges*. Highway Capacity Committee, AHB40. 2015 Transportation Research Board Annual Meeting.

2016 ORIED EHRA Representative for North Carolina State University Chancellors Award.

2004, 2009, and 2016 North Carolina State University Awards for Excellence Recipient.

1998 Recipient of Congressional Nomination to Service Academy.

COLLABORATORS

Daniel Ashmead (Vanderbilt); Jong-Dae Baek (HSRC); Janet Barlow (ADB); Beezy Bentzen (ADB); Zachary Bugg (Kittelsohn); Daniel Carter (HSRC); Andy Daleidon (Kittelsohn); Richard Dowling (Kittelsohn); James Dunlop (NCDOT); Kim Eccles (VHB); Lily Elefteriadou (Univ. of Florida); Robert Wall Emerson (Western Michigan Univ); Robert Foyle (Retired); Chris Frey (N.C.State); Maged Al-Ghandour (NCDOT); Duane Geruschat (Salus Univ); Ann Gretter (Harpers Enterprises); Frank Gross (VHB); David Guth (Western Michigan Univ.); Ali Hajbabaie (Washington State Univ.); Ron Hughes (retired); Joseph Hummer (Wayne State Univ); Ram Jaghanathan (Leidos); Pete Jenior (Kittelsohn); David Kaber (N.C.State); Brian Katz (SAIC); Dae Kim (Western Michigan Univ); Wayne Kittelson (Kittelsohn); Peter Koonce (City of Portland); Mike Kyte (Univ of Idaho), Joel Leisch (consultant); Richard Long (Western Michigan Univ); George List (N.C. State); Mike Merkley (Pinetop Engineering); Jae-Pil Moon (HSRC); Ron Mortimer (Horrocks Engineering); Ed Myers (Kittelsohn); Brandon Nevers (Kittelsohn); David Noyce (Univ. of Wisconsin); Stacie Phillips (Kimley Horn); Alek Pochowski (Kittelsohn); Brian Ray (Kittelsohn); Lee Rodegerdts (Kittelsohn); Daniel Rodriguez (Univ. of N.C.); Soheil Sajjadi (PTV); Alan Scott (Elon Univ); Raghavan Srinivasan (HSRC); Hermanu Steyn (Kittelsohn); John Stone (N.C.State); Alison Tanaka (Kittelsohn); Tom Urbanik (Kittelsohn); Mark Vandehey (Kittelsohn); Billy Williams (N.C. State); Wei Zang (FHWA).