



ATTACHMENT I – General Qualifications

ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO:
ADSP015-00004729

STATE PROCUREMENT OFFICE
Department of Administration
100 North 15th Avenue, Suite 201
Phoenix, Arizona 85007

(If a firm has branch offices, complete for each specific branch office seeking work.)

1. Annual Request for Qualifications

a.	FIRM (OR BRANCH OFFICE) NAME:	LEE ENGINEERING, LLC
b.	FIRM (OR BRANCH OFFICE) STREET:	3610 North 44th Street, Suite 400
c.	FIRM (OR BRANCH OFFICE) CITY:	Phoenix
d.	FIRM (OR BRANCH OFFICE) STATE:	Arizona
e.	FIRM (OR BRANCH OFFICE) ZIP CODE:	85018
f.	YEAR ESTABLISHED:	1988
(g1).	OWNERSHIP - TYPE:	Limited Liability Corporation
(g2).	OWNERSHIP - SMALL BUSINESS STATUS:	Certified Small Business
h.	POINT OF CONTACT NAME AND TITLE:	Dave Bruggeman, PE, PTOE, Principal
i.	POINT OF CONTACT TELEPHONE NUMBER:	602.955.7206
j.	POINT OF CONTACT E-MAIL ADDRESS:	dbruggeman@lee-eng.com
k.	NAME OF FIRM (If block 1a is a branch office):	N/A



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2. EMPLOYEES BY DISCIPLINE

a. Discipline Title	b. Function: Primary (P) or Secondary (S)	c. No. of Employees - Firm	d. No. of Employees - Branch
Civil Engineer (Registered PE)	P	17	6
Technician/Analyst (ITS Designer)	P	3	2
Technician/Analyst	P	1	
Transportation Engineer (Engineering Designer)	P	5	1
Other (Administrative)	P	4*	2
Project Manager (and/or Principal)	S	9	3
Transportation Engineer (PTOE)	S	15	6
*includes one part-time			
Total	Primary	30	11



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME		b. ROLE IN THIS CONTRACT		c. YEARS EXPERIENCE	
JIM C. LEE, PhD, PE, PTOE		PRINCIPAL / PROJECT MANAGER		1. TOTAL 46+	2. WITH CURRENT FIRM 26+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com					
e. EDUCATION (DEGREE AND SPECIALIZATION) Ph.D., Civil Engineering, University of Oklahoma; M. Eng., Civil Engineering, Pennsylvania State University B.S., Civil Engineering, University of New Mexico			f. PROFESSIONAL TRAINING - REGISTRATIONS Registered Professional Engineer in AZ (#19418) Professional Traffic Operations Engineer (#2655)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITE Fellow; ITE Consultants Council-Past Chair; ITE Texas Section Past President; AMSE Fellow (Life Member); NSPE; ASCE Southeast Texas Branch Past President					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ			Professional Services 2013-ongoing	Construction (if applicable) \$299,701 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager for the development of a comprehensive update of the 2005 STSP with oversight by the MAG Transportation Safety Committee and the Transportation Safety Stakeholders Group. The new STSP will establish regional vision, goals, objectives, strategies, countermeasures, and performance measures for transportation safety. The STSP will also identify strategies for addressing new areas of transportation safety.					
2)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ			Professional Services 2013-2015	Construction (if applicable) \$259,389 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager for the development of a citywide 20-year bicycle master plan for the City of Phoenix. The Bicycle Master Plan provide priorities for bicycle infrastructure investment and transportation corridors; serve as an update to the city's General Plan bicycle element; and propose changes to city codes, ordinances, and guidelines to make Phoenix more bicycle-friendly. With limited resources to commit, 39 corridors were identified and prioritized for future bicycle infrastructure. More than 375 on-street and off-road bicycle projects were identified to complete gaps and make connections within these corridors.					
3)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	Arizona Attorney General's Office – ADOT Right-of-Way Condemnation Projects – Statewide, AZ			Professional Services 1988-ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Expert witness on numerous right-of-way land condemnation cases where agencies (statewide) need to acquire portions of adjacent property to improve traffic flow and safety aspects on the adjacent street frontages. This includes mitigating parking, circulation, and access impacts to minimize the effects of the property loss and overall goal of improving the property to a condition equal to or better than existed in the before condition.					
4)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	MAG Road Safety Assessments (RSAs) – Phoenix, AZ			Professional Services 2011-2015	Construction (if applicable) \$164,817 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager on five formal road safety evaluations. In total Lee Engineering provided RSA leadership, coordination, and recommendations for six urban signalized intersections and three suburban unsignalized intersections, spanning the six RSA projects.					
5)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	ADOT I-10 35th Avenue Sky Harbor Boulevard Safety Study – Phoenix, AZ			Professional Services 2014-ongoing	Construction (if applicable) \$93,737 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Principal Investigator for a traffic safety planning study for I-10, from 35 th Avenue (MP 141.67) to Sky Harbor Boulevard (MP 149.30). Performing statistical analysis on the crash data and developing mitigation measures. Developed a crash database in a GIS platform; conducted advanced spatial analysis, developed a collision diagram library in a GIS environment; and placed each collision diagram where it occurred in GIS. Conducted cost-benefit analysis for the objective-oriented counter measures.					



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
DAVE BRUGGEMAN, PE, PTOE	PRINCIPAL / PROJECT MANAGER	36+	11+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com			
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S., Civil Engineering, University of Arizona; Undergraduate, Electrical Engineering, Purdue University; Worksite Traffic Control Design & Certification, ATSSA; Synchro™ Software Training, Trafficworks; and Management of Traffic Control Systems, FHWA		f. PROFESSIONAL TRAINING – REGISTRATIONS Registered Professional Engineer in AZ (#16229) Professional Traffic Operations Engineer (#0007)	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITE Fellow; ITE Council; ITS Arizona Charter Member/Past President; and TRB Associate Member			
H. RELEVANT PROJECTS			
1)	(1) TITLE AND LOCATION (City and State) ADOT Statewide Traffic Engineering On-Call	(2) Year Completed	
		Professional Services 2003-ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm In the past eleven years, Dave has been working with ADOT to design traffic signal control (or modifications) for at least 75 locations throughout the State. Other on-call task work has included training of ADOT staff in signal design, signal timing, construction traffic control plans; development of standards and details; and signing, striping and design; compilation of specifications and estimates; construction engineering assistance; and traffic operations modeling.			
2)	(1) TITLE AND LOCATION (City and State) MCDOT Bell Road Adaptive Signal Control Technology Deployment – Surprise, Peoria, Glendale, Phoenix, Scottsdale, AZ	(2) Year Completed	
		Professional Services 2014	Construction (if applicable) \$183,668 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Provided the Concept of Operations, System Requirements, and prepared the application that resulted in CMAQ funding for the installation of traffic adaptive signal control technology at 52 intersections and for the installation of 21 travel time data collectors at key locations along Bell Road in Maricopa County, the cities of Surprise, Peoria, Glendale, Phoenix, and Scottsdale. Currently providing services to complete the Systems Engineering Analysis and Design Concept Report with cost estimate and 15% design plans. Also providing services for the best value procurement of the ASCT system (detection for the ASCT system and travel time data collectors will be procured using the low bid method).			
3)	(1) TITLE AND LOCATION (City and State) City of Avondale Signal System and Traffic Operations Center Design – Avondale, AZ	(2) Year Completed	
		Professional Services 2009-2012	Construction (if applicable) \$428,739 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm This project identified system needs, functionality, necessary components, and costs for implementing a new traffic operations center and signal system for the City of Avondale. Project process included evaluating system needs, spatial needs for the traffic operations center, identification of communications linkages to field devices, including 35 traffic signals and 7 CCTV, development of a DCR to support ARRA Federal funding, design of the system, design of a video wall with data and communications servers, obtaining environmental, right-of-way and utility clearances as part of the City/ADOT Local Governments agreement, and development of plans and specifications. As part of the process, an ITS Strategic Plan was developed for the City of Avondale.			
4)	(1) TITLE AND LOCATION (City and State) City of Chandler Traffic Signals at Queen Creek Road & Bush Way – Chandler, AZ	(2) Year Completed	
		Professional Services 2013	Construction (if applicable) \$19,470 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager on the design plans, estimate, and technical specifications for the construction of traffic signals at the intersection of Queen Creek Road and Bush Way (Hartford Street). The plans include installation of the single poles in compliance with ADA requirements, provisions for contractor proofing of the existing conduit, and tie-in of the new control cabinet to the existing fiber interconnection cable. Plans include signing and striping to accommodate crosswalks, stop lines, and traffic signals.			
5)	(1) TITLE AND LOCATION (City and State) City of Glendale ITS Infrastructure on Greenway, Thunderbird and Cactus Roads – Glendale, AZ	(2) Year Completed	
		Professional Services 2013-2014	Construction (if applicable) \$149,900 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Designed 6 miles of urban arterial conduit, boxes, and fiber connecting to 12 existing signals, 6 Bluetooth™ travel time data collection devices, and 12 new CCTV sites as part of this federally funded ADOT LPA Section project for the City of Glendale. This project included a wireless hop over the Aqua Fria River, to avoid ground disturbance and environmental impacts.			



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
MICHAEL J. CYNECKI, PE, PTOE	PROJECT MANAGER / ENGINEER	33+	2+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com			
e. EDUCATION (DEGREE AND SPECIALIZATION) M. S., Civil Engineering, Wayne State Univ., Detroit, Michigan B.S., Civil Engineering, Wayne State University, Detroit, Michigan		f. PROFESSIONAL TRAINING - REGISTRATIONS Registered Professional Engineer in AZ (#18477) Professional Traffic Operations Engineer (#3795)	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITE Fellow and Arizona Section ITE #10837; Association of Pedestrian and Bicycle Professionals Member; Transportation Research Board Pedestrian Committee (ANF10) Member; Committee Chair 1994-1997. Emeritus Member (Oct 2006): Transportation Research Board Section ANF00 (Pedestrian, Bicycle, and Motorcycle Committee), April 2007. Section Chair April 2008; Member – ITE Technical Committee 5A-5, “Design of Pedestrian Facilities”; ITE Technical Committee 6A-52, “Guidelines for Facilitating Pedestrian Movements in Suburban Activity Centers” (Completed); ITE Technical Committee 5P-3, “Pedestrian Crossing Criteria”; Member – NCHRP Project Panel 20-07/Task 105, “Planning, Design and Operation of Pedestrian Facilities,” Transportation Research Board (1999); Chair - ITE Technical Committee TENC-105-01: Guidelines for School Site Selection, Planning, and Design of Transportation Facilities			
H. RELEVANT PROJECTS			
1)	(1) TITLE AND LOCATION (City and State) MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ	(2) Year Completed	
		Professional Services 2013-ongoing	Construction (if applicable) \$299,701 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer for the development of a comprehensive update of the 2005 STSP with oversight by the MAG Transportation Safety Committee and the Transportation Safety Stakeholders Group. The new STSP will establish regional vision, goals, objectives, strategies, countermeasures, and performance measures for transportation safety. The STSP will also identify strategies for addressing new areas of transportation safety.			
2)	(1) TITLE AND LOCATION (City and State) City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ	(2) Year Completed	
		Professional Services 2013-2015	Construction (if applicable) \$259,389 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer for the development of a citywide 20-year bicycle master plan for the City of Phoenix. The Bicycle Master Plan provide priorities for bicycle infrastructure investment and transportation corridors; serve as an update to the city’s General Plan bicycle element; and propose changes to city codes, ordinances, and guidelines to make Phoenix more bicycle-friendly. With limited resources to commit, 39 corridors were identified and prioritized for future bicycle infrastructure. More than 375 on-street and off-road bicycle projects were identified to complete gaps and make connections within these corridors.			
3)	(1) TITLE AND LOCATION (City and State) PAG Road Safety Assessments (RSA) – Pima County, AZ	(2) Year Completed	
		Professional Services 2013-2014	Construction (if applicable) \$50,717 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Manager on two formal road safety evaluation of four rural, signalized high risk intersections within a 2.3 mile roadway segment as part of an independent, multi-disciplinary team.			
4)	(1) TITLE AND LOCATION (City and State) Vanasse Hangen Brustlin, Inc.(Prime) – NCHRP 03-104 Unsignalized Intersection Design Guide	(2) Year Completed	
		Professional Services 2011-2014	Construction (if applicable) \$34,880 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm As a subconsultant, Mike is developing a guide for state and local agencies to improve the safety, mobility and accessibility of unsignalized intersections for users (trucks, automobile drivers and other motorists, bicyclists and pedestrians).			
5)	(1) TITLE AND LOCATION (City and State) City of Phoenix Street Transportation Department - Phoenix, AZ	(2) Year Completed	
		Professional Services 2011	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm Mike’s 34 years of experience includes more than 26 years with the City of Phoenix Street Transportation Department. As Traffic Engineering Supervisor for the Traffic Operations Division, Mike managed the day-to-day operations of the Traffic Signal Section, Traffic Signal Shop, Traffic Count Shop, and Traffic Management Center. His project experience includes performing studies and assessments concerning traffic operations, traffic impact analysis, traffic engineering concepts, roadway/intersection safety, and traffic signal design.			



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
PAUL GUZEK, PE, PTOE	SENIOR ENGINEER	28+	12+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com			
e. EDUCATION (DEGREE AND SPECIALIZATION) M. S., Civil Engineering, Wayne State Univ., Detroit, Michigan B.S., Civil Engineering, Michigan State University		f. PROFESSIONAL TRAINING – REGISTRATIONS Registered Professional Engineer in AZ (#38915) and Professional Traffic Operations Engineer (#2641)	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITS Arizona Member			
H. RELEVANT PROJECTS			
1)	(1) TITLE AND LOCATION (City and State) MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ	(2) Year Completed	
		Professional Services 2013-ongoing	Construction (if applicable) \$299,701 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Paul serves as one of the Lee Engineering Project Engineers for the comprehensive update of the 2005 STSP with oversight by the MAG Transportation Safety Committee and the Transportation Safety Stakeholders Group.			
1)	(1) TITLE AND LOCATION (City and State) MAG 67th Avenue and Thomas Road PA – Phoenix, AZ	(2) Year Completed	
		Professional Services 2014-ongoing	Construction (if applicable) \$32,167 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Engineer for the preparation of a Project Assessment (PA) for safety improvements at the intersection of Thomas Road and 67th Avenue for the City of Phoenix. Paul performed the traffic analysis for this assignment.			
2)	(1) TITLE AND LOCATION (City and State) City of Avondale Transportation Plan Update – Avondale, AZ	(2) Year Completed	
		Professional Services 2010-2012	Construction (if applicable) \$56,750 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer to update of the City's 2006 Transportation Plan. The Lee Engineering effort included addressing the various transportation topics such as existing area roadway characteristics, crash trends, transit plan development, incorporation of a previously prepared ITS strategic plan, and an updated travel demand model of the City's planning area using TransCAD software.			
3)	(1) TITLE AND LOCATION (City and State) USA/AA/SWA West Belly Air Cargo Facility and East Cell Phone Lot Relocation Analysis	(2) Year Completed	
		Professional Services 2014	Construction (if applicable) \$32,791 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer for the analysis of the traffic impacts of relocating the cargo facility and east cell phone lot to the northeast side of Sky Harbor Airport. The analysis identified existing and future traffic demand of the facilities, determined if the existing infrastructure could accommodate the additional traffic demands, and recommended improvements to achieve satisfactory traffic operations.			
4)	(1) TITLE AND LOCATION (City and State) MAG On-Call Services for Intersection & Freeway Data Collection & Analysis – Phoenix, AZ	(2) Year Completed	
		Professional Services 2011	Construction (if applicable) \$17,684 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer to collect intersection movement count data at selected sites throughout the Valley over an eight-week period using an innovative video data collection technique (Miovision). This study required working closely with MAG, local agencies, and other consultants in securing needed permits for installing traffic counting equipment within agency right-of-way; in conducting pre-engineering of site locations to determine any fatal-flaw issues at the identified intersection locations; and the ability to quickly adjust scheduling as a result of poor weather conditions and other conflicts.			
5)	(1) TITLE AND LOCATION (City and State) MAG Non-Recurring Congestion Study – Phoenix, AZ	(2) Year Completed	
		Professional Services 2011	Construction (if applicable) \$277,100 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer for this large data-collection and analysis project that included quantifying the type and magnitude of non-recurring delay on freeways and arterial streets in the MAG region. The delay on arterials was measured using anonymous wireless address matching, which identified the MAC address of a Bluetooth® device in a vehicle and re-identified it at a downstream location. When delay beyond that which is typical was recognized the cause of the delay (traffic accident, work zone, signal timing, etc.) was researched. Freeway delay was obtained from system detector information.			



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a. NAME		b. ROLE IN THIS CONTRACT		c. YEARS EXPERIENCE	
YUNG KOPROWSKI, PE, PTOE		SENIOR PROJECT ENGINEER		1. TOTAL 7+	2. WITH CURRENT FIRM 5+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com					
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S., Civil Engineering, Cum Laude, Arizona State University			f. PROFESSIONAL TRAINING - REGISTRATIONS Registered Professional Engineer in AZ (#52513) Professional Traffic Operations Engineer (#3112)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITE Member; ASCE Member; ITS Arizona 2012 President; and ASHE Membership Chair, Scholarship Chair, 2nd Vice President					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ			(2) Year Completed	
				Professional Services 2013-ongoing	Construction (if applicable) \$299,701 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer working with the MAG Transportation Safety Committee and Transportation Safety Steering Group to carry out a comprehensive update of the 2005 MAG STSP. The STSP will identify strategies for addressing new areas of transportation safety. The development of the STSP will be closely coordinated with the ongoing development of the state's Strategic Highway Safety Plan by ADOT. The recommendations included in the STSP will be incorporated in the next generation MAG Regional Transportation Plan.					
2)	(1) TITLE AND LOCATION (City and State) City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ			(2) Year Completed	
				Professional Services 2013-2015	Construction (if applicable) \$259,389 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer on developing a 20-year Bicycle Master Plan for the City of Phoenix that will update and supplement the current "Bicycling Element" of the City's General Plan for City Council-adoption. The development of the plan is guided by the City's mission to make bicycling safer, more convenient, and more comfortable so that a greater number of City of Phoenix residents and tourists have the opportunity to use a bicycle for transportation purposes.					
3)	(1) TITLE AND LOCATION (City and State) MAG Road Safety Assessments (RSAs) – Phoenix, AZ			(2) Year Completed	
				Professional Services 2011-2015	Construction (if applicable) \$164,817 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Project Engineer on five formal road safety evaluations. In total Lee Engineering provided RSA leadership, coordination, and recommendations for six urban signalized intersections and three suburban unsignalized intersections, spanning the six RSA projects.					
4)	(1) TITLE AND LOCATION (City and State) MAG 67th Avenue and Thomas Road PA – Phoenix, AZ			(2) Year Completed	
				Professional Services 2014-ongoing	Construction (if applicable) \$32,167 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Project Engineer for the preparation of a Project Assessment (PA) for safety improvements at the intersection of Thomas Road and 67 th Avenue for the City of Phoenix. Paul performed the traffic analysis for this assignment.					
5)	(1) TITLE AND LOCATION (City and State) ADOT Arizona Implementation of AASHTO U.S. Bicycle Route System – Phoenix, AZ			(2) Year Completed	
				Professional Services 2014-ongoing	Construction (if applicable) \$68,697 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Project Engineer for the identification and analysis of U.S. Bicycle Routes within the Phoenix metropolitan area. Yung participated in the identification of route alternatives, which combines on-street and off-street bicycle facilities, for USBR designation in the Phoenix Metropolitan Area. She is working closely with stakeholders and agencies to select a preferred route.					



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a. NAME		b. ROLE IN THIS CONTRACT		c. YEARS EXPERIENCE	
ANDREW KWASNIAK, PhD, PE, PTOE, ACTAR		SENIOR ENGINEER		1. TOTAL 11	2. WITH CURRENT FIRM < 2 years
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com					
e. EDUCATION (DEGREE AND SPECIALIZATION) Ph.D., Civil Engineering, Purdue University M.S., Civil Engineering, Cracow University of Technology, Poland B.S., Civil Engineering, Cracow University of Technology, Poland			f. PROFESSIONAL TRAINING - REGISTRATIONS Registered Professional Engineer in AZ (#52919) Professional Traffic Operations Examiner (#3796) Accredited Traffic Accident Reconstructionist (#2160)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) Volunteer Chair of the ITE Transportation Expert Witness Council; Council of the ITE Transportation Expert Witness; Chair of the ITE Safety Executive Committee/Technical Gap Project; Awards Chair of the ITE Safety Executive Committee; Council of the ITE Safety Executive Committee; and Member of TRB RSA subcommittee					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ			(2) Year Completed	
				Professional Services 2013-2015	Construction (if applicable) \$259,389 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Team member on this comprehensive prioritized plan for potential bicycle improvements, contributed to improve bicycle safety, proposed policies for bicycle facility implementation, and identified barriers and solution for residents to safely access bicycle destinations.					
2)	(1) TITLE AND LOCATION (City and State) MAG 67th Avenue and Thomas Road PA – Phoenix, AZ			(2) Year Completed	
				Professional Services 1988-ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Engineer for the preparation of a Project Assessment (PA) for safety improvements at the intersection of Thomas Road and 67 th Avenue for the City of Phoenix. Andrew helped prepare the PA document.					
3)	(1) TITLE AND LOCATION (City and State) MAG Road Safety Assessments (RSAs) – Phoenix, AZ			(2) Year Completed	
				Professional Services 2011-2015	Construction (if applicable) \$164,817 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Team member for two of the six RSAs for MAG and its member agencies, Phoenix, Buckeye, and Litchfield Park. While with a former employer, Andrew was Team Leader and member on multiple RSAs performed in Indiana, Arizona, Illinois and Poland and Germany. These investigations included signalized intersections, two-way stop controlled intersections, four-way stop controlled intersections, road segments, and work zone areas. As part of these investigations, multiple safety countermeasures including roadway geometry design, traffic control and operation, human factors have been proposed.					
4)	(1) TITLE AND LOCATION (City and State) ADOT I-10 35th Avenue Sky Harbor Boulevard Safety Study – Phoenix, AZ			(2) Year Completed	
				Professional Services 2014-ongoing	Construction (if applicable) \$93,737 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Team Member on this project that focuses on applying the predictive and diagnostic Highway Safety Manual methodologies for I-10 corridor in downtown Phoenix area. As part of this project, evaluation of safety problems for this corridor based on in-depth review of crash report was performed. Also, a set of safety countermeasures was identified and proposed.					
5)	(1) TITLE AND LOCATION (City and State) Lee Engineering Current Litigation Projects – Nationwide, US			(2) Year Completed	
				Professional Services 2013-ongoing	Construction (if applicable) Fees vary
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Andrew is Senior Engineer for litigation consulting projects like Roadway Geometry Design (geometry design: stopping sight distance, intersection sight distance, design of exit ramps); Work Zone Safety (temporary traffic control plans, barricade and signage placement, temporary traffic control signal operations); Traffic Control Signal Operation (red light violations); Americans with Disabilities Act/International Building Code/International Residential Code Compliance (ramp design, parking lot design, pedestrian walkways within a park area design, and means of egress); Accident Reconstruction (mechanics of vehicular crashes by applying analytical techniques based on the laws of physics and principles of engineering. Utilizing conservation of momentum and energy to determine vehicles speed at impact.); Human Factors/Driver Characteristics (driver characteristics for crash avoidance, driver perception reaction time, night time visibility and overall driver performance).					



ATTACHMENT I – General Qualifications
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STATE PROCUREMENT OFFICE
Department of Administration
100 North 15th Avenue, Suite 201
Phoenix, Arizona 85007

4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME		b. ROLE IN THIS CONTRACT		c. YEARS EXPERIENCE	
JOHN PROWSE		SENIOR ITS DESIGNER		1. TOTAL 30+	2. WITH CURRENT FIRM 11+
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com					
e. EDUCATION (DEGREE AND SPECIALIZATION) Arizona State University (Traffic Engineering, GIS/Video Imagery, and Video Technologies); Northwestern University, Traffic Engineering; and Phoenix Institute of Technology, Electronic Technology				f. PROFESSIONAL TRAINING - REGISTRATIONS N/A	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) N/A					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) ADOT Statewide Traffic Engineering On-Call			(2) Year Completed	
				Professional Services 2014	Construction (if applicable) \$60,000 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm ITS Designer for the traffic signal design at over 62 signals in just the last ten years; signal timing for 134 signals in three cities, with ADOT-maintained signals on state routes; analysis and liability defense of special signal operations for rail pre-emption at three locations; signing and striping plans; construction traffic control plans; development of specifications for video detection; UPS and emergency vehicle pre-emption; assistance in the development of traffic signal Standard Specifications; and the development of the JOC specifications for traffic signal and lighting construction and maintenance. Twelve (12) of the traffic signal design projects also had civil design for sidewalks, ramps, and right turn lanes, provided by a civil subconsultant.					
2)	(1) TITLE AND LOCATION (City and State) MAG On-Call Services for Intelligent Transportation Systems & Transportation Safety Planning – Phoenix, AZ			(2) Year Completed	
				Professional Services 2014-ongoing	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm ITS Designer to provide MAG with specialized services required for executing studies and projects in identified areas through Task Orders. Areas of expertise include Traffic Engineering, ITS Planning, ITS Operations Planning, ITS Training, ITS Evaluation, Modeling Support, Fiber Network Management, and Transportation Safety.					
3)	(1) TITLE AND LOCATION (City and State) City of Glendale ITS Infrastructure on Greenway, Thunderbird and Cactus Roads – Glendale, AZ			(2) Year Completed	
				Professional Services 2013-2014	Construction (if applicable) \$149,900 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Designed 6 miles of urban arterial conduit, boxes, and fiber connecting to 12 existing signals, 6 Bluetooth™ travel time data collection devices, and 12 new CCTV sites as part of this federally funded ADOT LPA Section project for the City of Glendale. This project included a wireless hop over the Aqua Fria River, to avoid ground disturbance and environmental impacts.					
4)	(1) TITLE AND LOCATION (City and State) City of Mesa ARID – Mesa, AZ			(2) Year Completed	
				Professional Services 2013	Construction (if applicable) \$78,799 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm ITS Designer for a Systems Engineering Analysis and design for a project involving the implementation of ARID sensors at approximately 80 intersections within the City of Mesa to automatically detect and alert traffic operations staff of a suspected crash or other unexpected incident or condition.					
5)	(1) TITLE AND LOCATION (City and State) Oklahoma Dept. of Transportation Community Anchor Initiative Fiber Design – Oklahoma City, OK			(2) Year Completed	
				Professional Services 2011	Construction (if applicable) \$335,450 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm ITS Designer for a project that involved field and location survey, preliminary engineering, preparation of construction plans and construction inspection duties for 163 miles of fiber optic installation and communication infrastructure to connect 5 anchor institutions in the northwest section of the state. The design and plan development will be completed so that information can be incorporated into ODOT's GIS database as part of the as-built process. Also responsible for providing ESRI ArcGIS compatible data in a custom ODOT telecommunications data model.					



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME		b. ROLE IN THIS CONTRACT		c. YEARS EXPERIENCE	
BRUCE DRESSEL		SENIOR ITS DESIGNER		1. TOTAL 32+	2. WITH CURRENT FIRM <1
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com					
e. EDUCATION (DEGREE AND SPECIALIZATION) Associates , Business Administration, Phoenix College; Electronic Design principles, US Air Force; Traffic Engineering, Arizona State University and Phoenix College; Worksite Traffic Control Design & Certification, ATSSA; Synchro™ Software Training, Trafficworks; Transcore, TransSuite and Series 2000 ATMS; Center-to-Center Communications, ITE; Highway Capacity Workshop, Arizona State University; GIS Applications in Transportation, UC Berkley; W4IKS Software Training, Wapiti Systems; Vicon CCTV I.P. Video Solutions, Vicon Industries; Geometric Design, UC Berkley; Urban Street Design, Northwestern University Traffic Institute				f. PROFESSIONAL TRAINING - REGISTRATIONS N/A	
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) ITE AZ Member					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	MCDOT Bell Road Adaptive Signal Control Technology Deployment – Surprise, Peoria, Glendale, Phoenix, Scottsdale, AZ			Professional Services 2014 - ongoing	Construction (if applicable) \$183,668 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Lee Engineering is providing preliminary engineering and procurement services approved by FHWA for the installation of traffic adaptive signal control technology along Bell Road in Maricopa County, the cities of Surprise, Peoria, Glendale, Phoenix, and Scottsdale to improve traffic operations. Lee Engineering prepared the DCR, system engineering documents, and CMAQ application for the project that resulted in \$2.5 million construction and \$300K design awarded in Federal Aid. Lee Engineering coordinates and works closely with all stakeholder agencies and MCDOT departments.					
2)	(1) TITLE AND LOCATION (City and State)			(2) Year Completed	
	City of Scottsdale Traffic Management – Scottsdale, AZ			Professional Services 1981-1998/2000-2014	Construction (if applicable) n/a
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input type="checkbox"/> Check if project performed with current firm While with the City of Scottsdale, Bruce's experience as ITS Designer included the following: <ul style="list-style-type: none"> Designed the new Scottsdale Traffic Management Center (TMC) that included assisting with tenant improvements; communications relocation designs; operational design of the new TMC; UPS and power backup systems; CCTV and video wall control software purchase; and full LEED design for lighting and green wall interior office design. Developed and coordinated the public/private partnerships with Dark fiber providers for the City, resulting in the installation of over 165 miles of City-owned fiber optic cable at little to no out-of-pocket cost to the City of Scottsdale. Designed and implemented 140 CCTV cameras throughout the City of Scottsdale, including the I.P. switch network, replacing aging fiber/encoder devices in the field. Designed the traffic signal and lighting modifications associated with geometric changes and new signal construction. The projects included relocating existing traffic signals required for geometric changes; completing design of new traffic signals; and installing new or replacing existing traffic signal control cabinets and signal controllers. Developed and assisted in the design of the small arterial DMS design and installations at 25 locations in the City of Scottsdale, including right-of-way and utility coordination; DMS design criteria; and selection of DMS manufacturer for the City Qualified Products List. As a Traffic Engineering Analyst, completed approximately 150 signal warrant studies that included geometrically-challenged intersections in close proximity to other signalized intersections. Each involved level-of-service studies for signalized and unsignalized locations and delay studies to determine the difference in delay if a signal were installed. Many of the warrants were presented to the Transportation Commission and City Council. As a Traffic Engineering Analyst, completed several intersection delay studies on Scottsdale Road, Hayden and other major/major and major/minor arterial intersections. The project involved data collections in timed intervals, not divisible by the cycle length of the intersection. As a Traffic Engineering Analyst, completed several intersection capacity analysis at challenged locations where right-of-way was limited and utilities made it financially impractical to change the existing roadway geometrics. Many solutions required changes in upstream signal timing or creating alternate signage to limit vehicular traffic in that specific segment. One location was Chaparral Road, from Hayden to Scottsdale Road. The solution was determined to re-route pass-through traffic to Camelback Road through a series of guided route signs, both overhead and ground mounted. Traffic signal timing and striping reconfigurations were completed to allow more capacity for left turn traffic to take the alternate route from Hayden Road to Scottsdale Road. 					



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4. Resumes of Key Personnel Proposed for this Contract (Complete one Section 4 for each key person.)

a. NAME		b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
			1. TOTAL	2. WITH CURRENT FIRM
SANJAY PAUL, PhD, EIT		SENIOR ENGINEERING	5+	
d. LOCATION (City and State) 3610 North 44 th Street, Suite 100, Phoenix, AZ 85018 602.955.7206 www.LeeEngineering.com				
e. EDUCATION (DEGREE AND SPECIALIZATION) PhD, Civil Engineering, Arizona State University M.S., Civil Engineering, Arizona State University B.Sc., Civil Engineering, Bangladesh Univ. of Engineering & Tech			f. PROFESSIONAL TRAINING - REGISTRATIONS Registered Civil Engineer in Training in AZ (#11615)	
g. OTHER PROFESSIONAL QUALIFICATIONS (Organizations, Awards, etc.) ITS AZ Board Member; ITE AZ Member; ITE-ASU Vice President for Student Chapter (2011-2012)				
H. RELEVANT PROJECTS				
1)	(1) TITLE AND LOCATION (City and State)		(2) Year Completed	
	MAG 67th Avenue and Thomas Road PA – Phoenix, AZ		Professional Services 2014-ongoing	Construction (if applicable) \$32,167 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Engineering Designer for the preparation of a Project Assessment (PA) for safety improvements at the intersection of Thomas Road and 67th Avenue for the City of Phoenix. Sanjay performed the crash analysis and helped prepare the cost-benefit ratio portion of the HSIP application				
2)	(1) TITLE AND LOCATION (City and State)		(2) Year Completed	
	ADOT I-10 35th Avenue Sky Harbor Boulevard Safety Study – Phoenix, AZ		Professional Services 2014-ongoing	Construction (if applicable) \$93,737 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Engineering Designer for a traffic safety planning study for I-10, from 35 th Avenue (MP 141.67) to Sky Harbor Boulevard (MP 149.30). Performing statistical analysis on the crash data and developing mitigation measures. Sanjay developed a crash database in a GIS platform; conducted advanced spatial analysis, developed a collision diagram library in a GIS environment; and placed each collision diagram where it occurred in GIS. Sanjay also conducted cost-benefit analysis for the objective-oriented counter measures.				
3)	(1) TITLE AND LOCATION (City and State)		(2) Year Completed	
	MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ		Professional Services 2013-ongoing	Construction (if applicable) \$299,701 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Team member for the development of a comprehensive update of the 2005 STSP with oversight by the MAG Transportation Safety Committee and the Transportation Safety Stakeholders Group.				
4)	(1) TITLE AND LOCATION (City and State)		(2) Year Completed	
	ADOT ARID Technology Evaluation and Master Plan Development – Phoenix, AZ		Professional Services 2014-ongoing	Construction (if applicable) \$42,000 (fee)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Sanjay will be the Lead Researcher for an ADOT TTG project that will evaluate the Anonymous Re-Identification (ARID) Technology for travel time data collection, quality control, suitability and applicability check for travel time estimation, and develop a Master Plan for implementation on the Phoenix Freeway System. The team is researching on the sample size i.e. the number of devices each ARID device can detect; whether the sample is sufficient to calculate travel time for the freeway commuters; and, how reliable the travel time would be comparing to real experienced travel time. The team will also evaluate the efficiency and applicability of it, including, but not limited to: what are the advantages and disadvantages of the technology; what could the user expect from the technology; how the new technology will help the existing system; how compatible are they; and at what extent the new technology will advance the system. The team will also develop a master plan for the deployment of the technology on phoenix freeway system.				
5)	(1) TITLE AND LOCATION (City and State)		(2) Year Completed	
	ADOT Long Distance Travel Modeling: Proof of Concept		Professional Services 2013-2016	Construction (if applicable) \$119,999 (budget)
(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Senior Engineering Designer for conducting research on current practices on long distance personal travel demand modeling and forecasting domain. The team is also investigating available sources of data used for traditional modeling techniques including extent of information, data quality, reliability, and applicability in model development, validation and calibration. The team would perform investigative analysis on the emerging sources of long-distance personal travel behavior data to better capture the complex interaction among the contributing factors and also forecast the future demand more accurately. The team would also develop a modeling technique and training ADOT personnel in using the tools for ADOT State-wide applications.				



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State) Comprehensive Bicycle Master Plan – Phoenix, AZ	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2013 - 2014	CONSTRUCTION (If applicable) N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER City of Phoenix	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$259,388	e. TOTAL COST OF PROJECT \$259,388
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size and length of project)

Lee Engineering developed a citywide 20-year bicycle master plan for the City of Phoenix. The City of Phoenix Comprehensive Bicycle Master Plan provides priorities for bicycle infrastructure investment and transportation corridors; serve as an update to the city's General Plan bicycle elements; and propose changes to city codes, ordinances, and guidelines to make Phoenix more bicycle-friendly for residents and visitors alike.

Community and agency engagement has been essential to the development of this plan. The planning process directly engaged a wide variety of stakeholders as well as all types of bicycle riders. Municipal and agency staff from various departments and agencies (e.g., Street Transportation, Valley Metro, ADOT, MAG, Parks and Recreation, Community and Economic Development, Neighborhood Services, etc.) have been involved through a Technical Advisory Committee to ensure that the plan coordinates with other existing and planned bicycle networks within the city and the region.

Major Goals for the Bicycle Master Plan Project include:

- Provide a comprehensive prioritized plan for potential bicycle improvements;
 - The City of Phoenix participated as a pilot agency for the National Cooperative Highway Research Program (NCHRP) 07-17: *Pedestrian and Bicycle Transportation along Existing Road* study. By participating, Phoenix had the opportunity to prioritize bicycle projects using a methodology that represents best practices from around the country while also taking advantage of the latest safety and other research. As a participant, the City was provided with a detailed explanation of the methodology, an Excel-based spreadsheet tool, detailed instructions on how to use the tool, and periodic support from the Research Team.
 - From our work on this project and Mike Cynecki's 26 years with the City of Phoenix, the Lee Engineering team is familiar with existing and future bicycle infrastructure citywide. This includes barriers to bicycling such as gaps in the bike lane network, high traffic volumes, at-grade canal/road crossings, and signalized intersections where bike lanes are dropped 50 – 500 feet from the intersection.
- Provide bicycle connectivity with adjacent agencies;

The project team met with or contacted bike coordinators in the communities around Phoenix to identify the need to provide connectivity across the city borders. Agencies contacted included:

- City of Glendale	- City of Peoria	- Town of Cave Creek
- City of Scottsdale	- City of Tempe	- City of Chandler
- Town of Paradise Valley	- City of Avondale	- ADOT and MCDOT
- Improve bicycle safety;
 - The Phoenix Comprehensive Bicycle Master Plan goal for safety is that "Bicycling will be a safe transportation and recreation option. Streets will be designed and retrofitted to safely accommodate all modes. People on bikes will understand bicycling rules of the road through proper facility design and safety education. Bicycling will be safer by promoting accountability and responsible attitudes of all road users."
 - Lee Engineering conducted a crash analysis using the ALISS database and incorporated fatal and serious injury crashes involving a bicycle as a variable to prioritize bicycle infrastructure investment projects. Lee Engineering identified bicycle infrastructure projects for the safety of bicyclists using best practices for road and bikeways design within the limiting constraints (cost and ROW), not "minimum standards".
- Propose policies for bicycle facility implementation in Street Transportation and Planning and Development Services Department Projects, especially changes to zoning code with regard to bicycle parking, vehicle parking and showers/lockers to encourage biking in warm weather; and
- Identify barriers, with solutions, for residents to safely access bicycle destinations within the City and nearby communities.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State) Strategic Transportation Safety Plan – Phoenix, AZ	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2013-2015	CONSTRUCTION (If applicable) N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Maricopa Association of Governments	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT \$96,873	e. TOTAL COST OF PROJECT \$96,873
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f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size and length of project)

Lee Engineering was selected by MAG to develop an STSP that will establish a regional vision, goals, objectives, strategies, countermeasures and performance measures for transportation safety. The STSP development will be closely coordinated with the state's Strategic Highway Safety Plan. The STSP will also identify strategies for addressing new areas of safety planning such as, spatial analysis and utilization of appropriate analytical methods from the Highway Safety Manual. The recommendations from the STSP will provide input to the Regional Transportation Plan. Oversight for this project will be provided by the MAG Transportation Safety Stakeholders Group (TSSG) that will consist of members of the MAG Transportation Safety Committee and other key stakeholders. Lee Engineering will be providing the following services to MAG:

1. Review road safety performance and available resources for road safety planning and implementation. This task will include a review of the current state of road safety in the MPA, and identify all programs and funding resources available for road safety planning and implementation.
2. Facilitate a Visioning Workshop with the TSSG that will lead to identification of a road safety vision and goals for the region.
3. Execute a strategy to identify potential emphasis areas for future regional road safety initiatives and safety performance measures to be tracked for the entire MAG MPA This will be accomplished in consultation with the TSSG.
4. Lee Engineering will recommend Safety Performance Functions (SPFs) for intersections and conduct a workshop on Predictive Road Safety Analysis and the application of SPFs for network screening.
5. Lee Engineering will identify resources needed for improving road safety performance towards achieving the regional road safety vision and goals; recommend potential regional transportation policies that could help improve overall road safety performance; and identify methodologies for assessing the impact of future regional transportation infrastructure alternatives on road safety performance.
6. Lee Engineering will develop a potential approach to encourage future MAG TIP projects that would incorporate safety features and facilitate the introduction of Road Safety Assessments during project design review stage.
7. Lee Engineering will review, address and document opportunities for improving road safety through innovative traffic operations, safer work zones, emerging Connected Car applications, and strategies for safer sharing the road with bicyclists, as well as any other innovations.
8. Lee Engineering will identify any enhancements to the current MAG practices in reporting on road safety performance and recommend approaches for monitoring the effectiveness of regional road safety programs and initiatives.
9. Develop an Implementation Plan 2015-2025. This task will include preparation of the Implementation Plan that identifies what needs to be done to carry out the recommended Strategic Transportation Safety Plan. This will address all areas coordinated, determined, and evaluated in previous tasks including but not limited to Safety emphasis areas; Regional road safety initiatives; Potential state and regional resources; Roles and responsibilities; and Recommended schedule from implementation of proposed initiatives.
10. Lee Engineering will produce a Final Report and Executive Summary which will summarize all findings documented in Task 1-9 reports and produce two project presentations.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Statewide Traffic Engineering On-Call - AZ	PROFESSIONAL SERVICES	CONSTRUCTION <i>(If applicable)</i>
	2003-ongoing	N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Arizona Department of Transportation	N/A	N/A

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size and length of project)

In the past eleven years, Lee Engineering staff worked with ADOT to design traffic signal control (or modifications) for at least 75 locations throughout the State. Dave Bruggeman has been the leader of these traffic signal design efforts, either through his personal design of them or in a supervisory role. His years of experience in working with ADOT and coordinating input from the different parties involved with designing traffic signal control results in conscientious designs that regularly meet or exceed ADOT expectations. Other on-call task work has included training of ADOT staff in signal design, signal timing, construction traffic control plans; development of standards and details; and signing, striping and design; compilation of specifications and estimates; construction engineering assistance; and traffic operations modeling.

Mr. Dave Bruggeman developed and taught the Traffic Signal Workshop to train ADOT staff in Phoenix and Tucson how to design traffic signals; determine wiring and signal display needs; understanding and operating different types of controllers; interconnect methods; and signal timing and maintenance. Other projects have included traffic signal design at over 62 signals in just the last ten years; signal timing for 134 signals in three cities, with ADOT-maintained signals on state routes; analysis and liability defense of special signal operations for rail pre-emption at three locations; signing and striping plans; construction traffic control plans; development of specifications for video detection; UPS and emergency vehicle pre-emption; assistance in the development of traffic signal Standard Specifications; and the development of the JOC specifications for traffic signal and lighting construction and maintenance. Twelve (12) of the traffic signal design projects also had civil design for sidewalks, ramps, and right turn lanes, provided by a civil subconsultant.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Bell Road Adaptive Signal Control Technology Deployment – Surprise, Peoria Glendale, Phoenix, and Scottsdale, AZ	PROFESSIONAL SERVICES 2014	CONSTRUCTION <i>(If applicable)</i> N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa County Dept. of Transportation	\$183, 668	\$183,668

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size and length of project)

For this multi-phase System Engineering and Design project, Lee Engineering provided the Concept of Operations, System Requirements, and prepared the application that resulted in \$2.5 million construction and \$300K design awarded in Federal CMAQ funding for the installation of traffic adaptive signal control technology at 52 intersections and for the installation of 21 travel time data collectors at key locations along Bell Road in Maricopa County, the cities of Surprise, Peoria, Glendale, Phoenix, and Scottsdale. Lee Engineering is currently providing services to complete the Systems Engineering Analysis and Design Concept Report with cost estimate and 15% design plans. Lee Engineering is also providing services for the best value procurement of the ASCT system (detection for the ASCT system and travel time data collectors will be procured using the low bid method).

This project will also include the development of a software, database, and GUI to manage, query, and present the data at each agency's traffic management center which includes real-time and historical travel time and speed mapping for incident and congestion identification. This project's scope of work includes preparation of the Systems Engineering Analysis, Design Concept Report, and preliminary PS&E which required familiarity and application of the Federal Aid Process and ADOT Local Public Agency Process.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

a. TITLE AND LOCATION (City and State)

Regional Data Collection and Data Management On-Call

b. YEAR COMPLETED

PROFESSIONAL SERVICES

2012-2014

CONSTRUCTION (If applicable)

N/A

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER

Maricopa Association of Governments

d. ORIGINAL BUDGET/NTE AMOUNT OF PROJECT

\$79,110

e. TOTAL COST OF PROJECT

\$79,110

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size and length of project)

Arterial Traffic Data Collection & Vehicle Classification

Lee Engineering collected and processed arterial traffic data (volume and classification) at 122 directional roadway segment sites throughout the MAG region over a nine-week period using automatic traffic recorders. This study required working closely with MAG, local agencies, and other consultants in securing needed permits and completing the collections within the specified schedule.

Arterial Traffic Time Data Collection & Airport Vehicle Routing

Lee Engineering collected and processed travel time data for approximately 30 arterial roadway segments (of about 1/2 mile each) over the course of seven weeks within the Phoenix metropolitan area. Travel times were collected using Bluetooth™ re-identification technology coordinated with the participating city/agency. The project also entailed using the same technology in a portable, battery-powered convention to collect travel time and origin-destination information at Sky Harbor and Gateway airports. The data was used by MAG to assist in calibrating sub-regional traffic models of vehicle patterns and flows at those airports.



6. ADDITIONAL INFORMATION

a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)

Lee Engineering, LLC is a Phoenix-based civil engineering firm dedicated to providing traffic engineering, transportation planning and Intelligent Transportation System (ITS) services to federal, state and local agencies, private clients, and other design professionals.

Founded by Dr. Jim C. Lee, PE, PTOE, Lee Engineering has built a reputation on our ability to integrate our transportation planning, traffic engineering, and ITS expertise with technical know-how to produce powerful, customized decision making tools. At Lee Engineering, we have a commitment to maintain the following guiding principles:

- **Build on What You Know** - Lee Engineering’s technical staff members have built their professional careers in transportation; many have worked in both the public and private sector. Our staff is multi-disciplinary, with expertise in traffic engineering, transportation planning, ITS, expert witness services and transportation research. This professional environment enables us to provide customized products tailored specifically to your needs.
- **Partner with the Client** - The client plays a critical role in each of our projects. We work closely with you to evaluate the short-and long-term issues and environmental factors critical to your project’s success. Active client involvement throughout the life of the project results in delivery of a product that meets client requirements, on time and on budget.
- **Manage for Quality** - Confidence in decision making rests upon the reliability of the information provided by the decision making tool. Our quality assurance is based on careful planning, monitoring, and evaluation across the life of the project. We integrate technology and sound management techniques to ensure confidence in our products’ reliability.

Lee Engineering has been in business for over 26 years in the Phoenix, Arizona area and has expanded into Dallas and San Antonio, Texas; Albuquerque, New Mexico; and Oklahoma City, Oklahoma. As a firm specializing in traffic engineering, transportation planning and ITS, Lee Engineering is experienced in providing the following services:

Traffic Engineering

- Adaptive Signal Control
- Travel Time Determination
- Traffic Volume/Classification Counts
- Travel Time Collection
- Safety/Sight Distance Review
- Crash History/Trend Analysis
- Speed Zone Studies
- Roundabout Design and Assessment
- Signal Design and Signal Timing
- Signing Inventory, Plans and Design
- Pavement Marking Plans
- Traffic Control Plans
- Street Lighting Design

Transportation Planning

- Transportation Research
- Safety Improvement Assessments
- Thoroughfare Plan Development
- Impact Fee Analysis
- Traffic Impact Analysis/Modeling
- Parking Demand Studies
- Corridor Studies
- Travel Demand Modeling
- Pedestrian Studies
- Safe Routes to School

Intelligent Transportation Systems (ITS) Design

- Dynamic Message Sign Systems
- Freeway Management Systems
- Fiber Network Design and OSP Management Systems
- Weigh-In Motion Enforcement Systems
- Wireless Networks
- Closed-Circuit Television Cameras
- Road Weather Information Systems
- Traffic Management/Operations Centers
- Advanced Traffic Management Systems

ITS Planning and Evaluation

- Regional Feasibility Studies
- Early Deployment Planning
- Rural ITS Applications
- Public-Private Partnerships
- ITS Benefit/Costs Assessment
- Intelligent Transportation Infrastructure O&M Requirements
- Human Factor Evaluation of ITS
- Strategic Plan Development
- System Evaluations
- Transit Planning



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Transit Management

- Transit Organizational Analysis
- Long-Range Development Strategies
- Transit Financing

Transit Planning

- Bus, BRT and LRT Service Planning
- Transit Station and Park-n-Ride Location Analysis
- Multimodal Alternatives Analyses

Lee Engineering's Phoenix office technical personnel, their professional expertise and company position are highlighted below.

Jim C. Lee, PhD, PE, PTOE

Principal

Registrations: Professional Engineer in Arizona (#19418)
Professional Traffic Operations Engineer (#2655)

Education: Ph.D., Civil Engineering, University of Oklahoma, 1979
M.S., Civil Engineering, Pennsylvania State University, 1969
B.S., Civil Engineering, University of New Mexico, 1967

Experience: Dr. Lee has over 45 years of experience in traffic engineering and transportation planning. His experience includes 14 years as a public sector traffic engineer and his hands-on experience is complemented by three civil engineering degrees, with two specializing in traffic engineering. Jim's areas of expertise includes traffic engineering, transportation planning and litigation and expert witness services.

Dave Bruggeman, PE, PTOE

Principal

Registrations: Professional Engineer in Arizona (#16229)
Professional Traffic Operations Engineer (#0007)

Education: B.S., Civil Engineering, University of Arizona, 1979

Experience: Mr. Bruggeman has over 36 years of experience in traffic engineering, with 11 of those years as a municipal Traffic Engineer. Dave participated in the development of the MUTCD as member of the Traffic Signals Committee. He is known for his work in computerized traffic signal systems, signal timing/operations and ITS design.

Michael J. Cynecki, PE, PTOE

Project Manager

Registration: Professional Engineer in Arizona (#18477)
Professional Traffic Operations Engineer (#3795)

Education: M.S., Civil Engineering, Wayne State University, Detroit, Michigan 1979
B.S., Civil Engineering, Wayne State University, Detroit, Michigan 1978

Experience: Mr. Cynecki has over 33 years of experience that includes more than 26 years with the City of Phoenix Street Transportation Dept. As Traffic Engineering Supervisor for the Traffic Operations Division, Mike managed the day-to-day operations of the Traffic Signal Section, Traffic Signal Shop, Traffic Count Shop, and Traffic Management Center. His project experience includes performing studies and assessments concerning traffic operations, traffic impact analysis, traffic engineering concepts, roadway/intersection safety, and traffic signal design. Mike's areas of expertise includes pedestrian and bicycle safety and operations; traffic safety and operations; traffic signal design and operations; and school area safety and operations.

Yung Koprowski, PE, PTOE

Senior Project Engineer

Registrations: Professional Engineer in Arizona (#52513)
Professional Traffic Operations Engineer (#3112)

Education: B.S., Civil Engineering, Cum Laude, Arizona State University 2008

Experience: Mrs. Koprowski has seven years of experience in traffic and transportation that entailed performing engineering analyses for transportation and transit planning projects, assessing roadway and intersection safety, collision analyses, traffic impact analyses, and creating transit and ITS planning documents. Yung's areas of expertise includes transportation planning (safety and multimodal); ITS systems engineering and design; traffic engineering; and ITS planning.

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100 North 15th Avenue, Suite 201
Phoenix, Arizona 85007****John Prowse****Senior ITS Designer**

Education: Arizona State University, 1991 and 1993
-Traffic Engineering
-GIS/Video Imagery
-Video Technologies
Traffic Engineering, Northwestern University, 1989
Electronic Technology, Phoenix Institute of Technology, 1980-1982

Experience: Mr. Prowse has over 30 years of experience in traffic management technology that includes 15 years as a City of Phoenix employee. John's expertise includes traffic signal operations, signal timing/coordination and has led the design of the various ITS projects. He is especially experienced in fiber optic communications systems and has designed communications systems utilizing other media including wireless, copper and leased line low and high bandwidth. John specializes in ITS; traffic design; and signal systems.

Bruce Dressel**Senior ITS Designer**

Education: Associates , Business Administration, Phoenix College, 1984
Electronic Design principles, US Air Force, 1980-1982
Traffic Engineering, Arizona State University and Phoenix College, 1985/1986
Worksite Traffic Control Design & Certification, ATSSA
Synchro™ Software Training, Trafficworks
Transcore, TransSuite and Series 2000 ATMS
Center-to-center communications, ITE 2004
Highway Capacity Workshop, Arizona State University, 1995
GIS Applications in Transportation, UC Berkley, 1995
W4IKS Software Training, Wapiti Systems
Vicon CCTV I.P. Video Solutions, Vicon Industries, 2007
Geometric Design, UC Berkley, 1991
Urban Street Design, Northwestern University Traffic Institute, 1991

Experience: Mr. Dressel has over 34 years of municipal traffic engineering experience that includes 15 years as ITS Manager for the City of Scottsdale. While with Scottsdale, Bruce designed nearly half of the City's traffic signal installations; designed and implemented 140 CCTV cameras throughout; assisted in the small arterial DMS design and installations at 25 locations; and designed the new Traffic Management Center. Bruce specializes in ITS; traffic design; and signal systems.

Paul Guzek, PE, PTOE**Senior Engineer**

Registrations: Professional Engineer in Arizona (#38915)
Professional Traffic Operations Engineer (#2641)

Education: M.Eng., Civil Engineering, Wayne State University, Detroit, Michigan 1992
B.S., Civil Engineering, Michigan State University 1986

Experience: Mr. Guzek has over 28 years of experience in traffic engineering and transportation planning that includes several projects that have required the collection, evaluation, and analysis of traffic operations. Paul's areas of expertise includes traffic impact analyses; parking analyses; travel demand modeling; and traffic design.

Andrew Kwasniak, PhD, PE, PTOE, ACTAR**Senior Engineer**

Registrations: Professional Engineer in Arizona (#52919)
Professional Traffic Operations Engineer (#3796)
Accredited Traffic Accident Reconstructionist (#2160)

Education: Ph.D., Civil Engineering, Purdue University, 2008
M.S., Civil Engineering, Cracow University of Technology, Poland, 2003
B.S., Civil Engineering, Cracow University of Technology, Poland, 2001
Edward J. Cox Memorial Transportation Award, ITE, Indiana 2007
Socrates/Erasmus Scholarship, Hannover University, Germany 2003

Experience: Dr. Kwasniak specializes in transportation engineering, including traffic control signals operation, roadway geometric design, work zone safety, traffic control devices, and transportation safety. His areas of expertise include advance statistical techniques to analyze roadway safety deficiencies. Andrew has eleven years of experience in analyzing roadway accidents, evaluating road users' safety, performing road safety investigation/assessment, determining code/standard/recommended practice violations, and focusing on road user-oriented designed and ITS.



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Sanjay Paul, PhD, EIT **Senior Engineering Designer**

Registration: Civil Engineer in Training (#11615)

Education: PhD, Civil Engineering, Arizona State University (2014)
M.S., Civil Engineering, Arizona State University (2012)
B.Sc., Civil Engineering, Bangladesh Univ. of Engineering & Technology (2008)

Experience: Dr. Sanjay Paul has recently joined Lee Engineering as Senior Engineering Designer. He has five years of experience in research, teaching, planning and design in transportation engineering arena. His educational background, engineering expertise, and research skills and experience make him uniquely qualified for many transportation systems analysis and modeling projects. Sanjay specializes in transportation modeling and planning; traffic engineering; and ITS.

The following description of services demonstrates knowledge, skills and abilities that our technical staff members can and have provided our clients:

Traffic Signal Design – The traffic engineers at Lee Engineering’s Phoenix office have designed hundreds of traffic signals. Because of this experience, we can provide an accurate, optimum design in a cost-effective manner. In the past nine years, Lee Engineering staff has worked with ADOT to design traffic signal control (or modifications) for at least 75 locations throughout the State. **Mr. Dave Bruggeman, PE, PTOE** has been the leader of these traffic signal design efforts, either through his personal design of them or in a supervisory role. His years of experience in working with ADOT and coordinating input from the different parties involved with designing traffic signal control results in conscientious designs that regularly meet or exceed ADOT expectations. This same level of quality is also demanded by him when imparting his years of experience as a supervisor of traffic signal design work.

Traffic Signal Timing and Coordination – Synchronizing and improving traffic signal timing is one of the most cost-effective uses of public funds. In these days of limited city funds, there remain some relative low cost - high results opportunities such as implementing improved signal phasing and timing at an intersection or interchange.

Traffic Engineering Studies – Lee Engineering has conducted hundreds of traffic engineering studies of various complexities ranging from small, site-specific traffic operations studies to major research projects. Lee Engineering recently completed an update of the City of Avondale’s Transportation Plan and provides on-call traffic study reviews as an extension of their City staff.

Traffic Safety Studies – Lee Engineering has performed many traffic safety studies ranging from small studies associated with traffic impact studies to Road Safety Assessments (RSAs) for MAG and a statewide Arizona State Highway System Improvement Survey. A safety evaluation was a major component of some of our research studies, including ADOT Lead-Lag Study; ADOT Study of Single-Point Interchanges with Frontage Roads; and ADOT Roundabout Research Study. We also conducted a lead-lag safety comparison (three years before and three years after) for the City of Chandler.

Pedestrian Studies – To safely accommodate pedestrians is an essential component of most of the traffic engineering studies Lee Engineering has conducted. In addition, Lee Engineering staff has served as consultants and expert witnesses in numerous pedestrian lawsuits and studies, thereby keeping them current on pedestrian treatment and safety. **Mr. Mike Cynecki, PE** chaired the Transportation Research Board Pedestrian Committee and is an Emeritus member of that committee. He was also a member of a European Pedestrian and Bike scanning team in 1993 and has been involved in several FHWA Pedestrian studies.

ITS Planning & Design – Lee Engineering has conducted feasibility studies and designs for Advanced Traffic Management Systems, Dynamic Message Signs, the Statewide DMS Master Plan, and Remote Weather Information Systems for the Arizona Department of Transportation (ADOT), Maricopa County Department of Transportation (MCDOT) and many cities including Phoenix; Glendale; Gilbert; Flagstaff; Albuquerque, NM; Lubbock, TX and Loveland, CO. **Mr. Dave Bruggeman, PE, PTOE** and **Dr. Jim C. Lee** led the Kansas City, Kansas and Kansas City, Missouri area Mid-America Regional Council (MARC) feasibility study and functional design for what became Operation Green Light. This study involved 13 member agencies of MARC. Lee Engineering recently worked with the City of Avondale, AZ to design their Traffic Operations Center and produce their ITS Strategic Plan.

State-of-the-Art Data Collection – Good traffic engineering decisions must be based on sound data; however, it is not always practical to obtain as much data as we would like. For that reason, Lee Engineering searches for and uses the most efficient methods of data collection like video-based intersection counts (Miovision) and anonymous wireless address matching technology (Bluetooth™) for travel time and origin-destination studies.



Lee Engineering's in-house data collection and analysis services include manual and video-recorded intersection movement counts, average daily traffic counts, and GPS inventory and GIS capabilities. Additional engineering services that Lee Engineering provides to our clients include GPS inventory services for signs, striping, and other traffic related equipment (signals, pull boxes, etc.). These services can provide our clients reporting capabilities and needs assessment analysis. The information gathered from the GPS location can then be imported and used in a GIS geodatabase.

Lee Engineering was selected by the Maricopa Association of Governments (MAG) to collect intersection movement count data at selected sites over an 8-week period using an innovative video data collection technique (Miovision). This study required working closely with MAG, local agencies, and other consultants in securing needed permits for installing traffic counting equipment within agency right-of-way, in conducting pre-engineering of site locations to determine any fatal-flaw issues at the identified intersection locations, and the ability to quickly adjust scheduling as a result of poor weather conditions and other conflicts. Upon collection of the required count data, intersection movement counts were verified for accuracy and submitted to MAG in a designated format.

Roundabouts – Lee Engineering is an Arizona pioneer in analysis and design of roundabouts. We conducted the research study for ADOT for the I-17/Happy Valley roundabouts and made recommendations for improvements. Lee Engineering has provided analysis or design of approximately 30 roundabout locations in Arizona and Texas.

Road Safety Assessments (RSAs) – Lee Engineering organized and led five formal road safety evaluations of two rural, all-way stop controlled intersections, one suburban unsignalized, and two urban signalized intersections, as part of an independent, multi-disciplinary team. The RSA Team looked for potential safety hazards that may affect any type of road user and recommended measures to mitigate those safety issues. Primary concerns and observations include partial intersection development with pedestrian trip generator, roadside hazards, large truck/oversized vehicle traffic, high pedestrian activity, heavy turning movements, high speeds, poor pavement conditions, school age pedestrians, bicyclists, and opportunities for a road diet.

Signing and Pavement Marking Design – Lee Engineering has prepared approximately 30 pavement marking plans for ADOT, plus striping and signing plans for most of the traffic signal installations we have designed. We also prepared numerous signing and pavement marking plans associated with major developments. We conducted design review and modifications to the existing striping and circulation plans for several of Phoenix's municipal service centers.

ADOT – Litigation Consulting Services

Lee Engineering has provided litigation consulting and expert witness services for over 100 claims against the State of Arizona where there were allegations of roadway defects. These typically are the result of large damages resulting from serious injury or death where the driver at fault has inadequate insurance to cover the damages. In those cases, plaintiffs' attorneys frequently look for the "deep pockets" of the State of Arizona to pay.

ADOT I-10 Work Zone Contraflow Traffic Control Evaluation & Follow Up Study

Lee Engineering was sought out by ADOT to apply our expertise in traffic operational modeling (using VISSIM) to assess the potential impacts of a proposed construction traffic control plan on I-10. The plan was to implement contraflow traffic conditions on I-10 so that the I-10/Loop 202 (Santan) HOV direct-connect ramps could be constructed in a timely fashion with minimized delay imposed on I-10 traffic. Analysis entailed development/refinement of a VISSIM model, incorporation of data collected, and projection of peak season operations on I-10 from Queen Creek Road to Ray Road. The modeling effort concluded that the contraflow traffic control would not cause detrimental effects on the I-10 operations. ADOT later confirmed these conclusions via observations of the actual conditions. A follow-up study to confirm the accuracy and usefulness of the traffic model was performed per ADOT's request.

MCDOT Bell Road Systems Engineering Assistance

Lee Engineering-facilitated a two-day workshop of FHWA Model Systems Engineering for Adaptive Signal Control Technology in four study areas which included interactions with FHWA and participating cities, field review of intersections and gathering of controller/system details. Lee Engineering worked with the participating agencies to prepare the Concept of Operations and System Requirements for the Systems Engineering Document. Lee Engineering also prepared a successful \$2.5 million TIP application to the Maricopa Association of Governments.



MAG Bell Road Traffic Signal Timing Plan Development

Lee Engineering is one of MAG's on-call consultants for ITS/Traffic Engineering/Safety On-Call Services, and this project was a result of an issued task order from the MAG Traffic Signal Optimization Program. This signal timing project involves 54 traffic signals along Bell Road, spanning 19 miles and 6 cities/agencies including ADOT. The focus of the project is the development of four weekend timing plans for the entire corridor and three weekday timing plans for a portion of the corridor within the City of Phoenix jurisdiction. The current and future data-related work includes field review of conditions, collection of traffic volumes, obtaining existing signal timing and Synchro™ modeling files, and collection of average travel times. The time periods for the timing plans were determined from reviewing collected traffic volumes and data from the Maricopa County's Intelligent Transportation Infrastructure Program. The timing plans will be developed and optimized using the Synchro™ software while considering promotion of traffic progression, traffic and field constraints, and agency input. Our services will also include assisting with implementation of the developed timing plans.

MAG Arterial Travel Time Data Collection & Airport Vehicle Routing

Lee Engineering collected and processed travel time data for approximately 30 arterial roadway segments (of about ½ mile each) over the course of seven weeks within the Phoenix metropolitan area. Travel times were collected using Bluetooth® re-identification technology coordinated with the participating city/agency. The project also entailed using the same technology in a portable, battery-powered convention to collect travel time and origin-destination information at Sky Harbor and Gateway airports. The data was used by MAG to assist in calibrating sub-regional traffic models of vehicle patterns and flows at those airports.

MAG Arterial Traffic Data Collection & Vehicle Classification

Lee Engineering collected and processed arterial traffic data (volume and classification) at 122 directional roadway segment sites throughout the MAG region over a nine-week period using automatic traffic recorders. This study required working closely with MAG, local agencies, and other consultants in securing needed permits and completing the collections within the specified schedule.

City of Scottsdale

Conducted Traffic Signal Design - Loop 101 at 90th Street, Indian Bend Road at Scottsdale Road, Railroad Park, Hayden Road (civil design by URS), Scottsdale Road at Drinkwater, Scottsdale Road at 3rd Avenue, Thompson Peak Parkway at Healthcare Drive, cellular antenna traffic pole modifications at 35 signalized sites. (Total of 42 signals)

Developed Traffic Signal Timing - Frank Lloyd Wright (Scottsdale Road to Thompson Peak Parkway) (10 signals), Scottsdale Road (Loop 101 to Mayo) (3 signals). These projects also included obtaining all necessary field data and counts.

Conducted Traffic Signal/CCTV Fiber Interconnect & Infrastructure Design - Scottsdale Road, from Indian School Road to Frank Lloyd Wright (10 miles, 31 signals), Hayden Road, from Frank Lloyd Wright to Jomax Road (11 miles, 12 signals), Pima Road, from Indian Bend Road to Loop 101 (7 signals - 2 by wireless). Plans included fiber splicing details and fiber assignments for each device along the route, for these Federally-funded projects.

Traffic Management Center Upgrade - Developing specifications for relocating and upgrading the City's Traffic Management Center (TMC) with JOC contractor for a mobile-accessible TMC with state-of-the-art video display system and redundant system accessibility. (Involves all 300 signals)

Emergency Vehicle Pre-Emption System Study - Conducted a study to evaluate and demonstrate available pre-emption systems for emergency vehicle to manipulate traffic signals using various technologies.

City of Avondale

Traffic Management Center Design - Designed and participated in the construction administration/ oversight of the new traffic management center. Project process included workshops to define city needs, prioritize TMC elements, determine costs, a Design Concept Report and conducting of final design, assisted by a renovations architect. Involved all of the City's 65 traffic signals, fiber communications design, video displays, UPS and computers. This Federally-funded project required environmental, utility and right-of-way clearances.

Conducted Traffic Signal Design - Lee Engineering's proposed staff members designed signals for the City of Avondale at Avondale Boulevard at McDowell Road, and provided the construction engineering and oversight for signals designed by others at Van Buren and Eliso Fellix Way.



Developed Traffic Signal Timing - As part of the MAG TSOP program, proposed staff members developed and assisted in the field installation and adjustment of coordinated traffic signal timing at 34 locations, including obtaining all necessary field data.

Traffic Engineering Assistance - Lee Engineering has been providing On-Call traffic engineering services to the City of Avondale since 2004. Under that program, we have provided left turn signal needs studies, reviewed traffic impact analyses, conducted speed limit studies, assisted the city in site evaluations, and assisted in developing documentation to replace all traffic signal controllers.

City of Chandler

Traffic Management Center Design - Designed the City of Chandler Traffic Management Center. Project process included developing a Design Concept Report; working with a newly renovated space to determine placement, size, and connections for the video display system, computers and UPS as well as provide procurement specifications to bid as a procurement project through ADOT, using Federal funds.

Conducted Traffic Signal Design - Lee Engineering's proposed staff members have been designing traffic signals for the City of Chandler since 2000, and in that time, have designed 18 new signals and the removal of one signal, and joined forces with URS Corporation to provide structural analysis of traffic signal poles' ability to safely support illuminated street name signs.

Lagging Left Study - As part of a joint project with the Town of Gilbert, Lee Engineering evaluated the pros and cons of implementation of lagging left turn arrows on a test corridor in each jurisdiction, evaluating accidents, public acceptance, capacity implications and overall potential for success. In the end, Gilbert adopted lagging lefts while Chandler declined them.

Conducted Traffic Signal/CCTV Fiber & Infrastructure Design - Arizona Avenue, from Elliot Road to Chandler Boulevard (3, 7 signals), Chandler Boulevard, Delaware Street to Gilbert Road (3 miles, 7 signals), Chandler Boulevard, from Price Road to Delaware Street (3 1/2 miles, 9 signals), Germann Road, from McQueen Road to Gilbert Road (2 miles, 4 signals), Germann Road, from Price Road to Dobson Road (1 mile, 3 signals). Plans included fiber splicing details and fiber assignments for each device along the route.

City of Goodyear

Traffic Management Center Design - Designed the City of Goodyear's Traffic Management Center. Project process included developing a Design Concept Report, working with a newly renovated space to determine placement, size and connections for the video display system, computers and UPS as well as provide procurement specifications to bid as a procurement project through ADOT Local Governments, with Federal funds.

Conducted Traffic Signal Design - Lee Engineering's proposed staff members have been designing traffic signals in or for the City of Goodyear since 2002, and in that time have designed 38 new signals, many for the former Suncor Development, a private entity that built much of Goodyear as it built multiple areas of single-family housing until the economic downturn. Part of our duties for the City of Goodyear was to assist in the initial turn-on, program the controller and conduct final inspections.

Conducted Traffic Signal/CCTV Fiber & Infrastructure Design - Litchfield Road, from MC 85 to Wigwam Boulevard (5 miles, 15 signals). Plans included fiber splicing details and fiber assignments for each device along the route for this Federally-funded project that included utility, right-of-way and environmental clearances.

City of Mesa West Side Real-Time Adaptive Signals

Prepared the Project Assessment, Systems Engineering Analysis, 30%, 60%, 95%, and 100% PS&E for an ITS project involving the implementation of an adaptive traffic control system at 19 intersections surrounding Fiesta Mall within the City of Mesa. By designing this project without ground disturbance, this project was expedited to make use of available close out funding.

City of Mesa Gilbert Road ITS Design

LEE developed base roadway maps and designed ITS elements that included conduit infrastructure to house fiber optic communications, node cabinet needs/locations, CCTV cameras, and installation/replacement of video detection equipment. The completed plans, specifications, and estimates were prepared for City review, comment, and eventual use for bidding the construction project. The project extents were along Gilbert Road from McKellips Road in the north to Baseline Road in the south.



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City of Phoenix 27th Avenue and Grand Avenue Railroad Crossing

The City of Phoenix specifically requested that Lee Engineering complete a railroad crossing safety and improvement analysis for two intersections of highway-rail crossing on Grand Avenue at the intersection of 35th Avenue/Indian School Road and at 27th Avenue/Thomas Road. The purpose of the highway-rail grade crossing improvement analysis is to model select rail preemption solutions for the intersections and document the estimated impacts to the traffic system. Synchro™ and VISSIM traffic simulation models were used to evaluate various alternatives including a queue cutter (Red/Yellow/Green), a flashing queue-cutter, and a crossing “median and gate” alternative. Finally, Lee Engineering provided planning level cost estimates for each of the alternatives presented. A follow-up study was also performed to look into more detail concerning the preferred traffic control options and signal control parameters at both intersections as well as synchronization with nearby intersections.

7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

a. Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	54%
b. Percentage of Total Work Attributable to Non-Government Work:	46%

8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.

Signature:  Date: 23 December 2014

Name: Dave Bruggeman, PE, PTOE Title: Principal