



**DAVID FLORENCE, PE**  
**ASSOCIATE TRANSPORTATION RESEARCHER**  
YEARS OF QUALIFYING EXPERIENCE: 7

## Education

- B.S., Civil Engineering, Texas A&M University, 2015
- M.S., Civil Engineering, Texas A&M University, 2017

## Background and Qualifications

Mr. Florence is a graduate of the Texas A&M Civil Engineering department who specialized in Traffic Engineering. In his studies, he focused on connected and autonomous vehicle simulation and systems. Additionally, Mr. Florence served as the Vice President of the Texas A&M Institute of Transportation Engineers student chapter where he was responsible for managing traffic study projects. During his time with the student chapter, he developed a Microsoft Excel macro to automatically pair license plates for a study done in downtown Bryan.

Mr. Florence has over seven years of experience working at TTI. His expertise includes traffic signal systems and control, microsimulation, macrosimulation, Intelligent Traffic Systems (ITS), freeway operations, weather responsive traffic management, and traveler information systems. Mr. Florence has experience developing concept of operations and prototype systems for connected vehicle systems for wrong-way driver countermeasure systems and signal approach and departure vehicle systems. He is a skilled programmer who has scripted applications to simulate vehicle behavior using VISSIM to model connected and automated vehicles. His VISSIM expertise has enabled him to work on projects that continue to broaden his depth of experience in traffic operations, such as the simulation of transit signal priority in downtown Dallas.

## Recent Work Experience

Dates	Position(s)	Organization
Aug 2017-Present	Associate Transportation Researcher	Texas A&M Transportation Institute
01/2016 – 08/2017	Graduate Research Assistant	Texas A&M Transportation Institute
06/2014 – 12/ 2015	Undergraduate Research Assistant	Texas A&M Transportation Institute

## Professional Affiliations

- Institute of Transportation Engineers
- SAE DSRC Technical Committee
- Professional Engineer # 134070, State of Texas

## Technical Qualifications

- Experience using connected vehicle Basic Safety Messages to detect wrong-way vehicles and formulate Roadside Alert message to transmit a warning about a wrong-way driver to other vehicles on the facility.
- Develop simulation architecture tool to represent MAP, SPaT, and RSM messages which enable TOSCo vehicles to optimize speed in order to minimize emissions while approaching an intersection.
- Data analysis experience with field and simulation data

## Selected Relevant Project Experience

Sponsor	Project	Dates	PI	Role
CAMP	Traffic Optimization of Signalized Corridors: Phase 2 Build & Test	2019-2021	Kevin Balke	S
TxDOT	Super 2 Impacts on Rural Intersections	2020-2021	Kay Fitzpatrick	S
TxDOT	Connected Vehicle Wrong-Way Driving Detection & Mitigation Demonstration – Phase II	2016-2018	Melisa Finley	S
CAMP	Eco-A/D Small Scale Test and Evaluation: Phase 1 Modeling and Analysis	2016-2018	Kevin Balke	S

(PI = Principal Investigator, Co-PI = Co-Principal Investigator, S = Research Staff)

## Other Project Experience

**Improving Safety and Efficiency of Signalized Intersection During Inclement Weather.** Mr. Florence served as the primary microscopic simulation evaluator for this project involving adapting signal timing under inclement weather to improve mobility along a corridor. He created the simulation network, configured simulation scenarios, and reduced the data from the simulation output to quantify any improvements. This data reduction also including creating Purdue coordination diagrams from the traffic simulation output to further understand coordination improvements of the adaptive signal timing. This provided guidance to the Texas Department of Transportation regarding how traffic operations can be improved in inclement weather.

**Eco-A/D Small Scale Test and Evaluation: Phase 1 Modeling and Analysis.** Mr. Florence is part of the TTI team on this Crash Avoidance Metric Partnership (CAMP) project to develop algorithms for and simulate application designed to aid enabled connected vehicles in arriving at intersections at a point in time that they can proceed without stopping. This project involves developing recommendations for a new standardized message, the Roadside Safety Message (RSM), creating needed software to support infrastructure component simulation, and performing software-in-the-loop simulation with VISSIM 9. The infrastructure component simulation represents a queue detector output from field equipment and simulates the generation of an RSM by the infrastructure. The project team is using SH-105 in Conroe, TX as a high-speed corridor case study to simulate the system and generate estimated emissions and mobility benefits of the application. The sponsor for this project is the Federal Highway Administration.

**Dallas Area Rapid Transit 3-Car Train Simulation.** Mr. Florence performed simulation in VISSIM for Dallas Area Rapid Transit (DART) to identify the impacts of adding 3-car consist light rail trains to lines traveling through downtown Dallas, Texas. This involved creating logic to disable a stop location which is not valid for 3-car consists. This evaluation involved calibration, coding new logic, and quantifying the impacts of the different amounts of 3-car consists. The simulation includes analysis of normal operations and special event operations. The result of the simulation was a report for DART to reference when trying to decide how to handle the potential lost stop location and the impacts on normal operations.