



## Michael Blankenship, PE, RSP2I

Principal, Greenlight Traffic Engineering, LLC

### Professional Summary

Mike has 34 years of traffic safety and leadership experience in all facets of traffic engineering including planning, design, operations, research, consulting, and training. His career focus has been on providing safety for all road users. He has provided technical assistance to improve bus, motorist, bicyclist and pedestrian traffic flow and safety. Mike has served as an expert witness on tort liability cases involving vehicle, pedestrian, bicyclist, and motorcyclist crashes. His design experience includes intersections, roadways, traffic signals, signing/pavement marking and parking lots. Mike has developed and taught workshops on Road Safety Audits (RSAs), Roadside Safety, Risk Management/Tort Liability, Incident Management, MUTCD, Work Zone Traffic Control, Traffic Calming, and Walkable Communities.

Mike has developed policies and guidelines for state DOTs, including Arizona Department of Transportation (ADOT) pedestrian hybrid beacon warranting guidelines and a West Virginia DOT state-wide driveway policy. He has participated in development of ADOT and regional Strategic Highway Safety Plans, ADOT Safety Action Plan, and ADOT Roadway Departure and Intersection Safety Implementation Plans. Mike served on the FHWA Mainstreaming Safety Technical Oversight Working Group.

Mike has led and participated in research projects for ADOT and FHWA on work zone crashes, secondary crashes and effective traffic incident management, intersection traffic control, roadside barrier crashes, passing sight distance standards, and pavement marking and delineation treatments for older drivers.

Mike has provided litigation expert witness services for cases in Arizona (Phoenix, Gilbert, Tucson, Sedona, Pima County, Flagstaff), New Mexico, Texas, Nevada, Montana, North Carolina, and West Virginia.

### Education

M.S. Civil Engineering (Transportation Specialization, 4.0 GPA), West Virginia University, 1991

B.S. Civil Engineering (Magna Cum Laude, 3.78 GPA), West Virginia University, 1985

### Registration, Certifications and Memberships

Professional Engineer, Arizona (#45148), West Virginia (#13721), North Carolina (#050386)

Road Safety Professional Level 2 Infrastructure Certification

Institute of Transportation Engineers (Member)

## Work Experience

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### **Greenlight Traffic Engineering, LLC, 2017-Present** **Principal and Co-Founder**

Led the development of the Maricopa Association of Governments Strategic Transportation Safety Plan (STSP), the Pinal County STSP, and the update to the Yuma MPO STSP. Conducted Road Safety Assessments in Phoenix, Tempe, and Tucson. Developed the Glendale Crash and Volume Annual Report. Conducted crash data analysis for multiple locations in Casa Grande. Conducted safety analysis for the Yuma MPO Long Range Transportation Safety Plan. Provided road safety technical assistance to the Tohono O'odham Nation. Managed several intersection and corridor safety studies for Yuma County. Managed the crash data analysis update for the Lake Havasu MPO and Western Arizona Council of Governments, including developing Highway Safety Improvement Program (HSIP) funding applications. Updated the Yuma County Traffic Management Program. Developed the Yuma MPO Bicycle and Pedestrian Plan. Conducted Safe Routes to School studies in the City of Avondale. Managed rural road safety projects for Gila County. Providing litigation expert witness services to multiple clients. Assisted in development of the Arizona STSP and the Sun Corridor MPO Regional Transportation Plan. Leading development of the Town of Gilbert School Safety and Congestion Study. Updating the Navajo Nation DOT Strategic Highway Safety Plan. Developing the Local Road Safety Plan for the Indian Nations Council of Governments in Oklahoma. Conducting an FHWA study of state's Safety Circuit Rider programs.

### **Amec Foster Wheeler, 2013-2017** **Senior Traffic Safety Engineer**

Managed Florence Safe Routes to School Studies for Florence Elementary and Anthem Elementary Schools in Florence.

Led Maricopa Association of Governments regionwide safety study of signalized intersections with high frequency of left-turn crashes, developed priority list of locations, and developed applications for HSIP funding for highest priority intersections with left-turn crash issues.

Led RSA for an intersection with multiple owning agencies (City of Phoenix, City of Tempe). Led 6 RSAs at intersections and corridors for local agencies in the Pima Association of Governments region, including 5 design stage RSAs.

Led development of a bicycle and pedestrian implementation plan for the Lake Havasu MPO to identify and address walking and biking barriers and issues in Lake Havasu City and develop a 20-year plan to improve facilities for pedestrians and bicyclists.

Provided expert witness services to Pima County Attorney's Office on a run-off-road traffic crash.

Additional projects include:

- **Strategic Transportation Safety Plan, Sun Corridor MPO | Project Manager**

Managed development of the Sun Corridor Metropolitan Planning Organization (SCMPO) STSP. This effort included analyzing crash data and developing data driven safety emphasis areas and associated mitigation strategies, performance measures, network screening methodology, an implementation plan, and benefit/cost ratios for the highest priority locations.

- **Tucson ADA Inventory and Transition Plan | Traffic Engineer**

The City of Tucson initiated the development of the Americans with Disabilities Act (ADA) Self

Evaluation and Transition Plan. This Transition Plan identified barriers that limit access to persons with disabilities within the City's public right-of-way and developed a prioritized strategy for implementing improvements to address these barriers. Utilized a technologically advanced, semi-automated (LiDAR) approach to collect data for the 4200 lane miles of streets in the City. Identified features that are not ADA compliant, and developed an implementation plan for correcting these features.

- **Strategic Transportation Safety Plan, Yuma MPO | Project Manager**  
Managed the development of the first comprehensive Regional STSP for the YMPO region. The plan addressed the necessary steps and elements from a regional transportation planning perspective to reduce the risk of death or serious injury to all transportation users in the YMPO region. This effort included analyzing crash data, developing data-driven safety emphasis areas and associated mitigation strategies, performance measures, network screening methodology, an implementation plan, and benefit/cost ratios for the highest priority locations.
- **Strategic Transportation Safety Plan, Lake Havasu MPO | Project Manager**  
Managed development of the LHMPPO STSP. This effort included analyzing crash data and developing data driven safety emphasis areas and associated mitigation strategies, performance measures, network screening methodology, an implementation plan, and benefit/cost ratios for the highest priority locations.
- **Pima Association of Governments (PAG) RSA Program On-Call | Project Manager**  
Assignments included leading multi-discipline, multi-agency RSA teams on RSAs, providing technical assistance on HSIP applications and conducting safety studies of high crash locations for PAG member agencies. Conducted corridor and intersection RSAs, including the 1.5-mile long segment of River Road which encompassed the highest-ranked safety priority intersection in the PAG Region (River Road/SR 77 Oracle Road), the Downtown Links design stage RSA, the Broadway Boulevard design stage RSA for City of Tucson, and the Kolb Road/Valencia Road intersection design stage RSA for the PAG Regional Transportation Authority.
- **Strategic Transportation Safety Plan, Pima Association of Governments | Project Manager**  
Led the 4 E's effort to develop the PAG Strategic Transportation Safety Plan. This included inventorying existing safety performance and programs, developing data driven safety emphasis areas and associated mitigation strategies, performance measures, network screening methodology, and developing an implementation plan framework. Also developed 12 safety performance functions (SPFs) for the region.
- **Tractor/Trailer Truck Crash Analysis, Inter Tribal Council of Arizona | Traffic Safety Engineer**  
Conducted analysis of tractor/trailer crashes occurring on Tribal lands in Arizona and developed safety strategies to reduce these crashes.
- **Addressing Work Zone Traffic Safety Issues in Arizona, ADOT | Project Manager**  
Analyzed the causation of work zone related crashes including a comparison between crash contributing factors identified in police crash reports and contributing factors discovered during an analysis using human factors and crash reconstruction principles. Developed recommendations and countermeasures for improving work zone traffic control plans, strategies and construction management.

- Town of Gilbert Left-Turn Intersection Safety Enhancements | Project Manager**  
 Conducted a safety study for four intersections with negative offset for opposing left-turn movements. The design portion of this project provided Construction Documents for improvements to reduce the existing negative offset conditions of opposing left turns. Improvements included raised median modifications, signage and striping to shift the traffic to the left and reduce the negative offset.
- Havasupai Tribe Long Range Transportation Plan | Project Manager**  
 Led the development of the Long Range Transportation Plan for the Havasupai Tribe through ADOT's Planning Assistance for Rural Areas program. Identified existing conditions, future needs, and short and long term improvement recommendations.
- Indian School Road Corridor Safety Improvement Plan | Traffic Safety Engineer**  
 Provided traffic safety expertise on crash data analysis, conducted road safety assessment field reviews, identified safety issues and appropriate strategies, and developed a 4 E's safety improvement plan.
- Reducing Secondary Crashes through Effective Traffic Incident Management | Traffic Safety Engineer**  
 Provided project management and traffic safety expertise during stakeholder workshops with local and state law enforcement personnel for this ADOT research project.
- Roadway Departure Safety Implementation Plan (RDSIP) | Project Manager**  
 Duties included providing technical assistance in the prioritization of runoff road crash locations and developing standalone safety projects and improvements that will be incorporated into programmed pavement preservation projects. Provided assistance to ADOT and FHWA for the initial development of the statewide RDSIP, which screened road segments for high crash locations.
- Safe Routes to School Action Plan, City of Surprise | Traffic Safety Engineer**  
 Analyzed crash data and field conditions to determine safety issues and barriers that impact walking and biking to 3 schools in Surprise. Developed a list of safety strategies to increase the number of school children walking and biking to school.
- Road Safety Assessment Workshop | Traffic Safety Engineer**  
 Developed and conducted a MAG-sponsored workshop for local agencies and consultants on conducting RSAs, including a hands-on field review in downtown Phoenix.
- Avondale Strategic Transportation Safety Plan | Traffic Safety Engineer**  
 Provided project management and traffic safety expertise on crash data analysis, and developed safety strategies, action areas, performance measures, network screening methodology, and safety implementation plan.

### **Chalmers Engineering Services, Inc. 2006-2013** **Arizona Road Safety Audit Program Manager**

Under ADOT Supplemental Services Contracts, managed the Arizona Road Safety Audit (RSA) Program. As RSA Program Manager, led 80 RSAs of city, county, state, tribal and federal roads. Responsibilities included crash data analysis, in-field safety reviews, development of feasible improvements, presentations to road owners and report generation. Directed diverse teams of law enforcement, maintenance, engineering, planning, public works, fire and emergency response and health professionals to agreement on safety issues and safety recommendations. These safety audits included recommendations to improve

safety for all road users, including pedestrians and bicyclists. RSA locations included:

- **ADOT Districts:** Safford (US 70 in Safford and Bylas), Phoenix Maintenance (SR 85 intersections in Buckeye, I-10 in Phoenix, SR 88 in Apache Junction), Holbrook (US 191 from Chinle to Many Farms, US 160 in Dennehotso), Prescott (US 93 near Wickenburg, SR 69 in Dewey-Humboldt), Yuma (SR 95 Spur in Parker), Tucson (SR 86/Mission Road in Tucson, SR 77 in Tucson), Flagstaff (McConnell Drive at I-17 in Flagstaff), Kingman (SR 68 in Golden Valley), and Globe (US 70 in Peridot) Districts.
- **Counties:** Coconino (Leupp Road, Townsend-Winona Road, Perkinsville Road, Old Route 66, Lake Mary Road, Spring Valley Road, Mormon Lake Road, Espee Road), Pima (La Cholla Boulevard/River Road, Sandario Road, Ina Road, Palo Verde Road), Maricopa (Estrella Drive/51st Avenue, Box Bar/Needle Rock Roads), Greenlee (US 191/SR 75), Santa Cruz (Coatimundi Avenue), Mohave (CR 1/ Golden Shores Drive), Graham (Safford-Bryce Road), and Gila (Broadway Street/El Camino Street).
- **Cities:** Phoenix (Union Hills Drive/7th Street, Dunlap Avenue from 31st to 35th Avenue, Van Buren Street/31st Avenue), Tucson (Congress Street/4th Avenue, Mountain Avenue), Flagstaff (McConnell Drive), Mesa (Broadway Road/Stapley Avenue), Payson (SR 87/SR 260), Dewey-Humboldt (SR 69), Bullhead City (SR 95, Bullhead Parkway), Nogales (Mariposa Road), Scottsdale (Thomas Road/Hayden Road, SR 101/Frank Lloyd Wright Boulevard, SR 101/Raintree Drive), Peoria (Union Hills Drive/83rd Avenue), Glendale (Union Hills Drive/83rd Avenue), Williams (Perkinsville Road), South Tucson (6th Avenue), Sierra Vista (SR 90), Tempe (Rural Road from University Drive to Southern Avenue, Hardy Drive/Baseline Road), Star Valley (SR 260), and Glendale (Olive Avenue/59th Avenue).
- **Tribes:** Navajo (N12, US 160/N21, BIA 6, N112), Tohono O'odham (SR 86/BIA 15, San Xavier Road, J. Stock Road), Hopi (BIA 2), White Mountain Apache (SR 73), San Carlos (US 70 Bylas, US 70 Peridot), Ak-Chin (Peters and Nall Road, Maricopa-Casa Grande Highway, SR 347), Hualapai (SR 66 Peach Springs), Havasupai (BIA 18), Kaibab-Paiute (SR 389/BIA 50), and Colorado River Indian Tribes (Mohave Road).
- **Federal:** National Park Service (Saguaro National Park- Picture Rocks Road, Cactus Forest Loop).

Led/participated in 11 RSA training workshops for city, county, state, tribal, federal, and international participants. Gave 54 RSA presentations at various meetings and conferences, including National Association of County Engineers, FHWA RSA Conferences, MPOs, COGs, Arizona Association of County Engineers, Southern Arizona ITE, ITE/IMSA Conference, Arizona Roads and Streets, Tribal meetings, and numerous ADOT meetings.

Served as Chairman of the Governor's Traffic Safety Advisory Council RSA Subcommittee.

Provided assistance to Maricopa Association of Governments (MAG) and Pima Association of Governments (PAG) during the development of their regional RSA Programs. At the request of FHWA, Mike participated as a speaker for an FHWA national webinar on RSAs. He was also a presenter at the FHWA RSA Forum in Williamsburg, Virginia, again by FHWA request. During this Forum, Mike was interviewed for a marketing video for the FHWA RSA Program (this video has been distributed nationally). He also participated as a speaker at AASHTO's RSA workshop in Charleston, South Carolina at the request of AASHTO. Mike participated in an FHWA case study demonstrating the new Pedestrian Road Safety Audit Guidelines and Prompt Lists on a City of Phoenix Pedestrian RSA.

Initiated and managed Arizona High Risk Rural Roads Program (HRRRP), developed criteria used in selecting roads to receive HRRRP funding, analyzed crash data for all rural roads in Arizona, and guided

local agencies through the funding process.

Participated in the development of the 2007 and 2014 Arizona Strategic Highway Safety Plans. Participated in the development of the Arizona Intersection Safety Implementation Plan and Roadway Departure Safety Implementation Plan.

Assisted in the update of the Arizona Highway Safety Improvement Program (HSIP) manual and helped produce the HSIP annual report to FHWA. Made several presentations on the Arizona HSIP to various groups. Conducted several safety evaluations that included benefit-cost analyses to justify HSIP projects. Conducted RSAs on Top 5% locations identified in the HSIP Transparency Report. Participated in field reviews and kick-off meetings for ADOT pre-design projects to help ensure that these projects address safety issues when and where possible.

Helped develop ADOT's warranting guidelines for the Pedestrian Hybrid Beacon (HAWK). Participated in the ADOT/FHWA Roadway Departure Safety Implementation Plan and the Intersection Safety Implementation Plan.

Extremely familiar with various ADOT standards, policies, and guidelines, having used them while conducting RSAs and evaluating HSIP projects. These include the HSIP Manual, Roadway Design Guidelines, Guidelines for Highways on Bureau of Land Management and U.S. Forest Service Lands, Pavement Preservation Guidelines, Local Government Projects Manual, Traffic Engineering Policies, Guidelines, and Procedures, Signing and Marking Standards, Manual of Approved Signs, the Arizona Supplement to the MUTCD, and the Arizona Criminal and Traffic Law Manual.

### **Local Technical Assistance Program, West Virginia University, 1991-2006 Program Manager, Adjunct Assistant Professor**

Managed Federal program that delivered tangible benefits to state and local highway agencies by providing training and innovative transportation engineering solutions. Developed and conducted training seminars and workshops and provided technical assistance to highway agencies, city councils, MPOs, and homeowner associations.

Served as West Virginia Safety Circuit Rider, which involved identifying and prioritizing run-off-road, pedestrian, and intersection crash locations, conducting road safety audits, and generating traffic engineering solutions for these high priority locations. Conducted 44 corridor and 93 intersection safety assessments as WV Safety Circuit Rider.

Developed and taught the following courses to engineers, public works employees, and maintenance supervisors in Arizona, Nevada, Hawaii, North Carolina, and West Virginia:

- Risk Management/Tort Liability
- Roadside Safety
- MUTCD/Proper Signs and Markings
- Use of Traffic Counting Equipment
- Work Zone Traffic Control
- Incident Management
- Traffic Calming
- Walkable Communities
- Roadside Safety

Team leader and steering committee member of West Virginia Community Design Team (CDT) Program, which received the Governor's Service Award. Led 12 CDT efforts that devoted intensive weekends to citizens and city staff to develop solutions to communities' needs in pedestrian and bike safety, parking,

traffic congestion and safety, signals, signing and marking, and transportation planning.

Served as President of the National Local Technical Assistance Program (LTAP) Association 2003-2004.

Co-Principal Investigator, "Updating the West Virginia Division of Highways Driveway Manual".

Co-Principal Investigator, "Field Demonstration of Oil and Gas Well Brines in Local Level Anti-Icing Programs," Federal Highway Administration.

Initiated the inaugural West Virginia Traffic Safety Conference and served as the planning committee chair.

Taught Introduction to Transportation Engineering course to civil engineering students. This course is a required undergraduate course that included guiding the class through a comprehensive, semester-long highway design project.

Provided traffic engineering consultant services, including serving as an expert witness on 5 tort liability cases involving vehicle crashes, and conducting over 20 Traffic Impact Studies for commercial, industrial, and residential developments, and coordinating a traffic count program for the Harrison County Transportation Study.

### **Bellomo-McGee, Inc., 1987-1991** **Senior Engineer**

Conducted and supervised traffic engineering operational and safety studies, traffic impact studies, signal warrants analysis, speed studies, traffic signal design, intersection design, signing and marking plans, work zone traffic control plans, land use and traffic modelling, safety research, transportation planning studies, and participated in several public hearings and citizen informational meetings.

Principal research analyst for National Cooperative Highway Research Program (NCHRP) study on stop versus yield control for intersections. Analyzed 800 intersections to determine accident experience when intersection control is converted from stop to yield, resulting in the publication of NCHRP Report 320 (co-author).

Project engineer for two county-wide (Fairfax County, VA and Montgomery County, MD) intersection safety and congestion studies that involved collection and analysis of crash, geometric, and volume data to identify crash causal factors and candidate countermeasures.

Safety research analyst for several projects, including:

- FHWA study examining pavement markings and delineation treatments for elderly drivers
- FHWA study analyzing accidents involving roadside barriers
- FHWA study involving examination of AASHTO and MUTCD passing sight distance standards
- FHWA study involving the update of the AASHTO Yellow Book, "Highway Design and Operational Practices Related to Highway Safety."

Other engineering activities included:

- Conducted numerous traffic impact studies in Virginia and Maryland that included trip generation analyses, peak hour volume analyses, and capacity analyses.
- Conducted a speed limit analysis of the Massanutten Ski Resort access road.
- Involved in land use and traffic forecasting and a license plate o/d study for the Washington, D.C. Bypass Project.

- Developed traffic signal design plan including specifications and quantities for intersection in Fairfax County.
- Developed sign and marking plans for several roadway improvement projects in Fairfax County.
- Compiled transit service data including bus and rail ridership, capacities, and frequencies for the planned U.S. DOT consolidation at Union Station in Washington, D.C.
- Participated in several public hearings and citizen informational meetings for VDOT and Maryland State Highway Administration projects.

## Select Publications and Presentations

*"Addressing Work Zone Traffic Safety Issues in Arizona,"* ADOT SPR-720, March 2017

*"Road Safety Audit: Findings from Successful Applications in Arizona,"* paper presented at 2010 Transportation Board Annual Meeting

*"Road Safety Audit for Pedestrian Facilities - Arizona Experience,"* Public Roads, September/October 2009

*"Identifying and Addressing Intersection Operational Issues by Conducting Road Safety Assessments,"* paper presented at 2009 ITE Technical Conference

*"Updating the West Virginia Division of Highways Driveway Manual,"* WVDOT, 2004, Co-Principal Investigator.

*"Field Demonstration of Oil and Gas Well Brines in Local Level Anti-Icing Programs,"* Federal Highway Administration, 1999, Co-Principal Investigator.

*"Analysis of Intersections Converted from Stop to Yield Control,"* paper number 910728, presented at the Transportation Research Board Annual Meeting, Washington, D.C., January 14, 1991.

*"Effects of Converting from Stop to Yield Control at Intersections,"* presented at the Institute of Transportation Engineers District 2 Annual Meeting, Gettysburg, Pennsylvania, November 1, 1990.

NCHRP Report 320, *"Guidelines for Converting Stop to Yield Control at Intersections,"* 1989, Co-Author.