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

1. REVISED ADSPO13-00003465*: 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:	**Jim C. Lee, PhD, PE, PTOE, Principal**
i.	POINT OF CONTACT TELEPHONE NUMBER:	**602.955.7206**
j.	POINT OF CONTACT E-MAIL ADDRESS:	**jlee@lee-eng.com**

k.	NAME OF FIRM *(If block 1a is a branch office)*:	**N/A**

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 (PEs)	**P**	**17**	**7**
Technician/Analyst (ITS Designer)	**P**	**1**	**1**
Other (Administrative)	**P**	**3**	**2**
Project Manager (PEs)	**S**	**10**	**4**
Transportation Engineer (PEs & EITs)	**S**	**10**	**4**
Total		**24**	**11**

3. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST YEAR

a. Approximate No. of Projects	b. Experience	c. Revenue Index Number *(see below)*
50	**Intelligent Transportation Systems**	**5**
100	**Traffic Studies**	**5**
50	**Transportation**	**4**
100	**Traffic & Transportation Engineering**	**5**

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

1. Less than $100,000
2. $100,000 to less than $250,000
3. $250,000 to less than $500,000
4. $500,000 to less than $1 million
5. $1 million to less than $2 million
6. $2 million to less than $5 million
7. $5 million to less than $10 million
8. $10 million to less than $25 million
9. $25 million to less than $50 million
10. $50 million or greater

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
JIM C. LEE, PhD, PE, PTOE	**PRINCIPAL / PROJECT MANAGER**	**45+**	**25+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
Ph.D., Civil Engineering, University of Oklahoma; M. Eng., Civil Engineering, Pennsylvania State University; and B.S., Civil Engineering, University of New Mexico	Registered Professional Engineer in AZ (#19418); NV (#009471); NM (#9915); OK (#9120); TX (#34721); and Professional Traffic Operations Engineer (#2655)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
Institute of Transportation Engineers, Fellow; Institute of Transportation Engineers Consultants Council-Past Chair; Institute of Transportation Engineers Texas Section, Past President; American Society of Civil Engineers, Fellow (Life Member); National Society of Professional Engineers; American Society of Civil Engineers Southeast Texas Branch, Past President

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
1)	**MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Manager 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. The fee for this contract is $174,400 and the project is expected to be completed on November 2014.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
2)	**City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Manager 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. The fee for this contract is $246,572 and the project is expected to be completed on March 2014.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
3)	**MAG On-Call Services for Intelligent Transportation Systems & Transportation Safety Planning – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Manager 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. The fee for this contract will depend on the task order and the on-call contract expires September 1, 2016. To date, Lee Engineering has not received a task order for this contract.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
4)	**MAG Road Safety Assessments (RSAs) – Phoenix, AZ**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Manager on five formal road safety evaluations of eight 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 roadway and roadside hazards, inconsistency with ADA guidelines, pedestrian/bicycle characteristics, pedestrian/bicycle facilities (or lack of), and traffic operations. (Fee: $138,240)

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
5)	**MAG Non-Recurring Congestion Study – Phoenix, AZ**	2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Manager 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. (Fee: $277,100)

4. RESUMES OF KEY PERSONNEL PROPOSED F OR 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**	**34+**	**10+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
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	Registered Professional Engineer in AZ (#16229); NM (#10944); TX (#61944); NV (#CE008725); WA (#28111); UT (#318143-2202); CO (#29651); and Professional Traffic Operations Engineer (#0007)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
Institute of Transportation Engineers, Fellow; Institute of Transportation Engineers, Council; Intelligent Transportation Society of Arizona, Charter Member/Past President; and Transportation Research Board, Associate Member

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
1)	**ADOT Statewide Traffic Engineering On-Call**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Dave 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. To date, total fee for three tasks is approximately $60,000. The on-call contract expires January 2014.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
2)	**MAG On-Call Services for Intelligent Transportation Systems & Transportation Safety Planning – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

ITS Project Manager to provide MAG with specialized services required for executing studies and projects in identified areas through Task Orders. The fee for this contract will depend on the task order and the on-call contract expires September 1, 2016. To date, Lee Engineering has not received a task order for this contract.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
3)	**City of Avondale Traffic Signal Timing Studies & Left Turn Analyses – Avondale, AZ**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Manager for an on-call contract to provide traffic engineering services to the City of Avondale. For this contract, 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. The fee for this project is $45,000 and the contract expires December 31, 2013.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
4)	**City of Chandler Traffic Signals at Queen Creek Road & Bush Way – Chandler, AZ**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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. (Fee: $19,470).

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
5)	**City of Glendale ITS Infrastructure on Greenway, Thunderbird and Cactus Roads – Glendale, AZ**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Principal for a project that included the design conduit, fiber optic cabling and CCTV cameras to be constructed to expand the ITS capabilities of the City of Glendale. Additional fiber connections were designed and connections to the existing City communication systems were designed. (Fee: $136,000 est)

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	**PROJECT MANAGER / ENGINEER**	**33+**	**2+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*
M. S., Civil Engineering, Wayne State University, Detroit, Michigan, and B.S., Civil Engineering, Wayne State University, Detroit, Michigan

f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
Registered Professional Engineer in AZ (#18477) and MI (#6201030951)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
Fellow, Institute of Transportation Engineers, and member of Arizona Section ITE; Member, Association of Pedestrian and Bicycle Professionals; Member, Pedestrian Committee (ANF10), Transportation Research Board, Emeritus Member since October 2006; and Transportation Research Board Section ANF00 (Pedestrian, Bicycle, and Motorcycle & Moped Committees), Section Chair (2008 to present)

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: ; Construction *(if applicable)*: n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Engineer for the development of 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. The fee for this contract is $246,572 and the project is expected to be completed on March 2014.

2) (1) TITLE AND LOCATION *(City and State)*
MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ

(2) Year Completed: Professional Services: ; Construction *(if applicable)*: n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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. The fee for this contract is $174,400 and the project is expected to be completed on November 2014.

3) (1) TITLE AND LOCATION *(City and State)*
PAG Road Safety Assessment (RSA) – Pima County, AZ

(2) Year Completed: Professional Services: 2013; Construction *(if applicable)*: n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Manager for a formal road safety evaluation of four rural, signalized high risk intersections within a 2.3 mile roadway segment as part of an independent, multidisciplinary team. The Road Safety Assessment 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 high pedestrian activity, the area becoming urban in nature, negatively offset left-turns, lack of pedestrian infrastructure, unprotected drainage structures, and excessive signing. (Fee: $28,800)

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: 2013; Construction *(if applicable)*: n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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). This contract expires December 2013. (Fee: $34,880)

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 — ☐ Check if project performed with current firm

Mike's 33 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.

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	**PROJECT ENGINEER**	**29+**	**11+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
M. S., Civil Engineering, Wayne State University, Detroit, Michigan, and B.S., Civil Engineering, Michigan State University	Registered Professional Engineer in AZ (#38915) and Professional Traffic Operations Engineer (#2641)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
N/A

H. RELEVANT PROJECTS

1) (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	Construction *(if applicable)*
	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Engineer 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. The fee for this contract will depend on the task order and the on-call contract expires September 1, 2016. To date, Lee Engineering has not received a task order for this contract.

2) (1) TITLE AND LOCATION *(City and State)*
City of Avondale Transportation Plan Update – Avondale, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. GIS was used to organize and present data elements. (Fee: $57,000)

3) (1) TITLE AND LOCATION *(City and State)*
City of Mesa SCATS Evaluation Study – Mesa, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2012	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Project Engineer for a research study for the City of Mesa to perform a field performance evaluation of the real time adaptive traffic signal system the City installed in the Spring 2011. This project evaluated the performance of the pending Sydney Coordinated Adaptive Traffic System in the area surrounding the Superstition Springs shopping center mall (19 intersections) versus the performance of the existing time of day plans and coordination. Several measures of effectiveness were compared for the systems, including travel times collected using Bluetooth® re-identification technology and traditional GPS-based data. (Final Contract Amount: $157,805)

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	Construction *(if applicable)*
2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. Upon collection of the required count data, intersection movement counts were verified for accuracy and submitted to MAG in a designated format. (Fee: $17,684)

5) (1) TITLE AND LOCATION *(City and State)*
MAG Non-Recurring Congestion Study – Phoenix, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. ($277,100)

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
YUNG KOPROWSKI, PE, PTOE	**PROJECT ENGINEER**	**7+**	**4+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
B.S., Civil Engineering, Cum Laude, Arizona State University	Registered Professional Engineer in AZ (#52513) and Professional Traffic Operations Engineer (#3112)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
Institute of Transportation Engineers (ITE), Member; American Society of Civil Engineers (ASCE), Member; Intelligent Transportation Society of Arizona (ITS Arizona), 2012 President; and American Society of Highway Engineers (ASHE), Membership Chair, Scholarship Chair, 2nd Vice President

H. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
1)	**MAG Strategic Transportation Safety Plan (STSP) – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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. The fee for this contract is $174,400 and the project is expected to be completed on November 2014.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
2)	**City of Phoenix Comprehensive Bicycle Master Plan – Phoenix, AZ**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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. The fee for this contract is $246,572 and the project is expected to be completed on March 2014.

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
3)	**MAG Road Safety Assessments (RSAs) – Phoenix, AZ**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Engineer on five formal road safety evaluations of eight 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 roadway and roadside hazards, inconsistency with ADA guidelines, pedestrian/bicycle characteristics, pedestrian/bicycle facilities (or lack of), and traffic operations. (Fee: $138,240)

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
4)	**City of Mesa SCATS Evaluation Study – Mesa, AZ**	2012	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ Check if project performed with current firm

Project Engineer for a research study for the City of Mesa to perform a field performance evaluation of the real time adaptive traffic signal system the City installed in the Spring 2011. This project evaluated the performance of the pending Sydney Coordinated Adaptive Traffic System in the area surrounding the Superstition Springs shopping center mall (19 intersections) versus the performance of the existing time of day plans and coordination. Several measures of effectiveness were compared for the systems, including travel times collected using Bluetooth® re-identification technology and traditional GPS-based data. (Final Contract Amount: $157,805)

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
5)	**MAG Non-Recurring Congestion Study – Phoenix, AZ**	2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☑ 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. (Fee: $277,100)

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
ANDREW KWASNIAK, PhD, PE, ACTAR	**PROJECT ENGINEER**	**11**	**< 2 mos**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
Ph.D., Civil Engineering, Purdue University; M.S., Civil Engineering, Cracow University of Technology, Poland; B.S., Civil Engineering, Cracow University of Technology, Poland; Edward J. Cox Memorial Transportation Award, ITE, Indiana; and Socrates/Erasmus Scholarship, Hannover University, Germany	Registered Professional Engineer in AZ (#52919); Accredited Traffic Accident Reconstructionist (#2160); and International Code Council Accessibility Inspector/Plans Examiner (JUL 2010

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, 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) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
1)	**Lee Engineering Current Litigation Projects – Nationwide, US**		n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Dr. Andrew Kwasniak specializes in transportation engineering, including traffic control signals operation, roadway geometric design, work zone safety, traffic control devices, and transportation safety. Andrew has training as a Traffic Control Supervisor and a Traffic Control Technician, and has experience in the application and use of the Manual on Uniform Traffic Devices, the implementation and evaluation of Traffic Control Plans, and the application of Occupational Safety and Health Administration standards to the roadway construction industry. Andrew is an Accredited Traffic Accident Reconstructionist, and has experience analyzing roadway accidents, including collisions at stop controlled and signalized intersections, along road segments, in work zones, and at railroad crossings, and collisions involving pedestrians and bicycles. He also has experience investigating compliance of pedestrian facilities with the Americans with Disabilities Act and is a certified Accessibility Inspector/Plans Examiner.

Andrew has eleven years of experience in analyzing roadway accidents, incorporating advance data mining techniques, evaluating road users' safety, performing road safety investigation/assessment, determining code/standard/recommended practice violations, and focusing on road user-oriented designed and Intelligent Transportation Systems.

Andrew is Project 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). (Fees vary.)

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
2)	**Road Safety Assessments (RSAs)**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☐ Check if project performed with current firm

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. (Fees varied.)

	(1) TITLE AND LOCATION *(City and State)*	(2) Year Completed	
		Professional Services	Construction *(if applicable)*
3)	**Expert System to Support Site Investigation for Safety Improvements**	2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☐ Check if project performed with current firm

Research Assistant on this project whose goal was to introduce an Artificial Intelligence-like method to help investigators identify the crash causes. A knowledge-based system was developed to help during the RSAs. This knowledge-based system utilized information from two sources: 1) extracted from the crash database, and 2) collected during a site investigation. The developed-knowledge base structure was transparent, understandable, and flexible, allowing incorporating updates in the future. The developed prototype software is called Road Safety Investigation Tool and was developed for the Indiana Department of Transportation. (Fees varied.)

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
JOHN PROWSE	**ITS DESIGNER**	**29+**	**10+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
Arizona State University (Traffic Engineering, GIS/Video Imagery, and Video Technologies); Northwestern University, Traffic Engineering; and Phoenix Institute of Technology, Electronic Technology	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	Construction *(if applicable)*
	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. To date, total fee for three tasks is approximately $60,000. The on-call contract expires January 2014.

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	Construction *(if applicable)*
	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. The fee for this contract will depend on the task order and the on-call contract expires September 1, 2016. To date, Lee Engineering has not received a task order for this contract.

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	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

ITS Designer for a project that included the design conduit, fiber optic cabling and CCTV cameras to be constructed to expand the ITS capabilities of the City of Glendale. The project involved identifying conduit that can be reused and identified paths for new conduit to complete the conduit path. Additional fiber connections were designed and connections to the existing City communication systems were designed. Additionally, CCTV camera locations at three intersections were designed. (Fee: $136,000 est)

4) (1) TITLE AND LOCATION *(City and State)*
City of Mesa ARID – Mesa, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. (Fee: $78,799).

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	Construction *(if applicable)*
2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ 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. (Fee: $335,450).

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
R. CHRISTOPHER STEELE, EIT	**SENIOR ENGINEERING DESIGNER**	**5+**	**5+**

d. FIRM NAME AND LOCATION *(City and State)*
LEE ENGINEERING, LLC, Phoenix, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
M.S.E., Civil Engineering, Arizona State University and B.S.E., Civil Engineering, Northern Arizona University	Registered Civil Engineer in Training in AZ (#11036)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Publications, Organizations, Training, Awards, etc.)*
Institute of Transportation Engineers, Member and Intelligent Transportation Society of Arizona (ITS Arizona), Member

H. RELEVANT PROJECTS

1) (1) TITLE AND LOCATION *(City and State)*
City of Avondale Transportation Plan Update – Avondale, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Senior Engineering Designer providing support to the update of the City's previous 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. GIS was used to organize and present data elements. (Fee: $57,000)

2) (1) TITLE AND LOCATION *(City and State)*
MAG Road Safety Assessments (RSA) – Phoenix, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Senior Engineering Designer for a road safety evaluation of an unsignalized suburban intersection as part of a multidisciplinary team. The focus of this evaluation was to look for potential hazards that could affect any roadway users and to recommend mitigations to these hazards. Primary concerns and observations included sign visibility, stop line placement, sight distance hazards, and low light conditions. (Fee: $24,031)

3) (1) TITLE AND LOCATION *(City and State)*
City of Mesa ARID – Mesa, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2013	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Senior Engineering 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. (Fee: $78,799).

4) (1) TITLE AND LOCATION *(City and State)*
MAG Non-Recurring Congestion Study – Phoenix, AZ

(2) Year Completed	
Professional Services	Construction *(if applicable)*
2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Senior Engineering Designer 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. (Fee: $277,100)

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	Construction *(if applicable)*
2011	n/a

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☑ Check if project performed with current firm

Senior Engineering 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. (Fee: $335,450).

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)*	b. YEAR COMPLETED	
MAG Non-Recurring Congestion Study – Phoenix, AZ	PROFESSIONAL SERVICES **2011**	CONSTRUCTION *(If applicable)* **N/A**

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa Association of Governments	**$299,964**	**$277,100**

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

Lee Engineering was selected by MAG to determine the impact of Non-Recurring Congestion (NRC) on freeway and arterial traffic operations, and identify appropriate countermeasures for each road environment. The first key objective was to gain a better understanding of the role played by various random incidents related to traffic, weather, and special events that result in non-recurring traffic congestion on the freeway system and on the arterial systems in the region. The second study objective was to identify effective countermeasures, best practices, and recommend a plan to test them in the region. These countermeasures would help regain some of the lost road capacity due to NRC, thus reducing the immediate and very costly demand for the construction of new road capacity. Lee Engineering provided the following tasks:

Task 1: Literature Review of NRC and Countermeasures
- Performed a literature review and prepared a comprehensive summary of the current understanding of this problem and how it is being addressed at national, state, and regional levels.
- Developed a taxonomy of NRC
- Identified a comprehensive list of potential NRC countermeasures for both freeways and arterials.
- Identified any exemplary programs currently implemented in urban regions to counter NRC
- Gathered information on any case studies on the successful application of NRC countermeasures
- Methodologies used for quantifying the impacts of NRC and assessing the effectiveness of NRC countermeasures.

Task 2: Develop a Methodology for Quantifying NRC and a Data Collection Plan
- Based on the findings of Task 1, developed a sound methodology for estimation of the impacts of NRC, within the freeway and arterial environments in the MAG region, as it occurs over an entire calendar year of traffic operations
- Prepared a data collection plan that will describe in detail what data sources and methods will be used to gather the data to quantify the NRC problem in the MAG region.

Task 3: Data Collection, Analysis and Estimation of the Impact of NRC

Task 3 activities began only upon TAG approval of the methodology developed in Task 2. This task consisted of two subtasks. The first subtask involved the gathering of required data identified in Task 2. The second subtask involved analysis and interpretation of the impact of NRC on an annual basis. The impact of NRC was assessed based on appropriate measures such as estimated traffic delays, increased travel times and reduced reliability, overall loss of productivity, and cost to the region's economy. Key components of the multimodal transportation system analyzed generated the following:
- Estimated impact of NRC on freeways on the urban freeway system, and on gateway corridors such as I-17, I-10, and US60
- Estimated impact of NRC on arterial roads
- Estimated impact of NRC on transit services
- Estimated impact of NRC on freight trucking.

Task 4: Identified Countermeasures & Required Resources

The focus of this task identified proven countermeasures that are relevant and feasible for implementation in the MAG region:
- Identified a suite of effective NRC countermeasures that could be implemented in the region
- Rated the countermeasures low, medium, or high with respect to the likely resources needed to apply them in terms of infrastructure, staff, and operating funds
- Ranked the countermeasures in terms of their reported cost effectiveness based on an appropriate measure of NRC reduction per $ expended on the countermeasure

Task 5: Developed an Implementation Plan

Task 6: Developed the Framework for a Pilot Project

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)*	b. YEAR COMPLETED	
MAG Strategic Transportation Safety Plan – Phoenix, AZ	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)* **N/A**

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa Association of Governments	**$300,000**	**$277,100**

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.

This project is expected to be completed on November 2014.

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)*	b. YEAR COMPLETED	
ADOT Statewide Traffic Engineering On-Call	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)* **N/A**

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Arizona Department of Transportation	**$90,500**	**$1,200,000**

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

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.

This on-call contract expires January 2014.

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)*	b. YEAR COMPLETED	
MAG On-Call Services for ITS & Transportation Safety Planning – Phoenix, AZ	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)* **N/A**

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa Association of Government		

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

MAG has preselected Lee Engineering to be included on their On-Call List of qualified consultants to participate in the Intelligent Transportation Systems (ITS) and Transportation Safety (TS) On-Call Consultant Services program. The intent of the program is to enable MAG staff to augment existing resources by forming a pool of qualified consultants to provide specialized services that are required for executing projects. Lee Engineering will utilize state-of-the-art engineering and planning tools in executing each Task Order that will be issued by MAG for initiating a project.

As services are needed for a specific project, MAG will issue a Task Order requesting Lee Engineering submit a technical and pricing proposal in writing to the MAG Program Manager. The proposal will include the project services, required schedule, a list of deliverables, and pricing proposal. Upon receipt of the scope, planned schedule, deliverables, and Task Order Budget Allocation and after a resulting Task Order has been fully executed, a Notice-to-Proceed will be issued by the MAG Program Manager in compliance with the negotiated contract and Task Order.

The total duration of services for the individual projects to be completed under this contract may vary from a few weeks to several months depending on the scope for each project.

The term of this contract is in effect for 36 months and will expire September 2016.

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)*	b. YEAR COMPLETED	
Glendale ITS Infrastructure on Greenway, Thunderbird and Cactus Roads – Glendale, AZ	PROFESSIONAL SERVICES **2013**	CONSTRUCTION *(If applicable)* **N/A**

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER	d. DOLLAR AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
City of Glendale	**$150,000**	**$820,000**

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

This project involved the design conduit, fiber optic cabling and closed circuit television (CCTV) cameras to be constructed to expand the Intelligent Transportation Systems (ITS) capabilities of the City of Glendale (COG). Some roadways have existing conduit that will be reused when possible, depending on location and condition. New conduit paths will be identified, to complete conduit paths. Existing fiber exists along 59th Avenue, through the project area, and on Cactus Road, between 59th and 51st Avenues. Additional fiber connections will be designed and connection to the existing COG communications system will be designed. New CCTV will be designed for installation and connection at 12 existing signalized intersections in the project limits.

The following roadway segments and intersections are included in the project:

Fiber/Conduit:
Greenway Road, 6th Avenue to 51st Avenue
Thunderbird Road, 6th Avenue to 51st Avenue
Cactus Road, 6th Avenue to 59th Avenue
6th Avenue, Thunderbird Road to Sweetwater Avenue
6th Avenue, Greenway Road to Bell Road

CCTV Locations:
Greenway Road/55th Avenue
Greenway Road/6th Avenue
Thunderbird Road/5th Drive
Thunderbird Road/6th Avenue
Cactus Road/63rd Avenue
6th Avenue/Sweetwater Avenue
Greenway Road/63rd Avenue
Thunderbird Road/55th Avenue
Thunderbird Road/63rd Avenue
Cactus Road/61st Avenue
Cactus Road/6th Avenue
6th Avenue/Paradise Lane

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, PhD, 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 25 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:

Travel Time Determination
Traffic Counts
Crash History/Trend Analysis
Roundabout Design & Assessment
Signing Inventory, Plans and Design
Traffic Control Plans
Capacity/Level-of-Services Analysis
Safety/Sight Distance Review
Speed Zone Studies
Signal Timing and Signal Design
Pavement Marking Plans
Street Lighting Design

Transportation Planning:

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

Intelligent Transportation Systems Planning & Evaluation:

Regional Feasibility Studies
ITS Benefit/Costs Assessment
Advanced Traffic Management Systems
Road Weather Information Systems
Plans and Specifications
Strategic Plan Development
Intelligent Transportation Infrastructure O&M Requirements
Rural ITS Applications
Public-Private Partnerships
Simulation Modeling
Human Factor Evaluation of ITS System
System Procurement and Implementation
System Evaluations

Intelligent Transportation Systems Design:

- Dynamic Message Sign Systems
- Fiber Network Design & OSP Management Systems
- Wireless Networks
- Road Weather Information Systems
- Arterial-Level ITS Systems
- Development of Standard Specifications & Standard Details
- Freeway Management Systems
- Hybrid Communication Networks
- Closed Circuit Television Cameras
- Traffic Management & Operations Centers
- Advanced Traffic Management Systems

Transit Operations:

- Traffic Signal Priority Evaluation/Design
- Bus and Light Rail Transit Performance Analysis
- Capacity and Safety Analysis
- Transit Simulation and Modeling
- Rail Grade Crossing
- Bus Stop and Transit Station Access

Transit Management:

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

Transit Planning:

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

The table below highlights our Phoenix office technical personnel, their professional expertise and company position, while also identifying our technical personnel in our branch offices.

3610 North 44th Street, Suite 100, Phoenix, AZ 85018

Jim C. Lee, PhD, PE, PTOE — **CEO and 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.

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
Worksite Traffic Control Design & Certification, ATSSA
Roadside Barrier Design, AASHTO
Synchro™ Software Training, Trafficworks

Experience: Mr. Bruggeman has over 34 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.

Thomas F. Larwin, PE — **Program Manager**

Registration: Professional Engineer in California (#23603)

Education: M.E., Civil Engineering, Pennsylvania State University (Bureau of Highway Traffic)
B.S., Civil Engineering, University of Illinois

Experience: Mr. Larwin has over 40 years of experience including 27 years with the San Diego Metropolitan Transit Development Board as the agency's first Director of Planning and then served as its General Manager for 24 years. At MTDB he headed up the development of the San Diego light rail transit system (San Diego Trolley) from start to finish. He managed the initial planning that began in 1976 as well as the development and start-up of service in 1981. Over the next 20+ years he managed the planning and development of six subsequent extensions.

Michael J. Cynecki, PE **Project Manager**

Registration: Professional Engineer in Arizona (#18477)

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.

Paul Guzek, PE, PTOE **Project 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 26 years of experience in traffic engineering and transportation planning that includes several projects that have required the collection, evaluation, and analysis of traffic operations.

Andrew Kwasniak, PhD, PE, ACTAR **Project Engineer**

Registrations: Professional Engineer in Arizona (#52919)
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 is an Accredited Traffic Accident Reconstructionist (ACTAR), and has experience analyzing roadway accidents, including collisions at stop controlled and signalized intersections, along road segments, in work zones, and at railroad crossings, and collisions involving pedestrians and bicycles.

John Prowse **ITS Designer**

Education: Traffic Engineering, Arizona State University
GIS/Video Imagery, Arizona State University

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.

Yung Koprowski, PE, PTOE **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 over 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.

R. Christopher Steele, EIT **Senior Engineering Designer**

Registration: Civil Engineer in Training (#11036)

Education: M.S.E., Civil Engineering, Arizona State University, 2010
B.S.E., Civil Engineering, Northern Arizona University, 200

Experience: Mr. Steele has over five years of experience in performing engineering analysis for transportation

planning projects, performing capacity analysis for highway and arterial segments for, research for expert witness cases, parking capacity analysis, and assessing roadway and intersection safety

3030 Lyndon B Johnson Freeway, Suite 1660, Dallas, TX 75234	
Joseph T. Short, PE, PTOE **President and Principal**	Mr. Short has 25 years of diversified transportation engineering experience including traffic engineering and transportation planning. He has managed the design and timing of several traffic signal systems and has developed signal timing plans. His experience also includes traffic operation studies, traffic safety studies, parking studies, traffic impact studies and the development of thoroughfare plans.
Dharmesh Shah, PE, PTOE **Vice President and Principal**	Mr. Shah has 17 years of experience in traffic signal design, traffic impact analysis, traffic signal timing, design and management of computerized traffic signal systems, thoroughfare planning, transportation system analysis, major investment studies, and traffic and transit operations. His expertise includes HCS, PASSER II, PASSER III, Synchro™, CORSIM, and VISSIM.
Kelly Parma, PE, PTOE **Senior Project Manager**	Mr. Parma has 15 years of experience in the development of arterial signal system timing plans, traffic signal designs, freeway signing designs, traffic operation evaluations, speed zone development, and traffic impact studies. He has extensive knowledge HCS, PASSER II, PASSER III, and Synchro™.
Christopher Pierce, PE, PTOE **Project Engineer**	Mr. Pierce has 18 years of experience in the design of traffic signals, traffic operation evaluations, warrant studies, and research in the field of ITS.
John Denholm, PE, PTOE **Project Engineer**	Mr. Denholm has eight years of experience in the development of signal timing plans, traffic signal designs, roundabout operations and design, speed zone studies and strip map preparation, traffic operations, traffic impact studies and transportation planning. He has extensive knowledge of traffic engineering software including HCS, PASSER II, PASSER III, SIDRA, and Synchro™/SimTraffic.
Kimberly Brawner, PE, PTOE **Senior Project Engineer**	Ms. Brawner has 12 years of experience in traffic operation evaluations, warrant studies, transportation system analysis, traffic impact studies, transportation planning, special event traffic management, capital improvement programs, construction management, and school traffic control operations.
8220 San Pedro Drive NE, Suite 150, Albuquerque, NM 87113	
Paul Barricklow, PE, PTOE **Senior Project Manager**	Mr. Barricklow has 13 years of experience in traffic operations studies, traffic signal design, traffic signal timing and coordination, traffic impact analysis, ITS Design, and transit planning studies. His technical expertise includes traffic modeling skills in Highway Capacity Software, VISSIM, CORSIM, and Synchro™.
Patrick Byrd, PE, PTOE **Senior Project Engineer**	Mr. Byrd has 12 years of experience conducting traffic studies and transportation planning, along with designing intersection flaring and channelization, horizontal transitions, and roundabouts.
Joe Norby, EI **Senior Engineering Designer**	Mr. Norby has five years of experience in traffic engineering design and construction inspection/testing including traffic data collection management, traffic analysis for intersections and roadway studies, and traffic signal and ITS design.
1000 West Wilshire Boulevard, Suite 315, Oklahoma City, OK 73116	
Esther Shaw, PE, PTOE **Project Manager**	Ms. Shaw has 10 years of experience in a variety of public works projects which include water, wastewater, airport, local roadway, commercial site development, and traffic operations management improvements.

9901 IH 10W, Suite 800, San Antonio, TX 78230

John Friebele, PE, PTOE **Senior Project Manager**	Mr. Friebele has 43 years of experience in traffic and transportation engineering, transit operations, municipal engineering and street and roadway design. His technical expertise includes traffic signal and signal system design and construction, traffic engineering planning. design and operations, roadway design and construction; municipal utilities design transportation facilities planning and design and transit operations planning

The following description of services demonstrates our knowledge, skills and abilities that we can provide:

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 eight 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

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:	**63%**
b. Percentage of Total Work Attributable to Non-Government Work:	**37%**

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

Signature: _____ Date: 5 December 2013

Name" Dave Bruggeman, PE, PTOE Title: Principal