



**AIRTON G. KOHLS, Ph. D.,
SENIOR CONSULTANT**

agkohls@engsys.com

Dr. Kohls is a Senior Consultant at ESI specializing in Civil Engineering. He is also a Research Associate at the University of Tennessee Center for Transportation Research (CTR) where he is the director of the Traffic Signal Academy, a continuing education program. Dr. Kohls earned his Ph. D. in Civil and Environmental Engineering researching adaptive traffic signal control. He serves as an Adjunct Professor instructing undergraduate and graduate level courses, including Transportation Engineering I and Traffic Engineering Operations. Dr. Kohls has served as the Principal Investigator for several projects funded by US Department of Transportation and the Tennessee Department of Transportation. He has collaborated on projects with the US Department of Energy and Oak Ridge National Laboratory.

Dr. Kohls worked for over 10 years in Brazil as a Transportation Engineer for the city of Santa Cruz do Sul. He was responsible for the planning, operation and maintenance of traffic signals, transit and taxi operations, inspection of infrastructure projects, sewage systems and the construction of schools, sport facilities and marketplaces for the city. Dr. Kohls worked alongside city council members in developing legislation on requirements for parking spaces, zoning, and historic preservations of buildings.

Dr. Kohls is an accomplished researcher and dedicated Professor. He is a leader in the arena of Traffic Signal Control continuing education, being listed in the Federal Highway Administration (FHWA) Arterial Management Program as a source of training.

Areas of Specialization

Automotive / Accident Analysis
Intelligent Transportation Systems
Traffic Operations
Traffic Signal Control
Traffic Signal Timing
Transportation Safety

Education

Ph.D. Civil Engineering, University of Tennessee, 2010
M.S., Civil Engineering, University of Tennessee, 2007
B.S., Civil Engineering, University of Tennessee, 1995

Professional Affiliations/Honors

Awards

Tennessee Section of the Institute for Transportation Engineers – William L. Moore Jr.
Student Scholarship Award, 2007, 2008 and 2009

Memberships and Offices

President of the Institute of Transportation Engineers Student Chapter at the University of Tennessee, 2007 – 2009

Member of the Tennessee Section of the Institute for Transportation Engineers, 2010 – Present

Southeastern Smart Mobility Consortium

Member, 2015 – Present

National Cooperative Highway Research Program (NCHRP)

Report 812 – Signal Timing Manual 2nd edition – mentioned as select outside reviewer, 2015

Transportation Research Board (TRB)

Traffic Signal Committee paper reviewer, 2011 – Present

American Society of Civil Engineers (ASCE) Journal of Professional Issues in Engineering Education and Practice

Paper reviewer, 2014 – Present

IEEE Intelligent Transportation Systems Magazine

Paper reviewer, 2016 – Present

Journal of Intelligent Transportation Systems

Paper reviewer, 2016 – Present

Southeastern Transportation Center

Paper reviewer, 2011 – Present

Positions Held

Professional Experience (USA)

Senior Consultant, Engineering Systems Inc., 2022 – Present

Research Associate III at the University of Tennessee Center for Transportation Research, 2010 – Present

Traffic Signal Academy, Principal Instructor, Knoxville, Tennessee 2012 – Present

Traffic Signal Academy – <http://trafficsignalacademy.utk.edu/index.html> – Responsible for the development and serving as the principal instructor for the Traffic Signal Academy.

- The Traffic Signal Academy is a program available nationwide focused on the continuing education of the transportation community on issues related to the design, operations, and maintenance of traffic signals.
- The Traffic Signal Academy is listed in the Federal Highway Administration (FHWA) Arterial Management Program as a source of training.
http://ops.fhwa.dot.gov/arterial_mgmt/training.htm
- The Traffic Signal Academy is listed in the National Operations Center of Excellence (NOCOE) workforce development training list.

- Since 2010, the Traffic Signal Academy has provided services to more than 1,800 participants in 6 different courses. People from more than 25 different states have attended the classes. More than 50 different consultant companies have participated in the program as well as innumerable federal, state, county, and city agencies (Oak Ridge National Laboratories, Tennessee Department of Transportation, Florida Department of Transportation, Alabama Department of Transportation, Pennsylvania Department of Transportation, Kentucky Transportation Cabinet, Rahal Transportation Institute, etc.)

Tennessee Transportation Assistance Program (TTAP) Principal Instructor, Knoxville, Tennessee, 2010 – Present

Responsible for the development and presentation of continuing education classes in civil engineering and for technical assistance at the Tennessee Transportation Assistance Program. The Tennessee Transportation Assistance Program is part of a nationwide Local Technical Assistance Program (LTAP) financed jointly by the Federal Highway Administration (FHWA), Tennessee Department of Transportation (TDOT), and the University of Tennessee. TTAP moves innovative transportation technologies and practices into the hands of the men and women charged with maintaining Tennessee's local roads and bridges.

University of Tennessee Department of Civil and Environmental Engineering, 2012 – Present
Adjunct Assistant Professor instructing undergraduate and graduate level course Civil Engineering 355 and 552 – Transportation Engineering I and Traffic Engineering Operations.

Funded Research Projects:

- Principal Investigator for TDOT (Tennessee Department of Transportation) project *Evaluating Permissive Dual Left-turns at Signalized Intersections*. Total amount funded \$95,848 (January 2022 – Present).
- Principal Investigator for FHWA State Transportation Innovation Councils Project *Promoting Innovations through Training to Improve Traffic Signal Operation in Tennessee*. Total amount funded \$146,749 (January 2019 – Present).
- Coinvestigator for Department of Energy (DOE), UT Battelle, Oak Ridge National Lab project *Chattanooga Traffic Signal Project*. Total amount funded \$46,505 (December 2019 – Present).
- Principal Investigator for TDOT (Tennessee Department of Transportation) project *Autonomous Truck Mounted Attenuator (ATMA) Pilot*. Total amount funded \$125,000. (February 2018 – 2020).
- Principal Investigator for TDOT (Tennessee Department of Transportation) project *Access Management Design Manual*. Total amount funded \$93,516. (November 2015 – Present).
- Coinvestigator for TDOT (Tennessee Department of Transportation) project *Truck Ramp Parking*. Total amount funded \$65,273. (November 2015 – Present).

- Coinvestigator for TDOT (Tennessee Department of Transportation) project *Traffic Queue Prediction and Warning System*. Total amount funded \$123,344. (November 2015 – Present)
- Coinvestigator for Southeastern Transportation Center (STC) project *Development and Evaluation of Coordinated Traffic Signal Emergency Preemption System*. Total amount funded \$100,000. (January 2014 – July 2015)
- Coinvestigator for FHWA (Federal Highway Administration) project *Upgrade of Geographic Information System*. Total amount funded \$326,067. (January 2014 – December 2014).
- Principal Investigator for TDOT (Tennessee Department of Transportation) project *Extreme Weather Vulnerability Assessment Phase I and II*. Total amount funded \$596,134. (January 2014 – December 2014).
- Principal Investigator for TDOT (Tennessee Department of Transportation) project *Update of the TDOT Traffic Design Manual*. Total amount funded \$79,710. (September 2013 – Present).
- Principal Investigator for FHWA NHI (Federal Highway Administration – National Highway Institute) project *142051 Highway Traffic Noise*. Total amount funded \$233,949. (March 2012 – March 2013)

Classroom Teaching Experience

Principal Instructor

Traffic Signal Academy, University of Tennessee, Knoxville, Tennessee

Principal Instructor

Tennessee Transportation Assistance Program (TTAP), Knoxville, Tennessee

Adjunct Professor

University of Tennessee Department of Civil and Environmental Engineering

Publications

1. Li X., Khattak A.J., **Kohls A.**, “Signal phase timing impact on traffic delay and queue length—a intersection case study,” Winter Simulation Conference, 2016.
2. Arel I., Liu C., Urbanik T., **Kohls AG.**, “A Reinforcement Learning based Multi-agent System for Network Traffic Signal Control,” IET Intelligent Transport Systems, Vol. 4, No. 2, pp. 128–135, June 2010. 92 citations as of 3/23/2016.
3. Liu C., Elhananay I., XU J., **Kohls A.**, Urbanik T., “Improved Truck Safety at Traffic Signals”, NTRCI – National Transportation Research Center Incorporated, June 2009. <http://trid.trb.org/view.aspx?id=891006>
4. Chatterjee A., **Kohls A.**, Hummer J., Clarke D., “Assessing the Impact of Security Measures at Gates of Seaports on Traffic Operations”, Southeastern Transportation Center and North Carolina State Ports Authority. July 2008.
5. *Flow Based Adaptive Split Signal Control* – PhD dissertation, University of Tennessee, 2010. http://trace.tennessee.edu/utk_graddiss/716/ – 976 downloads as of 3/23/2016.

Presentations

- *Tennessee Traffic Signal Asset Management System – Indiana Local Transportation Asset Management Conference* – Online – October 2020.

- *Signalized Intersection Safety – INTERSECT19 – Grid smart – Knoxville, TN – October 2019.*
- *Improving Intersection Safety – Leading Pedestrian Interval and Yellow Change Interval – FHWA– Accelerating Safety Activity Program – Chattanooga, Johnson City, Franklin, Memphis, and Knoxville – TN – May 2019.*
- *Yellow Change Intervals and Red Clearance Intervals – TDOT 2017 Traffic Engineering Workshop – Chattanooga – TN.*
- *Improving Operations with Automated Traffic Signal Performance Measures – 2017 Tennessee Section of ITE Meeting – Franklin – TN.*
- *Traffic Signal Safety – 2017 TN Highway Safety and Operations Conference — Franklin – TN.*
- *Traffic Signal Training – Tennessee Society of Professional Engineers – Dandridge, TN – November 2015.*
- *Traffic Signal Training – INTERSECT15 – Grid smart – Knoxville, TN – October 2015.*
<http://www.knoxvilledailysun.com/business/2015/gridsmart.html>
- *TDOT Traffic Design Manual – Burns, TN – September 2015.*
- *Flashing Yellow Arrow – TSITE (Tennessee Section of the Institute for Transportation Engineers) – Gatlinburg – TN – September 2012.*
- *Update of the Tennessee Department of Transportation Traffic Design Manual – Buchanan, TN – September 2014.*
- *Coordination beyond Cycle, Split and Offset – Group Sync – Rhythm Engineering, Kansas City – June 2012.*

Professional Experience (Brazil)

City of Santa Cruz Do Sul, RS, Brazil – Transportation Engineer, 1996 – 2006

Transit

- Managed a comprehensive public transit study for a route optimization project for the city.
- Managed a project for documentation of city public transit routes on GIS.
- Held public meetings for a Transportation Improvement Project for the city.
- Implemented and maintained software for bus and taxi fares calculation.
- Maintained a monthly database of transit vehicles miles driven and number of people utilizing the transit system.

Traffic Operations

- Responsible for programming the city's Traffic Signal Controllers.
- Responsible for the city's Traffic Signs implementation and maintenance.
- Managed personnel on the city's Department of Transportation.

Infra-structure

- Worksite inspector for the construction of more than 20 miles of pavement projects in the downtown area of the city.
- Worksite inspector for the construction of more than 30 miles of sewage systems in the downtown area of the city.

- Worksite inspector for the construction of public gymnasiums, public markets, and public schools for the city.
- Worksite inspector for the construction of a paved 2.2mile FIA approved racetrack.

Planning

- Helped to develop legislation on requirements for access and parking spaces for new buildings.
- Helped to develop legislation on zoning requirements for the city.
- Helped to develop legislation on historic preservation of buildings.