

SERIAL 11015 RFP ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS)

DATE OF LAST REVISION: July 15, 2016

CONTRACT END DATE: August 31, 2018

CONTRACT PERIOD THROUGH AUGUST 31, ~~2014~~ ~~2015~~ 2018

TO: All Departments

FROM: Office of Procurement Services

SUBJECT: Contract for ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS)

Attached to this letter is published an effective purchasing contract for products and/or services to be supplied to Maricopa County activities as awarded by Maricopa County on **August 17, 2011**.

All purchases of products and/or services listed on the attached pages of this letter are to be obtained from the vendor holding the contract. Individuals are responsible to the vendor for purchases made outside of contracts. The contract period is indicated above.



Kevin Tyne, Chief Procurement Officer
Office of Procurement Services

NP/at
Attach

Copy to: **Office of Procurement Services**
Larry Hall, MCDOT



CONTRACT PURSUANT TO RFP

SERIAL 11015-RFP

This Contract is entered into this 17th day of August, 2011 by and between Maricopa County (“County”), a political subdivision of the State of Arizona, and Kimley-Horn and Associates, Inc, a North Carolina corporation (“Contractor”) for the purchase of advanced traffic management system.

1.0 CONTRACT TERM:

- 1.1 This Contract is for a term of Three (3) years, beginning on the 17th day of August, 2011 and ending the 31st day of August, ~~2014 2015~~ **2018**.
- 1.2 The County may, at its option and with the agreement of the Contractor, renew the term of this Contract for additional terms up to a maximum of Seven (7) years, (or at the County’s sole discretion, extend the contract on a month-to-month bases for a maximum of six (6) months after expiration). The County shall notify the Contractor in writing of its intent to extend the Contract term at least thirty (30) calendar days prior to the expiration of the original contract term, or any additional term thereafter.

2.0 FEE ADJUSTMENTS:

Any request for a fee adjustment must be submitted sixty (60) days prior to the current Contract annual anniversary. Requests for adjustment in cost of labor and/or materials must be supported by appropriate documentation. If County agrees to the adjusted fee, County shall issue written approval of the change. The reasonableness of the request will be determined by comparing the request with the (Consumer Price Index) or by performing a market survey.

3.0 PAYMENTS:

- 3.1 As consideration for performance of the duties described herein, County shall pay Contractor the sum(s) stated in Exhibit “A.”
- 3.2 Payment shall be made upon the County’s receipt of a properly completed invoice.

3.3 INVOICES:

- 3.3.1 The Contractor shall submit two (2) legible copies of their detailed invoice before payment(s) can be made. At a minimum, the invoice must provide the following information:
 - Company name, address and contact
 - County bill-to name and contact information
 - Contract serial number
 - County purchase order number
 - Invoice number and date
 - Payment terms
 - Date of service or delivery
 - Quantity

- Contract Item number(s)
- Description of service provided
- Pricing per unit of service
- Freight (if applicable)
- Extended price
- Mileage w/rate (if applicable)
- Total Amount Due

3.3.2 Problems regarding billing or invoicing shall be directed to the County as listed on the Purchase Order.

3.3.3 Payment shall be made to the Contractor by Accounts Payable through the Maricopa County Vendor Express Payment Program. This is an Electronic Funds Transfer (EFT) process. After Award the Contractor shall fill out an EFT Enrollment form located on the County Department of Finance Website as a fillable PDF document (www.maricopa.gov/finance/)

3.3.4 EFT payments to the routing and account numbers designated by the Contractor will include the details on the specific invoices that the payment covers. The Contractor is required to discuss remittance delivery capabilities with their designated financial institution for access to those details.

4.0 AVAILABILITY OF FUNDS:

4.1 The provisions of this Contract relating to payment for services shall become effective when funds assigned for the purpose of compensating the Contractor as herein provided are actually available to County for disbursement. The County shall be the sole judge and authority in determining the availability of funds under this Contract. County shall keep the Contractor fully informed as to the availability of funds.

4.2 If any action is taken by any state agency, Federal department or any other agency or instrumentality to suspend, decrease, or terminate its fiscal obligations under, or in connection with, this Contract, County may amend, suspend, decrease, or terminate its obligations under, or in connection with, this Contract. In the event of termination, County shall be liable for payment only for services rendered prior to the effective date of the termination, provided that such services are performed in accordance with the provisions of this Contract. County shall give written notice of the effective date of any suspension, amendment, or termination under this Section, at least ten (10) days in advance.

5.0 DUTIES:

5.1 The Contractor shall perform all duties stated in Exhibit "B", or as otherwise directed in writing by the Procurement Officer.

5.2 During the Contract term, County shall provide Contractor's personnel with adequate workspace for consultants and such other related facilities as may be required by Contractor to carry out its contractual obligations.

6.0 TERMS and CONDITIONS:

6.1 INDEMNIFICATION:

6.1.1 To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless County, its agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses, including, but not limited to, attorney fees, court costs, expert witness fees, and the cost of appellate proceedings, relating to, arising out of, or alleged to have resulted from the negligent acts, errors, omissions, mistakes or malfeasance relating to the performance of this Contract. Contractor's duty to defend, indemnify and hold harmless County, its agents,

representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is caused by any negligent acts, errors, omissions or mistakes in the performance of this Contract by the Contractor, as well as any person or entity for whose acts, errors, omissions, mistakes or malfeasance Contractor may be legally liable.

6.1.2 The amount and type of insurance coverage requirements set forth herein will in no way be construed as limiting the scope of the indemnity in this paragraph.

6.1.3 The scope of this indemnification does not extend to the sole negligence of County.

6.2 INSURANCE REQUIREMENTS:

6.2.1 Contractor, at Contactor's own expense, shall purchase and maintain the herein stipulated minimum insurance from a company or companies duly licensed by the State of Arizona and possessing a current A.M. Best, Inc. rating of A-, VII or higher. In lieu of State of Arizona licensing, the stipulated insurance may be purchased from a company or companies, which are authorized to do business in the State of Arizona, provided that said insurance companies meet the approval of County. The form of any insurance policies and forms must be acceptable to County.

6.2.2 All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the Contract is satisfactorily completed and formally accepted. Failure to do so may, at the sole discretion of County, constitute a material breach of this Contract.

6.2.3 Contractor's insurance shall be primary insurance as respects County, and any insurance or self-insurance maintained by County shall not contribute to it.

6.2.4 Any failure to comply with the claim reporting provisions of the insurance policies or any breach of an insurance policy warranty shall not affect the County's right to coverage afforded under the insurance policies.

6.2.5 The insurance policies may provide coverage that contains deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to County under such policies. Contactor shall be solely responsible for the deductible and/or self-insured retention and County, at its option, may require Contractor to secure payment of such deductibles or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit.

6.2.6 County reserves the right to request and to receive, within 10 working days, certified copies of any or all of the herein required insurance certificates. County shall not be obligated to review policies and/or endorsements or to advise Contractor of any deficiencies in such policies and endorsements, and such receipt shall not relieve Contractor from, or be deemed a waiver of County's right to insist on strict fulfillment of Contractor's obligations under this Contract.

6.2.7 The insurance policies required by this Contract, except Workers' Compensation, and Errors and Omissions, shall name County, its agents, representatives, officers, directors, officials and employees as Additional Insureds.

6.2.8 The policies required hereunder, except Workers' Compensation, and Errors and Omissions, shall contain a waiver of transfer of rights of recovery (subrogation) against County, its agents, representatives, officers, directors, officials and employees for any claims arising out of Contractor's work or service.

6.2.9 Commercial General Liability.

Commercial General Liability insurance and, if necessary, Commercial Umbrella insurance with a limit of not less than \$1,000,000 for each occurrence, \$2,000,000 Products/Completed Operations Aggregate, and \$2,000,000 General Aggregate Limit. The policy shall include coverage for bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual coverage, and shall not contain any provision which would serve to limit third party action over claims. There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from explosion, collapse, or underground property damage.

6.2.10 Automobile Liability.

Commercial/Business Automobile Liability insurance and, if necessary, Commercial Umbrella insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to any of the Contractor's owned, hired, and non-owned vehicles assigned to or used in performance of the Contractor's work or services under this Contract.

6.2.11 Workers' Compensation.

6.2.11.1 Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Contractor's employees engaged in the performance of the work or services under this Contract; and Employer's Liability insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee, and \$500,000 disease policy limit.
(N.B. - \$1,000,000 limits on larger contracts)

6.2.11.2 Contractor waives all rights against County and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the Workers' Compensation and Employer's Liability or commercial umbrella liability insurance obtained by Contractor pursuant to this Contract.

6.2.12 Errors and Omissions Insurance.

Errors and Omissions insurance and, if necessary, Commercial Umbrella insurance, which will insure and provide coverage for errors or omissions of the Contractor, with limits of no less than \$1,000,000 for each claim.

6.2.13 Certificates of Insurance.

6.2.13.1 Prior to commencing work or services under this Contract, Contractor shall furnish the County with certificates of insurance, or formal endorsements as required by the Contract in the form provided by the County, issued by Contractor's insurer(s), as evidence that policies providing the required coverage, conditions and limits required by this Contract are in full force and effect. Such certificates shall identify this contract number and title.

6.2.13.2 Prior to commencing work or services under this Contract, Contractor shall have insurance in effect as required by the Contract in the form provided by the County, issued by Contractor's insurer(s), as evidence that policies providing the required coverage, conditions and limits required by this Contract are in full force and effect. Such certificates shall be made available to the County upon 48 hours notice. BY SIGNING THE AGREEMENT PAGE THE CONTRACTOR AGREES TO THIS REQUIREMENT AND UNDERSTANDS THAT FAILURE TO MEET THIS REQUIREMENT WILL RESULT IN CANCELLATION OF THIS CONTRACT.

6.2.13.2.1 In the event any insurance policy (ies) required by this Contract is (are) written on a "claims made" basis, coverage shall extend for two (2) years past completion and acceptance of Contractor's work or services and as evidenced by annual Certificates of Insurance.

6.2.13.2.2 If a policy does expire during the life of the Contract, a renewal certificate must be sent to County fifteen (15) days prior to the expiration date.

6.2.14 Cancellation and Expiration Notice.

Insurance required herein shall not be permitted to expire, be canceled, or materially changed without thirty (30) days prior written notice to the County.

6.3 WARRANTY OF SERVICES:

6.3.1 The Contractor warrants that all services provided hereunder will conform to the requirements of the Contract, including all descriptions, specifications and attachments made a part of this Contract. County's acceptance of services or goods provided by the Contractor shall not relieve the Contractor from its obligations under this warranty.

6.3.2 In addition to its other remedies, County may, at the Contractor's expense, require prompt correction of any services failing to meet the Contractor's warranty herein. Services corrected by the Contractor shall be subject to all the provisions of this Contract in the manner and to the same extent as services originally furnished hereunder.

6.4 INSPECTION OF SERVICES:

6.4.1 The Contractor shall provide and maintain an inspection system acceptable to County covering the services under this Contract. Complete records of all inspection work performed by the Contractor shall be maintained and made available to County during contract performance and for as long afterwards as the Contract requires.

6.4.2 County has the right to inspect and test all services called for by the Contract, to the extent practicable at all times and places during the term of the Contract. County shall perform inspections and tests in a manner that will not unduly delay the work.

6.4.3 If any of the services do not conform with Contract requirements, County may require the Contractor to perform the services again in conformity with Contract requirements, at an increase in Contract amount. When the defects in services cannot be corrected by re-performance, County may:

6.4.3.1 Require the Contractor to take necessary action to ensure that future performance conforms to Contract requirements; and

6.4.3.2 Reduce the Contract price to reflect the reduced value of the services performed.

6.4.4 If the Contractor fails to promptly perform the services again or to take the necessary action to ensure future performance in conformity with Contract requirements, County may:

6.4.4.1 By Contract or otherwise, perform the services and charge to the Contractor any cost incurred by County that is directly related to the performance of such service; or

6.4.4.2 Terminate the Contract for default.

6.5 PROCUREMENT CARD ORDERING CAPABILITY:

The County may determine to use a MasterCard Procurement Card, to place and make payment for orders under the Contract.

6.6 INTERNET ORDERING CAPABILITY:

The County intends, at its option, to use the Internet to communicate and to place orders under this Contract.

6.7 NOTICES:

All notices given pursuant to the terms of this Contract shall be addressed to:

For County:

Maricopa County
Office of Procurement Services
Attn: Director of Purchasing
320 West Lincoln Street
Phoenix, Arizona 85003-2494

For Contractor:

Kimley-Horn and Associates, Inc.
Attn: Tricia Boyer
7878 N. 16th Street, Suite 300
Phoenix, AZ 85020
602-944-5500

6.8 REQUIREMENTS CONTRACT:

6.8.1 Contractor signifies its understanding and agreement by signing this document that this Contract is a requirements contract. This Contract does not guarantee any purchases will be made (minimum or maximum). Orders will only be placed when County identifies a need and issues a purchase order or a written notice to proceed.

6.8.2 County reserves the right to cancel purchase orders or notice to proceed within a reasonable period of time after issuance. Should a purchase order or notice to proceed be canceled, the County agrees to reimburse the Contractor for actual and documented costs incurred by the Contractor. The County will not reimburse the Contractor for any avoidable costs incurred after receipt of cancellation, or for lost profits, or shipment of product or performance of services prior to issuance of a purchase order or notice to proceed.

6.8.3 Purchase orders will be cancelled in writing.

6.9 TERMINATION FOR CONVENIENCE:

The County reserves the right to terminate the Contract, in whole or in part at any time, when in the best interests of the County without penalty or recourse. Upon receipt of the written notice, the Contractor shall immediately stop all work, as directed in the notice, notify all subcontractors of the effective date of the termination and minimize all further costs to the County. In the event of termination under this paragraph, all documents, data and reports prepared by the Contractor under the Contract shall become the property of and be delivered to the County upon demand. The Contractor shall be entitled to receive just and equitable compensation for work in progress, work completed and materials accepted before the effective date of the termination.

6.10 TERMINATION FOR DEFAULT:

- 6.10.1 In addition to the rights reserved in the Contract, the County may terminate the Contract in whole or in part due to the failure of the Contractor to comply with any term or condition of the Contract, to acquire and maintain all required insurance policies, bonds, licenses and permits, or to make satisfactory progress in performing the Contract. The Procurement Officer shall provide written notice of the termination and the reasons for it to the Contractor.
- 6.10.2 Upon termination under this paragraph, all goods, materials, documents, data and reports prepared by the Contractor under the Contract shall become the property of and be delivered to the County on demand.
- 6.10.3 The County may, upon termination of this Contract, procure, on terms and in the manner that it deems appropriate, materials or services to replace those under this Contract. The Contractor shall be liable to the County for any excess costs incurred by the County in procuring materials or services in substitution for those due from the Contractor.
- 6.10.4 The Contractor shall continue to perform, in accordance with the requirements of the Contract, up to the date of termination, as directed in the termination notice.

6.11 STATUTORY RIGHT OF CANCELLATION FOR CONFLICT OF INTEREST:

Notice is given that pursuant to A.R.S. §38-511 the County may cancel this Contract without penalty or further obligation within three years after execution of the contract, if any person significantly involved in initiating, negotiating, securing, drafting or creating the contract on behalf of the County is at any time while the Contract or any extension of the Contract is in effect, an employee or agent of any other party to the Contract in any capacity or consultant to any other party of the Contract with respect to the subject matter of the Contract. Additionally, pursuant to A.R.S §38-511 the County may recoup any fee or commission paid or due to any person significantly involved in initiating, negotiating, securing, drafting or creating the contract on behalf of the County from any other party to the contract arising as the result of the Contract.

6.12 OFFSET FOR DAMAGES;

In addition to all other remedies at law or equity, the County may offset from any money due to the Contractor any amounts Contractor owes to the County for damages resulting from breach or deficiencies in performance under this contract.

6.13 ADDITIONS/DELETIONS OF SERVICE:

The County reserves the right to add and/or delete products and/or services provided under this Contract. If a requirement is deleted, payment to the Contractor will be reduced proportionately to the amount of service reduced in accordance with the proposal price. If additional services and/or products are required from this Contract, prices for such additions will be negotiated between the Contractor and the County.

6.14 RELATIONSHIPS:

In the performance of the services described herein, the Contractor shall act solely as an independent contractor, and nothing herein or implied herein shall at any time be construed as to create the relationship of employer and employee, partnership, principal and agent, or joint venture between the District and the Contractor.

6.15 SUBCONTRACTING:

The Contractor may not assign this Contract or subcontract to another party for performance of the terms and conditions hereof without the written consent of the County, which shall not be unreasonably withheld. All correspondence authorizing subcontracting must reference the Proposal Serial Number and identify the job project.

6.16 AMENDMENTS:

All amendments to this Contract shall be in writing and approved/signed by both parties. Maricopa County **Office of Procurement Services** shall be responsible for approving all amendments for Maricopa County.

6.17 RETENTION OF RECORDS:

6.17.1 The Contractor agrees to retain all financial books, records, and other documents relevant to this Contract for six (6) years after final payment or until after the resolution of any audit questions which could be more than six (6) years, whichever is longer. The County, Federal or State auditors and any other persons duly authorized by the Department shall have full access to, and the right to examine, copy and make use of, any and all said materials.

6.17.2 If the Contractor's books, records and other documents relevant to this Contract are not sufficient to support and document that requested services were provided, the Contractor shall reimburse Maricopa County for the services not so adequately supported and documented.

6.18 AUDIT DISALLOWANCES:

If at any time, County determines that a cost for which payment has been made is a disallowed cost, such as overpayment, County shall notify the Contractor in writing of the disallowance. County shall also state the means of correction, which may be but shall not be limited to adjustment of any future claim submitted by the Contractor by the amount of the disallowance, or to require repayment of the disallowed amount by the Contractor.

6.19 ALTERNATIVE DISPUTE RESOLUTION:

6.19.1 After the exhaustion of the administrative remedies provided in the Maricopa County Procurement Code, any contract dispute in this matter is subject to compulsory arbitration. Provided the parties participate in the arbitration in good faith, such arbitration is not binding and the parties are entitled to pursue the matter in state or federal court sitting in Maricopa County for a de novo determination on the law and facts. If the parties cannot agree on an arbitrator, each party will designate an arbitrator and those two arbitrators will agree on a third arbitrator. The three arbitrators will then serve as a panel to consider the arbitration. The parties will be equally responsible for the compensation for the arbitrator(s). The hearing, evidence, and procedure will be in accordance with Rule 74 of the Arizona Rules of Civil Procedure. Within ten (10) days of the completion of the hearing the arbitrator(s) shall:

6.19.1.1 Render a decision;

6.19.1.2 Notify the parties that the exhibits are available for retrieval; and

6.19.1.3 Notify the parties of the decision in writing (a letter to the parties or their counsel shall suffice).

6.19.1.4 Within ten (10) days of the notice of decision, either party may submit to the arbitrator(s) a proposed form of award or other final disposition, including any form of award for attorneys' fees and costs. Within five (5) days of receipt of

the foregoing, the opposing party may file objections. Within ten (10) days of receipt of any objections, the arbitrator(s) shall pass upon the objections and prepare a signed award or other final disposition and mail copies to all parties or their counsel.

6.19.1.5 Any party which has appeared and participated in good faith in the arbitration proceedings may appeal from the award or other final disposition by filing an action in the state or federal court sitting in Maricopa County within twenty (20) days after date of the award or other final disposition. Unless such action is dismissed for failure to prosecute, such action will make the award or other final disposition of the arbitrator(s) a nullity.

6.20 SEVERABILITY:

The invalidity, in whole or in part, of any provision of this Contract shall not void or affect the validity of any other provision of this Contract.

6.21 RIGHTS IN DATA:

The County shall own have the use of all data and reports resulting from this Contract without additional cost or other restriction except as provided by law. Each party shall supply to the other party, upon request, any available information that is relevant to this Contract and to the performance hereunder.

6.22 INTEGRATION:

This Contract represents the entire and integrated agreement between the parties and supersedes all prior negotiations, proposals, communications, understandings, representations, or agreements, whether oral or written, express or implied.

6.23 VERIFICATION REGARDING COMPLIANCE WITH ARIZONA REVISED STATUTES §41-4401 AND FEDERAL IMMIGRATION LAWS AND REGULATIONS:

6.23.1 By entering into the Contract, the Contractor warrants compliance with the Immigration and Nationality Act (INA using e-verify) and all other federal immigration laws and regulations related to the immigration status of its employees and A.R.S. §23-214(A). The contractor shall obtain statements from its subcontractors certifying compliance and shall furnish the statements to the Procurement Officer upon request. These warranties shall remain in effect through the term of the Contract. The Contractor and its subcontractors shall also maintain Employment Eligibility Verification forms (I-9) as required by the Immigration Reform and Control Act of 1986, as amended from time to time, for all employees performing work under the Contract and verify employee compliance using the E-verify system and shall keep a record of the verification for the duration of the employee's employment or at least three years, whichever is longer. I-9 forms are available for download at USCIS.GOV.

6.23.2 The County retains the legal right to inspect contractor and subcontractor employee documents performing work under this Contract to verify compliance with paragraph 6.23.1 of this Section. Contractor and subcontractor shall be given reasonable notice of the County's intent to inspect and shall make the documents available at the time and date specified. Should the County suspect or find that the Contractor or any of its subcontractors are not in compliance, the County will consider this a material breach of the contract and may pursue any and all remedies allowed by law, including, but not limited to: suspension of work, termination of the Contract for default, and suspension and/or debarment of the Contractor. All costs necessary to verify compliance are the responsibility of the Contractor.

6.24 ~~VERIFICATION REGARDING COMPLIANCE WITH ARIZONA REVISED STATUTES §§35-391.06 AND 35-393.06 BUSINESS RELATIONS WITH SUDAN AND IRAN:~~

~~6.24.1 By entering into the Contract, the Contractor certifies it does not have scrutinized business operations in Sudan or Iran. The contractor shall obtain statements from its subcontractors certifying compliance and shall furnish the statements to the Procurement Officer upon request. These warranties shall remain in effect through the term of the Contract.~~

~~6.24.2 The County may request verification of compliance for any contractor or subcontractor performing work under the Contract. Should the County suspect or find that the Contractor or any of its subcontractors are not in compliance, the County may pursue any and all remedies allowed by law, including, but not limited to: suspension of work, termination of the Contract for default, and suspension and/or debarment of the Contractor. All costs necessary to verify compliance are the responsibility of the Contractor.~~

6.25 CONTRACTOR LICENSE REQUIREMENT:

6.25.1 The Respondent shall procure all permits, insurance, licenses and pay the charges and fees necessary and incidental to the lawful conduct of his/her business, and as necessary complete any required certification requirements, required by any and all governmental or non-governmental entities as mandated to maintain compliance with and in good standing for all permits and/or licenses. The Respondent shall keep fully informed of existing and future trade or industry requirements, Federal, State and Local laws, ordinances, and regulations which in any manner affect the fulfillment of a Contract and shall comply with the same. Contractor shall immediately notify both **Officer of Procurement Services** and the using agency of any and all changes concerning permits, insurance or licenses.

6.25.2 Respondents furnishing finished products, materials or articles of merchandise that will require installation or attachment as part of the Contract, shall possess any licenses required. A Respondent is not relieved of its obligation to possess the required licenses by subcontracting of the labor portion of the Contract. Respondents are advised to contact the Arizona Registrar of Contractors, Chief of Licensing, at (602) 542-1525 to ascertain licensing requirements for a particular contract. Respondents shall identify which license(s), if any, the Registrar of Contractors requires for performance of the Contract.

6.26 CERTIFICATION REGARDING DEBARMENT AND SUSPENSION

6.26.1 The undersigned (authorized official signing for the Contractor) certifies to the best of his or her knowledge and belief, that the Contractor, defined as the primary participant in accordance with 45 CFR Part 76, and its principals:

6.26.1.1 are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;

6.26.1.2 have not within 3-year period preceding this Contract been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

6.26.1.3 are not presently indicted or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (2) of this certification; and

6.26.1.4 have not within a 3-year period preceding this Contract had one or more public transaction (Federal, State or local) terminated for cause of default.

6.26.2 Should the Contractor not be able to provide this certification, an explanation as to why should be attached to the Contract.

6.26.3 The Contractor agrees to include, without modification, this clause in all lower tier covered transactions (i.e. transactions with subcontractors) and in all solicitations for lower tier covered transactions related to this Contract.

6.27 PRICES:

Contractor warrants that prices extended to County under this Contract are no higher than those paid by any other customer for these or similar services.

6.28 GOVERNING LAW:

This Contract shall be governed by the laws of the state of Arizona. Venue for any actions or lawsuits involving this Contract will be in Maricopa County Superior Court or in the United States District Court for the District of Arizona, sitting in Phoenix, Arizona

6.29 ORDER OF PRECEDENCE:

In the event of a conflict in the provisions of this Contract and Contractor's license agreement, if applicable, the terms of this Contract shall prevail.

6.30 INCORPORATION OF DOCUMENTS:

The following are to be attached to and made part of this Contract:

6.30.1 Exhibit A, Pricing;

6.30.2 Exhibit B, Scope of Work;

6.30.3 Exhibit C,

6.30.4 Exhibit D **Office of Procurement Services** Contractor Travel and Per Diem Policy.
Exhibit E – Post Award Summary
Exhibit F – MCDOT Response to Post Award Summary

6.31 PUBLIC RECORDS:

All Offers submitted and opened are public records and must be retained by the Records Manager at the Office of Procurement Services. Offers shall be open to public inspection after Contract award and execution, except for such Offers deemed to be confidential by the Office of Procurement Services. If an Offeror believes that information in its Offer should remain confidential, it shall indicate as confidential, the specific information and submit a statement with its offer detailing the reasons that the information should not be disclosed. Such reasons shall include the specific harm or prejudice which may arise. The Records Manager of the Office of Procurement Services shall determine whether the identified information is confidential pursuant to the Maricopa County Procurement Code.

IN WITNESS WHEREOF, this Contract is executed on the date set forth above.

CONTRACTOR

George Fares

AUTHORIZED SIGNATURE

George Fares

Senior Vice President

PRINTED NAME AND TITLE

7878 N. 16th st, phoenix, AZ 85020

ADDRESS

7-19-2011

DATE

MARICOPA COUNTY

~ OR ~

[Signature]

CHAIRMAN, BOARD OF SUPERVISORS

AUG 17 2011

DATE

ATTESTED:

[Signature]

CLERK OF THE BOARD

AUG 17 2011

DATE

APPROVED AS TO FORM:

[Signature]

LEGAL COUNSEL

Aug 16 2011

DATE

EXHIBIT A

PRICING

SERIAL 11015
 NIGP CODE:
 RESPONDENT'S NAME: Kimley-Horn and Associates, Inc.
 COUNTY VENDOR NUMBER : 2011009600
 ADDRESS: 7878 N. 16th Street
Suite 300
 P.O. ADDRESS:
 TELEPHONE NUMBER: 602-944-5500 602-371-4563
 FACSIMILE NUMBER: ~~Mobile Phone~~ 602-944-7423 520-271-2247
 WEB SITE: www.kimley-horn.com
 CONTACT (REPRESENTATIVE): Tricia Boyer, P.E. Ray Yparraguirre
STEWART ALLEN
tricia.boyer@kimley-horn.com
Ray.Yparraguirre@kimley-horn.com
 REPRESENTATIVE'S E-MAIL ADDRESS: stewart.allen@kimley-horn.com

	<u>YES</u>	<u>NO</u>	<u>REBATE</u>
WILL ALLOW OTHER GOVERNMENTAL ENTITIES TO PURCHASE FROM THIS CONTRACT	[x]	[]	
WILL ACCEPT PROCUREMENT CARD FOR PAYMENT:	[x]	[]	
WILL OFFER REBATE (CASH OR CREDIT) FOR UTILIZING PROCUREMENT CARD:	[]	[X]	<u>3%</u>

(Payment shall be made within 48 hours of utilizing the Purchasing Card)

RESPONDENT IS REQUIRED TO PICK ONE OF THE FOLLOWING PAYMENT TERMS.
 FAILURE TO INDICATE PAYMENT TERMS WILL RESULT IN A DEFAULT TO NET 30 DAYS.
 RESPONDENT MUST INITIAL THEIR SELECTION BELOW.

- | | | |
|---|---|---|
| <input type="checkbox"/> NET 10 DAYS | <input type="checkbox"/> NET 45 DAYS | <input type="checkbox"/> 1% 10 DAYS NET 30 DAYS |
| <input type="checkbox"/> NET 15 DAYS | <input type="checkbox"/> NET 60 DAYS | <input type="checkbox"/> 2% 30 DAYS NET 31 DAYS |
| <input type="checkbox"/> NET 20 DAYS | <input type="checkbox"/> NET 90 DAYS | <input type="checkbox"/> 1% 30 DAYS NET 31 DAYS |
| <input checked="" type="checkbox"/> NET 30 DAYS | <input type="checkbox"/> 2% 10 DAYS NET 30 DAYS | <input type="checkbox"/> 5% 30 DAYS NET 31 DAYS |

Central Signal System		
Item	Description	Cost
1	Central Signal System — Attach list of components-	\$130,000
2	Central Signal System — Additional Software (Attach List)	\$8,000
3	Software Integration	\$35,000
4	System Integration	\$50,000
5	Testing, System Acceptance, Training, Documentation	\$45,000
6	Furnish, Install, Integrate Equipment and Software (not included above) Required for Full Operation of System (Attach List)	\$23,000 \$10,600
Central Signal System Complete — Total		\$291,000 \$278,600

Additional		
Item	Description	Cost
6	Furnish, Install, Integrate Optional Equipment (Attach list)	\$12,400
7	Adaptive Traffic Control	\$250,000
8	Remote access via internet	Included
9	Extended Warranty — Per Year	Included in maintenance fee
10 a	Maintenance Years 1 through 3*	\$60,000
10 b	Maintenance Year 4	\$20,000
10 c	Maintenance Year 5	\$20,000
10 d	Maintenance Year 6	\$25,000
10 e	Maintenance Year 7	\$25,000
10 f	Maintenance Year 8	\$25,000
10 g	Maintenance Year 9	\$25,000
10 h	Maintenance Year 10	\$25,000
11	TMC Operational Support — Full Time (Qualifications and hourly rates)	
12	TMC Operational Support — Part Time (Qualifications and hourly rates)	

*Item 10 a will be the Maintenance cost held for the first three years of the contract

Additional pricing for Items 1, 2, and 6 is shown below:

Detailed Pricing		
Item	Description	Cost
4 Central Signal System Components	Signal System	\$100,000.00
	CCTV	\$ 15,000.00
	DMS	\$ 15,000.00
	Total for Item 1	\$130,000.00
-	-	-
2 Central Signal System Additional Software	PageGate 10 pager license	\$ 300.00
	ArcView Version 9*	-
	ESRI MapObjects	\$ 5,000.00
	SQL Server 2008 Standard Edition with 10 CALs**	\$ 2,500.00
	Visio 2007 Standard	\$ 200.00
	Total for Item 2	\$ 8,000.00
-	-	-
6 Furnish, Install, Integrate Equipment	Database/Application/Comm Server	\$ 5,100.00
	Externally Attached Storage	\$ 500.00
	Installation	\$ 5,000.00
	Total for Item 6	\$ 10,600.00
-	-	-
6 Furnish, Install, Integrate Optional Equipment	Application Server	\$ 3,700.00
	Communication Server	\$ 3,700.00
	2 Portable Tablet for remote access	\$ 1,000.00
	3 years of Data Service for Portable Tablet	\$ 1,500.00
	Installation	\$ 2,500.00
	Total for Item 6	\$ 12,400.00

*Not required if provided by the County or if Kimley Horn maintains the basemap

**May be provided by the County

KITS Version Upgrade & Maintenance		
Tasks	Description	Cost
1 Version Upgrade	Onsite Integration and Test and migrating the ATMS version.	\$30,000.00
MapDotNet License	Purchase of a required third-party software platform, MapDotNet (\$5,000).	Included
Support for a newer version of Econolite firmware	The system will be upgraded to support a newer version of Econolite firmware that operates on both an ASC/3 and Cobalt controller. Version 2.62 is the current firmware as of the date of this scope. This does not include supporting additional controller parameters.	Included
2 1 year of Maintenance	KITS maintenance for one year.	\$20,000.00
	Total for Tasks 1 & 2	\$50,000.00

Additional Services – Pricing valid for up to 2 years from the revised contract		
Optional Services	Purpose	FEE
CCTV Module	The CCTV module provides access to camera view and PTZ as well as a web browser device support for cameras that support browser based viewing. If necessary, Kimley-Horn will integrate one new decoder as part of this task. Further, Kimley-Horn will configure and integrate up to 10 CCTV as part of this task	\$20,000.00
DMS Module	The DMS module provides access to DMS real-time, commands, and scheduling through KITS. Kimley-Horn will configure and integrate up to 10 DMS as part of this task.	\$2,500 per device \$20,000.00
Pedestrian Detector Logging	This task would include support for logging pedestrian calls in a log and displaying the events on the Historical Intersection Timing report.	\$15,000.00
Microsoft Surface	This task will include the procurement of a Microsoft Surface tablet, including keyboard, mouse, and pen.	\$2,500.00 per device
Data Plan	This task will include the purchase of a data plan	\$35.00 per month

EXHIBIT B SCOPE OF WORK

1.1 ~~TRAFFIC MANAGEMENT FUNCTIONS~~

1.1.1 ~~Status Monitoring~~

~~The central signal system software shall be capable of monitoring the traffic signal controllers on a second by second basis. If polling rates are restricted by elements of the field communications infrastructure, the central signal system software shall monitor the traffic signal controllers at the most frequent rate possible, up to second by second rates where possible. At startup, the central signal system software shall establish communications with all intersection controllers via the central communication system and begin second by second monitoring, if possible. The central signal system software shall start to process both incoming data and user requests.~~

~~A message communications scheme shall be included that ranks messages to controllers on a priority level basis in which upload/download is a higher priority than second by second monitoring.~~

1.1.2 ~~Capacity~~

~~The system shall be scalable and have the capacity of managing up to (250) intersections, if required, as well as accommodating a minimum of (12) simultaneous users and (16) special functions.~~

1.1.3 ~~Control Sections~~

~~The new central signal system software shall enable the operator to define a minimum of (100) control sections, or subsystems, each of which shall be completely independent of the connection of any particular intersection to the communications network. The number of intersections in a particular subsystem shall be programmable from a minimum of one to a maximum of the total number of intersections in the system. It shall be possible to have intersections and detectors assigned to different sections by time of day, either by operator command or through the event scheduler.~~

1.1.4 ~~Modes Of Operation~~

~~The central signal system software shall operate in a distributed mode, making use of the intelligence in the local intersection controllers. The central signal system software shall upload and download to intelligent local controllers the timing plans, time of day/day of week (TOD/DOW) schedules, and all other parameters required to operate the local intersection. All intersection controllers shall be monitored on a real time basis by the central signal system software. It is highly desirable that the central signal system software communicate with the field controllers at a minimum 19.2 kbps rate. Upon system startup, the central signal system software shall establish communications with all intersection controllers and begin real time monitoring. The central signal system software shall start to process both incoming data and operator requests. Any upload, download, or time/date requests shall take precedence over real time monitoring. The central signal system software shall be designed for unattended operation twenty four (24) hours per day, seven (7) days a week, without requiring an operator to be logged into the system.~~

~~The central signal system software shall provide system control by coordinating intersection operation on an individual, section, or system wide basis. The central signal system software shall include at least the following control modes, which shall be operator selectable from the Graphical User Interface (GUI): TOD/DOW, Special Event, Manual (including remote stop time), Traffic Responsive, Standby, and to a timing plan different than the TOD/DOW, either by manual override or through the traffic responsive algorithm, the controller shall be commanded to the appropriate plan. In the event that,~~

while in software commanded override, a controller does not receive a valid timing plan number from the central signal system software within an operator defined time frame, it shall revert back to its local TOD/DOW schedule. The central override shall be allowable on an intersection, section, or system wide basis as defined in Section 1.4.3. In the event of a failure other than power failure or the severing of communications between the central signal system software and the controller, the operator shall have manual control over the intersection.

1.1.4.1 Time of Day/Day of Week

TOD/DOW mode shall be used for controlling traffic conditions that occur regularly. In this mode, each controller shall automatically select and implement traffic signal timing plans in accordance with the defined schedule, locally stored, on a TOD/DOW basis. TOD/DOW plans shall be downloadable from the central signal system software to the controller in the field. Any plan located at the central signal system software shall be downloadable to any slot in the local controller's database. The timing plans that are being stored in the local controller shall be tagged in the database so that the central signal system software always "knows" which plans are stored at the controller. In order to download a timing plan to a controller, the operator shall select the plan from the database and the controller memory slot where the plan will reside. The user interface shall allow the operator to choose timing plans for all available memory slots at once. This shall enable the operator to initiate one download per controller to download all timing plans (or just one timing plan) and time of day events.

1.1.4.2 Special Events

The operator shall be able to schedule any command for execution at any time. The system administrator shall be able to inhibit commands from being entered into the event scheduler. The entries in the event scheduler shall be automatically sequenced in ascending order by TOD/DOW, regardless of the order in which the entries were made.

Operator commands shall have priority over scheduled entries in the event scheduler. The operator shall be able to make entries into the event scheduler for up to a minimum of one year in advance. Up to 1000 entries shall be permitted. The scheduler shall have the capability to load multiple commands for the same time and to execute those commands at the same time. For events scheduled at the same time, the execution shall be sequential.

1.1.4.2.1 Temporary and Permanent Commands

Commands entered into the event scheduler shall be of two types, permanent and temporary. Permanent commands shall be performed every time the matching of time parameters occurs. Temporary commands shall be performed once and then be deleted from the scheduler database. The operator shall be able to enter the following permanent and temporary command times as a minimum:

Permanent commands

1.1.4.2.1.1 Every day basis (i.e., every day of the year)

1.1.4.2.1.2 Every week basis (i.e., on a given day or days of every week)

1.1.4.2.1.3 Every time span basis (i.e., every hour);

1.1.4.2.1.4 Every weekday (i.e., given weekday from Monday through Friday)

~~1.1.4.2.1.5 Every weekend (i.e., given weekend day such as Saturday or Sunday)~~

~~Temporary commands~~

~~1.1.4.2.1.6 Specific date basis (e.g., December 25, 2000)~~

~~1.1.4.2.1.7 Specific time basis (e.g., at 2:00 PM or 1400 hours)~~

~~1.1.4.2.1.8 Specific date/time basis (e.g., on 4/15/2001 at 11:00 AM)~~

~~1.1.4.3 Manual Commands~~

~~The operator shall be able to invoke manual override of the plan currently in effect for the entire system, for a subsection of the system, or for individual intersections (system wide, section, or intersection basis). Manual selection of timing plans shall have a higher priority than all other modes of timing plan selection. The operator shall have two options for implementing manual override:~~

~~1.1.4.3.1 Setting the manual override and later releasing the override manually; and~~

~~1.1.4.3.2 Setting the manual override with a specified time frame for automatic termination.~~

~~Under the second option, the manual override shall terminate automatically at the end of the specified time. When manual override is terminated, each affected controller shall revert to its scheduled mode of operation.~~

~~The intersection display shall have special function buttons for controlling the stop time and release time for a specific phase or phases. The Supplier may be requested by the Client to add additional special function buttons or manual commands to the intersection display. The central signal system software shall include up to sixteen (16) such special functions at the request of the Client.~~

~~1.1.4.4 Traffic Responsive Control~~

~~In the traffic responsive mode of operation, the central signal system software shall select the timing plan that is best suited to the existing traffic conditions as measured by the system detectors and analyzed by the system's traffic-responsive process. Once the traffic responsive process has selected the appropriate timing plan, the plan number shall be commanded to the intersections on a continuous basis until the traffic responsive process recognizes, based on sufficient change in traffic conditions, the need to command a different timing plan.~~

~~The traffic responsive algorithm shall be based on the UTCS algorithm or other approved traffic responsive algorithm. In order to enhance traffic responsive operation, the following traffic responsive process points shall be implemented: Each section shall be associated with zero to a maximum of ten (10) other sections, one of which shall be designated as the master section. When traffic conditions warrant a traffic responsive timing plan change for the master section, the central signal system software shall automatically change the timing plans for the other associated sections. If no other sections are associated with a section, only that section shall change timing plans.~~

~~The operator shall be able to define a single detector station as a section. When the traffic responsive process detects that this detector station has exceeded operator defined thresholds, the associated sections shall automatically change to the appropriate traffic responsive plan. This process is intended for use in~~

~~conjunction with special events (such as to detect and respond to a surge of traffic leaving the parking facility of a stadium or arena following the end of a sporting event).~~

~~Section definitions shall be changeable on a time of day basis through the GUI. The intersections within a section shall be changeable, allowing intersections to be in different sections depending on the time of day. Definition of master sections and associated sections shall be changeable, allowing sections to be associated with different master sections depending on the time of day~~

~~1.1.4.5 Stand by~~

~~It shall be possible to place controllers in a standby mode on system wide, section, or intersection basis. The operator shall be able to release these controllers from central control through the user interface. When released, the central signal system software shall not communicate with the controller and the controller shall run independently. The operator shall have the ability to reactivate released, or off line, controllers via the central signal system software. The central signal system software shall recognize the release of an intersection from communications into stand by mode without displaying the status as a communications failure.~~

~~The operator shall be able to monitor the intersection components through the central signal system software, even while not commanding it.~~

~~1.1.4.6 Flash and Free/Flash~~

~~In the flash mode, the controller shall run uncoordinated and will not provide green time to any movements at the intersection. To initiate flashing operation remotely, the controller shall be commanded to flash from the central signal system software.~~

~~If the controller has been commanded to be in flash mode and remains on-line, it shall be shown as being in flash mode in the GUI. If the intersection is in flash mode because it is off line, it shall be shown as being in free/flash mode. A safeguard mechanism shall be incorporated to prevent an accidental command for universal system flash~~

~~1.1.4.7 Adaptive Traffic Control~~

~~In the adaptive control mode, the central signal system software shall generate and implement timing plans in real time based on detector data. Adaptive Control Systems (ACS) use detector data to determine the characteristics of traffic approaching a traffic signal and then adjust the signal timings according to real-time predictive algorithms in order to optimize their performance.~~

~~The Supplier shall state which ACS algorithm it has packaged with its central signal system software in prior installations and/or tests. Subsequent to this award, if the Client so specifies, the functionality to provide an ACS shall be demonstrated by the Contractor. If the Client so specifies, the central signal system software shall be integrated with a Client approved ACS.~~

~~ACS is not required by MCDOT at this time. It is highly desired that the central signal system be expandable to include an adaptive control operation at a future time.~~

~~1.1.4.8 Stop Time Control~~

~~The system shall allow the operator to implement remote, stop time, traffic signal control from the TMC.~~

~~1.1.5 Traffic Database~~

~~The Supplier shall furnish and implement a Client approved, off the shelf database package. The Supplier shall provide a database interface, which shall be integrated into the central signal system software to provide seamless operation for the operator. The resulting combination of central signal system software and database software shall provide for off-line and online database generation and maintenance.~~

~~This shall include loading, modifying, examining, copying, and retrieving the data used to operate the central signal system software. These data include traffic system configuration, timing plans, TOD/DOW schedules, operator databases, and alarm databases. Traffic system configuration shall include channel assignments, communication parameters, and included intersections. Any database changes shall be achievable without having to restart the central signal system software.~~

~~All tables in the database shall be printable in the same form as shown on the computer screen for use by the traffic engineers and maintenance technicians in the field. In order to alleviate repetitive data entry, the central signal system software shall allow the operator to copy, paste and export data tables for use with other Windows™ based applications. The central signal system software shall copy the database fields from one controller to another controller when commanded by the operator.~~

~~A search engine shall be provided that identifies and displays all intersection or section data by a specified time of day or day of week.~~

~~Database generation of traffic control operations shall include automated safeguards to preclude dangerous or undesirable intersection operation. These safeguards shall, as a minimum, include range checking and timing plan verification.~~

~~It is highly desirable that the database be able to export data in the Universal Traffic Database Format (UTDF). This will allow an exchange of data between traffic modeling and timing software such as Synchro.~~

~~1.1.5.1 Database Recovery~~

~~All database backup and recovery shall be through the central signal system software user interface. The operator shall be able to do the following:~~

- ~~1.1.5.1.1 Automatically compress and back up the database on an operator specified time of day setting or upon operator command~~
- ~~1.1.5.1.2 Restore the back up copy of the database to the database.~~

~~1.1.5.2 Database Reports~~

~~The operator shall be able to generate custom reports using the relational database custom report utility supplied with the database package. The central signal system software shall provide a seamless interface to this utility. The Supplier shall provide routine pre-formatted reports for use upon startup of the central signal system software.~~

~~The central signal system software shall have the means to create user defined pre-formatted reports. The user shall be able to print a user defined selection of the reports.~~

~~Database reports shall be exported on command from this utility in the following formats (text comma delimited, text space delimited, text tab delimited). The~~

operators' license for this utility shall permit standalone use of the utility without the central signal system software.

1.1.6 ~~Controller Operation (Central Signal System Interface With Controllers)~~

1.1.6.1 ~~Distributed Operation~~

As stated in the Modes of Operation section, the central signal system software shall operate in a distributed mode, fully making use of the intelligence in the local intersection controllers. ~~The intelligent local controllers shall be programmed with timing plans, TOD/DOW schedules, and all other parameters required to operate the local intersection. This programming shall be done by downloading at least the timing plan and schedule parameters using the central signal system software. The central signal system software shall permit the operator to switch from the stored database to an uploaded controller database without either database closing or losing changes. The central signal system software shall monitor all intersection controllers on a second by second basis. The central signal system software time and date source shall be as described in Section 2.1.1.~~

1.1.6.2 ~~Upload/download~~

~~The controller firmware shall allow upload/download on a system wide, section, and intersection basis.~~

~~It is highly desirable that the upload/download commands be executed at a minimum communication rate of 19.2 kbps between the central signal system software and the field controllers.~~

~~The central signal system software shall upload and download the following data, at a minimum:~~

~~1.1.6.2.1 Intersection timing parameters~~

~~1.1.6.2.2 Detector data from at least 32 detectors per intersection controller~~

~~1.1.6.2.3 Controller and cabinet alarm data~~

~~1.1.6.2.4 Event data~~

~~1.1.6.2.5 Universal date and time~~

~~1.1.6.2.6 Controller date and time; and, others specified elsewhere in these Functional Requirements~~

~~It is desirable that the central signal system software be able to do individual controller page uploads and downloads.~~

~~A message communications scheme shall be included that ranks messages to controllers on a priority level basis in which upload/download is a higher priority than second by second monitoring.~~

~~The central signal system software shall highlight errors or missing data in timing plans prior to permitting download of the timing plans to a controller. The central signal system software shall generate a comparison report listing all data discrepancies between the database and controller. The central signal system software shall write this report to a text file for printing or editing.~~

1.1.6.3 ~~Failure Monitoring~~

~~Controller hardware monitoring shall diagnose and report on detector and controller output. The diagnostics shall compare controller settings in the field compared with database parameters, highlight differences and identify failures.~~

~~Failures shall be defined by operator definable error thresholds. Upon failure, the central signal system software shall log the event and also display a visual alarm to the operator. The event log shall include both the controller time and the central signal system software time. The central signal system software shall continue to attempt communication with the failed component. If the failed component communicates successfully for an operator specified amount of time, the component shall be considered operational. This event shall also be logged, along with the clearing of the alarm for the failed component. The operator shall be able to disable these components through the user interface. When disabled, the central signal system software shall not communicate with the component.~~

~~1.1.6.4 Timing Plans~~

~~The new central signal system software shall provide for a minimum of sixteen (16) unique timing plans for each intersection to be stored in the central database. At any one time, it shall be possible for a minimum of twelve (16) of these plans to be stored in the local controller's database and implemented upon command by the new central signal system software. The number of timing plans, timing plan pages, and coordination plan pages that can be stored by the central signal system software shall only be limited by the physical storage capabilities of the hardware.~~

~~Each timing plan shall include uniquely programmable values for cycle length and offset, a uniquely programmable phase sequence, and uniquely programmable split values. The central signal system software shall provide both the automatic calculation of permissive periods (based on splits values) and the ability for the operator to input desired values for the beginning and end of permissive periods.~~

~~The central signal system software shall also provide the capability to handle special signal and/or timing plans to accommodate unusual traffic flow patterns during special events and incidents. These special event timing plans may be included within the sixteen timing plans.~~

~~The central signal system software shall copy the timing plans, tables and coordination tables from one controller to another when commanded by the operator.~~

~~1.1.6.5 Phase Sequence Flexibility~~

~~The central signal system software shall be capable of variable left turn phasing including lead, lag and lead/lag phasing.~~

~~The central signal system software shall recognize first and third car left turn lane detection.~~

~~1.1.6.6 Preemption of Operation~~

~~Operators with a certain security level shall be able to pre-empt any operation.~~

~~1.1.6.7 Vehicle Preemption~~

~~The central signal system software shall recognize the occurrence of locally initiated preemption (emergency vehicle, transit or railroad) and thereby not erroneously diagnose a coordination failure because the local controller has been preempted. The beginning and ending times of all preemption events shall be recorded in the system log. The central signal system shall include reports and displays that show the beginning and ending times (or alternately, the beginning time and duration) of all preemption events for a selected time period. Types of preemption (e.g., emergency vehicle, transit and railroad) shall be differentiated and coded with identification within the central signal system software. Vehicle preemptions shall be reported by intersection approach.~~

1.1.7 ~~Traffic Alarms~~

~~The central signal system software shall have the capability to automatically send text and or e mail messages to maintenance personnel upon detecting critical problems with the central signal system software and field controllers. Upon detection of the critical event, which triggers a system event, the designated phone number shall be dialed and the message sent. This feature shall be fully programmable allowing designation of TOD/DOW, phone number, and which critical event to trigger.~~

~~The system shall have call back confirmation that the call was received. If the confirmation does not happen, the system shall continue the page until message confirmation or until the problem is repaired.~~

~~Alarms shall be displayed in the active window on the central signal system software screen. The alarm window shall be intrusive (preempt or interfere with the operator's editing tasks) or non intrusive as defined by the operator. The alarm window shall be displayed in a position defined by the operator and at a size defined by the operator.~~

1.1.8 ~~Detector Data Processing~~

~~The central signal system software shall process detector data every one (1) minute for traffic responsive operation. The central signal system software shall re-evaluate the traffic responsive data every five (5) minutes to determine the appropriateness of the timing and make changes. The Supplier must note that additional detector processing rates may be necessary for adaptive control systems (ACS) implementation if implemented in the future by MCDOT.~~

~~The field hardware is expected to include both system and local detectors that shall be used for both traffic counting and traffic responsive operation. The central signal system software shall process and maintain detector count and occupancy data on a continuous basis to be used for various traffic control strategies and/or reporting tasks. Detector feedback shall be obtained on a user definable time frame and format. The time frame shall not be less than once per minute.~~

1.1.8.1 ~~Detector Data Types~~

~~The central signal system software shall recognize, process and display detector information from both detectors located at the intersections and sensors/detectors not related to traffic signals such as mid block count stations. Standard engineering data shall be stored in a unique data base and be printable and exportable with the following standard fields.~~

~~1.1.8.1.1 Volume (absolute numbers) per length class and per lane.~~

~~1.1.8.1.2 Average speed (km/h or mph) per length class and per lane.~~

~~1.1.8.1.3 Average gap time (1/10 sec) per length class and per lane.~~

~~1.1.8.1.4 Average headway (m or feet) per lane.~~

~~1.1.8.1.5 Occupancy (%) per lane~~

1.1.8.2 ~~Collection and Retrieval~~

~~The central signal system software shall automatically record detector data in the database, and archives the data onto external media. Raw detector data shall be stored in memory on a five minutes basis. Up to four weeks of five minute detector data for each intersection shall be stored on the system disk, by the database program. If bad data or no data is received from the detector loops during any or all of the five minute collection time, the data will be tagged as questionable or not available in the database. A user definable filter shall be~~

~~used to set the threshold of when detector data is considered not usable. Each five minute block shall be date and time tagged. The user shall have the ability to enable or disable the detector data collection feature.~~

~~Every twenty four (24) hours the five minute detector data shall be automatically compressed and written to the storage media. Detector data shall be retrievable from the storage media for use with the relational database or traffic modeling packages. Upon retrieval the detector data shall be automatically expanded from the compressed format.~~

~~1.1.8.3 Detector Monitoring~~

~~The detector feedback from the field from loop detectors and video detectors shall be continuously monitored for proper operation. Detectors shall be classified as acceptable, marginal, disabled, and failed. Detector failures shall be reported to the system log and the system workstation.~~

~~The central signal system software shall have user definable failure filters that define the thresholds that a detector must exceed to be considered failed. The filter values shall be selectable on a time of day basis. The following failure types shall be provided at a minimum:~~

~~1.1.8.3.1 Maximum Presence: If an active detector exhibits continuous detection for a program entered period (0-255 minutes in one minute increments);~~

~~1.1.8.3.2 No Activity: If an active detector does not exhibit an actuation during a program period (0-255 minutes in one minute increments);~~

~~1.1.8.3.3 Erratic Output: If an active detector exhibits excessive actuation (program entered maximum counts per minute 0-255 in increments of one); and~~

~~1.1.8.3.4 Bad communication.~~

~~1.1.8.4 Traffic Monitoring~~

~~The central signal system shall have the ability to report and monitor traffic congestion from field detectors and show graphically red, yellow and green status for corridor on a congestion map. This map shall have a means to be exported or sent to outside sources such as websites or FTP servers.~~

~~1.1.8.5 Controller Database Monitoring~~

~~It is desirable that the central signal system perform a comparison between each traffic signal controller local database on the system network and the central signal system database at least once a day. The results of this comparison are to be summarized in a report to the TMC operators and signal maintenance staff.~~

~~1.1.9 Interface With Synchro 7~~

~~The central signal system software shall import timing data to and export timing data from Synchro 7 with a single command, and shall be able to directly download to controllers the timing plans that are generated in Synchro 7. Additional information about Synchro 7 may be found at <http://www.trafficware.com/>.~~

~~1.2 SYSTEM INTEGRATION~~

~~1.2.1 Time Synchronization~~

~~The Supplier shall provide the means by which the central signal system software's time clock is automatically synchronized with coordinated universal time (UTC) through~~

~~MCDOT's GPS time source (Symmetricom Synch Server S350) located in the Traffic Management Center. Such automatic synchronization shall occur at least once per hour. The capability shall also be provided for the operator to disable and re-enable this function. The central signal system software shall provide for the automatic downloading of clock updates to each field controller. The central signal system software shall include a controller clock that synchronizes all field controllers at a user defined frequency. The frequency of such updates shall be operator programmable within the range of once per minute to once per day. The central signal system software shall also permit the controller clock to be updated when a controller is brought on line. Additionally, unless the operator has disabled the feature, the central signal system software shall transmit a clock update in conjunction with the command for implementation of a different timing plan.~~

~~1.2.2 Central Architecture~~

~~1.2.2.1 Open Architecture~~

~~The Supplier shall place the source code for all such restrictive software that has been placed under configuration management and control (i.e. all software required to edit or alter the source code and successfully recompile and operate the software, including operating systems, libraries, tools and utilities, data base structures and code, and compilers, including a list of all software documentation tools) in a software escrow account, accompanied by detailed source code documentation, including a list of applicable software development tool, as described above. Such escrow account shall be updated with respect to all source code in the account at least annually, or earlier, if the Supplier issues an update that contains substantial revisions to the software then retained in escrow. The cost of maintaining such escrow shall be included in the contract price. The escrow account will be released in the event that the Supplier is unable to deliver services (including warranty services, maintenance, upgrades, bug fixes, and expanded features).~~

~~Upon release of the escrow account under these terms, the Client shall have a royalty free, non transferable, nonexclusive license to use, for the Client's traffic management system purposes only, the machine readable/executable software.~~

~~1.2.2.2 Scalability~~

~~The central signal system software shall be capable of handling up to 250 intersections.~~

~~1.2.2.3 MS Windows Based~~

~~MS Windows shall be the operating system on which the central signal system software is based and will be able to support current and future MS Windows operating systems~~

~~1.2.3 Traffic Signal Controller Communications~~

~~The central signal system software shall include a modular communications process that shall be compatible with TS 2 communications hardware (NEMA Standards Publication TS 2 2003 v02.06) as well as the 2070 platform. The communications protocol shall be based on the following National Transportation Communications for ITS Protocol (NTCIP) standards:~~

~~1.2.3.1 NTCIP 1101 Simple Transportation Management Framework (STMF)~~

~~1.2.3.2 NTCIP 2001 Class B Profile~~

~~1.2.3.3 NTCIP 1201 Global Object Definitions~~

~~1.2.3.4 NTCIP 1202 Object Definitions for Actuated Traffic Signal Controller Units~~

~~It is expected that the field hardware vendors will identify and document any messaging protocols or objects that are not covered by the above mentioned NTCIP standards. Vendors will identify version numbers and publication dates of NTCIP standards with which they are in compliance. For example, "NTCIP 1101:1996 v01.12 December 2001 - Includes Jointly Approved NTCIP 1101 Amendment 1 v08".~~

~~The central signal system software shall be demonstrated to have previously worked with Econolite ASC/2 and ASC/3 controller units, via both serial and Ethernet at a communications rate of 19.2 kbps for serial and 32 kbps minimum for Ethernet.~~

~~The Functional Requirements specified herein take precedence over any constraints created by NTCIP standards (for example, minimum or maximum values for objects).~~

~~1.2.4 Center To Center Communication~~

~~The central signal system software shall be able to utilize AZTech Center to Center Message sets for data exchange with the Regional Archived Data System (RADS). The AZTech Center to Center Message sets are compliant with national standards and can be accessed at www.aztech.org. This reference document is entitled: RADS Traffic Management System Center to Center Message Interface Design, Revision 2.0, June 30, 2008.~~

~~The supplier shall provide technician(s) to assist the client with the center center communications. This support shall be contracted on a task basis. The supplier shall submit to the client the qualifications and hourly rate for the proposed technicians.~~

~~1.2.5 ATMS Functions~~

~~1.2.5.1 Closed Circuit Television/Video~~

~~The central signal system software shall have an integrated graphical interface to control and monitor the closed circuit television (CCTV) system. This interface shall include camera selection, display selection, configuration setup (presets, tours etc.), selection and implementation of presets, and camera control (pan, tilt, zoom, focus iris). The central signal system software shall be able to detect and report camera failures. The camera presets shall be operator definable. This interface control shall be compatible with the currently deployed Camera Cameleon client server so as not to interrupt or affect operation. This component shall have the capability to control and view the cameras as a stand alone system in the event Camera Cameleon is down.~~

~~1.2.5.2 Dynamic Message Signs~~

~~Using approved NTCIP for Dynamic Message Signs; the central signal system software shall monitor each dynamic message sign (DMS) and send messages for display on each DMS, utilizing a database of messages that is internal to the central signal system software. The central signal system software shall include a GUI to support these functions.~~

~~This interface control shall be compatible with the currently deployed Camera Cameleon client server so as not to interrupt or affect operation. This component shall have the capability to control and operate the signs as a stand alone system in the event Camera Cameleon is down.~~

1.2.6 Security

~~The central signal system software shall provide and maintain a security system to prevent unauthorized access to the system. This shall apply to executable files as well as text and database files. Operator privileges shall be definable on a functional level. The security levels shall include, at a minimum: no access, view only, upload only, download only, and full access. Each operator shall have a privilege level mask defined by the system administrator. The mask shall define the specific functions that the particular operator is authorized to perform. For example, a particular operator may be given the ability to view all reports, but not to modify some or all levels of the database. This shall allow for any number of different levels of operator access capability. The system administrator level shall have full access to the system as well as the responsibility for maintaining account passwords and privilege level masks. Each operator shall have a unique, operator definable password used to gain access to the system.~~

~~Before gaining access to the system, the operator shall be required to enter an operator identification code. The central signal system software shall validate the code against an encrypted database of authorized operators. Successful completion of the log in shall result in execution of a session start up procedure. The start up procedure shall establish the privileges, object menu options, windows, and tools the operator may utilize. Any functions that a particular operator is not authorized to access shall either not be shown or shall be "grayed out" so that the operator can easily distinguish the functions to which he/she has access.~~

~~LAN access shall be limited to those activities that support the central signal system software. Any activity that hinders or does not directly support the operation of the central signal system software shall be restricted or eliminated. Any executable files that are not needed in support of the central signal system software shall be eliminated from the system or otherwise protected from access, thus minimizing any risk associated with unauthorized access. Operating system tasks that impede central signal system software response shall also be eliminated (i.e., clock, calendar manager, file manager, etc.).~~

~~Unsuccessful log in attempts shall be logged to the central signal system software log.~~

~~The system administrator shall have the capability to reduce the access capabilities of operators while they are logged into the central signal system software from a remote computer.~~

~~When the operator signs off of any individual workstation, all windows and applications that are part of the central signal system software shall close.~~

1.2.7 BACKGROUND:

Kimley-Horn has initiated development to upgrade the Graphical User Interface (GUI) for the KITS Advanced Traffic Management System to move it from a classic Windows look and feel, to the latest technology from Microsoft .NET called the Windows Presentation Foundation (WPF). In addition to improving the application to support the latest technologies and online mapping resources, the improvements to the GUI are focused on the latest in usability design principles. The City will also receive upgrades made to the ASC/3 signal controller interface. Finally, KITS will be enhanced to support a later version of Econolite firmware that operates on the ASC/3 and Cobalt controllers. At the date of this scope and fee, the agreed upon version is 2.62.

The focus of this scope is for Kimley-Horn to:

- **Perform Onsite Integration and Test tasks to install the new KITS User Interface**
- **Integrate current signal data with the new internet based mapping system**
- **Support for Econolite version 2.62**

1.2.8 SCOPE OF WORK DESCRIPTION:

The tasks included in upgrading MCDOT to the new KITS User Interface are as follows:

Task 1: Version Upgrade

In this task, Kimley-Horn will install, integrate, and test the latest version of KITS onsite. This will include updates to the latest User Interface and Windows Services for the ATMS. Additionally, database scripts will be created to migrate ATMS data from the previous version to the new version. Kimley-Horn will utilize the existing signals layer to configure the internet based mapping engine with existing devices.

Deliverable(s):

Updated KITS User Interface, to include:

- User workspace layouts to create custom views of the map and interface
- Ribbon based menu for quick access and ease of use
- Map Enhancements
 - Right click on the map to create a new signal in an easy to use wizard
 - Right click on the intersection icon on the map for quick access to commonly used signal interfaces
 - Internet based mapping engine with access to Bing and Open Street Maps
 - Define links from the map, and auto population of link distances using internet mapping services
 - Map data saved in the database so users no longer need to distribute map files to all workstations
 - Support for resizing map icons
 - Support for Caching Map Base Layer if internet access is not available
 - Customizable color indications for signal layer data
 - Integrated traffic layer provided by Nokia HERE
 - Display Alerts on the map
 - Display signal phase status on the map for corridor analysis
- Timing Values Enhancements
 - Fully redesigned Timing Values
 - Support for a real-time Cycle Summary data display
 - Intersection Graphic Templates
 - Intersection Graphics saved in the database so users no longer need to distribute graphic files to all workstations
 - Real-Time option that includes an IO display to see detector calls at the signal
- ASC/3 Controller Interface Enhancements
 - Support for ASC/3 specific vehicle detector parameters that enable configuration of System Detectors from the KITS user interface. New parameters include volume bit, occupancy bit, ECPI log, TS2 Detector, ECPI Type.
 - Support for 10 Day Plans (currently supports 5)
 - Support for 4 Phase Timing Plans (currently supports 1)
 - Support for 50 Split Plans (currently supports 20)
 - Support for 50 Coordination Plans (currently supports 20)
 - Support for 50 Action Plans (currently supports 30)
 - Support for 16 Phase Sequences (currently supports 1)
 - Support for Coord Actuated Phase

- Batch Compare service to identify discrepancies for signal databases between the field and central on a nightly basis
- Grid view reports for improved analysis and decision making
 - Communication Quality
 - Event Log
 - User Activity Log
- Improvements to the usability of KITS Security wizard
- Automatic time comparisons on a schedule to alert users if time is different in addition to the ability to automatically alert and download time.
- Scheduled email reports for Event Log, User Activity Log, and Communication Log

Kimley-Horn will create one intersection graphic template using the new interface
Upgraded KITS Windows Services

Migration of data from the existing database and to the new KITS database

Procurement, installation and integration of the internet based mapping engine
Onsite Installation and Test

Task 2: 1 Year of Maintenance for Version Upgrade

In this task, Kimley-Horn will support the Count staff in resolving issues experienced with the KITS ATMS software, including integration related issues with the City's existing NTCIP ASC/3 compliant controller version. This will include necessary resolutions for identified issues. MCDOT can expect onsite support until an issue is resolved

Deliverable(s):

- Unlimited phone and email support
- Up to 18 hours of on-site support
- Necessary software patches
- Attendance for up to 2 City staff at the 2017 KITS user group meeting

1.2.9 EXCLUSIONS

Additional professional services to help support migration to the new software version are available to MCDOT. Though recommended, these items are not included in the Scope of Services per MCDOT's request. Should any of the below items or other unidentified out of scope services be requested, these may be carried out through a change order to this contract or under the existing Kimley-Horns ITS and Safety On-Call contract with MCDOT.

Items outside this Scope of Services include but are not limited to:

- Staff Training
- Configuration of intersection timing value graphics within KITS
- Creation of additional timing value graphic templates within KITS
- Coordination with MCDOT IT
- Future hardware migration
- Additional support of servers and third-party software
- Support for automatic creation of KITS system detectors from ASC/3 detector pages
- Server support and fine tuning
- User documentation
- Additional Maintenance and Support activities

1.3 USER INTERFACE

1.3.1 General Ease of Use

The GUI software shall provide the operator with a graphical operating environment of the type commonly found on today's desktop computers. The GUI shall be easy to use while providing a fast and efficient way to control and monitor the traffic signal system in real time. The GUI shall allow the operator to intuitively select objects on the screen by point and click manipulation with the mouse, thereby minimizing typing and the need to memorize lengthy commands. It shall be easy, for example, to add or delete a given intersection from a section through point and click manipulation of the intersections on a map. The operator shall be able to double click on a section of the main map area to maximize the previously minimized intersection graphics.

The GUI shall include standard MS Windows™ printer interfaces and utilize standard MS Windows™ printer drivers.

All windows in the central signal system software shall support a mouse with a right button, a left button and a wheel.

The central signal system software shall also provide "hot keys" for commonly used functions. The GUI shall incorporate the following:

1.3.1.1 Pop up multiple display objects and windows;

1.3.1.2 Menu icons and controls;

1.3.1.3 Dialog boxes;

1.3.1.4 Push button and other active commands;

1.3.1.5 Visual and audio alarms; and

1.3.1.6 Use of object characteristics such as colors, highlighting, and flashing to alert operators of status changes

The GUI shall be oriented around graphic tools and based on the principle of direct manipulation. Several windows may be active at the same time and may overlap on the screen; however, the operator shall be able to interact with only one window at a time. The operator shall be able to easily switch from one window to another, such as by pointing with the mouse cursor to the uncovered part of another window. The intersection graphics shall fill the entire screen when commanded by the operator. The operator shall be able to move any window on the screen, to change window size, and to collapse a window to an icon. The intersection graphics window shall include a window header with the standard intersection name and number in it.

When an exception condition (such as a device failure) exists, an inactive window shall attract the operator's attention by beeping and/or flashing its icon or title bar.

The signal system GUI shall provide an easy to use intersection add utility that allows the administrator to easily add intersections to the system through the use of templates and drag and drop items. Once created the system shall allow the administrator to simply drag and drop onto the map. No line entries in the data base or programming shall be needed. The GUI shall intuitively make all necessary changes and check for errors.

1.3.2 Multi-user Capability

The Supplier furnished operating system and software shall support a multi terminal, multi user interface and the software shall allow access to multiple levels of the central signal system software simultaneously. A minimum of six (6) users, each one of whom

~~can be assigned a specific level of access privilege, shall be able to access the central signal system software concurrently.~~

~~Common icons shall be used as much as possible for all display levels. All colors shall be selectable by the operator. The same colors and icons shall also be used in display/report screens. A legend shall be available within the display window, defining the meaning of each icon and color.~~

~~When an operator opens a controller database that is in use, the central signal system software shall display a message explaining to the operator that the database is already open.~~

~~A list of the operators that are currently logged onto the central signal system software shall be available to be viewed by a user defined set of operators.~~

~~1.3.3 Dynamic Displays~~

~~The supplier shall furnish the following:~~

~~1.3.3.1 System Map~~

~~When maximized, graphical views shall return to the scale at which they were displayed immediately prior to being minimized~~

~~1.3.3.1.1 Zoom/pan~~

~~The dynamic mapping shall incorporate full pan/zoom capability. The operator shall be able to set up both dynamic and static informational layers that are displayed at different view scale levels by defining the view scale levels in a zoom level set up configuration database table. By setting the zoom scale range and appropriately enabled/disabled layers, the operator shall be able to control which layers display at different zoom scales. For example, at the region-wide scale level the operator might enable roadway centerlines (static information) as well as a communication status indication (dynamic information) for each intersection controller in the system. When zooming in to a group of intersections (i.e. changing the view scale), the roadway centerlines would be disabled from view and the roadway curb lines would be enabled (become visible), and all phases of all the intersections in the displayed group would become visible. If the operator changes the intersection graphics scale, the symbols that are part of the intersection graphics shall change proportionately.~~

~~1.3.3.1.2 GIS compatibility~~

~~The graphic system shall have a base map that covers the entire limits of the Client's jurisdiction. The base map shall be an ArcInfo Geographic Information System (GIS), ArcView GIS generated graphic file, or ESRI format serving as a static background map. The central signal system software shall utilize ArcView GIS or ESRI as the map and database platform. The dynamic layers of the GIS map shall be incorporated onto the base map by the Supplier. As a minimum, the base map will show the roadway centerlines of arterials and collector streets, freeway centerlines, rail lines, and major landmarks. Different layers shall be enabled as a default at different zoom levels.~~

The background for intersection graphics should consist of hyperlinked files if the operator so chooses. If the operator has specified that an intersection shall include a hyperlinked file and the file cannot be located, an error message stating that the file cannot be located shall be displayed.

1.3.3.2 Intersection Status

The central signal system software shall allow operators to view real-time intersection status and detector (volume, occupancy, and speed) data overlaid on the GIS map or hyperlinked files.

The central signal system software shall provide the means to keep multiple intersection database windows open simultaneously in real time to facilitate comparison and data manipulation. It shall be possible to drag and drop these windows throughout the entire monitor screen.

In all menu selections, the central signal system software shall include a list of intersections by standard name and number. When an intersection graphics window is minimized, it shall be possible to maximize the window by selecting the same intersection from the menus.

The central signal system software shall permit the operator to view the status of equipment on a filtered basis. At the minimum the following elements shall be selectable on a system, section, intersection or individual detector basis for use as filters in the display of system, communications, or equipment status: (a) Communications; (b) Power up/down; (c) Detector events; (d) Time download; (e) Transition; (f) Timing plan changes — scheduled, manual, special event, holiday; (g) Flashing operation — police flash, technician flash, MMU flash, scheduled flash; (h) Preemption operation, fire station preempt, railroad preempt; (i) Cabinet door; (j) Special functions; (k) Controller event log; (l) Detector event log; (m) MMU events log; (n) Keyboard entry detection; (o) transit priority

1.3.3.2.1 Intersection Displays

Intersection displays, which shall depict roadway curb lines and lane lines and shall include static displays of the following (as a minimum):

- 1.3.3.2.1.1 Street names
- 1.3.3.2.1.2 Intersection number
- 1.3.3.2.1.3 Phase numbering
- 1.3.3.2.1.4 Special function definition; and North arrow

The intersection display shall also include dynamic indicators. The intersection display shall indicate the status of the following (as a minimum):

- 1.3.3.2.1.5 Controller operational mode (TOD/DOW, traffic responsive, manual, free, free/flash, police flash, technician flash);
- 1.3.3.2.1.6 Which intersection is commanding the section or intersection;
- 1.3.3.2.1.7 Changes to the timing pages;
- 1.3.3.2.1.8 Controller status (offset transition, preempted, type of preemption, conflict flash, etc.);
- 1.3.3.2.1.9 The intersection display shall indicate the difference between the programmed offset and the actual timed

~~offset. The displayed difference shall be indicated as positive or negative;~~

- ~~1.3.3.2.1.10 Communications status (e.g., on line, bad communication, or no communication);~~
- ~~1.3.3.2.1.11 Cabinet door status;~~
- ~~1.3.3.2.1.12 Timing parameters currently in effect (e.g., control mode, transition status, control section assignment, timing plan number, cycle length, offset, and split values);~~
- ~~1.3.3.2.1.13 Color status of all vehicular phases and overlaps (including the circular red, yellow, and green indications and all arrows);~~
- ~~1.3.3.2.1.14 Color status of all pedestrian phases (including walk, flashing don't walk, and steady don't walk);~~
- ~~1.3.3.2.1.15 Actuation status of all local detectors (vehicular and pedestrian) and all system detectors associated with the intersection;~~
- ~~1.3.3.2.1.16 Preemption in effect, and what preemption mode;~~
- ~~1.3.3.2.1.17 Special function status;~~
- ~~1.3.3.2.1.18 Indication of failure, and type of failure;~~
- ~~1.3.3.2.1.19 Count up of cycle clock; and~~
- ~~1.3.3.2.1.20 Count down of the number of seconds remaining for the split of the phase in service.~~

~~It is highly desirable that the user be able to import an aerial photo and be able to overlay the aerial with the dynamic real time information.~~

~~1.3.3.2.2 Detector Displays~~

~~The detector status for a given intersection shall be displayed on the screen with the intersection graphics. Traffic counts from system (count) detectors shall be displayed within user definable count intervals.~~

~~The detector statuses that shall be depicted include the following:~~

- ~~1.3.3.2.2.1 Operational~~
- ~~1.3.3.2.2.2 No activity~~
- ~~1.3.3.2.2.3 Erratic output~~
- ~~1.3.3.2.2.4 Maximum presence~~
- ~~1.3.3.2.2.5 Failed communication~~
- ~~1.3.3.2.2.6 Real time feedback pre-empted.~~

~~The status of pedestrian push button calls shall be displayed as part of the intersection graphics.~~

~~1.3.3.3 Communication Statistics~~

~~The central signal system software shall have the capability of developing a display/report that shall show the communications throughput. The display shall include number of communication attempts, number of successes, number of failures, and percentage of successful communications per intersection, per channel, and per system.~~

~~The communications status views shall include a reference to the standard intersection name and number.~~

~~The central signal system software shall permit the operator to select the method by which sections are sorted. The choices of methods of sorting shall include by communications circuit, by communications addresses, by communications channels, or by intersection name (alphabetically) or number.~~

~~1.3.3.4 Time/space Diagrams~~

~~The central signal system software shall have the ability to generate time space diagrams from both real time data and from historical data contained in the database and to display such time space diagrams on screen. The operator should then be able to perform "on screen fine tuning", using click and drag methods to adjust the offsets, with the resulting changes in the widths of the progression bands being displayed. The operator should then be able to save to the database the resulting changes in offset for that timing plan.~~

~~To fine tune crossing arterial progression, it is desired that the operator be able to generate and display the time space diagram for each street in a separate window. The on-screen adjustment of the offset of the common window should result in changes in the widths of the progression bands in both windows.~~

~~1.3.3.5 Failure Summary~~

~~A traffic signal system's effectiveness is primarily a function of the timing plan that it ultimately imposes on the street. This effectiveness is increased when adequate provision is made for the early detection and efficient diagnosis of component malfunctions. A facility for doing this shall be included in the central signal system software. Malfunction detection and diagnosis and automatic status logging shall be provided to minimize the time to repair of critical components of the central signal system software.~~

~~Upon detection of the failure of a critical component or subsystem, the central signal system software shall automatically enable an alarm and initiate the notification of the operators. The occurrence of each such alarm shall be recorded in the system log.~~

~~The central signal system software log shall include a reference to the intersection name and number with which any given event is associated.~~

~~1.3.4 History and Performance Reports~~

~~The central signal system software shall generate reports for traffic events, detector data, performance measures, and communications statistics. The reports shall be generated on a system wide, section or intersection basis. It is desirable that these reports are able to be exported to MS Excel. It is desirable that travel time be one of the performance measures.~~

~~1.3.5 Audible Alarms~~

~~The central signal system software shall generate audible alarms for specified, user-defined failures, concurrent with graphical alerts and alphanumeric paging. Operators shall be able to disable/enable the audible alarm feature quickly and easily. The audible alarms shall come from individual workstations. The central signal system software shall log the disabling of an alarm.~~

~~1.3.6 — Global Parameter Changes~~

~~Global changes to control parameters must be able to be made on a system-wide, section, or intersection basis without requiring the operator to enter data one intersection at a time.~~

~~1.3.7 — Remote Access~~

~~The central signal system software shall have the capability of providing access to the system for remote operators. The remote access capability shall include workstations that are physically connected to the LAN, and VPN connections. All connected computers, up to five (5) simultaneous users, shall be capable of concurrent operation.~~

~~Remote access via cellular communications is desirable.~~

~~The system shall be remotely accessed via a VPN connection.~~

~~It is desirable that the system be remotely assessable through a hand held tablet computing device with Wi-Fi and 3G or 4G capabilities.~~

~~1.4 — MAINTENANCE AND SUPPORT~~

~~1.4.1 — Expandability~~

~~The central signal system software shall be capable of handling up to 250 intersections.~~

~~1.4.2 — Industry Standards~~

~~The Supplier must meet enhancements to industry standards, including approvals of amendments to the NTCIP standards previously discussed.~~

~~1.4.3 — Documentation~~

~~The delivered central signal system software shall be fully documented. This documentation shall consist of pertinent technical documentation and user documentation. The documentation shall include:~~

~~1.4.3.1 — System architecture and block diagram;~~

~~1.4.3.2 — Hardware requirements;~~

~~1.4.3.3 — Program source libraries and source code in escrow account (see Section 2.2.1);~~

~~1.4.3.4 — Database definitions and file structures;~~

~~1.4.3.5 — Interface specifications;~~

~~1.4.3.6 — Specifications compliance matrix;~~

~~1.4.3.7 — Communication protocols including field device protocol;~~

~~1.4.3.8 — Variable descriptions, variable cross references and subroutine calling sequences;~~

~~1.4.3.9 — Security documentation;~~

~~1.4.3.10 — System backup and recovery procedures;~~

~~1.4.3.11 — System operational procedures and error handling;~~

~~1.4.3.12 — Operational options;~~

~~1.4.3.13 — 20 hardcopies of the operator's manual and 20 hardcopies of the training manuals for each installation of the central signal system software; and,~~

~~1.4.3.14 — Online users's manual and help facility.~~

All documentation shall be submitted to the Client for final approval. The documentation shall consist of 10 hardcopies, electronic copies, and on line documentation. Documentation shall be updated for any system changes.

1.4.4 Training

For each installation of the central signal system software, training shall be provided. Training shall consist of instructing the Client's personnel on the functional application and operation of the software supplied. Up to twelve (12) people will attend each training session. At a minimum this session shall include:

1.4.4.1 Use of operator interface;

1.4.4.2 Use of graphical map generation and animation;

1.4.4.3 Database use and manipulation;

1.4.4.4 System parameter and database entry;

1.4.4.5 Error messages and troubleshooting techniques;

1.4.4.6 Database custom report generation;

1.4.4.7 Overview of system structure and interfacing;

1.4.4.8 Priority Scheme setup;

1.4.4.9 Configuration setup;

1.4.4.10 File Maintenance

1.4.4.11 System startup and shutdown; and

1.4.4.12 System backup and recovery procedures.

1.4.4.13 Creating and adding new intersections

1.4.4.14 Creating and evaluating coordination for corridors and signals on the system or being evaluated as a model

The training session shall consist of both formal classroom presentation and "hands on" workshops. The training shall be provided after the successful completion of the Operational Test. All of the training shall be provided at the Client's offices or operations center. The on site training sessions shall be a minimum of sixteen hours (16) total. The supplier and the client shall decide on the training schedule.

All training material shall be delivered to the Client for approval thirty days before the start of the training session. Additional training shall be provided if the system receives any updates.

1.4.5 Cell Phone Texting

The operator cell phone texting system (system) shall alphanumeric messages for at least 250 device locations.

The system shall dial alternate numbers if the primary dialed number rings busy or does not connect.

The system should take into account all new technologies including emailing.

The system shall allow for an acknowledgement of the received text at the Traffic Management Center.

1.4.6 System Backups

1.4.6.1 ~~Recovery~~

~~The central signal system software shall automatically recover from a power failure. The central signal system software shall automatically begin communications with all field equipment via the central communications system.~~

~~If the central signal system software detects a non-fatal error within one or more of its processes, it shall alert the user via an alarm on the workstation and log a message to the system log. The system shall continue to operate in a degraded state. The Client shall have final determination on what is considered a non-fatal failure.~~

~~If the central signal system software detects a fatal error within one or more of its processes, it shall attempt to alert the user via an alarm on the workstation and log a message to the system log. The central signal system software shall then attempt an orderly shutdown of the system.~~

~~If the system cannot be restarted by TMC staff, the supplier shall provide technical assistance within 24 hours of being notified.~~

1.4.6.2 ~~Archiving~~

~~Every twenty-four hours the five-minute detector data shall be automatically compressed and written to the storage media. Each twenty-four-hour history shall be date tagged. The data storage feature shall have the ability to append twenty-four-hour detector data to the storage media, enabling full usage of the media. When the media does not have enough storage space left for a full twenty-four-hour detector count archival, the central signal system software shall notify the user that a new storage media cartridge/disk is required. The user shall have the ability to enable or disable the detector data archival feature.~~

1.4.6.3 ~~Disaster Recovery~~

~~A means and process shall be provided to completely backup the entire system onto a removal storage device or equivalent. It is MCDOT's intent to store a mirror image of the system software and the database(s) at a site separate from the Traffic Management Center building. It is envisioned that this backup will be done on a monthly basis.~~

1.4.7 ~~Operational Support~~

~~Help shall be available to support users with operational problems and to assist in trouble shooting system problems. This support may be in person, by telephone, e-mail, or by VPN access to the client's system.~~

~~Technical support shall be provided within (24) hours, excluding weekends and holidays. The one exception to this is if the entire system is down and cannot be restarted successfully by the TMC staff. In this case, the vendor shall provide assistance within (24) hours of being notified.~~

1.4.8 ~~Testing~~

~~Testing shall consist of three phases: factory acceptance testing, operational testing, and final acceptance testing.~~

1.4.8.1 ~~Factory Acceptance~~

~~The central signal system equipment shall be tested prior to shipping to demonstrate conformance with all applicable requirements. The Supplier shall furnish a letter from the manufacturer stating compliance with applicable requirements upon completion of the factory acceptance testing.~~

~~The Client reserves the right to conduct at its own expense any testing or inspections deemed necessary to ensure that the equipment conforms to applicable requirements.~~

~~1.4.8.2 Operational Testing~~

~~The operational test shall be deemed complete when the central signal system software is demonstrated to meet all requirements when all components are working together as an integrated system. The Supplier shall provide a test procedure to the Client for approval at least thirty days before the operational test is to begin. The Supplier shall provide all necessary assistance to ensure completion of this test. The Supplier shall fix any problems encountered and add any omissions discovered during this test period.~~

~~1.4.8.3 Final Acceptance Testing~~

~~The final acceptance test procedure draft shall be submitted to the Client (60) days prior to the target test period. This test procedure draft will be reviewed by the Client and its advising consultant. Ultimately a final acceptance test procedure will be agreed upon.~~

~~The final acceptance test will verify that the entire system, complete and in place, with the changes and additions made during the operational testing in place, functions properly and in accordance with these requirements. The final acceptance test shall not be completed until all items conform to the requirements as approved by the Client and all training has been completed. The Supplier shall perform and document all necessary testing. The final acceptance test will include the completion of a thirty day test period during which the entire integrated system operates without failure.~~

~~1.4.9 Warranty and Maintenance Agreement~~

~~1.4.9.1 Warranty~~

~~The Supplier shall provide a five year warranty that includes, but is not limited to, bug fixes and upgrades, in order to maintain or restore the intended functionality of the central signal system software as outlined in these functional requirements. This warranty shall be provided and priced as part of the Supplier's central signal system software package.~~

~~1.4.9.2 Maintenance~~

~~The Supplier shall provide a maintenance program and operational support framed in a maintenance agreement consisting of access to a troubleshooting hotline, client VPN system access, emergency maintenance, routine preventative maintenance, and software updates. The proposals shall include full explicit pricing for this maintenance. The cost to the Client of the maintenance program shall be itemized on a year-by-year basis for five years (i.e. 1st year, 2nd year, 3rd year, 4th year, 5th year).~~

~~1.5 SYSTEM OPERATIONS SUPPORT~~

~~1.5.1 TMC Operational Support Full time (40 hours per week)~~

~~Upon Client request the supplier shall provide technician(s) to assist the client with the day to day operations of the central signal system in the client's Traffic Management~~

~~Center (TMC). The supplier shall submit to the client the qualifications and hourly rate for the proposed technicians.~~

~~1.5.2 TMC Operational Support Part Time (0 to 40 hours per week)~~

~~Upon Client request the supplier shall provide technician(s) to assist the client with the day to day operations of the central signal system in the client's Traffic Management Center (TMC). The supplier shall submit to the client the qualifications and hourly rate for the proposed technicians.~~

~~1.6 SYSTEM ENHANCEMENTS~~

~~The client may request the supplier for specific system enhancements. The supplier shall provide technicians to be on site to assist the Client with such enhancements. The support shall be contracted on a task basis. The supplier shall submit to the Client the qualifications and the hourly rates for the proposed technicians.~~

EXHIBIT C

SPECIFICATIONS REQUIREMENTS MATRIX

FUNCTIONAL REQUIREMENTS			
2.1	Traffic Management Functions	COMPLIANCE	COMMENTS
2.1.1	<u>Status Monitoring</u> – Capable of monitoring a signal system on a second- by-second basis or on priority basis for message communications.	Full	KITS is capable of second-by-second monitoring and can also be configured based on user settings.
2.1.2	<u>Capacity</u> – The system shall be scalable and have the capability of managing up to 250 intersections, as well as accommodating: <ul style="list-style-type: none"> • 12 Simultaneous users • 16 Special functions 	Full	KITS is fully scalable and has the proven ability to support thousands of intersections and can support more than 20 simultaneous users. Special functions are typically determined by controller functionality and KITS can support special functions currently supported by the ASC/2 and ASC/3 controllers.
2.1.2 A	20 Simultaneous users	Full	
2.1.2 B	20 Special functions	Full	
2.1.3	<u>Control Sections</u> – Capacity to control a minimum of 100 control sections, able to assign intersections/detectors to different sections per requirement.	Full	KITS has the capacity to control more than 200 control sections and is able to assign intersection/detectors to different sections, per requirement.
2.1.3 A	<u>Control Sections</u> – Capacity to control a minimum of 200 control sections, able to assign intersections/detectors to different sections per requirement.	Full	
2.1.4	<u>Modes of Operation</u> – The central signal system shall operate in the following modes:		
2.1.4.1	<i>Time-of-day/Day-of-week</i> – For regular control.	Full	
2.1.4.2	<i>Special Events</i> – Temporary (specific time/date basis) and permanent (every day/week/time span basis) event based control.	Full	
2.1.4.3	<i>Manual Commands</i> – For control with manual override and release and/or termination with a specific time frame	Full	
2.1.4.4	<i>Traffic Responsive</i> – For control where the timing plan is best suited to existing traffic conditions based on UTCS algorithm.	Full	
2.1.4.5	<i>Standby mode</i> – Single intersection or system wide, component to run uncoordinated with the ability to reactivate off-line or disabled intersections controlled via the system.	Full	
2.1.4.6	<i>Flash & Free Flash Mode</i> – Where the controller is to run uncoordinated w/o providing green time at intersection, commanded using the system.	Full	
2.1.4.7	<i>Adaptive Control</i> – The system shall generate and implement timing plans in real time based on detector data using predictive algorithms.	Full	
2.1.4.8	<i>Remote Stop Time</i> – The system shall allow the operator to implement remote, stop time, traffic signal control from the TMC.	Full	
2.1.5	<u>Traffic Database</u> – Off the shelf database package with interface to be integrated into the system to provide off-line and online database generation and maintenance with following functions:		

FUNCTIONAL REQUIREMENTS			
2.1.5.1	<i>Database Recovery</i> – Automatically compress and back-up database on specified time-of-day or upon command and restore back-up copy to database.	Full	Kimley-Horn will configure a back-up/recovery system on site, which is in line with MCDOT’s practices and requirements. KITS is capable of creating many reports that can be individually configured for each user
2.1.5.2	<i>Database Reports</i> – Provide seamless interface for operators to be able to create reports in commonly used formats (comma separated variable etc.) using relational database utility in the database package.	Full	Kimley-Horn will configure a back-up/recovery system on site, which is in line with MCDOT’s practices and requirements. KITS is capable of creating many reports that can be individually configured for each user
2.1.6	<u>Controller Operation</u> – The central signal system controller interface shall have the following features:		
2.1.6.1	<i>Distributed Operation</i> – Ability to operate in distributed mode, fully utilizing intelligence in local intersection controllers that are programmed with timing plans, TOD/DOW schedules etc.	Full	
2.1.6.2	<i>Upload/Download</i> – Ability to upload/download on either system wide, section or intersection basis at minimum communication rate of 19.2 kbps, data includes timing parameters, detector data, controller and cabinet alarm data, event data, universal date and time, controller date and time, other functional requirements.	Full	
2.1.6.3	<i>Failure Monitoring</i> – Ability to diagnose and report on controller and detector output.	Full	
2.1.6.4	<i>Timing Plans</i> – Ability to provide for a minimum of 16 unique timing plans with uniquely programmable values for cycle length, offset phase sequence, split values etc., for each intersection to be stored in central database and at least 16 such plans to be stored in the local controller database.	Full	
2.1.6.5	<i>Phase Sequence Flexibility</i> – Flexibility for left-turn phasing including lead, lag & lead/lag phasing be able to recognize third-car left-turn lane detection using two left-turn lane loops.	Full	
2.1.6.6	<i>Preemption of Operation</i> – Operators able to preempt any operation based on security level.	Full	
2.1.6.7	<i>Vehicle Preemption</i> – Ability to recognize locally initiated pre-emption and beginning and ending times of all pre-emption events to be recorded.	Full	
2.1.7	<u>Traffic Alarms</u> – The system shall have the ability to automatically sending alphanumeric and audio messages to maintenance personnel upon detection of critical problems and record voice messages to be attached to system event.	Full	KITS is capable of providing alarms that are configurable for individual users.
2.1.8	<u>Detector Data Processing</u> – The system shall have the ability to process detector data every one (1) minute for traffic responsive operation and reevaluate traffic responsive data every five (5) minutes. These include:		
2.1.8.1	<i>Detector Data Types</i> – The system shall have the ability to recognize, process, and display detector information from detectors located at the intersections and sensors, detectors such as mid-block count stations. Data to include volume, average speed, average gap time, average headway, occupancy, concentration, average length, confidence level and vehicle	Full	KITS supports every one minute for traffic responsive operations and reevaluates traffic responsive data every five minutes.

FUNCTIONAL REQUIREMENTS			
	classification.		
2.1.8.2	<i>Data Collection & Retrieval</i> – The system shall have the ability to automatically record detector data in the database and archive data onto external media. Raw data to be stored in memory for 5-min basis.	Full	KITS supports every one minute for traffic responsive operations and reevaluates traffic responsive data every five minutes.
2.1.8.3	<i>Detector Monitoring</i> – The system shall have the ability to obtain feedback from the field loop detectors and to continuously monitor video detectors for proper operation. Detectors shall be classified as acceptable, marginal, disabled or failed with failures reported to a system log and system workstation. The user-definable thresholds to detect failure shall include at a minimum, the following failure types: maximum presence, no activity, erratic output and bad communications.	Full	KITS supports every one minute for traffic responsive operations and reevaluates traffic responsive data every five minutes.
2.1.8.4	Traffic Monitoring	Full	
2.1.8.5	Controller Database Monitoring	Full	System monitoring features of KITS include: Real-time phase timing Real-time cabinet I/O System status summary Alarms and alerts Scheduler status Communications status Section status Graphical, color-coded displays of dual-ring, eight-phase controller plan data Variety of on-demand reports that provide event and performance data with flexible filters and selection options.
2.1.9	<u>Interface with SYNCHRO 7</u> – The system shall have the ability to import and export timing data to and from SYNCHRO with a single command and be able to directly download timing plans generated by SYNCHRO to the controllers.	Full	Kimley-Horn has developed software tools designed to facilitate the efficient and accurate conversion of timing plan parameters developed in Synchro to native controller formats. The Synchro interface component reads timing plan data from UTDF-formatted timing plan data files and converts the data to a format native to the controller. The conversion supports alternate sequences (lead/lag). Data can be imported by individual intersection or by groups (e.g. control sections) sharing a common cycle length. The converted data is stored in a database for subsequent processing.
2.2	System Integration		
2.2.1	<u>Time Synchronization</u> – The system shall have the ability to automatically synchronize with the coordinated universal time (UTC).	Full	The user can configure the frequency and exact time of clock synchronization from central to the controllers. We recommend that you utilize an authenticated internet time source for the clock for your entire domain/network. KITS runs on all versions of Windows.
2.2.2	<u>Central Architecture</u>	Full	

FUNCTIONAL REQUIREMENTS			
2.2.2.1	<i>Open Architecture</i> – The supplier shall place source code for restrictive software that is under configuration management and control in a software escrow account, accompanied by detailed source code documentation. The escrow account shall be updated at least annually.	Full	
2.2.2.2	<i>Scalability</i> – The central signal system software shall be capable of handling up to 250 intersections.	Full	
2.2.2.3	<i>Windows Based</i> – The central signal system software shall be based on a Windows operating system	Full	
2.2.3	<u>Traffic Signal Controller Communications</u> – The central signal system shall include a modular communications process that is compatible with TS-2 communications hardware and the communications protocol shall be based on the following national Transportation Communications for ITS Protocol (NTCIP) standards. The software shall be demonstrated to have previously worked with multiple controllers. The communication protocols are:	Full	KITS is NTCIP compatible and has been integrated and deployed with numerous controller types
2.2.3.1	<i>NTCIP 101</i> – Simple Transportation Management Framework.	Full	
2.2.3.2	<i>NTCIP 2001</i> – Class B Profile.	Full	
2.2.3.3	<i>NTCIP 1201</i> – Global Object Definitions.	Full	
2.2.3.4	<i>NTCIP 1202</i> – Object Definitions for Actuated Traffic Signal Controller Units.	Full	
2.2.3	<i>Vendors will identify version numbers and publication dates of NTCIP standards with which they are in compliance. For example, “NTCIP 1101:1996 v01.12 December 2001 – Includes Jointly Approved NTCIP 1101 Amendment 1 v08”.</i>	Full	
2.2.4	<u>Center-to-center Communications</u> – The central signal system software shall be able to utilize AZTech Center-to-Center Message sets for data exchange with the Regional Archived Data System (RADS). The AZTech Center-to-Center Message sets are compliant with national standards and can be accessed at www.aztech.org . This reference document is entitled: RADS Traffic Management System Center-to-Center Message Interface Design, Revision 2.0, June 30, 2008.	Full	KITS is intimately familiar with MCDOT’s C2C communication. KITS is capable of utilizing C2C message sets for data exchange with RADS and is currently doing so in Surprise, AZ. Kimley-Horn is currently supporting MCDOT with an update to the C2C System Diagram.
2.2.5	<u>ATMS Functions</u> –		
2.2.5.1	<i>CCTV</i> – The system shall have an integrated graphical interface to control and monitor the CCTV system including camera/display selection, configuration setup, selection and implementation of presets, camera control. The system shall also have the ability to report camera failures.	Full	KITS is compatible with Camera Cameleon and also has an integrated CCTV and DMS functionality.
2.2.5.1A	CCTV Compatible with Camera Cameleon	Full	
2.2.5.2	<i>Dynamic Message Signs</i> – The system shall monitor each dynamic message sign and send messages for each DMS from a database of messages using the NTCIP.		
2.2.5.2A	DMS Compatible with Camera Cameleon		

FUNCTIONAL REQUIREMENTS			
2.2.6	Security – The central signal system shall be provide and maintain a security system to prevent unauthorized access to the system, which shall be applicable to executable as well as text and database files. Operator privileges shall be definable on a functional level.	Full	KITS fully supports user-based role security. Each user is assigned to a role, such as traffic engineer, technician, or administrator. Roles are provided security levels in a number of different areas, including access to controllers, cameras, DMS controls, reports, and so on. Users can also be restricted to privileges that extend only within their zone (e.g., jurisdiction or agency). Authentication is integrated with existing Windows security.
2.3	User Interface		
2.3.1	General Ease of Use – The system software shall provide the operators with a graphical user environment and shall include standard Windows™ printer interfaces and drivers. The GUI shall incorporate pop-up multiple display objects, menu icons, dialog boxes, push button commands, visual and audio alarms, use of object characteristics and other elements of typical GUI's.	Full	KITS has an intuitive menu structure. In addition to menus, all commands can be executed directly within the GIS map or with the use of user-configurable hotkeys
2.3.2	Multi-User Capability – The system software shall support a multi-terminal, multi-user interface and allow accesses to multiple levels of the system software simultaneously.	Full	KITS supports multi-terminal and multi-use interface, allowing users to access multiple levels of the system software simultaneously.
2.3.3	Dynamic Displays		
2.3.3.1	System Map – The system map shall have the following capabilities:		
2.3.3.1.1	Zoom/Pan – The dynamic mapping shall incorporate full pan/zoom capabilities and offer the operator the ability to set up both dynamic and static informational layers.	Full	
2.3.3.1.2	GIS Compatibility – The system shall be GIS compatible	Full	
2.3.3.2	Intersection Status – The system shall allow operators to view real-time intersections status and detector data overlaid on the system map and the status of equipment on a filtered basis using filters such as Power up/down, detector events, time download, transitions, timing plan change, flashing operation – police, technical flash, special event, pre-emption operation – Opticom/Tomar preempt, fire station preempt, railroad preempt etc, cabinet door, special functions, controller event log, detector event log, MMU events log, keyboard entry detection etc. Intersection Status include:	Full	
2.3.3.2.1	Intersection Displays – The intersection display shall depict roadway curb lines, lane lines and static display that include street names, intersection number, phase numbering, special function definition and north arrow. The intersection displays shall also include dynamic indicators that indicate the status of ♦ controller operation mode ♦ master intersection ♦ controller status ♦ difference between programmed and actual offset ♦ communication status ♦ cabinet door status ♦ color status for vehicular and pedestrian phases ♦ actuation status for all local detectors ♦ preemption status ♦ special function status ♦ failure indication ♦ count-up of cycle clock ♦ count-down for remaining seconds for split phase in service.	Full	

2.3.3.2.2	Detector Displays – The system shall display the detector status for the given intersection along with traffic counts within user-defined count intervals. The detectors status shall include ✦ Operation/ Not-operational ✦ No activity ✦ Erratic output ✦ Maximum presence ✦ Failed Communication ✦ Real-time feedback preempted.	Full	
2.3.3.3	<i>Communication Statistics</i> – The system shall have the capability of developing display/report that shows the communication throughput including communication attempts, number of successes, failures, % of successful communication per intersection, per channel and per system.	Full	
2.3.3.4	<i>Time Space Diagrams</i> – The system shall be able to generate and display time-space diagrams from real-time and historical data. The system shall also enable the operators to fine tune the timing plans using click and drag methods and save the resultant changes in the databases.	Full	
2.3.3.5	<i>Failure Summary</i> – The system shall be able to generate and display time-space diagrams from real-time and historical data. The system shall also enable the operators to fine tune the timing plans using click and drag methods and save the resultant changes in the databases.	Full	
2.3.4	<u>History Reports</u> – The system shall generate reports for traffic events, detectors data, measures of effectiveness (MOEs) and communication statistics.	Full	KITS fully supports this requirement. Report categories: <ul style="list-style-type: none"> • Controller failure conditions and anomalies • User activity include parameter saves, manual commands, and timing editing • Performance measures Intersection MOE cycle by cycle data Second-by-second phase timing data Split monitor histograms Coordination performance Phase malfunctions and detector failure conditions <ul style="list-style-type: none"> • Railroad, EV and route preemption events and summaries • System, count, calling, speed trap, and freeway detector data summaries
2.3.5	<u>Audible Alarms</u> – The system shall generate audible alarms for specified user-defined failures, concurrent with graphical alerts and alphanumeric paging which can be disabled/enabled easily.	Full	KITS will provide all alarm functionality discussed. KITS has integrated external trigger functionality for video wall display, CCTV preset and DVR (digital video recorder) that incorporates the inputs listed below : <ul style="list-style-type: none"> • Power Up • Cabinet door open • Coordination failure • Conflict flash • Manual control • Place in Stand-By mode • Rail Preempt • Individual Emergency Vehicle Preemption • Bus Priority

			<ul style="list-style-type: none"> • Queue detector alarm • Pedestrian and vehicle detection failure • Communication off / on
2.3.6	<u>Global Parameter Changes</u> – The system shall be able to make global changes to control parameters on a system wide or intersection basis.	Full	KITS supports setting of system parameters as well as batch copy tools.
2.3.7	<u>Remote Access</u> – The system shall have the capability of providing access to the system for remote operators via LAN and VPN connections.	Full	
2.3.7A	<u>Internet Access</u> – The system shall have the capability of providing access to the system for remote operations via the internet.	Full	
2.4	Maintenance & Support		
2.4.1	<u>Expandability</u> – The system shall be capable of handling up to 250 intersections	Full	KITS is currently fully operational serving clients with as few as 20 intersections to more than 3,000 intersections. KITS expands to support your growth
2.4.2	<u>Industry Standards</u> – The system shall meet enhancements to the industry standards including approvals and amendments to the NTCIP standards	Full	
2.4.3	<u>Documentation</u> – The system shall be fully documented that consist of pertinent technical documentation and user documentation such as † system architecture and block diagrams, † hardware requirements † program source libraries and source code † database definitions and file structures † interface specifications † specifications compliance matrix † communication protocols † variable descriptions † security documentation † system backup and recovery † system operational procedures and error handling, operational options, hardcopies of operational and training manual † Online User Help	Full	
2.4.4	<u>Training</u> – Training including formal classrooms and hands-on workshops shall be provided to include † Use of operator interface † Use of graphical map generation and animation † database use and manipulation † system parameters and database entry † error messages and troubleshooting techniques † database custom report generation † overview of system structure and interfacing † priority scheme setup † configuration setup † file maintenance † system startup and shutdown † system backup and recovery procedures.	Full	Training is necessary for you to operate, maintain, and grow your system for the future. The training sessions will include both interactive lectures with hands-on experience, printed course materials, technical documentation, and users manuals. Lectures cover a system overview, general operating features, and the theory of operation for the system. Hands-on training provides the user with direct exposure to all aspects of the system and its operation and maintenance. As a minimum, 40 hours of on-site instruction for the system will be provided. Comprehensive training will be provided to familiarize the user with all aspects of the local controller, and central system.
2.4.5	<u>Cell phone texting</u> – The system shall issue audible and alphanumeric pages from a database of at least 100 messages and a reference location database for at least 2000 device locations.	Full	KITS fully supports email and text message alerting for any system event.
2.4.6	<u>System Backups</u> –		
2.4.6.1	<u>Recovery</u> – The system shall automatically recover from power failure and begin communications with all field equipment via central communications system.	Full	All files utilized by KITS will allow live backups. Your database is the critical in the system element that requires daily backup along with transaction logging. Our SQL experts will partner with the County to implement a backup solution that is consistent with County standards and protects your data. KITS

			includes integrated data archiving and retrieval features for system detector data, controller events, communication statistics, and other frequently logged data
2.4.6.2	<i>Archiving</i> – The system shall automatically compress and archive five-minute detector data every 24-hours and notify user when enough storage space is not available on media for archiving.	Full	
2.4.6.3	<u>Disaster Recovery</u> – A means and process shall be provided for a complete backup.	Full	
2.4.7	<i>Operational Support</i> : Help shall be available to provide operational support and assist in trouble shooting system problems.	Full	
2.4.8	<u>Testing</u> –		
2.4.8.1	<i>Factory Acceptance</i> – The system shall be tested to demonstrate conformance with all applicable requirements	Full	
2.4.8.2	<i>Operational Testing</i> – The operational test shall be deemed complete when the system is demonstrated to meet all requirements when all components are working together as an integrated system	Full	
2.4.8.3	<i>Final Acceptance Testing</i> – The final test to be completed after all items conform to the requirements as approved by the client.	Full	
2.4.9	<u>Warranty & Maintenance Agreement</u> –		
2.4.9.1	<i>Warranty</i> – Five year warranty that includes, bug fixes and upgrades either on-site or through remote access.	Full	
2.4.9.1A	<i>Extended Warranty</i> – An extended warranty that includes bug fixes and upgrades either on-site or through remote access.		
2.4.9.2	<i>Maintenance Agreement</i> – Agreement that includes operational support through access to a troubleshooting hotline, emergency maintenance, routine preventive maintenance, client VPN system access, and software updates.	Full	
2.5	System Operational Support		
2.5.1	TMC Operational Support – Full Time	Full	
2.5.2	TMC Operational Support – Part Time	Full	
2.6	System Enhancements	Full	

EXHIBIT D**OFFICE OF PROCUREMENT SERVICES CONTRACTOR TRAVEL AND PER DIEM POLICY**

- 1.0 All contract-related travel plans and arrangements shall be prior-approved by the County Contract Administrator.
- 2.0 Lodging, per diem and incidental expenses incurred in performance of Maricopa County/Special District (County) contracts shall be reimbursed based on current U.S. General Services Administration (GSA) domestic per diem rates for Phoenix, Arizona. Contractors must access the following internet site to determine rates (no exceptions): www.gsa.gov
 - 2.1 Additional incidental expenses (i.e., telephone, fax, internet and copying charges) shall not be reimbursed. They should be included in the contractor's hourly rate as an overhead charge.
 - 2.2 The County will not (under no circumstances) reimburse for Contractor guest lodging, per diem or incidentals.
- 3.0 Commercial air travel shall be reimbursed as follows:
 - 3.1 Coach airfare will be reimbursed by the County. Business class airfare may be allowed only when preapproved in writing by the County Contract Administrator as a result of the business need of the County when there is no lower fare available.
 - 3.2 The lowest direct flight airfare rate from the Contractors assigned duty post (pre-defined at the time of contract signing) will be reimbursed. Under no circumstances will the County reimburse for airfares related to transportation to or from an alternate site.
 - 3.3 The County will not (under no circumstances) reimburse for Contractor guest commercial air travel.
- 4.0 Rental vehicles may only be used if such use would result in an overall reduction in the total cost of the trip, not for the personal convenience of the traveler. Multiple vehicles for the same set of travelers for the same travel period will not be permitted without prior written approval by the County Contract Administrator.
 - 4.1 Purchase of comprehensive and collision liability insurance shall be at the expense of the contractor. The County will not reimburse contractor if the contractor chooses to purchase these coverage.
 - 4.2 Rental vehicles are restricted to sub-compact, compact or mid-size sedans unless a larger vehicle is necessary for cost efficiency due to the number of travelers. (NOTE: contractors shall obtain pre-approval in writing from the County Contract Administrator prior to rental of a larger vehicle.)
 - 4.3 County will reimburse for parking expenses if free, public parking is not available within a reasonable distance of the place of County business. All opportunities must be exhausted prior to securing parking that incurs costs for the County. Opportunities to be reviewed are the DASH; shuttles, etc. that can transport the contractor to and from County buildings with minimal costs.
 - 4.4 County will reimburse for the lowest rate, long-term uncovered (e.g. covered or enclosed parking will not be reimbursed) airport parking only if it is less expensive than shuttle service to and from the airport.
 - 4.5 The County will not (under no circumstances) reimburse the Contractor for guest vehicle rental(s) or other any transportation costs.
- 5.0 Contractor is responsible for all costs not directly related to the travel except those that have been pre-approved by the County Contract Administrator. These costs include (but not limited to) the following: in-room movies, valet service, valet parking, laundry service, costs associated with storing luggage at a hotel, fuel costs associated with non-County activities, tips that exceed the per diem allowance, health club fees,

and entertainment costs. Claims for unauthorized travel expenses will not be honored and are not reimbursable.

- 6.0 Travel and per diem expenses shall be capped at 15% of project price unless otherwise specified in individual contracts.

EXHIBIT E
POST AWARD SUMMARY



August 30, 2011

Mr. Paul Aguilar
Procurement Officer
Maricopa County **Office of Procurement Services** Department
320 West Lincoln Street
Phoenix, Arizona 85003-2494

➤ PHOENIX OFFICE
7878 N. 16th Street
Suite 300
Phoenix, AZ 85020
(602) 944-5500
(602) 944-7423 FAX

Re: Advanced Traffic Management System (RFP Number 11015)

Dear Mr. Aguilar:

This letter summarizes key points from the Post Award meetings held on August 18 and August 25, 2011. KITS (Kimley-Horn Integrated Transportation System) will be deployed to monitor and command existing Econolite ASC/2 and ASC/3 controllers maintained and operated by Maricopa County. KHA will integrate the following ASC/2 functionality into the MCDOT KITS deployment:

- Dynamic intersection displays – remote viewing of phase returns and detector activity
- Main map – visual status indications based return values from once per second polling
- Communication statistics – archival and retrieval of communication quality
- Time synchronization – controller clock synchronization based on server time
- Manual and scheduled command – command controller(s) to run a timing pattern

Standard NTCIP 1201 and 1202 communication protocols will be the used with IP communication.

Remote configuration of ASC/2 database parameters will be maintained through the existing i2 interface. An integrated editor will be provided for ASC/3. Our team will support and maintain the MCDOT i2 signal system until no more ASC/2 controllers are required to be on-line. We will work with County staff on-site to backup important system files and will maintain the capability to remotely configure the controller database(s). Field communication maintenance and troubleshooting services are not covered under this agreement.

Automated SQL database scripts will be developed by KHA staff to transfer most of the existing data. Our team will execute the scripts to copy existing MCDOT configuration data from the existing i2 database into corresponding KITS database tables. This will save MCDOT staff time and increase accuracy when configuring the new ATMS. Data fields and parameters to be transferred will be presented to the County for approval prior to the development of these automated scripts.

These services will be provided at no additional cost to the County. We recommend, following agreement on this letter and project approach, a detailed work plan be developed to detail the services associated with this project as well as the hardware and third party software to be included. Kimley-Horn values our relationship and appreciates your effort working toward common goals in this project. If you have any questions or would like additional detail, please do not hesitate to contact Tricia or Jason at (602) 944-5500 or via e-mail at tricia.boyer@kimley-horn.com or jason.castillo@kimley-horn.com.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Tricia J. Boyer, P.E.
Project Manager

Jason Castillo
Project Director

Pierre Pretorius
Regional Leader

EXHIBIT F

MCDOT RESPONSE TO POST AWARD SUMMARY

September 13, 2011

RE: ATMS Solicitation 1105-RFP
MCDOT response to Kimley-Horn's letter dated August 30, 2011

Maricopa County Department of Transportation (MCDOT) accepts the method described by Kimley Horn & Associates (KHA) in their letter dated August 30, 2011 for the remote editing of the field Econolite ASC/2 controller unit data bases from a work station in the Traffic Management Center with the following clarifications and stipulations.

MCDOT understands that for this method to function, the ASC/2 database parameters need to be maintained through the existing i2 central traffic signal control system (i2 System). Because of this, KHA will be fully responsible for maintaining the operability of the existing i2 System. This maintenance and support includes all responsibility for hardware and software.

MCDOT stipulates that the editing stated in the first paragraph above shall include the ability to perform complete uploads and downloads between the i2 central database and the field controller unit databases.

MCDOT stipulates that if any hardware or software requires replacement, KHA is responsible for furnishing and installing, at no cost to MCDOT, said items.

MCDOT stipulates that until all ASC/2 field controllers that need to be monitored and controlled by the Traffic Management Center (TMC) are replaced by Econolite ASC/3 or a future compatible version, the i2 System shall remain operational.

A list of ASC/2 controller locations that are to be monitored and controlled by the TMC will be provided by MCDOT to KHA along with the resident firmware version. The number of ASC/2 controller units to be TMC monitored and controlled has been previously provided by MCDOT.

MCDOT stipulates that KHA shall demonstrate within (8) weeks of the Notice to Proceed the basic ASC/2 editing functionality described in the first paragraph above and in KHA's referenced letter for a minimum of (4) ASC/2 field controller units.

MCDOT is in agreement with the approach and other key points explained in the letter. As mentioned, a detailed work plan shall be submitted for review and approval.

KIMLEY-HORN AND ASSOCIATES, INC., 7878 N. 16TH STREET SUITE 300, PHOENIX, AZ 85020

PRICING SHEET: NIGP CODE 55090

Vendor Number: 2011000960 0

Certificates of Insurance Required

Contract Period: To cover the period ending **August 31, 2014 2015 2018.**