



Andrew P. Nichols, Ph.D., PE
2000 - Present (Career)
Traffic Engineering Manager

Ph.D. Civil Engineering,
Purdue University
2004

M.S. Civil Engineering,
Purdue University
2001

B.S. Civil Engineering,
West Virginia University
2000

Transportation Research
Board

-Signal Systems

-*Signal Timing Manual*

-Highway Traffic
Monitoring

ITE Associate Member

ASCE Associate Member

ASTM Member

Dr. Nichols has conducted traffic signal design, traffic data collection, traffic safety studies, and traffic-related research for various projects in South Carolina, Indiana, and West Virginia. After graduating from Purdue University in 2004, he served as a faculty member in the Department of Civil and Environmental Engineering at the University of South Carolina. In 2006, he began consulting with Dennis Corporation and served as Traffic Engineering Manager, in addition to his full-time faculty position, until August 2007. Dr. Nichols is currently an assistant professor at Marshall University in Huntington, West Virginia, where he teaches undergraduate and graduate courses in civil engineering. He conducts research with the Nick J. Rahall Appalachian Transportation Institute, which is affiliated with Marshall University. In addition to his academic commitments, Dr. Nichols has also established a West Virginia Division for Dennis Corporation, providing consulting services in all areas of traffic engineering.

Dr. Nichols significant professional and academic experience includes the following:

West Virginia Projects:

- ❑ **Intelligent Transportation Systems deployment evaluation and training for the West Virginia Department of Highways** - The scope of this project includes the oversight of a traffic management center configuration, evaluation of ITS technologies, and operator training for a five-year deployment effort.
- ❑ **Performance evaluation of radar-based sensors on high-speed signalized intersection approaches for West Virginia Department of Highways** - The scope of this project includes field data collection, verification, and statistical analysis.

South Carolina Traffic Projects:

- ❑ **Traffic Signal Timing study for a five intersection coordinated system on US 78 in North Charleston, South Carolina** - The scope of the study included data collection, Synchro modeling and simulation and a final report.
- ❑ **Traffic Impact Study for Highland Center Commercial Development in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this 18.85-acre commercial development with three access points.
- ❑ **Traffic Impact Study for Blythewood Crossing Mixed-Use Development in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, queue analysis, and summary of findings for this development. The purpose of this additional study was to analyze the queue lengths on the nearby interstate exit ramp. Due to the type of intersection, the analysis was conducted with SimTraffic simulation software. This analysis also included the design and specification of offset left-turn lanes for one of the development access points.
- ❑ **Traffic Impact Study for the Copper Beech Townhomes Development in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this rental development on a 24.18-acre site.

- ❑ **Traffic Impact Study for The Retreat Columbia Development in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this 26.45-acre site with attached and detached rental units. This study included the evaluation of sight distance at the proposed access location.
- ❑ **Traffic Impact Study for Brookcrest Residential Development in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this 50.41-acre site with three access points.
- ❑ **Traffic Impact Study for Long Bay Mixed-Use Development in Richland County.** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this 206.6-acre residential and commercial development with three access points. This analysis incorporated internal and pass-by trip capture.
- ❑ **Traffic Impact Study for The Farm on McCord's Ferry and The Karen and Larkie Tract Developments in Richland County** - Dr. Nichols' responsibilities included traffic data collection, trip generation, Synchro and Highway Capacity analysis, and summary of findings for this residential development. The final report included design alternatives for a deceleration lane entering the development that was constrained by an existing culvert.
- ❑ **Traffic Mobility Study for the Dutchmans Creek Bridge project in Fairfield County** - Dr. Nichols' responsibilities included interviewing local residents, observing pedestrian activity, and collecting background information that contributed to a final report summarizing the need for a separate pedestrian facility.

Other Traffic-Related Research and Training Experience:

- ❑ **Traffic Sensor Evaluation** - Dr. Nichols performed evaluation of various traffic sensing technologies, including video detection, radar detection, inductive loop detectors, and piezoelectric strips. He performed setup and calibration of many traffic sensing devices. His responsibilities included designing the evaluation framework, collecting the data, analyzing the data, and summarizing the results.
- ❑ **Traffic Signal Design** - Dr. Nichols performed signal design of 5-intersection system in West Lafayette, IN. His responsibilities included data collection, Synchro modeling, optimization, intersection design, controller implementation, and controller troubleshooting.
- ❑ **Traffic Signal Design Manual** - Dr. Nichols wrote a manual titled "Design Guidelines for Deploying Closed Loop Systems" for the Indiana Department of Transportation summarizing their traffic signal design practices and outlining how to implement timing plans in two vendors' NEMA controllers, set up closed loop communication, and troubleshoot programming configurations. The manual has subsequently been utilized by engineers and technicians as a desk reference and entry-level engineers for training purposes.
- ❑ **Traffic Signal Controller Training** - Dr. Nichols teaches an annual workshop at the University of Idaho on the use of Synchro and SimTraffic for traffic signal design and how to implement the design in NEMA traffic signal controllers. Real-time simulation is used to troubleshoot the implementation and fine-tune the performance of the timing plan in a controlled environment prior to field deployment.
- ❑ **Specification Development** - Dr. Nichols serves on ASTM committee E17 on vehicle-pavement systems that develops standards for highway traffic monitoring devices, including inductive loop detectors and piezoelectric strips.

Significant Academic Publications and Presentations:

- ❑ Nichols, A., D. Bullock. "Automatic Speed Calibration Methodology for Traffic Monitoring Sites," ASCE J. Transportation Engr. Volume 132, Issue 1, pp. 30-39 January 2006.

- ❑ Nichols, A., M. Cetin. "Numerical Characterization of Gross Vehicle Weight Distributions from Weigh-in-Motion Data," submitted to the Transportation Research Board July 2006. (accepted for publication).
- ❑ Nichols, A., D. Bullock. "Planning Procedures for Estimating an Upper Bound on Bus Priority Benefits," In the Proceedings of the 8th International Conference on Applications of Advanced Technologies in Transportation, Beijing, China, May 26-28, 2004.
- ❑ Nichols, A., D. Bullock, and M. Kyte. "A Laboratory-Based Course on Real-Time Traffic Signal Control," Proceedings of the 27th Annual Conference of the IEEE Industrial Electronics Society, Denver, CO, November 29-December 2, 2001.
- ❑ Nichols, A. "Development of a Traffic Signal Timing Manual for Indiana." Presented to TRB Signal Timing Manual Subcommittee Meeting, January 2006.