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**EDUCATION**

**North Carolina State University; Raleigh, NC**  
M.S. in Civil Engineering, December 2016

**North Carolina State University; Raleigh, NC**  
B.S. in Civil Engineering, December 2007

**PROFESSIONAL EXPERIENCE**

- June 2014 - Present      **Research Associate, Highway Systems Group**  
Institute for Transportation Research and Education  
North Carolina State University at Raleigh, N.C.
- Nov. 2010 - June 2014      **Research Assistant, Highway Systems Group**  
Institute for Transportation Research and Education  
North Carolina State University at Raleigh, N.C.
- Dec. 2007 - Nov. 2010      **Engineering Technician, VAMS Group**  
Institute for Transportation Research and Education  
North Carolina State University at Raleigh, N.C.

**PEER REVIEWED PUBLICATIONS**

**Journal Articles**

Yeom, C., Hajbabaie, A., Schroeder, B., **Vaughan, C.**, Xuan, X., and N. Roupail (2016). *Innovative Work Zone Capacity Models from Nationwide Field and Archival Sources*. Transportation Research Record: Journal of the Transportation Research Board. TRR Issue 2485, pp. 51-60, TRB, Washington, D.C.

Findley, D., Chang, J., **Vaughan, C.**, Schroeder, B., Foyle, R., and D. Alford (2014). *Highway Capacity Planning Application and Development of Default Values in North Carolina*. Transportation Research Circular: TR-C Issue E-C190, pp. 88-102, TRB, Washington, D.C.

Yeom, C., Hummer, J.E., Schroeder, B.J., Cunningham, C.M., **Vaughan, C.**, and N. Roupail (2014). *Empirical Before-After Comparison of the*

*Operational Performance of Diverging and Conventional Diamond Interchanges.* Journal of Transportation Engineers, American Society of Civil Engineers (ASCE).

**Vaughan, C.**, Jagadish, C., Bharadwaj, S., Cunningham, C.M., Schroeder, B.J., Hummer, J.E., Findley, D., and N. Roupail (2014) *Long-Term Monitoring of Wrong-Way Maneuvers at Diverging Diamond Interchanges.* Transportation Research Record: Journal of the Transportation Research Board. TRR Issue 2484, pp. 129-139, TRB, Washington, D.C.

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 Record: Journal of the Transportation Research Board. TRR Issue 2461, pp. 103-112, TRB, Washington, D.C.

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).

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.* Transportation Research Record: Journal of the Transportation Research Board. TRR Issue 2361, pp. 25-34, TRB, Washington, D.C.

Findley, D.J., Cunningham, C.M., Schroeder, B.J., **Vaughan, C.L.**, and T.J. Fowler (2012). *Structural and Safety Investigation of Statewide Weathered Steel Beam Guardrail Performance in North Carolina,* Journal of the Transportation Research Board: TRR Issue 2309, pp. 63-72, TRB, Washington, D.C.

Cunningham, C.M., Schroeder, B.J., **Vaughan, C.**, and R. Hughes (2012). *Is Ticketing Aggressive Cars and Trucks Effective in Changing Driver Behavior: Evidence from North Carolina TACT III Effort,* Journal of the Transportation Research Board: TRR Issue 2265, pp. 100-108, TRB, Washington, D.C.

## Proceedings

Yeom, C., Schroeder, B., Cunningham, **C.**, **Vaughan, C.**, Roupail, N., and J. Hummer (2014). *Lane Utilization at Two-lane Arterial Approaches to Double Crossover Diamond (DCD) Interchanges.* Proceedings of the Transportation Research Board 93<sup>rd</sup> Annual Meeting. Transportation Research Board. National Research Council, Washington, DC.

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 91<sup>st</sup> Annual Meeting. Transportation Research Board. National Research Council. Jan. 24, 2012. Washington, DC.

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

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.

## REPORTS

**Vaughan, C.**, Searcy, S., Bert, S., Findley, D., Foyle, E., Carnes, C., Pincus, T., Coley, A., Manfredi, Z. and C. Cunningham. (2016). *Assessment of Automated Sign Retroreflectivity Measurement*. Final Project Report submitted to the North Carolina Department of Transportation. FHWA/NC/2014-32. June 2016.

Sallade, S., **Vaughan, C.**, Chase, T., Warchol, S., and C. Cunningham. (2015). *Reducing Aggressive Driving Behavior*. Final Project Report submitted to Governor's Highway Safety Program.

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.

Findley, D.J., J. Chang, **C. Vaughan**, B. Schroeder, and R. Foyle. *NCLOS Program 2010 Update*. North Carolina Department of Transportation Report. FHWA/NC/2012-05. November 2013.

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

Findley, D.J., Cunningham, C.M., Schroeder, B.J., **Vaughan, C.L.**, and Fowler, T.J. *Performance of Weathered Steel Guardrail in NC*. North

Carolina Department of Transportation. Report FHWA/NC/2011-11. May 2011. Raleigh, NC.

Hughes, R. G., Cunningham, C. M., Schroeder, B. J., & Vaughan, C. L. (2011). *Evaluation of North Carolina Highway Patrol TACT Effort Using Roadside Video Monitoring Techniques*. Final Project Report submitted to Governor's Highway Safety Program.

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.

## PROJECT EXPERIENCE

*Reducing Aggressive Driving Behavior in the Vicinity of Trucks Using Real-Time Feedback*

Oct. 2014 - Sept. 2015 NCGHSP

*Reduction in Railroad Right-of-Way Trespassing Incidents*

Sept. 2014 - Aug. 2016 NCDOT

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

Sept. 2014 - Aug. 2016 NCDOT

*NCHRP 3-113 – Guidance for Traffic Signals at Diverging Diamond Interchanges and Adjacent Intersections*

June 2014 - May 2016 NCHRP

*Assessment of Automated Sign Retroreflectivity Measurement*

Feb. 2014 - Mar. 2016 NCDOT

*Bicycle and Pedestrian Data Collection*

Nov. 2013 - Oct. 2015 NCDOT

*Evaluation of Life Cycle Impacts of Intersection Control Type Selection*

Aug. 2013 - Aug. 2015 NCDOT

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

May 2013 - Aug. 2015 NCHRP

*NCHRP 3-107 – Work Zone Capacity Methods for the Highway Capacity Manual*

Jan. 2013 - Nov. 2014 NCHRP

*Field Evaluation of Double Crossover Diamond Interchanges*  
Oct. 2010 - Dec. 2014 FHWA

*NC Level of Service (LOS) Program 2010 Update*  
Jun. 2011 - Jun. 2013 NCDOT

*NCDOT Roadway Reviews*  
Jun. 2011 - Dec. 2011 NCDOT

*Road Commission for Oakland County Pedestrian Hybrid Beacon (PHB) and Rectangular Rapid Flashing Beacon (RRFB) Study*  
Feb. 2009 - Nov. 2011

*NCHRP 3-100 – Evaluating the Performance of Corridors with Roundabouts*  
May 2011 - December 2012 National Academy of Science

*Performance of Weathered Steel Guardrail in North Carolina*  
Aug. 2010 - Feb. 2011 NCDOT

*All-Weather Paint for Work Zones: Field Evaluation in North Carolina*  
Mar. 2008 - Sep. 2010 3M Traffic Safety Systems Division

*Camera-Based Detection for TACT III Enforcement Evaluation*  
Jan. 2010 - Sep. 2010 NC State Highway Patrol – FMCSA

*TACT II Enforcement Evaluation Program*  
Apr. 2009 - Sep. 2009 NC State Highway Patrol – FMCSA

## PRESENTATIONS

94<sup>th</sup> Transportation Research Board Annual Meeting, Long-Term Monitoring of Wrong-Way Maneuvers at Diverging Diamond Interchanges, Jan 11-15, 2015.

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

92<sup>nd</sup> Transportation Research Board Annual Meeting, Empirical Study and Assessment of the Operational Performance of Double Crossover Diamond Interchanges, Jan 13-17, 2013.

92<sup>nd</sup> Transportation Research Board Annual Meeting, Public Opinions of Roadway Assets Using a New Method – The Roadway Review, Jan 13-17, 2013.

90<sup>th</sup> Transportation Research Board Annual Meeting, Camera-Based Detection for TACT III Enforcement Evaluation, Jan 23-27, 2011.

## ACTIVITIES

Friend, TRB Geometric Design Committee (AFB10), 2014 - Present

Friend, TRB Highway Traffic Monitoring Committee (ABJ35), 2014 – Present

Friend, TRB Bicycle and Pedestrian Data Subcommittee (ABJ35-3), 2014 – Present

Friend, TRB Transportation Asset Management Committee (ABC40), 2015 - Present

Friend, TRB Traffic Control Devices Committee (AHB50), 2014 - Present

Friend, TRB Work Zone Traffic Control Committee (AHB55), 2014 - Present

## TEACHING ACTIVITY

*Asphalt Pavement Maintenance and Condition Assessment, Abu Dhabi  
TranspoGroup*

*Instructor*

*January 2016*

*Fundamentals of Engineering (FE), NCDOT*

*Instructor*

*Jul. 2013 - Present*

*Highway Engineering Concepts (HEC), NCDOT*

*Instructor*

*Aug. 2013 - Present*

*Fundamental Engineering Principles (FEP), NCDOT*

*Instructor*

*Mar. 2010 - Present*

## RECENT CONFERENCES

January 2016	TRB Annual Meeting
January 2015	TRB Annual Meeting
July 2014	TRB Alternative Intersections and Interchanges Symposium
January 2013	TRB Annual Meeting
January 2012	TRB Annual Meeting

January 2011	TRB Annual Meeting
February 2010	NC GIS Conference
February 2009	NC GIS Conference

### **HONORS**

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

Award for Best Paper. *Innovative Work Zone Capacity Models from Nationwide Field and Archival Sources*. Work Zone Traffic Control Committee (AHB55). 2016 Transportation Research Board Annual Meeting.

### **COLLABORATORS**

Chae, K.; Chang, J.; Cunningham, C.; Findley, D.; Fowler, T.; Fry, P.; Gontaruk, F.; Hekele, A.; Hummer, J.; Jackson, K.; Katz, D.; McAvoy, D.; Hughes, R.; Salamati, K.; Schroeder, B.; Tatham, C.; Roupail, N.; Yeom, C.; Jagadish, C.; Bharadwaj, S.; Hajbabaie, A.; Xuan, X.