



NADEEM CHAUDHARY, PH.D., P.E.
SENIOR RESEARCH ENGINEER
 YEARS OF QUALIFYING EXPERIENCE: 37



Education

- Ph.D., Industrial Engineering, Texas A&M University, 1987
- M.Eng., Industrial Engineering, Texas A&M University, 1982
- B.S., Mechanical Engineering, UCE Taxila, Pakistan, 1979

Background and Qualifications

During his tenure at TTI, Dr. Chaudhary has served as Principal Investigator (PI) and/or key researcher on dozens of competitively-funded research and implementation projects. He co-developed mathematical formulations, models and code for PASSER series of signal timing optimization programs, FHWA's MAXBAND 86 program for signal timing optimization and a program for optimizing system-based metering rates along a freeway corridor. In a series of three projects, he developed, enhanced and field-deployed several instances of an adaptive control system for detecting and progressing platoons of vehicles at isolated intersections. He also led the development of a NTCIP-based toolbox for collecting and analyzing high-resolution controller data, analyzing it, and downloading optimized timings plans to controllers. During his career, he has prepared numerous guidelines related to design and operation of ramp meters, operating coordinated traffic signals and signalized diamond interchanges, and traffic responsive control of signalized arterials. Dr. Chaudhary possesses extensive experience in developing and conducting training workshops in the areas of urban traffic control and roadway safety and roadway safety audits. He is also experienced in conducting group sessions and one-to-one interview with practitioners for identifying user needs and requirements.

Recent Work Experience

Dates	Position(s)	Organization
2005 - Present	Senior Research Engineer	Texas A&M Transportation Institute
2000- 2005	Research Engineer	Texas A&M Transportation Institute
1995 - 2000	Associate Rese. Eng./Program Manager	Texas A&M Transportation Institute
1990-1995	Assistant Research Engineer	Texas A&M Transportation Institute

Accomplishments and Professional Affiliations

- Registered Professional Engineer in Texas (PE # 66470).
- Member Institute of Traffic Engineer.

Relevant Project Level Experience

Research Staff, Implementation of Automated Traffic Signal Performance Measures (ATSPM), TxDOT Project 0-7009 (August 2019-Pesent). The objective of this project is to develop guidelines and recommendations for the statewide deployment of ATSPM systems by considering varying needs and resources of agency's 25 districts and widely varying implementation requirements, resource needs and costs associated with available ATSPM options.

Research Staff, Improve System Emergency Response in Houston Districts using Connected Vehicle Technology, TxDOT Project 0-7004 (July 2019-Present). The objectives or this project are to 1) develop methodologies for improving emergency vehicle signal preemption in a connected environment, 2) develop/test mechanisms to broadcast Signal Phase and Time messages, Emergency Vehicle Alerts, and other notifications to emergency vehicles and other roadway users in the vicinity, 3) Enhance performance by including metered ramps, and 4) Implement prototype systems at selected Houston field sites.

Research Staff, Assessment of Innovative and Automated Freight Systems and Development of Evaluation Tools – Phase III, TxDOT Project 0-6837-03 (June 2019-Pesent). The objective of this project is to improve flow of trucks to/from Port of Port Arthur and Port of Brownsville in Texas. Activities include field studies, selection/deployment of site-specific strategies. Sub-activities include upgrading hardware, retiming traffic signal, and system evaluation.

Research Vehicle-to-Infrastructure Queue Advisory/Warning Applications: Concept and Design, Virginia Transportation Research Center Project 114420 (April 2019-January 2021). This Connected Vehicle Pooled Fund Study project developed concept of operations, system requirements, and high-level design for vehicle-to-infrastructure (V2I) queue warning systems that can be used in future deployments. The proposed system combines data from infrastructure sensors, third-party providers, and real-time trajectories from connected vehicles.

Principal Investigator, Ramp Metering Impact Study with Potential Regional Development within Dallas-Fort Worth Ozone Nonattainment Area, TxDOT Project 0-6945 (May 2017-October 2018). This project used a combination of regional dynamic traffic assignment model and localized microsimulation models to evaluate the traffic performance, air quality and fuel consumption benefits of ramp metering in two selected freeway corridors.

Selected Relevant Publications

- M. Finley, A. Pike, K. Fitzpatrick, E. Park, L. Theiss, M. Pratt, N. Chaudhary, S. Sunkari, N. Wood, and S. Datta. *Traffic Control Devices Analysis, Testing, and Evaluation Program: FY2020 Activities*. Report FHWA/TX-21/0-6969-R3, Texas A&M Transportation Institute, College Station, Texas, June 2021.
- N. Chaudhary, R. Farzaneh, J. Shelton, M. Le, H. Zhou, G. Valdez, and M. Venugopal. *Potential Use of Ramp Metering as Congestion Management Strategy in the Dallas-Fort Worth Metroplex*. Report FHWA/TX-18/0-6945-R1, Texas A&M Transportation Institute, College Station, Texas, November 2018.
- S Sunkari, A. Bibeka, N. Chaudhary, and K. Balke. *Impact of Traffic Signal Controller Settings on the Use of Advanced Detection Devices*. Report FHWA/TX-18/0-6934-R1, Texas A&M Transportation Institute, College Station, Texas, September 2018.
- J. Tydlacka, T. Zhou, K. Dixon, R. Avelar, L. Ding, S. Venglar, N. Chaudhary, and M. Brewer. *Design and Operation of U-Turns at Diamond Interchanges in Texas*. Report FHWA/TX-17/0-6894-1, Texas A&M Transportation Institute, College Station, Texas, September 2017.
- K. Balke, N. Chaudhary, S. Sunkari, H. Charara, D. Florence, C. Stevens, G. Pesti, and J. Tydlacka. *Guidelines for Deploying Weather Responsive Operations in TxDOT Traffic Signals*. Report FHWA/TX-17/0-6861-1, Texas A&M Transportation Institute, College Station, Texas, February 2017.
- N. Chaudhary, H. Charara., and S. Sunkari. *Development of NTCIP-Based Portable Traffic Signal Evaluation System*. Report No. FHWA/TX-14/0-6775-1, Texas A&M Transportation Institute, College Station, Texas, October 2014.
- K. Balke, N. Chaudhary, B. Brydia, P. Songchitruksa, and G. Pesti. *Warrants and Criteria for Installing and Sunsetting TxDOT ITS Equipment*. Report No. FHWA/TX-14/0-6773-1, Texas A&M Transportation Institute, College Station, Texas, January 2014.
- E. Seymour, B. Kuhn, K. Balke, N. Chaudhary, D. Jasek, R. Rajbhandari, T. Voigt, K. Miller, T. Geiselbrecht, and S. Venglar. *Research to Develop an ITS Strategic Plan for Texas*. Report No. FHWA/TX-13/0-6672-2 Vol. 1, Texas A&M Transportation Institute, College Station, Texas, September 2013.
- N. Chaudhary, C. Chu, S. Sunkari, and K. Balke. *Guidelines for Operating Congested Traffic Signals*. Report No. FHWA/TX-10/0-5998-1, Texas Transportation Institute, College Station, Texas, August 2010.
- H. Charara, N. Chaudhary, S. Sunkari, and R. Longmire. *PIA System Installation and User Guide: 2009 Update*. Product 5-5507-01-P3, Texas Transportation Institute, April 2010.
- K. Balke, N. Chaudhary, P. Songchitruksa, and G. Pesti. *Development of Criteria and Guidelines for Installing, Operating, and Removing TxDOT Ramp Control Signals*. Report No. FHWA/TX-09/0-5294-1, Texas Transportation Institute, College Station, Texas, May 2009.