Appendix A

Resumes for Key Personnel

City of Madison

Advancing Safety and Emergency Operations Through a Regional Connected Vehicle Corridor

Yang Tao, Ph.D., P.E.

Director of Traffic Engineering, City of Madison

Yang Tao is the Director and the agency head of the City of Madison's Traffic Engineering Division, which has over 150 employees and is responsible for the City's pedestrian, bicycle, and motor vehicle transportation systems. He has been overseeing Madison's Smart Cities and Vision Zero Initiatives, and has been working with various City agencies, state DOTs, universities, and a consortium of other public and private entities in envisioning and building a next-generation people and data centered, safe, efficient, equitable and climate-friendly transportation system for Madison. Dr. Tao has also been playing leadership roles in the transportation professional both locally and nationally, such as having served as the inaugural chair of the Institute of Transportation Engineers (ITE) International Standing Committee on Smart Communities and is recognized as a national leader in advanced transportation technology and innovation.

PROJECT ROLE: **Project Manager**

Dr. Tao will serve as the project manager for the proposed project. He will be responsible for the overall project delivery including budget and schedule adherence, progress reporting, liaison with USDOT, and coordination with partnering agencies WisDOT and UW-Madison, as well as project consultants and vendors.

EDUCATION

- Doctor of Philosophy in Civil and Environmental Engineering, University of Wisconsin-Madison
- PhD Minor in Business, University of Wisconsin-Madison
- Bachelor of Science in Civil Engineering, Tsinghua University

PROFESSIONAL LICENSES

- Professional Engineer in Wisconsin, License No. 41428 (2011)

PROFESSIONAL EXPERIENCE

DIRECTOR OF TRAFFIC ENGINEERING DIVISION/CITY TRAFFIC ENGINEER, CITY OF MADISON, WI

- Direct the staff (over 150 employees) and activities of all units of the Traffic Engineering Division
- Manage, operate, and maintain the City's pedestrian, bicycle and motor vehicle systems
- Deliver eight major services to City residents: Pedestrian Bicycle, Signing, Pavement Marking, Traffic Signals, Streetlighting, Fiber Communication, Radio Communication, and Planning and Data Services
- Provide leadership on cross-departmental initiatives such as Vision Zero and Smart Cities, and work with various City agencies, UW-Madison, State DOT, and a consortium of other

public and private entities in envisioning and building a next-generation people and data centered, safe, efficient, equitable and climate friendly transportation system for Madison
- Served as the inaugural Executive Secretary for the City's new Transportation Commission from 2018 to 2020, drafted the Commission's first annual work plan, and played a major role in developing procedures, training materials and its day-to-day operation
- Inspired staff and kept staff highly motivated, and quadruped Traffic Engineering project delivery through capital budget since 2019
- Collaborate with alders and neighborhood representatives to address resident requests and complaints, for which the number has increased significantly due to the impact of the pandemic and the growth of the City
- Led the Traffic Engineering Division in achieving major successes in multiple aspects despite all the challenges brought by the pandemic

INTERIM CITY TRAFFIC ENGINEER AND PARKING MANAGER, CITY OF MADISON, WI

- Coordinated and directed the staff (over 180 employees) and activities of all units of the Traffic Engineering Division and Parking Division
- Managed, operated, and maintained the City's pedestrian, bicycle and motor vehicle systems
- Managed, operated, and maintained the City's public parking systems

VARIOUS LEVELS OF PROFESSIONAL AND MANAGERIAL POSITIONS, CITY OF MADISON, WI

- Continuously advanced from an entry level engineer position to the assistant director of Traffic Engineering Division
- Gained ground knowledge of all aspects of transportation engineering and planning, roadway design, project delivery, community engagement, and customer service

RESEARCH ASSISTANT, PROJECT ASSISTANT, WISCONSIN TRAFFIC OPERATIONS AND SAFETY LABORATORY

- Conducted research and project work on Intelligent Transportation Systems and transportation safety for transportation agencies such as Wisconsin Department of Transportation

RELEVANT ACCOMPLISHMENTS

- Managed over a dozen projects that utilized federal discretionary grants and has extensive experience and knowledge of post-award grant administration, including Highway Safety Improvement Program (HSIP), Surface Transportation Program-Urban (STP-U), Transportation Alternative Program (TAP), Carbon Reduction Program (CRP), and Safe Streets and Roads for All Program (SS4A).
- Spearheaded the City of Madison's Smart City Initiative, brought advanced transportation technology to the City, and received the 2018 International Transportation Achievement Award from Institute of Transportation Engineers
- Led Madison's cross departmental Vision Zero team in improving traffic safety. Data shows significant declines in traffic fatalities and serious injuries for two consecutive years and by 29% since launch of the initiative. Madison's Vision Zero program is nationally recognized by multiple organizations.

- Partnered with UW-Madison, Wisconsin DOT and other partners and successfully built the first Connected Corridor in Wisconsin along Madison's Park Street to improve safety, mobility and equity via Connected Vehicle (CV) technology. Received the 2021 Project of the Year Award from Intelligent Transportation Society of Wisconsin.
- Promoted effective Transportation Systems Management and Operations (TSMO) practices to improve mobility efficiency and accommodate the City's growth in a more sustainable manner and received the 2021 Institute of Transportation Engineers (ITE) International Transportation Systems Management & Operations Council Organization Award.
- Led the Madison team in building and operating the City's Advanced Traffic Management System (ATMS), which was recognized by the 2020 Project of the Year Award from Intelligent Transportation Society of Wisconsin.
- Partnered with elected and appointed officials, fellow City agencies and the greater community to keep improving the City's multimodal transportation systems. Achieved Gold Status for Walk Friendly Community in 2021, further strengthened Madison's status as a Platinum Level Bicycle Friendly Community, and supported Metro Transit in improving transit in the City such as accommodations for transit users and infrastructure improvements.
- Incorporated equity considerations into Traffic Engineering programs, partnered with Neighborhood Resource Teams (NRTs), and significantly increased investments in historically underserved neighborhoods.
- Engaged residents, especially traditionally underserved residents, in discussions on how the City should build our streets and approach traffic safety, through programs such as Let's Talk Streets. An estimated 1,513 residents were engaged through these efforts.
- Played leadership roles in the transportation profession both locally and nationally, elected as the 2018 Institute of Transportation Engineers (ITE) Wisconsin president, and served on national Transportation Research Board (TRB) committees on Bicycle Transportation (2006-2018) and Intelligent Transportation Systems (2007-2010).
- Recognized as a national leader on advanced transportation technology and innovation:
    - Inaugural chair of the Institute of Transportation Engineers (ITE) International Standing Committee on Smart Communities, 2017-2021
    - Vice chair of the Institute of Transportation Engineers (ITE) International Transportation Systems Management and Operations (TSMO) Council, 2018-2021
    - Member, National Strategy for Transportation Automation Task Force, 2019-2020
    - Public Agency Representative, USDOT/ITE/AASHTO/NACTO Roadway Transportation Systems Cybersecurity Working Group, 2018
    - Member, Wisconsin Automated Vehicle External (WAVE) Advisory Committee, 2020-present

SELECTED AWARDS

- Distinguished Service Award in Transportation, Institute of Transportation Engineers Wisconsin, 2022
- Transportation Professional of the Year Award, Institute of Transportation Engineers Midwestern District, 2018
- Young Professional Award, Institute of Transportation Engineers Wisconsin, 2012
- Martin Bruening Award, Institute of Transportation Engineers Wisconsin, 2007

TODD D. SZYMKOWSKI, P.E., PTOE, PMP

Statewide Traffic Systems Engineer, Wisconsin Department of Transportation

Todd Szymkowski is currently the Statewide Traffic Systems Engineer in the WisDOT Bureau of Traffic Operations where he is responsible for setting engineering-related policies and procedures related to connected and automated vehicles.

PROJECT ROLE: Connected Vehicle Standards & Policy Lead

Mr. Szymkowski will serve as a key partner to the team on state level policies, standards, and procedures that may impact the deployment of the proposed project.

EDUCATION

- Master of Science in Civil and Environmental Engineering, University of Wisconsin-Madison
- Bachelor of Science in Civil Engineering, University of Wisconsin-Milwaukee

PROFESSIONAL LICENSES

- Professional Engineer in Wisconsin, License No. 34989-6 (2001)
- Professional Engineer in Illinois, License No. 062.056129 (2002)
- Professional Engineer in Iowa, License No. 22189 (2014)
- Professional Engineer in Arizona, License No. 62400 (2016)
- Professional Engineer in Indiana, License No. PE11800226 (2018)
- Professional Engineer in Nebraska, License No. E-17754 (2019)
- Professional Engineer in Tennessee, License No. 123103 (2019)
- Professional Engineer in Kansas, License No. PE27204 (2019)
- Professional Engineer in Utah, License No. 11558846-2202 (2019)
- Professional Engineer in Arkansas, License No. 19436 (2020)
- Professional Engineer in Florida, License No. PE91046 (2021)
- Professional Traffic Operations Engineer (PTOE), License No. 1184 (2003)
- Project Management Professional (PMP), License No. 2860969 (2020)

PROFESSIONAL EXPERIENCE

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO) PLAN, ANCHORAGE, AK

Metropolitan Area Transportation Solutions. Project Manager, as a subcontractor, developed a TSMO plan for the Anchorage, Alaska metropolitan region. The scope of work included interviewing stakeholders, creating an existing conditions technical memorandum, and recommending a package of projects, services, and activities to improve safety, mobility, and equity throughout the region.

Transportation Systems Management and Operations Summit Facilitation Services, Nationwide, U.S.

American Association of State Highway Transportation Officials and National Operations Center of Excellence. Project Manager for the planning and execution of the 2021 National TSMO Workforce Development Summit, which was used as a basis to develop a 5-year workforce development plan for the National Operations Center of Excellence and it key partners. Work also included developing several white papers in advance of the event and event proceedings. An addendum was used to engage the team with a May 2022 Workforce Development Peer Exchange. The team served as break-out session leads. Several white papers were also developed based on the recommendations from the previously developed 5-year plan.

Transportation Systems Management and Operations (TSMO) Plan, Statewide, WA, Washington Department of Transportation.

Project Manager as a subcontractor developing a TSMO Plan for WSDOT that is focused on integrating multimodal and equity elements and throughout. Leading the development of the Program including a comprehensive list of approximately three dozen action plans that define the scope of activities that need to be performed over the next five years to mature TSMO as WSDOT. Follow-up work included developed a variety of case studies that were used to update the TSMOWA.org website.

Route 9, Salem Hill Road to Texas Road Intersections with Transit Systems Priority, Monmouth and Middlesex Counties, NJ, New Jersey Department of Transportation.

Project Manager providing systems engineering support for identifying technology for traffic signal operation improvements. Work includes development of systems engineering documents and a concept of operations for adaptive traffic signal systems, Intelligent transportation systems (ITS) devices such as connected vehicle technology and transit signal priority in a connected vehicle environment in accordance with NJDOT and FHWA requirements. Coordinated with roadway designers on alternatives analysis for bus queue jump lanes at the intersections to work in conjunction with the technology alternatives. The concept of operations will identify the requirements to be included in the specifications for the signal systems during final design and included a conceptual project architecture for the transit signal priority operation.

US Route 5/Route 15 Computerized Traffic Signal System and Connected Vehicle Project, Newington, CT, Connecticut Department of Transportation.

Project Manager providing systems engineering support for the full replacement of traffic signal equipment at 15 signalized intersections along the US Route 5/Route 15 corridor, including preparation of traffic signal design plans for new traffic signal mast arms, controller cabinets, adaptive signal control technologies (ASCT), automated traffic signal performance measures (ATSPM), and design of closed-circuit television (CCTV) cameras and connected vehicle devices. The deployment of new technology also required updates to the intelligent transportation systems (ITS) Regional Architecture via the creation of a project architecture.

CONNECTED VEHICLE (CV) PILOT DEPLOYMENT EVALUATION PROJECT, VARIOUS LOCATIONS, U.S., U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

Initial Project Lead for the evaluation support for the Wyoming CV pilot location along I-80. The project created an evaluation methodology, developed site specific evaluation plans. In the process of conducting the evaluation, reporting results as well as collaborating with the prime contractor, Texas A&M Transportation Institute, on the creation of a data plan, a safety management plan, training and evaluation outreach plan, an equipment acquisition and installation plan and others. The project also included evaluation of Smart Columbus.

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO) WORKFORCE: SKILLS, POSITIONS, RECRUITMENT, RETENTION, AND CAREER DEVELOPMENT, WASHINGTON, DC, NATIONAL ACADEMY OF SCIENCES: NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM.

Project Manager and C0-Principal Investigator conducting research related to defining the workforce needs of the future for emerging technologies. Work included defining existing post-secondary education training, best practices scan of state departments of transportation, and academic literature searches on recruiting and retaining public sector staff. After two virtual workshops, 19 emerging TSMO positions descriptions and associated knowledge, skills, and abilities (KSA) have been defined. A gap analysis assessed the previously defined post-secondary training with each position and identified areas where course need to be developed. All the work was integrated into a TSMO Guidebook that highlights best practices for recruiting, professional development, and retaining TSMO staff.

AWARDS

- Distinguished Service Award, Great Lakes Transportation Enterprise Institute (GLTEI), 2014
- Distinguished Service Award, ITE Wisconsin, 2013
- Martin Bruening Paper Award (Professional), ITE Wisconsin, 2011
- Distinguished Service Award, ITS Wisconsin, 2010
- Young Professional Award, ITE Wisconsin, 2004
- Martin Bruening Paper Award (Student), ITE Wisconsin, 1996
- Student Paper Award, ITE Midwestern District, 1996

DAVID HANSEN, P.E., PTOE

Traffic Engineer, City of Madison

David Hansen is the head of the Signal and Lighting Section within the City of Madison Traffic Engineering Division. His work involves the planning, coordination, and performance evaluation of a wide variety of traffic signals, streetlighting, & fiber optic communication systems, and provides staff supervision and professional development.

PROJECT ROLE: **Infrastructure Lead**

Mr. Hansen will be leading design, engineering, and deployment of centralized traffic signal systems. His work will also involve the procurement of all ITS components and its integration to EVP and Priority Systems. He will manage the team developing the project plans, specifications, and estimate, bid the project, and oversee the construction.

EDUCATION

- Bachelor of Science in Civil Engineering with a technical emphasis in transportation and municipal engineering, University of Wisconsin-Milwaukee

PROFESSIONAL LICENSES

- Professional Traffic Operations Engineer, Certification Number 1341 (2004)
- Professional Engineer in Wisconsin, License No. 34931-6 (2001)

PROFESSIONAL EXPERIENCE

TRANSIT SIGNAL PRIORITY SYSTEMS DEVELOPMENT, BUS RAPID TRANSIT (BRT) SYSTEM, CITY OF MADISON, WI

Traffic Signal Priority Systems Deployment. Supervising the implementation and development of the Econolite Centracs ATMS Transit Signal Priority (TSP) system and associated systems upgrades at 110 signalized intersection locations along two BRT routes throughout the Madison metropolitan area. Tasks also include materials procurement, building and testing traffic signal controller cabinets, managing ongoing traffic signal reconstruction, and adjusting work zone signal timings.

WEST MASON STREET TRAFFIC SIGNAL SYSTEMS RECONSTRUCTION, CITY OF GREEN BAY, WI

City Traffic Engineer and Project Manager. Project planning and reconstruction of seven signalized intersections along the city's highest volume principal arterial. Work included securing a grant and local funds match, obtaining the needed committee and council approvals for the project, design of a fiber interconnected signal system with video detection cameras and streetlighting, providing construction oversight, and developing final signal timing plans for the improved corridor.

CITYWIDE RRFB DEPLOYMENT, CITY OF GREEN BAY, WI

City Traffic Engineer and Project Manager. Managed the plan development and ongoing deployment of 64 RRFB systems throughout the City of Green Bay. Work included securing project funding, materials procurement, project plans, specifications, and estimate, utilities coordination, development of an online interactive project progress map, and working with the Mayor's Office and local alders on constituent RRFB education.

SAFE WALK & BIKE PLAN (SAFE ROUTES TO SCHOOL & BIKE-PEDESTRIAN PLAN), CITY OF GREEN BAY, WI

City Traffic Engineer and Project Oversight Team Member. Scoped project objectives cooperatively with stakeholders from the Green Bay Area Public School District, Department of Community and Economic Development, and Green Bay Metropolitan Planning Organization; participated in consultant selection; assisted in obtaining multiple project funding through WisDOT grants, obtained the needed committee and council approvals; and provided staff resources and document review during all stages of plan development and project implementation.

RELEVANT ACCOMPLISHMENTS

- Thirty years of experience in transportation and traffic engineering including local & state government and private consulting. (1994-2024)
- City Traffic Engineer in Green Bay, Wisconsin for nearly 18 years prior to his current position with the City of Madison. In his previous role, David served as the technical advisor and recording secretary to the Green Bay Traffic Commission, created new safety programs including the Neighborhood Traffic Calming Program, and managed the day-to-day operations of the city's traffic engineering systems. (2006-2023)
- Strong leadership skills developed through involvement in local and state initiatives including assisting in a bill that became Wisconsin State Statute requiring all motorists to stop at dark or snow-obstructed traffic signals. (2015)

DAVID A. NOYCE, Ph.D., P.E., F. ASCE, F. ITE

Executive Associate Dean, University of Wisconsin-Madison

David Noyce is the Executive Associate Dean and Arthur F. Hawnn Professor of Transportation Engineering, College of Engineering at the University of Wisconsin-Madison. He is also the Executive Director of the Traffic Operations and Safety (TOPS) Laboratory and the Wisconsin Driving Simulator Laboratory. His research focusses on the operational and behavioral aspects of transportation safety and operations.

PROJECT ROLE: **Systems Integration and Evaluation Lead**

Dr. Noyce will serve as the systems manager for the proposed project to ensure the automated systems operate in accordance with stakeholder requirements and state law. He will also lead the advancement of evaluation methodologies as well as workforce development.

EDUCATION

- Doctor of Philosophy in Civil Engineering, Texas A&M University
- Master of Science in Civil and Environmental Engineering, University of Wisconsin-Madison
- Bachelor of Science in Civil and Environmental Engineering, University of Wisconsin-Madison
- Master of Business Administration, University of Wisconsin-Whitewater

PROFESSIONAL LICENSES

- Professional Engineer in Wisconsin, License No. 25726 (1988)

PROFESSIONAL EXPERIENCE

PARK STREET CONNECTED CORRIDOR, PROJECT INVESTIGATOR, 2017-2024

- Investigating the use of connected vehicle technologies for a variety of applications

CITY OF RACINE AUTOMATED VEHICLE TESTING, PROJECT INVESTIGATOR, 2019-2025

- Investigating the use of automated vehicle in outreach, education, and research projects, as well as establishing connected vehicle technologies at City traffic signals to allow the group's automated vehicles to drive through signalized intersections without human assistance

NATIONAL SCIENCE FOUNDATION (NSF), COLLABORATIVE RESEARCH: FW-HTF-R: THE FUTURE OF TRUCKING: PATHWAYS TO POSITIVE SOCIETAL OUTCOMES, PROJECT INVESTIGATOR, 2022-2025

- Investigating the cooperative automation of future trucking including network architecture and vehicle control algorithms.

RELEVANT ACCOMPLISHMENTS

- More than 39 years of experience in transportation engineering including state government, private consulting, and academia
- Strong leadership skills developed through extensive involvement in state, national, and international initiatives
- Director, Wisconsin Driving Simulator Laboratory, 2010-present
- Associate Director, SaferSim University Transportation Center, 2013-present
- Director, Wisconsin's Federally Designated Automated Vehicle Proving Grounds, 2017-2019
- Co-author of chapter on traffic signals in Traffic Control Devices Handbook. Second Edition, Institute of Transportation Engineers, Washington, D.C., 2013, pp. 295-437

Xiaopeng (Shaw) Li, Ph.D., P.E.

Professor, University of Wisconsin-Madison

Xiaopeng (Shaw) Li is currently a Professor at the Department of Civil & Environmental Engineering, Affiliate Professor at Department of Electrical & Computer Engineering, and the Director of Connected & Autonomous Transportation Systems (CATS) Laboratory at the University of Wisconsin-Madison.

PROJECT ROLE: **Connected Infrastructure R&D Lead**

Dr. Li will serve as a key partner to the team to lead the digital twin development as well as lead the research, development, and evaluation of ITS design.

EDUCATION

- Doctor of Philosophy in Civil and Environmental Engineering, University of Illinois at Urbana-Champaign
- Master of Science in Applied Mathematics, University of Illinois at Urbana-Champaign
- Master of Science in Civil and Environmental Engineering, University of Illinois at Urbana-Champaign
- Bachelor of Engineering in Civil Engineering, Tsinghua University

PROFESSIONAL LICENSES

- Professional Engineer in Wisconsin, License No. 100171-6

PROFESSIONAL EXPERIENCE

ARGONNE NATIONAL LAB, EVALUATING ENERGY AND MOBILITY IMPACTS OF CONNECTED AND AUTOMATED VEHICLES USING REAL-WORLD DATA, PROJECT INVESTIGATOR, 2023-2024

- Conducted comprehensive analysis of energy and mobility impacts of connected and automated vehicles using real-world data.
- Developed models and simulations to predict future trends and impacts in the field of autonomous transportation.

DEPARTMENT OF ENERGY (DOE), VISUAL-ENHANCED COOPERATIVE TRAFFIC OPERATIONS (VECTOR) SYSTEM, PROJECT INVESTIGATOR, 2022-2025

- Led the development of the VECTOR system, focusing on enhancing traffic operations through visual technology.
- Implemented and tested advanced traffic management strategies using cooperative systems and visual analytics.
- Led field tests and data analysis to assess system reliability and effectiveness in improving traffic flow.

NATIONAL SCIENCE FOUNDATION (NSF), CPS: SMALL: CYBER-PHYSICAL PHASES OF MIXED TRAFFIC WITH MODULAR & AUTONOMOUS VEHICLES: DYNAMICS, IMPACTS AND MANAGEMENT, SOLE PROJECT INVESTIGATOR, 2020-2022

- Investigated the dynamics of mixed traffic scenarios involving modular and autonomous vehicles in cyber-physical environments.
- Developed management strategies and frameworks for effectively integrating autonomous vehicles into existing traffic systems.

NATIONAL SCIENCE FOUNDATION (NSF), EAGER/COLLABORATIVE RESEARCH: ENABLE ELASTIC CAPACITY FOR TRANSPORTATION INFRASTRUCTURE THROUGH A TRANSMODAL MODULAR AUTONOMOUS VEHICLE SYSTEM, LEAD PROJECT INVESTIGATOR, 2020-2022

- Focused on enhancing the capacity of transportation infrastructure through the development of a transmodal modular autonomous vehicle system.
- Collaborated with researchers to create innovative solutions for integrating autonomous vehicles into multi-modal transportation networks.

USDOT FHWA, FHWA COOPERATIVE AUTOMATION RESEARCH: COOPERATIVE AUTOMATION RESEARCH MOBILITY APPLICATIONS (CARMA) PROOF-OF-CONCEPT TRAFFIC SYSTEMS MANAGEMENT AND OPERATIONS (TSMO) USE CASE TESTING, PROJECT INVESTIGATOR, 2019-2021

- Led the CARMA proof-of-concept testing for TSMO use cases to validate the effectiveness and feasibility of the CARMA platform in various traffic scenarios and conditions.
- Compiled comprehensive research reports showcasing the performance outcomes of the CARMA system and its potential contributions to modern traffic management strategies.

RELEVANT ACCOMPLISHMENTS

- Director of National Institute for Congestion Reduction (NICR), a FAST-Act National University Transportation Center 2020-2022
- Recipient of a National Science Foundation (NSF) CAREER award
- PI or a co-PI for a number of federal, state, and industry grants, with a total budget of around $30 million
- Director of Connected and Autonomous Transportation Systems (CATS) lab housing 3 full scale connected and automated vehicles and associated sensing and communication devices