MARC

Mid-America Regional Council

REQUEST FOR PROPOSAL

Furnish, Install, and Integrate Advanced Traffic Management System (ATMS) Software For the Operation Green Light (OGL) Regional Traffic Signal Program

Requested by
The Mid-America Regional Council

August 22, 2019

REQUEST FOR PROPOSAL (RFP)

Furnish, Install, and Integrate Advanced Traffic Management System (ATMS) Software For the OGL Regional Traffic Signal Program

A. PURPOSE AND INTRODUCTION

The Mid – America Regional Council (MARC) serves as the association of city and county governments and the metropolitan planning organization for the bi-state Kansas City region. As a voluntary association, MARC strives to foster better understanding and cooperation on issues that extend beyond the jurisdiction of a single city, county or state.

MARC is seeking proposals from qualified firms to furnish, install, and integrate Advanced Traffic Management System (ATMS) Software, hereafter referred as "ATMS Software" for the Regional Operation Green Light Program. The anticipated work performed by the firm under this proposed contract is described in the Scope of Work.

B. PRE-PROPOSAL MEETING

There will be an optional pre-proposal meeting for all interested Proposers on **Wednesday, August 28, 2019, at 10:30 a.m**. at the Mid–America Regional Council. Proposers are strongly encouraged to attend the pre-proposal meeting. Proposers may attend in-person, by conference call, or by webinar. Proposers will have the opportunity to ask questions.

Pre-proposal meeting location:

Mid–America Regional Council
600 Broadway, Suite 200
Kansas City, MO 64105

Pre-proposal Conference Call Information:

Conference call Number: (312) 757–3111
Conference Code: 753-585-237

C. QUESTIONS

Proposers may submit written questions, request clarifications or exceptions to this RFP by the questions deadline shown in the Estimated Schedule. All written inquiries shall be directed to Ray M. Webb, Manager of Traffic Operations at (816) 701-8358 or e-mail rwebb@marc.org. MARC will post responses to any inquiries received by the date and time shown in the Estimated Schedule.

MARC will respond to proposer questions via addendum, which will be posted on the MARC RFP website (https://www.marc.org/Requests-for-Proposals) and DemandStar (https://business.demandstar.com) no later than September 6, 2019.

D. ESTIMATED SCHEDULE

Milestone	Date	Time
Request for Proposal (RFP) Released	August 22, 2019	
Pre-proposal Meeting @ MARC (optional)	August 28, 2019	10:30 AM CST
Deadline to Submit Written Questions	August 30, 2019	3:00 PM CST
Response to Written Questions	September 6 , 2019	3:00 PM CST
Proposal Due	**September 17, 2019**	**4:00 PM CST**
Notification of Short-listed Proposers (tentative)	September 27, 2019	
Interviews of Short-listed Proposers (tentative)	October 9-10, 2019	
Pilot demo/bench test set-up for selected Proposers (tentative)	October 9-11, 2019 - November 14, 2019	
Proposer Selection (tentative)	November 21, 2019	
Recommendation of Award	**November 22, 2019**	**4:00 PM CST**
Contract negotiations and award	November 2019 – January 2020	

E. PROPOSAL SUBMITTAL REQUIREMENTS

Open Records Act and Proprietary Information

The Mid-America Regional Council (MARC) is a public organization and is subject to the Missouri Open Records Act (Chapter 610, RSMo). All records obtained or retained by MARC are considered public records and are open to the public or media upon request unless those records are specifically protected from disclosure by law or exempted under the Missouri Sunshine Law. All contents of a response to a Request for Bids, Qualifications, Proposals or information issued by MARC are considered public records and subject to public release following decisions by MARC regarding the bid request. If a proposer has information that it considers proprietary, a bidder shall identify documents or portions of documents it considers to contain descriptions of scientific and technological innovations in which it has a proprietary interest or other information that is protected from public disclosure by law, which is contained in a Proposal. After either a contract is executed or all submittals are rejected, if a request is made to inspect information submitted and if documents are identified as "Proprietary Information" as provided above under Missouri Sunshine Law, MARC will notify the proposer of the request for access, and it shall be the burden of the proposer to establish that those documents are exempt from disclosure under the law."

REQUEST FOR PROPOSAL (RFP)

Furnish, Install, and Integrate Advanced Traffic Management System (ATMS) Software For the OGL Regional Traffic Signal Program

To be eligible for consideration, one **(1)** electronic copy (Acrobat) and two **(2)** hard copies of the response (not to exceed 15-pages, single-sided No. 12-font, excluding cover letter (1 page), tabs and required attachments) to the RFP must be received by MARC no later than:

4:00 PM Central Time, September 17, 2019

No faxed or emailed proposals will be accepted. All attachments must be completed and returned with proposal. Proposals received after the designated time will not be considered. The proposal shall be titled as:

Proposal to
Furnish, Install, and Integrate Advanced Traffic Management System (ATMS) Software For the OGL Program

Proposals must be received at:

Mid–America Regional Council
600 Broadway, Suite 200
Kansas City, MO 64105
Attn: Ray M. Webb

by the date and time indicated above. No late proposals will be accepted.

The following items must be addressed in all proposals:

1. **SCOPE OF WORK:** MARC staff has developed a general outline of work tasks associated to the Scope of Work. The Contractor will be required to recommend and expand and/or revise this proposed Scope of Work**.** Respondents must provide a detailed scope of work including specific methodologies and/or approaches. Innovative approaches for completion of the Scope of Work are encouraged.

    A. The name and address of the contracting firm, together with the name, telephone and fax number, and e-mail address of the primary contact person for purposes of this proposal
    B. A listing of all proposed subcontractors, if any

2. **CONTRACT PRICE**: Proposals should indicate the cost of services to be provided. The project Cost Proposal Forms are summarized in **Attachment J and Attachment K**. **Attachment J** includes bid items that shall be evaluated for the project scoring. **Attachment K** includes optional bid items that MARC will consider after the RFP scoring is complete. Cost proposals for both **Attachment J** and **Attachment K** must be in a sealed envelope/container and marked "Furnish, Install, and Integrate Advanced Traffic Management System (ATMS) For the OGL Program". Container(s) utilized for original documents must be clearly marked ORIGINAL DOCUMENTS.

3. **QUALIFICATIONS:** Proposals should indicate general and specific qualification of the proposer appropriate to this project. A brief narrative regarding the firm's capabilities to carry out this project, including special assets, areas of expertise, analytical tools, and data sources, etc. to which the firm may have access. Proposals shall also include:
   A. A listing and written samples of similar projects undertaken within the last five (5) year (multi-agency projects), by proposing firm and/or its subcontractors, showing contract amounts, description of work performed, client contact persons, phone numbers, and e-mail addresses;
   B. Resumes of key professionals staff who will be assigned to this project;
   C. Description of the workload of individuals assigned to this project during the period of this study. Any reassignment of designated key staff will not occur without mutual consultation and consent by MARC.
   D. Firm's and subcontractors', if any, annual current Statement of Qualification. **(if using an engineering firm)**
   E. References

4. **DISADVANTAGED BUSINESS ENTERPRISE (DBE) REQUIREMENTS AND PARTICIPATION**: This project is funded in part by USDOT and is required to follow rule 49 CFR part 26, Disadvantage Business Enterprise Program. This project has a DBE goal of 0%.

   If applicable, DBE proposers should submit, with their proposals, Intent to Perform As a Disadvantage Business Enterprise (DBE), **Attachment E**, for each proposed DBE contractor, subcontractor, or joint venture. Certification of DBEs will be made in accordance with MARC's DBE Program.

5. **AFFIRMATIVE ACTION CHECKLIST:** If applicable, proposers must complete and enclose with their proposal company's Affirmative Action Plan (see **Attachment B** Affirmative Action Checklist).

6. **CERTIFICATION REGARDING DEBARMENT:** Each proposer is required to certify by signing the "Certification Regarding Debarment, Suspension, and Other Ineligibility and Voluntary Exclusion" (**Attachment C**). "Certification Regarding Debarment, Suspension, and Other Ineligibility and Voluntary Exclusion" is a certification that the proposer is not on the U.S. Comptroller General's Consolidated Lists of Persons or Firms Currently Debarred for Violations of Various Contracts Incorporating Labor Standards Provisions.

7. **CERTIFICATION REGARDING LOBBYING**: See **Attachment D**. Required for primary only

8. **CERTIFICATION REGARDING INSURANCE**: See **Attachment F**.

F. INSTRUCTIONS FOR SUBMITTING PROPOSALS

I. Proposal Format

All proposals shall respond clearly to the questions and information requested in the RFP, shall be complete in every respect, and must answer concisely and clearly all proposed requirements stipulated by the RFP. The proposal should follow the format of the RFP in presentation of the information requested by the RFP, listing each response under the appropriate number. If the response to a question or information requested is "reject," an explanation must accompany this response. A proposal may be disqualified for providing a "reject" response to any provision if MARC deems that the response is not in the best interests of MARC. The proposed pricing schedule should follow the above responses and be in the same format as provided in the RFP. A grand total of all service costs must be included.

Proposers interested in responding to this request are invited to submit a proposal, which shall include the following minimum information:

1. Title Page (not counted toward the 15-page limit): Include a title page indicating the RFP subject, official name of the firm, mailing address, telephone and fax numbers, date, name of primary contact person, and contact person's phone number and email address.

2. Transmittal Letter (Limit 1-page. Not counted toward the 15-page limit): The letter must be signed by an official authorized to solicit business and enter into contracts for the firm. Provide contact name with phone number and email if different from the person signing the letter. The letter shall indicate whether there are any conflicts of interest, limiting the firm's ability to provide the requested services. Acknowledge the receipt of this RFP and any addendum to the RFP. Indicate that the proposal is a firm offer to enter into a contract for a period of 120 days from the proposal due date.

3. Table of Contents (not counted toward the 15-page limit)

4. Project Understanding and Approach (Limit 3-pages): This section should provide an overall understanding of the project and the general approach to be taken by the Proposer. This section may include a discussion of known constraints, challenges, and the Proposers' approach, solutions, and assumptions.

5. Work Plan (Limit 5-pages): This section should present a work plan for the tasks described in **Section F**, Scope of Services. Discuss how the Proposer will perform the tasks and identify deliverables. The response should include enough detail to demonstrate knowledge of goals and requirements of this proposal. The Proposer should describe how to deploy a new ATMS Software while maintaining the

continuity of operations. The proposal may include additional tasks or subtasks that the Proposer believes necessary to accomplish the project.

6. Project Schedule (Limit 2-pages): Include a proposed schedule for completing the work. Include/highlight major deliverables and milestones.

7. Requirements: This RFP and the related attachments contain functional requirements for the ATMS. The Proposer is required to respond to every requirement in **Attachment I**, Requirements and Verification Plan Matrix for the ATMS Software regardless of the requirement category designation. For each requirement, the Proposer shall indicate if it is currently met, will be met, or will not be met. Provide a written description for each response. The Requirements contain the following requirements categories: Mandatory and Secondary.

   - Mandatory – This requirement shall be met by the Proposer. Mandatory requirements and the Proposer's approach to satisfying Mandatory requirements are considered in the evaluation process. If a Proposer cannot meet a mandatory requirement, a written response shall be provided.
   - Secondary – This requirement describes features and/or functionality that MARC prefers, but is not mandatory. The Proposer's approach to satisfying Secondary requirements is considered in the evaluation process.

8. Proposed Personnel (Limit 2-page): Provide a project organization chart that shows roles and responsibilities of key personnel and reporting structure. Identify any sub-Proposers and their role and responsibilities. Key personnel resumes that show their relevant experience and workplace location should be provided in an appendix.

9. Firm Qualifications (Limit 3-pages): Provide a statement of qualifications and experience that uniquely qualify the Proposer to provide the services required for the completion of this project. Describe the firms on the team (including any sub-Proposers) including location of offices and headquarters, number of employees, and number of years in business. Describe where the firms on the team have worked together before, if applicable. Describe how warranty, licensing and annual support contracts work for the ATMS components. Provide a list of similar work (four projects minimum) performed within the last 3 years to include dollar amount, project description, project team, and owner/client/reference contacts including phone numbers and addresses. Projects of similar work are considered projects of 30 or more controllers of different types integrated with the ATMS software.

10. Cost Proposal: Provide a completed cost proposal as contained in **Attachment J and Attachment K**.

11. Verification that all Proposers (prime and sub-Proposers) have a Drug-Free Workplace Policy. Proposer certifies that they maintain a drug-free workplace environment to ensure worker safety and workplace integrity. Proposer agrees to provide a copy of its drug-free workplace policy at any time upon request by MARC.

12. Nondiscrimination: The contractor, with regard to the work performed under this proposal, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the proposal covers any activity, project or program set forth in Appendix B of 49 CFR Part 21.

13. Non-Collusion Clause: The proposal shall be arrived at by the proposer independently and be submitted without collusion with, and without any direct or indirect agreement, understanding or planned common course of action with, any person; firm; corporation; vendor/proposer; contractor of materials, supplies, equipment or services described in this RFP. Proposer shall not collude with, or attempt to collude with, any state officials, employees or agents; or evaluators or any person involved in this RFP. The proposer shall not take any action in the restraint of free competition, designed to limit independent bidding or to create an unfair advantage. Should it be determined that collusion occurred, MARC reserves the right to reject a proposal or terminate the contract and impose further administrative sanctions.

II. Discrepancies in Proposals

If discrepancies between sections or other errors are found in a proposal, MARC may reject the proposal, or at its sole discretion, retain the proposal and ignore any obvious inadvertent non-substantive errors.

III. Proposer's Conditions

Any conditions or expectations on the part of the proposer for performance by MARC must be set forth in the proposal.

G. DEFINITIONS OF TERMS

Advanced Traffic Management System (ATMS) Software – This is the central software used to manage, monitor, archive, and report in real-time the conditions of the traffic signals and other devices for the OGL program

Bench Test – The test to be performed by MARC staff or designated personnel on the short-listed proposers in which the proposers will set up their respective ATMS software for MARC and its representatives to test features and functions consistent with the project requirements. The bench test location will be as shown in the schedule and located at KCMO TOC at 5310 Municipal Avenue, Kansas City, Missouri, 64120.

Proposer – The prime contractor and all associated subcontractors that will provide all contract deliverables.

Collusion – An agreement or cooperation between two or more persons or entities to accomplish a fraudulent, deceitful, or unlawful purpose.

Adaptive Signal Control Technology (ASCT) – This is typically a module within an ATMS or within the traffic signal controller, which takes real-time inputs from the detection system (typically advanced and stop-bar detection). The ASCT module will use of algorithms and user constraints, to calculate cycle, splits and offsets for each intersection included in an ASCT group or corridor. An ASCT deployment requires enhanced controllers, detection and communications between signals.

H. BACKGROUND

MARC leads the Regional Traffic Signal Operations & Management program, named "Operation Green Light" (OGL) that improves traffic flow and reduces vehicle emissions for the Kansas City metro area. The program is overseen by a steering committee composed of representatives from each participating agency, including local municipalities along with Kansas and Missouri Departments of Transportation and their assigned Federal Highway Administration (FHWA) representatives. The program is operated by dedicated MARC staff. OGL works with federal, state and local agencies to develop and implement a system that will coordinate traffic signal timing plans and communication between traffic signal equipment across jurisdictional boundaries.

OGL operates over 700 traffic signals and includes 27 partner agencies in the Greater Kansas City area. In addition to 27 partner agencies, oversight is provided by the Missouri and Kansas Federal Highway Administration (FHWA) field offices. The existing traffic management systems utilized by the OGL comprises of mix of controllers and firmware with a centralized traffic control software, TransSuite as shown in the following table.

Controller	Firmware
Eagle M50 or M60	4.01f, 4.57 and newer
Econolite ASC/2	1.14 NTCIP
Econolite ASC/3	02.62.00 and newer
Econolite Cobalt	32.64.00 and newer
Intelight Max Time	2.0.11
Wapiti	W4IKS 58
D4	1.5L-38
McCain Omni eX	1.10.2.6705
2070	Econolite ASC/3 and Cobalt/1C module various versions

In addition to over 700 intersections that have been identified to be part of the OGL regional program, local agencies have added several hundred additional intersections to the system, making around 1500 intersections online. A communication network connects the signal system components managing these intersections to this system. The communication system includes licensed 18 GHz microwave, unlicensed 5.3/5.4 and 5.8 GHz with a few 900 MHz wireless radios, cellular modem, and fiber-optic communications. **Attachment H** provides the list of the OGL intersections with controller and firmware information.

The OGL's current ATMS software (TransSuite®) was deployed in 2005, which provides monitoring and management capability to several combinations of traffic signal controller hardware, and firmware. The system includes four separate central software implementations housed in different locations. Kansas City, MO (KCMO), Olathe and Overland Park operate the signal system on their own servers for their respective cities. The OGL server that operates all other agencies' traffic signals is located at the MoDOT Kansas City District's offices. The four implementations are connected through Center-to-Center functionality. Since the time of implementation, the system has gone through numerous upgrades and enhancements. **Attachment G** shows a simple network architecture diagram of the existing servers for OGL.

I. SCOPE OF SERVICES

I. General

The proposer shall furnish, install, integrate, and test all necessary ATMS software and hardware for this project.

The ATMS software for this project shall include implementing real-time, centralized control and monitoring of field devices such as traffic signal controllers and other ITS devices as outlined in the System Requirements found in **Attachment I.** The Proposer shall be responsible for all items necessary to develop, test and implement the ATMS software.

The Proposer shall be fully responsible for the maintenance and care of all hardware, equipment, and software furnished by the Proposer until the time of final acceptance of the ATMS software by MARC.

II. Project Management

The Proposer shall designate a dedicated Project Manager (PM) that will be committed to this project through the duration of the contract. The System Proposer Project Manager's responsibilities shall include but not be limited to:

- Coordinate the work of this contract with other concurrent work as necessary.
- Maintain communication between key contract personnel and MARC staff.
- Maintain an adequate staff of qualified support personnel to perform the work necessary to complete the project.
- Establish and maintain contract administration procedures, which may or may not include supplemental agreements, time-extensions, subcontracts, and tracking and maintaining the budget.
- Inform MARC's Project Manager of any changes to the key personnel assigned to the project. The work shall be performed and directed by the key personnel identified in the proposal. Any changes in the designated key personnel or the proposed PM in charge of the work, as indicated in the proposal, shall be subject to review and approval by MARC. The proposed staff assigned to perform any task shall be qualified individuals with closely related experience in that field.
- Keep MARC's Project Manager informed of all the pertinent decisions related to the project.

1. Project Schedule and Duration

The Proposer shall develop and maintain a project schedule for the duration of the project. A contract resulting from this RFP will be issued from the date of award through August of 2020 and 2-year warranty period. MARC reserves the right to

extend the period of this contract beyond the termination date when mutually agreeable to the Proposer and MARC.

Within one week after the notice to proceed (NTP), the Proposer shall submit a detailed schedule indicating all milestone dates and major deliverables. MARC's Project Manager will review and approve the Project Schedule for content and format. Upon approval of the Project Schedule, the Proposer shall update the Project Schedule at least on a monthly basis to reflect actual progress.

2. Bi-Weekly Progress Meetings

The Proposer PM shall arrange and attend regular bi-weekly progress meetings in person or by phone as needed to report the progress and provide data to the MARC's Project Manager. The data shall generally include the following information:

- Detailed project schedule and critical path work from initial plans as work progresses.
- Progress against schedule for each identified work item.
- Forecast the completion dates from current progress.
- Rescheduled work in any area, which is out of the required sequence.
- Forecast any future possible issues in any area.
- Receive and answer questions from project stakeholders concerning the status of any work element in terms of schedule, staff, and cost.

III. Furnish ATMS Software

The Proposer shall furnish the ATMS software per the system requirements contained in **Attachment I**. This will include any additional 3rd party software, operating system, applications, and/or utilities necessary and cost associated for the operation of the traffic signal control software. The Proposer shall deploy the ATMS software at the following existing servers as specified in the system requirements in **Attachment I:**

- OGL Traffic Operations Center (TOC) at 600 NE Colbern Road, Lee's Summit, MO 64086
- City of Olathe TOC on Rogers Road at I-35
- City of Overland Park TOC at Command and Control Center at 12401 Hemlock, Overland Park, KS 66213
- KCMO TOC at 5310 Municipal Avenue, Kansas City, Missouri, 64120

For all Proposer supplied hardware, the Proposer shall provide the MARC's Project Manager with hardware specifications for review and approval prior to delivery. Specifications will be compared to the system requirements listed in **Attachment I**.

IV. Installation and Integration

The Proposer shall install, configure, and integrate the ATMS software on existing or agency provided servers (as listed above). The Proposer shall also install and configure the ATMS client software onto the existing workstations, laptops, and tablets of MARC's staff and applicable partner agencies' staff. It is anticipated that there will be up to **40** client installations of this type with **20** clients running simultaneously initially.

V. System Testing and Acceptance

The Proposer shall develop Verification and Acceptance Test Procedures for MARC review and approval based on the Requirements and the Verification Plan in **Attachment I**. The Proposer shall provide a proposed acceptance test procedure to MARC for approval at least 30 days before the acceptance test is to begin. MARC shall review the Proposer's initial Acceptance Test Procedure and provide review comments within 14 days. The Acceptance Test Procedures shall not be final until accepted by MARC.

The Acceptance Test Procedures will serve as a guide to operationally test system hardware, software, and integration. The procedures must include a detailed description of the tests to be conducted and the purpose of each test. Each test should be mapped to at least one of the system requirements in the **Attachment I**. At a minimum, the Acceptance Test Procedure shall define testing stages, methods, procedures, tools and data to verify that the system is working as designed under the planned and maximum conditions.

Final acceptance testing shall include tests for the ATMS software, and any additional software implemented, and communications between field devices and the ATMS software. The test period for final acceptance will be a period of 30 days of error-free operation. MARC may choose to pause the testing period on days spent correcting minor errors. MARC may choose to restart the 30-day acceptance test if errors are found to be significant. Final acceptance tests will be conducted to:

- Verify requirements are satisfied;
- Verify user interface is implemented correctly;
- Verify error-free linkage of units and external software interfaces;
- Verify storage and throughput capacity requirements;
- Verify real-time performance requirements are met;
- Verify security measures;
- Verify diagnostic and logging features;
- Verify ability to recover from errors, improper input and hardware failures; and
- Ensure hardware performs correctly.

All tests will be conducted by the Proposer in the presence of the MARC's Project Manager, staff, and/or other assigned partner agency staff. The Proposer shall document and record all test results. A variance report shall be prepared by the Proposer each time a test results is not meeting a functional requirement. The Proposer shall document corrective actions to correct the variance.

MARC's Project Manager will provide final acceptance of the ATMS software, hardware, integration, and other services following the Proposer's completion of work in accordance with the contract and after successful completion of the 30-day acceptance test. The acceptance date will mark the beginning of the Proposer's warranty period.

VI. Training and Documentation

The Proposer shall develop training courses and conduct training classes for training MARC staff and other partner agency staff in the operation, administration, and maintenance of the ATMS software. The Proposer shall submit a detailed and comprehensive training plan for each course to MARC for review and approval 30 days prior to the scheduled start of any training. The training plan(s) shall include a lesson plan for each course detailing the literature, standard operating procedures, manuals, and test materials that will be used.

The training plan(s) shall describe the Proposer management role and responsibilities for each course. The training plan(s) shall include a training schedule listing each period of instruction and the time required for each period. The number of training persons per course will vary depending on the course subject.

The training will be delivered three times over the course of 2-year warranty period. The preliminary schedule for training is after installation but before acceptance testing, 4-6 months after acceptance testing and at the end of the 2-year warranty period.

The Proposer shall be responsible for ensuring that the operating and technical support staff for MARC and partner agencies are adequately trained to provide all operational, maintenance and support functions of the ATMS software. Formalized training shall be provided as defined below to acquaint large numbers of staff to the functionality and support of the particular application. Unless otherwise stated, class size shall be assumed to be 20 people.

The training sessions shall consist of both formal classroom presentation and hands-on workshops performing various functions of ATMS software respectively. All training shall be conducted during normal MARC business hours.

Training Location and Schedule

All training courses shall be primarily conducted at a space provided or designated by MARC. Based on the schedule and anticipated attendance, training sites may be hosted by other OGL stakeholder's in the region.

The Proposer shall develop a training schedule acceptable to MARC with all training completed before the final implementation.

Training Equipment Requirements

All training shall be performed using actual equipment to be installed. This shall include workstations, field devices, test equipment, etc. Standard classroom-type materials such as whiteboards, slide and overhead projectors, screens, and so forth will be provided by MARC as requested by the Proposer. These standard materials shall be restricted to normal supplies typically owned by MARC.

The Proposer shall be responsible for all labor costs, transportation, per diem, course material, and reproduction costs, and all miscellaneous material and supply costs not identified but required, to conduct all classroom training.

The Proposer shall develop training manuals for all phases of the training effort. The Proposer shall deliver and update twenty-three (23) copies of the training manual(s) to MARC. All training aids including slides, charts, graphs, support documentation, and other media shall become the property of MARC upon completion of the training programs.

MARC reserves the right to film all training courses provided and organized by the Proposer.

Documentation

The Proposer shall provide a complete systems documentation package. The documentation package in general shall include all drawings (electrical, mechanical, assembly, flow and block diagrams, interconnection diagrams, power distribution, wiring, etc.), schematics, software and hardware submittals, detailed functional and interface descriptions, user/operator manuals, software programming manuals and procedures and all other required documentation related to the completed ATMS software installation. The documentation package shall address all hardware and software provided under this contract, and shall be subject to review and approval by MARC before final system acceptance.

The Proposer shall submit all documentation for review and approval by MARC. Following approval, twenty-three (23) copies of the documentation shall be provided to MARC.

VII. System License and Warranty

Licensing Terms

The Proposer shall provide all necessary licenses, used for the project including database, operating systems, third-party software applications, including installations of such software in servers, workstations, laptops, and other computing devices.

All software license terms shall be perpetual with no recurring fees. The terms and conditions of software license will be incorporated into the final contract. Prior to finalizing the contract, MARC reserves the right to negotiate terms of the software license.

Warranty Terms

The Proposer shall provide all necessary on- and off-site support as appropriate during the course of implementation of the ATMS software. Following completion and final acceptance of the ATMS software, the Proposer shall support the installed ATMS software for the duration as proposed by the Proposer, or as negotiated, but for a period of no less than two years following final system acceptance. Additional annual support contracts for an additional 3 years (1-year annual renewals) for a total of 5 years will be optional items. Prior to finalizing the contract, MARC reserves the right to negotiate terms of the warranty and annual support.

During the warranty period, the Proposer shall provide the following services at no additional cost:

- Technical Support – The Proposer shall provide technical support to assist MARC's staff and partner agencies' staff with routine questions about the use, configuration, management, and troubleshooting of the system. The Proposer shall propose the technical support terms and include methods of communication, hours of availability, and response times.
- Software Upgrades – The Proposer shall provide all released upgrades of the ATMS software to MARC. Software upgrades include those to address errors, defects, security flaws, etc. and those that provide enhancements, new features, new functions, etc. All user configuration and preferences should be retained when applying software upgrades. If requested by MARC, the Proposer shall provide technical support to install software upgrades.

Additional warranty and technical support, beyond the negotiated terms of the contract, will be summarized in the cost proposal form as additional technical support. The additional technical support shall be annual support contracts for up to 3 years (1-year annual renewals) for a total of 5 years.

J. PRICING

I. Cost Proposal

The project Cost Proposal Forms are summarized in **Attachment J and Attachment K. Attachment J** are bid items that shall be evaluated for the project scoring. **Attachment K** are optional bid items that MARC will consider after the RFP scoring is complete. The Proposer shall provide a response for both **Attachment J** and **Attachment K** in separate sealed and labeled envelopes.

COST PROPOSAL ITEM DESCRIPTIONS INCLUDE:

Furnish and Install ATMS Software on Servers - This item will include all labor, management, installation support, configuration, integration, testing, training, shipping, necessary auxiliary hardware, cables, documentation, Operations/Maintenance (O/M) manuals, warranty, licensing and support for an ATMS Software that meets the project requirements and specifications. This item will be paid by the Lump Sum. No other compensation shall be provided for this item.

Furnish, install, and configure ATMS Client on Existing MARC Staff and applicable partner agencies' staff Computer - This item will include all labor, management, installation, support, configuration, integration, shipping, testing, training and documentation for the Proposer to install necessary software on MARC-owned and applicable partner agencies-owned computers/devices. This item will be paid by the Each. No other compensation shall be provided for this item.

ATMS Testing, Training and Technical support are subsidiary to the following items:

Furnish and Install ATMS Software
Furnish and Install ATMS Client Workstations
Install ATMS Client on Existing MARC Staff and applicable partner agencies' staff Computers and/or Tablets

The Proposer shall provide all labor, materials, resources, equipment, management, shipping, hardware for intermediate tests and acceptance testing, test documentation and variance resolution to satisfy the requirements and verification plan. No other compensation shall be provided for this item.

Fully Integrate Existing OGL Controller to ATMS - This item will include all labor, management, support, configuration, integration and documentation for the Proposer to transfer existing OGL data from the existing legacy signal system to the new ATMS. There are OGL signals present on all four of the central software implementations. This item will also include training MARC staff and applicable partner agencies' staff to be able to transfer intersections from the legacy system to the new system. This item will be paid by the Intersection. No other compensation shall be provided for this item.

ATMS Training – This item will include all labor, management, support, materials, shipping, and documentation for the Proposer to create hardcopy, quick reference, and web-based training materials. This includes three (3) on-site training sessions for up to 10 MARC staff and partner agencies' staff at each session. The training will be delivered three times over the course of 2-year warranty period (After installation but before acceptance testing, 4-6 months after acceptance testing and at the end of the 2-year warranty period). Optional Cost Proposal items will include potential additional training beyond what is provided through the deployment and acceptance period.

ATMS Technical Support – This item will include all necessary support for the operations testing and configuration of the ATMS. No other compensation shall be provided for this item. Technical Support for Year 1 and 2 are considered as part of the standard 2-year warranty period. Optional Cost Proposal items will include potential additional technical support beyond what is provided through the deployment and acceptance period.

OPTIONAL ITEMS

Fully Integrate Non-OGL Signal to New ATMS - This item will include all labor, management, support, configuration, integration and documentation for the Proposer to transfer existing Non-OGL data from the existing legacy signal systems to the new ATMS systems. This work may be done on any or all of the central system implementations. This item will also include training MARC staff or partner agencies' staff to be able to transfer intersections from the legacy systems to the new systems. This item will be paid by the Intersection. No other compensation shall be provided for this item.

Install SPM Module to the New ATMS - This item will include all labor, management, support, configuration, integration and documentation for the Proposer to install an SPM Module to the new ATMS system. This work may be done on any or all of the central system implementations. This item will also include training MARC staff or partner agencies' staff. This item will be paid by the Intersection. No other compensation shall be provided for this item.

Convert Unsupported Existing Controller to the New ATMS - This item will include all labor, management, support, configuration, MIB integration and documentation for the Proposer to make the controller and firmware identified in 1.23g -1.23j of the requirements operational within the new ATMS. There are OGL and Non-OGL signals present on all four of the central software implementations. This item will also include training MARC staff and applicable partner agencies' staff to be able to transfer intersections from the legacy system to the new system. This item will be paid by the Intersection. No other compensation shall be provided for this item.

Additional ATMS Training – This item will include all labor, management, support, materials, shipping, and documentation for the Proposer to create additional hardcopy, quick reference, and web-based training materials. Training is expected to be a 6-hour

refresher course with presentation of new functions for up to 10 people. It will be delivered at the locations to be determined by MARC and the OGL stakeholders. This training is to be provided annually during calendar years 2022-2024.

Additional ATMS Technical Support – This pricing is established for annual technical support for after the initial 2-year period, which begins after acceptance. This is expected to be annual contracts that can be renewed up to three (3) times. This is expected to include all needed software patches, fixes, and version upgrades necessary to keep the system operational. The proposer shall submit their tech support procedures and policies. This item will include all labor, management, support, materials, shipping, and documentation needed to complete the work. No other compensation shall be provided for this item. The Optional Item will be an annual renewal and paid for annually.

K. EVALUATION OF PROPOSALS/SELECTION PROCESS

I. Evaluation Process

The selection process will involve a two-stage evaluating period. In the first stage, the Evaluation and Selection Committee will score each written proposal based on the selection criteria outlined in section "Selection Criteria". This will constitute the "Initial Score" for each submitted proposal.

Following the first evaluation stage, up to four (4) of the highest-scoring proposers will be asked to interview and participate in a bench test deployment. The interview and bench test set-up are further explained in section "Interview and Bench Test Set-Up". Following the second evaluation stage, the "Initial Score" may be adjusted higher or lower based on the additional information obtained during the interview and bench test.

Selection Criteria

The Evaluation and Selection Committee will use the following criteria to evaluate proposals. Points will be awarded according to how well each proposal meets these criteria. The maximum number of points awarded is 100.

Ability to Meet ATMS Software Mandatory requirements.....Maximum 40 points
Ability to Meet ATMS Software Optional requirements.....Maximum 15 points

Proposers shall complete the System Requirement matrix in **Attachment I** and provide a written description of how each requirement will be met. Each item will be scored as Met (3 points), Partially Met (1 point) or Not Met (0 points). The ATMS software will be evaluated based on the twenty-seven (27) sub-categories of the System Requirements. The total score for each required section will be scaled, to two decimals, to the maximum

points available (e.g., Ability to Meet ATMS Software Mandatory Requirements will be scaled to a maximum of 40 points, etc.).

Company Profile and Proposed Project Team…….....Maximum 10 Points

A maximum of 10 points will be awarded for Company Profile and Proposed Project Team. Evaluation components to be considered include but are not limited to:

- Size and financial stability of company
- Qualifications of proposed staff
- Project Manager Experience
- Technical support staff Experience

Company Previous Experience and Client References.……..... Maximum 10 Points

A maximum of 10 points will be awarded for Company Previous Experience with ATMS software deployment and Client References. Evaluation components to be considered include but are not limited to:

- 4 deployments with the ATMS software and the existing controller local software versions, custom development, if applicable, and Client Contacts in the past 3 years (30 controllers with the controller local software integrated with the ATMS software)
- History of successful deployment
- Reference from existing users

Proposed Project Approach.....Maximum 15 Points

A maximum of 15 points will be awarded for the proposer's project approach. Evaluation components to be considered include:

- Project Approach
- Approach to Schedule
- Technical maintenance and support
- Consideration of phased deployment
- Ability to maintain/operate the existing Controllers with the new ATMS software. The proposer shall describe in detail the level of full MIB integration with the controllers listed in requirement **1.23a – 1.23i** of **Attachment I**.

Cost Proposal..... Maximum 10 Points

The maximum number of points will be awarded to the proposal with the lowest cost. Points assigned to other proposals will be on a proportional basis according to the following formula:

Proposal A: $70,000 = 10 points Proposal B: $140,000 = 5 points
Low-Cost Proposal A/Proposal B Cost X 10 = points awarded
$70,000/$140,000 X 10 = 5 points

Interview and Bench Test Set-Up

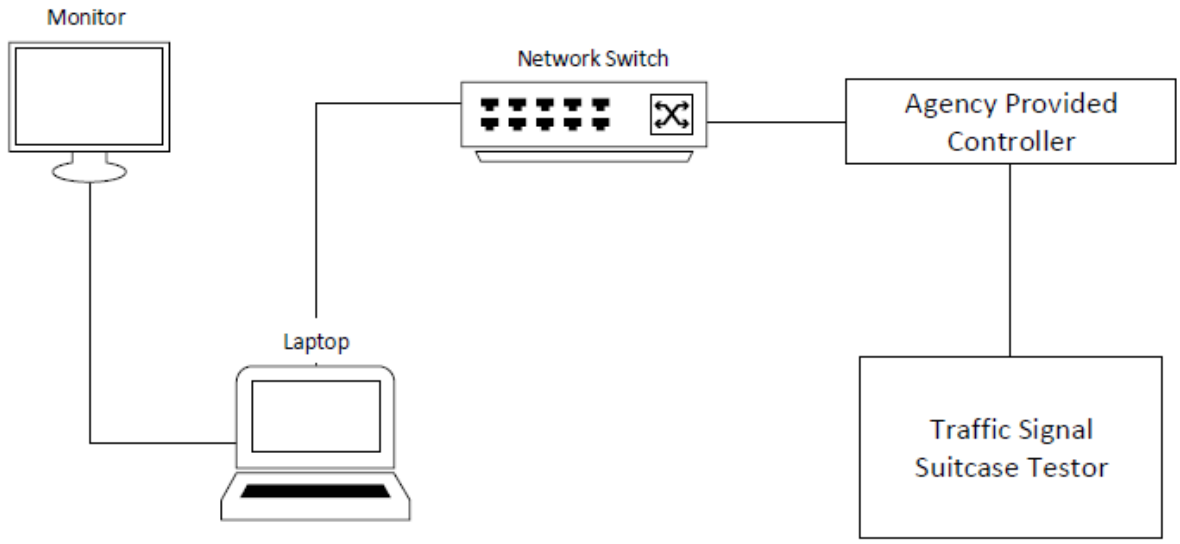
Following the review of the written proposals, up to four (4) Proposers with the highest scores will be invited to an on-site interview. The selection panel will conduct oral interviews for the short-listed Proposer(s). Based upon the interview presentation, the score of each evaluation criteria may be adjusted for the interviewed Proposer. The score may be adjusted higher or lower based on additional information obtained during the interview process. The interview process will include all statements by the Proposer's staff during the interview and the bench test set-up.

As determined by the interview schedule, Proposers will set-up their ATMS software for bench test. KCMO's TOC located at 5310 Municipal Ave., Kansas City, Missouri 64120 will be available to the shortlisted Proposers from 8:00 am CST to 3:30 pm CST the day before the interview. The facility will be available from 8:00 am CST until 3:30 pm CST the day of the interview.

The Bench Test deployment will allow the Evaluation and Selection Committee to perform preliminary verification of the functionality and capability of the proposed ATMS software and its interaction with the existing traffic signal system controller local software that are currently operated by MARC partner agencies.

As part of the bench test, the Proposer shall set up their ATMS software to a network switch. The ATMS software will communicate with existing traffic signal controllers and controller local software through a MARC provided multi-port switch, as illustrated in Figure x. The controllers will be provided by OGL stakeholders. The ATMS software provided for the bench test must meet the system requirements listed in **Attachment I**. The Proposer shall provide a suitcase tester for use during the bench test and a detailed summary of the version numbers of all software they are providing and using for the bench test.

Typical Bench Test Configuration



Once this bench test is established, MARC staff and partner agencies' staff will have 20 working days (4 weeks) for a hands-on assessment of each Proposer's ATMS software. Proposers shall provide a contact to serve as technical support during the hands-on assessment to help troubleshoot any technical issues that may arise.

All equipment and material supplied by the Proposer for the bench test shall remain the property of the Proposer. At the conclusion of the bench test, all equipment supplied by the Proposer for the purpose of the bench test will be returned to the Proposer. It will be the responsibility of the Proposer to deliver and pick up all equipment and material before and after the bench test.

Based on the bench test evaluation, the score from the proposal will be adjusted. The score may be adjusted higher or lower based on additional testing and information obtained during the testing period. This will result in the "Revised Score – Interview and Bench Test."

Final Selection

Based on the "Revised Score – Interview and Bench Test," the Proposer with the highest score for the ATMS will be recommended for selection to MARC for award and negotiation.

L. CONTRACT AWARD

MARC will notify the selected candidate by telephone, e-mail and in writing. Following verbal notification, MARC will negotiate a standard professional service agreement with the selected candidate. The selected candidate's proposal will be incorporated by reference in the contract. Additionally, MARC will notify, in writing, the candidates who are not selected.

M. PAYMENT TERMS

The milestones used to determine payments for all fixed-price design and development phase activities (when applicable), shall be based on the following:

Furnish, Install, and Integrate ATMS Hardware and Software – 50 percent

Full payment for this milestone shall be based on all ATMS hardware and software being received, installed, and operational. Full payment for this milestone will constitute meeting all contract requirements and submitting all required documentation. All submitted information, data, and documentation must be reviewed and approved before full payment will be made. This milestone shall represent 50 percent of the total contract budget.

System Testing – 20 percent

This milestone is reached when all ATMS hardware and software are operational and system-verification and acceptance tests have been satisfactorily completed. This milestone shall represent 20 percent of the total contract budget. Full payment for this milestone will constitute meeting all contract requirements and submitting all required documentation including acceptance of the Acceptance Test Procedures. All submitted information, data, and documentation must be reviewed and approved by MARC before full payment will be made.

Training and Documentation – 20 percent

This milestone is reached upon completion of training and providing all system documentation. This milestone shall represent 20 percent of the total contract budget. Full payment for this milestone will constitute meeting all contract requirements and submitting all required documentation including acceptance of the training plan. All submitted information, data, and documentation must be reviewed and approved by MARC before full payment will be made.

30-Days Operational Acceptance – 10 percent

This milestone is reached upon satisfactory completion of the 30-day Operational Acceptance period. This milestone shall represent the final 20 percent of the total contract budget. At this point, the ATMS shall be fully operational and have successfully completed the System Acceptance Test. Full and final payment for this milestone will consist of meeting contract requirements and performing and passing all required design verification tests as stated in the RFP and submitting all required documentation to MARC for this period of time. All test data and documentation must be reviewed and approved by MARC before full payment will be made.

N. PROTEST PROCEDURES

In the course of this solicitation, for proposals and the selection process, a proposer (bidder of offer or whose direct economic interest would be affected by the award of the contract) may file a protest when in the Proposer's opinion, actions were taken by MARC staff and /or the selection committee which could unfairly affect the outcome of the selection procedure. All protest should be in writing and directed to MARC's Director of Transportation, Mid-America Regional Council, 600 Broadway, Suite 200, Kansas City, MO 64105. Protest should be made immediately upon occurrence of the incident in question but no later than three (3) days after the proposer receives notification of the outcome of the section procedure. The protest should clearly state the grounds for such a protest.

Upon receipt of the protest, MARC's Director of Transportation will review the actual procedures followed during the selection process and the documentation available. If it is determined the action(s) unfairly changed the outcome of the process, notifications with the selected proposer will cease until the matter is resolved.

Upon resolution, the Director of Transportation's decision shall be final and conclusive unless, within seven (7) days from the date of receipt of its copy, the Proposer mails or otherwise furnishes a written appeal to MARC's Executive Director. In connection with any such appeal, the Proposer shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of MARC's Executive Director shall be binding upon the Proposer and the Propose shall abide by the decision unless it decides to further pursue its remedies through formal proceedings in court, arbitration or otherwise, which the Proposer may do, in the Proposer's sole discretion.

ATTACHMENT A

1. Complete the AFFIRMATIVE ACTION CHECKLIST (**Attachment B**) or provide company's executed Affirmative Action Plan. (If applicable)

2. Complete the CERTIFICATION REGARDING LOBBYING (**Attachment C**)

3. Complete the CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION (**Attachment D**)

4. Complete the INTENT TO PERFORM AS A DBE (**Attachment E – if applicable**)

5. Complete the CERTIFICATION OF INSURANCE (**Attachment F**)

6. OGL Server Network Architecture Diagram (**Attachment G**)

7. OGLTraffic Signal Controller and Firmware Summary (**Attachment H**)

8. Requirements and Verification Plan of the ATMS Software (**Attachment I**)

9. Cost Proposal Form for Required Items **(Attachment J)**

10. Cost Proposal Form for Optional Items (**Attachment K**)

ATTACHMENT B

AFFIRMATIVE ACTION CHECKLIST:

Federal regulations require that any firm 50 or more employees soliciting an assisted federally funded contract must have an affirmative action program. If applicable, please provide a brief response to the following items that would typically be covered in any such program. You may provide a copy of your program and reference appropriate pages.

1 Date plan was adopted

2 Name of Affirmative Action Officer

3 Statement of commitment to affirmative action by the chief executive officer

4 Designation of an affirmative action officer, of assignment of specific responsibilities and to whom the officer reports.

5 Outreach recruitment

6 Job analysis and restructuring to meet affirmative action goals

7 Validation and revision of examinations, educational requirements, and any other screening requirements.

8 Upgrading and training programs

9 Internal complaint procedure

10 Initiating and ensuring supervisory compliance with affirmative action program

11 Survey and analysis of entire staff by department and job classification and progress report system

12 Recruitment and promotion plans (including goals and time tables)

ATTACHMENT C

Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion

This Certification is required by the regulation implementing Executive Order 12549, Debarment and Suspension, 29 CFR Part 98 Section 98.510, Participants' responsibilities. The Regulations are published as Part II of the June 1985, Federal Register (pages 33, 036-33, 043)

Read instructions for Certification below prior to completing this certification.

1 The prospective proposer certifies, by submission of this proposal that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in this transaction by any Federal department or agency.

2 Where the prospective proposer is unable to certify to any of the statements in this certification, such prospective proposer shall attach an explanation to this proposal.

_____ _____

Date Signed – Authorized Representative

_____

Title of Authorized Representative

Instructions for Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion:

1 By signing and submitting this agreement, the proposer is providing the certification as set below.

2 The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the proposer knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

ATTACHMENT D

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

1 No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersign, to any person influencing or attempting to influence an officer or employee of a federal agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2 If any funds other than Federal appropriated funds have been paid or will be paid to any person for attempting to influence an officer or employee of any federal agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal or Federally assisted contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form – LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3 The undersigned shall require that the language of this certification be included in the award documents of all tiers (including subcontracts, subgrants, and contracts under grant, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 32, US Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____

(Name of Entity)

_____

(Name and Title of Authorized Official)

_____ _____

(Signature of above Official) (Date)

ATTACHMENT E

INTENT TO PERFORM AS A DISADVANTAGE BUSINESS ENTERPRISE (DBE)

Project Title and Description:

_____

The undersigned intends to perform work in connection with the above project as (check one):

_____ Prime Contractor _____ Subcontractor

_____ Joint Venture _____ Other (please specify)_____

_____

If applicable name of prime contractor or joint venture partner:

_____

The DBE status of the undersigned is confirmed by a DBE Certification from one or all of the following (please provide copy of current Certification Certificate):

____ MRCC (Missouri Regional Certification Committee)

____ KDOT

____ MoDOT

____ City of Kansas City Missouri

____ Kansas City Area Transportation Agency (KCATA)

____ Other (please specify) _____
(MARC may require additional certification documentation)

The undersigned is prepared to perform the following described work in connection with the above project (attach additional sheet in needed),

_____

_____

_____

at the following price _____ **(complete only after MARC contract price negotiations)**

_____ _____
Date Name of DBE Firm

By: _____
Signature of DBE Firm's Authorized Representative

_____
Print Name and title

ATTACHMENT F

CERTIFICATION OF INSURANCE

1. The Consultant shall maintain commercial general liability, automobile liability, and worker's compensation and employer's liability insurance in full force and effect to protect the Consultant from claims under Worker's Compensation Acts, claims for damages for personal injury or death, and for damages to property arising from the negligent acts, errors, or omissions of the Consultant and its employees, agents, and subconsultants in the performance of the services covered by this Agreement, including, without limitation, risks insured against in commercial general liability policies.

2. The Consultant shall also maintain professional liability ("Errors and Omissions") insurance to protect the Consultant against the negligent acts, errors or omissions of the Consultant and those for whom it is legally responsible, arising out of the performance of professional services under this Agreement.

3. The Consultant's insurance coverages shall be for not less than the following limits of liability:

    a. Commercial General Liability: $400,000.00 per claim up to $2,000,000.00 per occurrence;

    b. Automobile Liability: $100,000.00 per claim up to $2,000,000.00 per occurrence;

    c. Worker's Compensation in accordance with the statutory limits; and Employer's Liability: $1,000,000.00; and

    d. Professional ("Errors and Omissions") Liability: $1,000,000.00, each claim and in the annual aggregate.

4. The Consultant shall, upon request at any time, provide the Sponsor with certificates of insurance evidencing the Consultant's commercial general or professional liability ("Errors and Omissions") policies and evidencing that they and all other required insurance is in effect, as to the services under this Agreement.

5. Any insurance policy required as specified shall be written by a company which is incorporated in the United States of America or is based in the United States of America. Each insurance policy must be issued by a company authorized to issue such insurance in the State of Missouri.

I affirm or attest that _____ has and shall maintain (at the minimum) the
(name of company)
fore-mention insurance coverage during the contract agreement period.

_____ _____

Date Signed – Authorized Representative

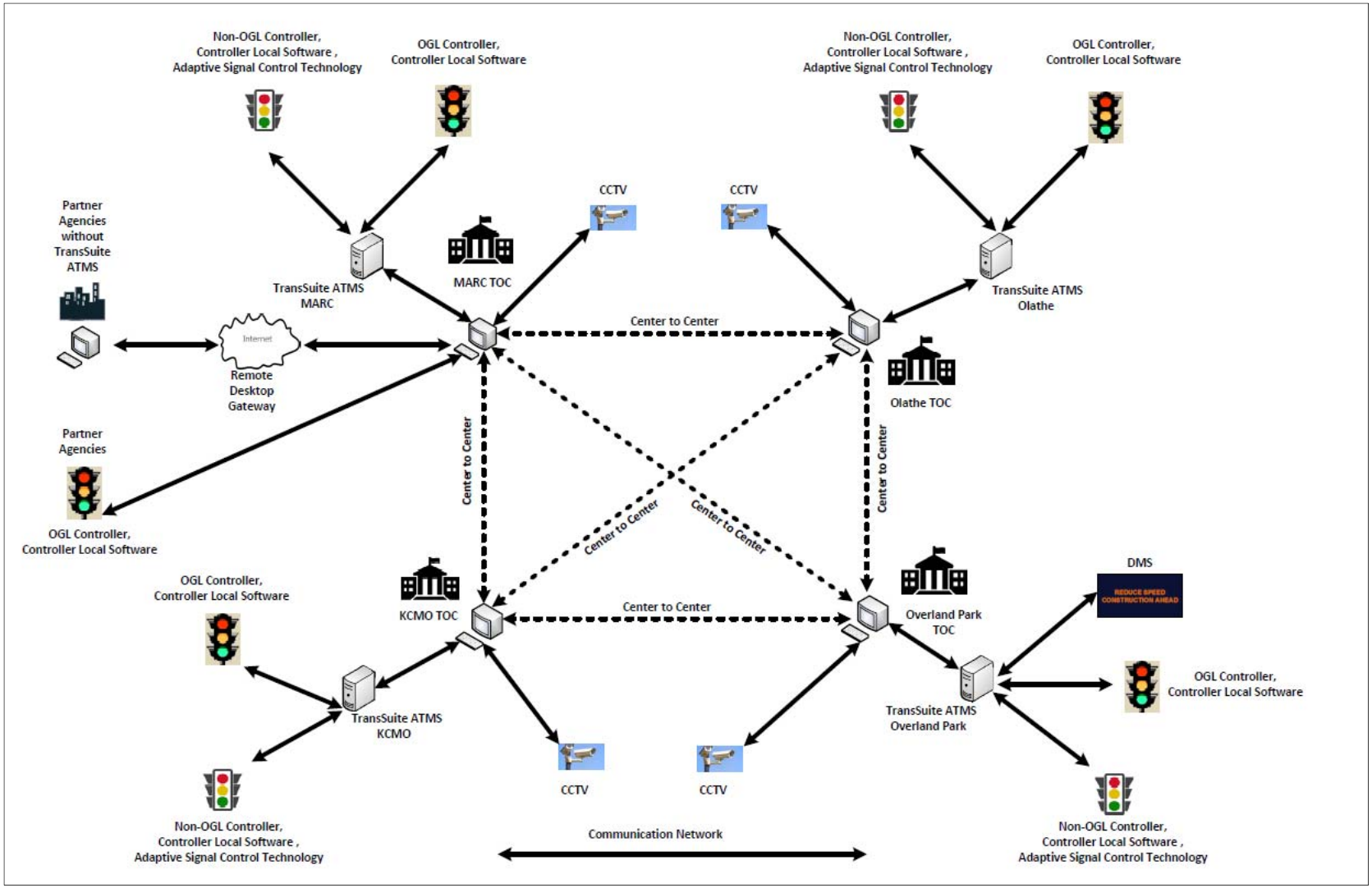
_____

Title of Authorized Representative

ATTACHMENT G

OGL SERVER NETWORK ARCHITECTURE DIAGRAM

Existing Regional Traffic Management System (OGL Operation)



ATTACHMENT H

OGL TRAFFIC SIGNAL CONTROLLER AND FIRMWARE SUMMARY

OGL Traffic Signal Controller and Firmware Summary

MARC		KCMO		Olathe		Overland Park	
Controller Type	Number of Controllers	Controller Type	Number of Controllers	Controller Type	Number of Controllers	Controller Type	Number of Controllers
Eagle M50	260	Eagle M50	0	Eagle M50	0	Eagle M50	0
Econolite 2070	5	Econolite 2070	249	Econolite 2070	1	Econolite 2070	2
Econolite ASC/2	11	Econolite ASC/2	210	Econolite ASC/2	0	Econolite ASC/2	0
Econolite ASC/3	325	Econolite ASC/3	292	Econolite ASC/3	146	Econolite ASC/3	233
Econolite Cobalt	90	Econolite Cobalt	0	Econolite Cobalt	0	Econolite Cobalt	9
Intelight MaxTime	4	Intelight MaxTime	0	Intelight MaxTime	0	Intelight MaxTime	0
Wapiti W4IKS	2	Wapiti W4IKS	142	Wapiti W4IKS	0	Wapiti W4IKS	0
		170	121			D4 1.5L	2
		None	33			McCain Omni eX	1

ATTACHMENT I

OGL ATMS REQUIREMENTS AND VERIFICATION PLAN

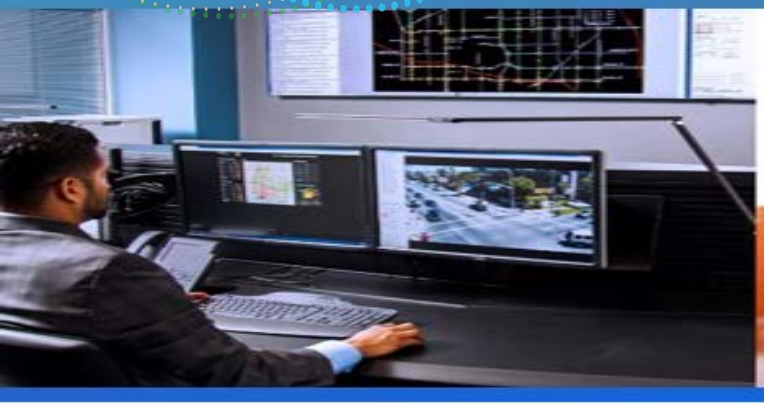
iteris®

Mid-America Regional Council (MARC), Operation Green Light (OGL)

Advanced Traffic Management System (ATMS)

Requirements and Verification Plan

FINAL | version 1.1



Submitted to:

MARC MID-AMERICA REGIONAL COUNCIL

OPERATION GREENLIGHT TURNING STOP LIGHTS INTO GO LIGHTS

August 15, 2019

DOCUMENT VERSION CONTROL

DOCUMENT NAME	SUBMITTAL DATE	VERSION NO.
Requirements and Verification – Internal Review	February 26, 2019	1.0
Requirements and Verification – Final	August 15, 2019	1.1

TABLE OF CONTENTS

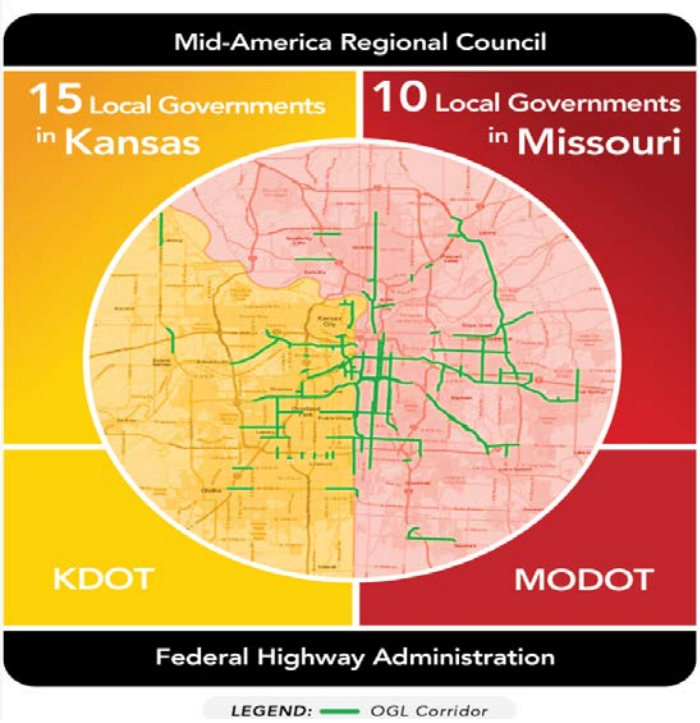
FIGURES

1 PURPOSE OF DOCUMENT

The purpose of this document is to present the proposed requirements and verification plan for the Advanced Traffic Management System (ATMS) software for the Mid-America Regional Council (MARC), Operation Green Light (OGL) program in the Greater Kansas City, Missouri area. OGL is a cooperative effort across the Kansas City region to improve traffic signal coordination and operations across jurisdictional boundaries. MARC has developed the Concept of Operations (ConOps) document, which describes the requirements of the ATMS at a high level that would meet the identified needs for the OGL program. From the high-level requirements of the ATMS identified in the ConOps this document breaks those high-level requirements into the testable and verifiable detailed requirements and provides the traceability of these detailed requirements to needs. This document is part of the System Engineering documents that have been developed in compliance with the Federal Highway Administration (FHWA) Federal Rule 23 CFR 940.11 and Systems Engineering Guidelines to select and deploy an ATMS for the OGL program. This document describes the scope of the project; the referenced documents that are used to prepare the requirements and verification plan; details on the actual execution of verification; and provides a list of the verification cases and corresponding system requirements to be tested.

OGL operates approximately 700 traffic signals and includes 27 partner agencies within both Kansas and Missouri. In addition to the 27 partner agencies, oversight is provided by the Missouri and Kansas Federal Highway Administration (FHWA) field offices. **Figure 1** provides a snapshot of agency partners.

Figure 1 – Agency Partners



The following stakeholders have vested interests in the Regional Arterial Traffic Signal Coordination System, and improving traffic flow across the Kansas City metropolitan area and were involved in the process to determine the final requirements and verification plan:

- Mid-America Regional Council (MARC)
- Kansas Department of Transportation (KDOT)
- City of Olathe, KS
- City of Overland Park, KS
- City of Shawnee, KS
- City of Kansas City, KS
- City of Bonner Springs, KS
- City of Fairway, KS
- City of Lansing, KS
- City of Leavenworth, KS
- City of Leawood, KS
- City of Lenexa, KS
- City of Merriam, KS
- City of Mission, KS
- City of Mission Woods, KS
- City of Prairie Village, KS
- City of Westwood, KS
- Missouri Department of Transportation (MoDOT)
- City of Belton, MO
- City of Blue Springs, MO
- City of Gladstone, MO
- City of Grandview, MO
- City of Independence, MO
- City of Lee's Summit, MO
- City of Liberty, MO
- City of North Kansas City, MO
- City of Raymore, MO

This verification plan is expected to be a living document with edits managed from selection of System Vendors through the preparation of the acceptance test. This document will be used to guide OGL partner agencies and the System Vendor during the deployment with the understanding that the project requirements and verification will guide the installation, integration, and testing of the State-of-the-art ATMS system. To put it simply, OGL and partner agencies staff, System Vendors will have full knowledge of the test requirements as they deploy the ATMS, be able to deploy a system that passes the test, and will therefore be able to meet the stakeholder requirements and goals.

2 SCOPE OF PROJECT

The goal of the project is to improve or replace the current central ATMS software for Mid-America Regional Council (MARC), Operation Green Light (OGL) program in the Greater Kansas City, Missouri area to improve traffic signal coordination and operations across jurisdictional boundaries. The OGL existing traffic signal system includes over 700 traffic signals and a vast hybrid communications system. While the current system is still functional, stakeholders have identified needs that cannot be met with the current deployment.

The existing OGL traffic signal system is comprised of traffic signals and devices, which include:

- Traffic signal controllers and firmware (M50, Econolite 2070, ASC/2, ASC/3 and Cobalt, Intelight, Wapiti)
- Traffic signal cabinets (NEMA)
- Detection devices (inductive loops, video, and radar)
- Communications
    - Media (including twisted pair copper, wireless radio, fiber optic)
    - Hardware (switches, transceivers, modems, etc.)
    - Conduit
- ATMS software
- ITS devices
    - CCTV cameras
    - Emergency vehicle preemption (EVP)
    - Uninterruptible power supply (UPS) systems
    - Dynamic message signs (DMS)

This document is specific to the central ATMS software, which will require a phased deployment to integrate the signals from the partner agencies.

3 REFERENCE DOCUMENTS

The following documents have been used throughout the development of the system requirements and verification plan. Some of these documents provide policy guidance for the region's traffic management, some are standards with which the regional traffic management system must comply, while others report the conclusions of discussions, workshops, and other research used to define the needs of the project.

- Systems Engineering for ITS
  https://ops.fhwa.dot.gov/publications/seitsguide/
- Kansas City Regional ITS Architecture
  http://www.marc2.org/Assets/ITS/scope.htm
- Regional Transportation Plan 2050
  http://www.marc.org/Transportation/Metropolitan-Transportation-Plan/Long-Range-Transportation-Plan/Regional-Transportation-Plan-2050
- Transportation Outlook 2040
  http://www.to2040.org/plandocs.aspx
- Best Practices In Regional, Multiagency Traffic Signal Operations Management
  http://onlinepubs.trb.org/onlinepubs/nchrp/docs/nchrp20-68a_07-04.pdf
- I-35 Integrated Corridor Management Plan
  http://www.marc.org/Transportation/Plans-Studies/pdfs/Concept-of-operations.aspx

In addition to the documents above, notes from the site visits conducted with the partner agencies and survey questionnaire completed by partner agencies were used to define the needs of the project and subsequently identify project requirements.

4 ATMS REQUIREMENTS

Appendix A identifies detailed requirements for the ATMS software deployment, which are based on user needs defined in the ConOps. These needs were developed from scenario-based discussions and requirements workshops. As detail was added, requirements were grouped in logical subsets to determine Mandatory or Optional prioritization. Optional requirements are features that the OGL program partner agencies would like to have but are not mandatory as the execution of the project deployment can be accomplished without these features operating within the ATMS. As an example, the selected ATMS does not need to interface with a signal optimization software such as SYNCHRO for off-line signal timing plans preparation. Some ATMS may have already an integrated signal timing optimization module but may not be able to meet some other mandatory requirements. The City would consider an ATMS with an integrated signal timing software a favorable solution but not at the expense of other mandatory requirements. Therefore, the requirement to interface with a signal timing optimization software is shown as optional.

5 VERIFICATION APPROACH

The requirements and verification plans described herein are considered draft until after the selection of the ATMS System Vendor. The final verification procedures will be developed in partnership with the ATMS System Vendor with approval from MARC. All verification shall be conducted in the presence of the MARC's Project Manager. Final verification and formal system acceptance will be approved by the MARC's Project Manager. The Project Manager will have the ultimate decision on the contents of the plan and the time frame of the acceptance tests and will coordinate with the ATMS System Vendor.

The ATMS System Vendor will be responsible for providing all materials, equipment and staff to complete the testing. At a future date, the ATMS System Vendor will provide a list of all hardware, software and special equipment that will be utilized in the testing. The proposed date and time of all acceptance testing will be planned in advance and coordinated with the MARC Project manager. The System Vendor shall produce and maintain a schedule for the MARC Project Manager that details all proposed dates and time of all acceptance testing activities. The Project Manager will review and approve the schedule.

The ATMS System Vendor shall conduct the verification tests in two steps. In the first step, the vendor shall bench test the system against the system requirements at an approved location. This "bench test" shall serve to test conditions that would otherwise be unsafe or unwanted with live traffic. These include the testing of failed conditions such as "Flash" conditions or "Power Fail" conditions, etc. In the second step, the System Vendor shall conduct the verification tests with field deployed software. The verification table indicates where the test should be conducted (See attached Requirements with Preliminary Verification Methods). The vendor shall coordinate with the MARC Project Manager to schedule the testing time periods consistent with the test schedule.

Acceptance testing will be a critical part of implementation, including one-day acceptance and 30-day reliability tests. The acceptance test is expected to consist of a one day test of the field components as described above. This testing will take place in the field at selected locations and at the traffic operations center (TOC) for complete end-to-end system verification. If there are verification tests that result in failure, then the

verification could take longer than one day. A 30-day reliability test for each component installed as part of the project will also be documented. The 30-day test is expected to document the verification of daily operation.

The ATMS System Vendor shall immediately record any failure or lack of performance to meet the stated system requirements as a System Variance. MARC Project Manager in association with the partnering agencies shall provide input to the summary of the content and magnitude of the System Variance. The ATMS System Vendor shall prepare a variance report stating why the system requirement was not met. It is the responsibility of the System Vendor to complete, track, and resolve each variance to the satisfaction of the MARC Project Manager. The variance form shall include a proposed solution to resolve the deficiency and shall be submitted to the Project Manager within seven days of the failure initial documentation. Upon any failed verification, the MARC Project Manager will review and accept the resolution of a complete Variance form and also decide if all testing should stop until correction is made. A failure with a select system requirement such as upload/download data to the controller will likely cause all testing to halt. Other functional requirement failure such as a report layout may not necessitate a halt to system verification.

If the ATMS System Vendor is not able to meet a system requirement that was included in the contract, the System Vendor shall prepare a report documenting the failure and develop a plan to provide similar performance operation or correction to the failure. Upon completion of all required verification testing, the ATMS System Vendor shall prepare a final Verification Report, which will contain all critical information regarding testing conducted including both failures and successes. Resolution of the cause of failures should also be detailed.

6 VERIFICATION REVIEW AND TESTING

This section identifies specific verification reviews and acceptance testing for the ATMS deployment. The acceptance test is expected to include multiple reviews and will include one or more of the following elements:

- Factory Acceptance Testing
- Shop drawing reviews
- Inventories
- Bench Testing
- Product Demonstration – Organized presentation of ATMS functions
- Field demonstrations of device performance through the ATMS
- TOC test case(s)of ATMS functions (Scripted Demonstrations)
    - 1-Day
    - 30-Day Reliability

The verification and acceptance testing will be accomplished at facilities approved by MARC and the partnering agencies and at specific field locations within the OGL operational area. The System Vendor will need to provide multiple staff in the field and at the TOC to document certain acceptance tests. A verification test case is a logical grouping of functions and performance criteria that are to be verified together. Each test case should contain the following:

- Name and reference number

- Objective (from Requirements)
- List of requirements to be verified or traced
- Data to be recorded or noted during verification, such as expected results
- Statement of requirements met, partially met, or not met.
- Comments on how requirements are met, and proposed action if only partially met or not met.

The following preliminary test cases have been identified:

1. Local Controller Monitoring and Management
2. Database Logging for Real Time Information
3. Demonstration of the ATMS' full integration with the various controller & firmware operating OGL signals
4. Demonstration of ATMS system functions running time
5. Demonstration of ATMS signal performance measures
6. Database Logging and Recovery for Archived Information
7. Graphical User Interface – Mapping Features
8. Graphical User Interface – Intersection/Device Status
9. Alarms & Notifications
10. Reporting
11. Data Transfer
12. Remote Access and Operation

Additional and final test case instructions will be developed in conjunction with the System Vendor, after a specific system has been procured so that all necessary software demonstration procedures are adjusted accordingly.

APPENDIX

REQUIREMENTS AND VERIFICATION PLAN MATRIX

Mid-America Regional Council | Operation Green Light (OGL) Program

Advanced Traffic Management System Software Requirements

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
ATMS Software Deployment Requirements								
1.01		The ATMS shall provide the full capabilities of the system to operators at:						
.01a	a	All traffic signal cabinets via laptop or tablet computer	M		Product Demonstration, Field Observation			
.01b	b	OGL TOC at 600 NE Colbern Road, Lee's Summit, MO 64086	M		Product Demonstration			
.01c	c	City of Olathe TOC on Rogers Road at I-35	M		Product Demonstration			
.01d	d	City of Overland Park TOC at Command and Control Center at 12401 Hemlock, Overland Park, KS 66213	M		Product Demonstration			
.01e	e	KCMO TOC at 5310 Municipal Avenue, Kansas City, Missouri, 64120	M		Product Demonstration			
Vendor Response:								
1.02		The ATMS shall allow all controller settings and parameters to be developed and stored in a central location and be able to download the plans to the local field controllers.	M		Product Demonstration, Field Observation			
Vendor Response:								
1.03		The ATMS shall support an exclusive phase based on external request while showing the status of the signal to reflect phasing.	M		Product Demonstration			
Vendor Response:								
1.04		The ATMS shall support an exclusive phase based on user-defined detector actuations while showing the status of the signal to reflect phasing.	M		Product Demonstration, Field Observation			
Vendor Response:								
1.05		The ATMS shall support transit signal priority (TSP) while showing the status of the signal to reflect priority operation.	M		Product Demonstration			
Vendor Response:								
1.06		The ATMS shall be capable of summarizing Signal Phasing and Timing (SPaT) data requests from each controller.	M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.06a	The ATMS shall be able to time stamp controller inputs and outputs.	M		Product Demonstration			
Vendor Response:							
1.07	The ATMS shall be capable of summarizing controller response to Signal Phasing and Timing (SPaT) data.	M		Product Demonstration			
Vendor Response:							
1.08	The ATMS shall support NTCIP 1211 for Transit Signal Priority.	M		Product Demonstration			
Vendor Response:							
1.09	The ATMS shall support NTCIP 1203 Object Definitions for DMS.	M		Product Demonstration			
Vendor Response:							
1.10	The ATMS shall support NTCIP 1212 Object Definitions for Connected Vehicle Environment.	M		Product Demonstration			
Vendor Response:							
1.11	The ATMS shall support the ATC Application Programming Interface (API) — ITE 9603-1.	M		Product Demonstration			
Vendor Response:							
1.12	The ATMS shall allow operators with appropriate privileges to monitor the traffic signal system from remote devices.	M		Product Demonstration			
.12a	a latest iOS (iPhone, iPad)	M		Product Demonstration			
.12b	b Android	M		Product Demonstration			
.12c	c Windows 7	M		Product Demonstration			
.12d	d Windows 10	M		Product Demonstration			
.12e	e Any Future System	M		Product Demonstration			
Vendor Response:							
1.13	The ATMS shall be modular. Allow for the addition of DMS management.		O	Product Demonstration			
Vendor Response:							
1.14	The ATMS shall be scalable for the unlimited number of intersections with no incremental license cost.	M		Product Demonstration			
Vendor Response:							
1.15	The ATMS shall allow management and monitoring of Pedestrian Hybrid Beacon Systems.	M		Product Demonstration			
Vendor Response:							
1.16	The ATMS shall allow management and monitoring of Flashing Beacon Systems (advanced signal flashers and school zone).		O	Product Demonstration			

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:								
1.17	The ATMS shall allow management and monitoring of Flashing Beacon Systems by Time of Day.			O	Product Demonstration			
Vendor Response:								
1.18	The ATMS shall be scalable for addition of new DMS locations.			O	Product Demonstration			
Vendor Response:								
1.19	The ATMS shall be scalable and be able to monitor unlimited number of signals with no incremental cost per signal.		M		Product Demonstration			
Vendor Response:								
1.20	The ATMS shall be able to monitor the communication of connected field devices that are IP addressable e.g., UPS, Conflict Monitors, etc..			O	Product Demonstration			
Vendor Response:								
1.21	All hardware shall utilize existing IP Schema to have networking capability both in field to center communications as well as server to client communications.		M		Product Submittal, Product Demonstration			
Vendor Response:								
1.22	The ATMS shall track IP addresses to all signals and devices.		M		Product Demonstration			
Vendor Response:								
1.23	The ATMS shall be able to integrate MIB including all all standard NTCIP objects as well as all additional proprietary NTCIP objects from multiple controllers that are part of the OGL network.							
.23a	a	Econolite ASC/3 (NEMA, RM or 2070) ver x.64.00 and newer	M		Product Demonstration			
.23b	b	Eagle M50/M60 ver 4.01f and ver 4.57 and newer	M		Product Demonstration			
.23c	c	Econolite ASC/2070 OGL ver 1.03.06	M		Product Demonstration			
.23d	d	Econolite Cobalt (NEMA or 1C module) ver x.64.00 and newer	M		Product Demonstration			
.23e	e	Intelight MaxTime ver 2.0.11 and newer	M		Product Demonstration			

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.23f	f	McCain Omni eX ver 1.10.2.6705		O	Product Demonstration			
.23g	g	D4 ver 1.5L-38		O	Product Demonstration			
.23h	h	Econolite ASC/2 NEMA ver 1.14 NTCIP		O	Product Demonstration			
.23i	i	Wapiti W4IKS ver 58		O	Product Demonstration			
Vendor Response:								
ATMS Architecture Requirements								
2.01		The ATMS shall use "commercial off the shelf" processors and network components for the ATMS servers.	M		Product Submittal			
.01a		The ATMS shall use "commercial off the shelf" processors and network components for the Client Workstations.	M		Product Submittal			
Vendor Response:								
2.02		The ATMS shall be based on secured encyrpted web interface or client-server architecture	M		Product Submittal, Product Demonstration			
Vendor Response:								
2.03		The ATMS database shall be compatible with Microsoft SQL Server 2016 or newer.	M		Product Demonstration			
Vendor Response:								
2.04		To the greatest extent possible, the ATMS shall be designed/support an “open” system architecture format (as described herein) to allow flexibility, interoperability, and future expansion of the system to meet future needs.	M		Product Demonstration			
Vendor Response:								
2.05		The ATMS shall use the latest version of Microsoft’s multi-tasking operating system (Windows Server 2016) for Intel-architecture PC-based servers in a client-server architecture.	M		Product Submittal, Product Demonstration			
Vendor Response:								
2.06		The ATMS workstations shall use the latest version of Microsoft’s multi-tasking operating system for Intel-architecture PC-based desktop in a client-server architecture.	M		Product Submittal, Product Demonstration			
Vendor Response:								
2.07		The ATMS shall write and append data to the database for a user-defined period for at least the following data:						

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.07a	a	actuations for a user selected sensor	M		Product Demonstration			
.07b	b	volumes by movement for a user selected sensor	M		Product Demonstration			
.07c	c	high-resolution traffic data	M		Product Demonstration			
Vendor Response:								
2.08		Detector shall be capable of collecting and storing data in the database for at least n detectors [where n is equal to 64 times (64x) the number of intersections supported by the ATMS]	M		Product Demonstration			
.08a	a	These detectors can be any combination of local or system detectors	M		Product Demonstration			
Vendor Response:								
2.09		The delivered ATMS shall support at least X simultaneous operations on the local area network (LAN) (where x is equal to the number of intersections supported by the ATMS divided by 25)	M		Product Demonstration			
Vendor Response:								
2.10		The delivered ATMS equipment shall be able to support at least 80 simultaneous clients initially.	M		Product Demonstration			
.10a		The delivered ATMS equipment shall be sized to support any additional future simultaneous clients at no additional cost.	M		Product Demonstration			
Vendor Response:								
2.11		The ATMS shall be modular in a manner that allows for integration of planned software and hardware without ATMS revisions.						
.11a	a	ASCT system	M		Product Demonstration			
.11b	b	SPM system	M		Product Demonstration			
.11c	d	System for managing and operating school flashers.		O	Product Demonstration			
.11d	e	System for managing and operating DMSs included within OGL program		O	Product Demonstration			
Vendor Response:								
2.12		The ATMS shall be scalable in a manner that allows ATMS upgrades without modification to the database server.	M		Product Demonstration			
Vendor Response:								

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
2.13		The ATMS shall be capable of communicating, monitoring and reporting the following signal characteristics to the existing legacy signal systems, including but not limited to, controllers and local control software.						
.13a	a	Cycle	M		Product Demonstration			
.13b	b	Splits	M		Product Demonstration			
.13c	c	Offset	M		Product Demonstration			
.13d	d	Coordinate Phase	M		Product Demonstration			
.13e	e	TOD Plan	M		Product Demonstration			
Vendor Response:								
2.14		The ATMS shall provide integration control and operations with existing 170 controllers enhanced for Ethernet communications.		O	Product Demonstration			
Vendor Response:								
2.15		The ATMS shall provide for the integration with planned ATC controllers compliant with the ATC 5201 v06.25 standard with the following features:	M		Product Demonstration			
.15a	a	Linux based operating system	M		Product Demonstration			
.15b	b	NTCIP Compliant	M		Product Demonstration			
Vendor Response:								
2.16		The ATMS shall be able to integrate applications related to Smart City initiative.		O	Product Demonstration			
Vendor Response:								
2.17		The ATMS shall be able to show the overall system status, including but not limited, to health of communications, cabinet equipment malfunctions (detection and pedestrian buttons, controller hardware problems, flash events, etc.) as well as various traffic flow/congestion indicators that are available. (e.g. occupancy, volumes, speeds, split failures, preempts/priorities, etc.) in a customizable dashboard. The dasboard shall be customizable for:	M		Product Demonstration			
.17a	a	System-wide	M		Product Demonstration			
.17b	b	a jurisdiction	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.17c	c	a section of a roadway	M		Product Demonstration			
.17d	d	an intersection	M		Product Demonstration			
Vendor Response:								
ATMS Status (Alarms and Alerts)								
3.01		The ATMS shall display and log all equipment faults, errors, and system alarms sent to the TOC and allow the printing of such alarms.						
.01a	a	Controller	M		Product Demonstration			
.01b	b	Switch	M		Product Demonstration			
.01c	c	UPS	M		Product Demonstration			
.01d	d	Detection	M		Product Demonstration			
.01e	e	Sensors	M		Product Demonstration			
.01f	f	Dynamic Message Signs		O	Product Demonstration			
.01g	g	CCTV		O	Product Demonstration			
Vendor Response:								
3.02		Within the ATMS, the system shall log and automatically report differences when any database changes have occurred to any controller.	M		Product Demonstration			
Vendor Response:								
3.03		The ATMS shall display the status of system controllers.	M		Product Demonstration			
Vendor Response:								
3.04		At a minimum, the ATMS shall alert the User when the following controller situations occur:						
.04a	a	Controller detects a cabinet door open	M		Product Demonstration, Field Observation			
.04b	b	Controller is in conflict flash	M		Product Demonstration, Field Observation			
.04c	c	Controller reports an operating status change	M		Product Demonstration, Field Observation			
.04d	d	Controller detects a pedestrian indication out	M		Product Demonstration, Field Observation			
.04e	e	Controller detects a traffic signal indication out	M		Product Demonstration, Field Observation			

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.04f	f	Controller power failure or recovery	M		Product Demonstration, Field Observation			
.04g	g	Controller reports local database changed	M		Product Demonstration, Field Observation			
.04h	h	Controller detects loop and/or system detector failure	M		Product Demonstration, Field Observation			
.04i	i	Controller detects bicycle detector failure	M		Product Demonstration, Field Observation			
Vendor Response:								
3.05		The ATMS shall display the status of the system and local detectors in real time.	M		Product Demonstration			
Vendor Response:								
3.06		At a minimum, the ATMS shall alert the User for following detector occupancy and volume situations as listed below. The ATMS shall also allow the User to configure the detector occupancy and/or volume sensitivity of such threshholds and alerts.						
.06a	a	Detectors are experiencing constant calls for user-set time period	M		Product Demonstration			
.06b	b	Detectors are experiencing no calls for user-set-time period	M		Product Demonstration			
.06c	c	Detectors are experiencing excessive calls (User set)	M		Product Demonstration			
.06d	d	Detector occupancy data is more than a user set value for an intersection	M		Product Demonstration			
.06e	e	Detector volume data is more than a user set value for an intersection	M		Product Demonstration			
.06f	f	Detector occupancy and/or volumes are experiencing unusual patterns for a particular time of day, day of week, excluding holidays and other user-configured special days.	M		Product Demonstration			
Vendor Response:								
3.07		Within the ATMS, the alarm feature shall have at least two (2) priority levels:						
.07a	a	Priority Level 1 – Event requires immediate attention	M		Product Demonstration			
.07b	b	Priority Level 2 – Event does NOT require immediate attention	M		Product Demonstration			
Vendor Response:								
3.08		The ATMS shall have the capability to add new alarms or events to one component of the system without rebuilding any other part of the system	M		Product Demonstration			
Vendor Response:								

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
3.09		For each alarm, the ATMS shall have the ability to automatically time stamp, route, notify, and/or e-mail/text a specific user station(s).	M		Product Demonstration			
Vendor Response:								
3.10		The ATMS shall provide users the capability to turn ON or OFF each type of alarm separately. However, alarms will still be logged.	M		Product Demonstration			
3.11		The ATMS shall provide users the capability to filter alarms by						
.11a	a	jurisdiction	M		Product Demonstration			
.11b	b	section	M		Product Demonstration			
.11c	c	intersection	M		Product Demonstration			
.11d	d	time of day	M		Product Demonstration			
Vendor Response:								
Vendor Response:								
3.12		The ATMS shall have the ability to immediately display alarms as they occur.	M		Product Demonstration			
Vendor Response:								
3.13		The ATMS shall have the ability to automatically print user-selectable alarms on designated log printer.	M		Product Demonstration			
Vendor Response:								
3.14		At a minimum, the ATMS shall provide the following user-selectable features for each type of alarm:						
.14a	a	Delay – the ability to select a configurable time period for which you can set the alarm to be displayed/reported to the User AFTER the actual alarm occurs. This way, the system is given a chance to “repair/correct” itself.	M		Product Demonstration			
.14b	b	Priority – the ability to select a configurable time period for which various users of the system can easily prioritize the alarm and event information that is displayed. The alarm and event configuration is highly flexible and is configured by a user to display particular events in a hierarchical manner, as directed by the user. The user sets a desired alarm priority, selecting high importance alarms for more urgent display and annunciation and rendering a lower display status to less urgent events.	M		Product Demonstration			

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
ATMS Control							
4.01	Through the ATMS, Users with defined privileges shall have operational control (e.g., monitor, control, check equipment status, etc.) of every traffic signal and ITS element connected to their jurisdiction.	M		Product Demonstration			
Vendor Response:							
4.02	The ATMS shall provide functions allowing the Administrator to control the system security (i.e., Users will be able to adjust who has what type of access to system security features).	M		Product Demonstration			
Vendor Response:							
4.03	ATMS Users shall be able to manipulate intersection controllers if they have the proper privileges.	M		Product Demonstration			
Vendor Response:							
4.04	The ATMS shall provide functions allowing the users with defined privileges to place a call on a user-defined phase at a singular intersection from the intersection graphical layout status display and shall require no more than 3 mouse clicks and 5 seconds to enact. There shall be an optional termination time after which the system will automatically remove the call.	M		Product Demonstration			
Vendor Response:							
4.05	The ATMS shall provide functions allowing the users with defined privileges to place a call to a user-defined group of signals.	M		Product Demonstration			
Vendor Response:							
4.06	The ATMS shall provide functions allowing the users with defined privileges to manually implement a timing plan to one or a group of signals.	M		Product Demonstration			
Vendor Response:							
4.07	ATMS Users shall be able to log in from a remote location and be able to monitor, control, upload and download signal plans, etc. to the intersection controllers.	M		Product Demonstration			
Vendor Response:							

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
4.08	ATMS Users shall have operational control (e.g., monitor, control, view/upload/download controller databases, check equipment status, etc.) of every traffic signal and ITS element in other jurisdictions (that share and/or are connected to it) through the ATMS as per existing established MOUs.	M		Product Demonstration			
.08a	ATMS shall allow the partner agencies to communicate through instant chat message.	M		Product Demonstration			
Vendor Response:							
4.09	ATMS Users shall be able to preset and name geographical map/viewing locations and view preset locations through the GUI module.	M		Product Demonstration			
Vendor Response:							
4.10	The ATMS shall allow only one (1) User to control or configure a given device at any given time	M		Product Demonstration			
Vendor Response:							
4.11	ATMS clients (i.e., workstation PC's) shall connect to the system server automatically upon initiation of the client software program at the workstation. In like fashion, the system server shall also connect to all system devices and to the database(s) automatically upon initiation of the server.	M		Product Demonstration			
Vendor Response:							
4.12	Applicable ITS device types shall have a control GUI, allowing Users to control specific devices. The ATMS shall provide concurrent control of at least 5 (five) devices of each ITS device type (e.g., CCTV, DMS, detector station, etc.), without more than a (3) three second delay in system response time, which excludes time needed for establishing a communication connection as in the case of dial-up devices.		O	Product Demonstration			
Vendor Response:							
4.13	Applicable ITS device types shall have a data display GUI, allowing Users to view polled information from specific devices. Users may view data from multiple device types and multiple devices of each type concurrently, without noticeable degradation (by the User) in system performance.	M		Product Demonstration			
Vendor Response:							

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
4.14		The ATMS shall provide a task scheduler which provides the following functionality (at a minimum) to the User through a graphical user interface (GUI):						
.14a	a	Should provide a quick-scheduler function for each ITS device type, where Users can post a command for a set period of time in a single step (i.e., 5-min button, 15-min button, 1-hour button, etc.). Once time has expired, a reminder to the User should allow for extending the duration of the command.	M		Product Demonstration			
.14b	b	Shall allow special schedules, where one or more events/commands are defined for one or more ITS device types for dates and times up to (12) twelve months into the future.	M		Product Demonstration			
.14c	c	Shall allow consistent schedules, set by day-of-week or day spacing (1, 2, 3,) at a fixed time. Consistent schedules should run – once enabled – until disabled by a User.	M		Product Demonstration			
.14d	d	Shall provide a list or calendar viewer where Users may view scheduled commands, the ITS Device type(s) to be used, and the times/dates for the events/commands up to (12) twelve months into the future.	M		Product Demonstration			
Vendor Response:								
4.15		The ATMS scheduler shall support at least 100 simultaneous active, scheduled commands/events at any given time.	M		Product Demonstration			
Vendor Response:								
4.16		The ATMS scheduler should be able to integrate other subsystems, such that additional ITS devices and actions may be scheduled (i.e., set camera views for time of day etc.).		O	Product Demonstration			
Vendor Response:								
4.17		The ATMS shall provide for local area network (LAN) capability so that several workstations can simultaneously access the ATMS and database(s).	M		Product Demonstration			
Vendor Response:								
4.18		The ATMS shall have the capability to change alarm routing to different users by time of day						
.18a	a	ATMS work station	M		Product Demonstration			
.18b	b	e-mail	M		Product Demonstration			
.18c	c	text message	M		Product Demonstration			
Vendor Response:								

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
4.19	The ATMS shall provide the ability to upload and download local controller databases.		M		Product Demonstration			
Vendor Response:								
4.20	The ATMS shall provide the ability to compare database entries and time stamps.		M		Product Demonstration			
Vendor Response:								
4.21	The ATMS shall collect events from the communications server regarding intersection communications status as they occur.		M		Product Demonstration			
Vendor Response:								
4.22	The ATMS shall have the ability to allow a maintenance person to initiate a full download of the controller database from central to the field, initiated from the field.		M		Product Demonstration, Field Observation			
Vendor Response:								
4.23	The ATMS shall provide "off-line" capability for signal controllers so that they automatically revert to internal time-based control (TBC) operation during any communication failures or User "override."		M		Product Demonstration			
Vendor Response:								
4.24	The ATMS shall support the output of the off-line preparation of timing plans (using off-line optimization models such as SYNCHRO).							
.24a	a	Phase Data (min. green, yellow, red, W, FDW, passage)		O	Product Demonstration			
.24b	b	Cycle		O	Product Demonstration			
.24c	c	Splits		O	Product Demonstration			
.24d	d	Sequence		O	Product Demonstration			
.24e	e	Offset Phase		O	Product Demonstration			
.24f	f	Offset and Reference Point		O	Product Demonstration			
Vendor Response:								
4.25	The ATMS shall be capable of interfacing with the system database(s). The ATMS shall be capable of automatically updating data between the database(s).		M		Product Demonstration			
Vendor Response:								
4.26	The ATMS shall provide for download/upload capability, allowing the User to perform this function for individual and/or appropriate subsets of controller database parameters at selected schedules, or as desired.		M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
4.27	The ATMS shall provide for saved connection paths and IP addressing, file back-up for unexpected system shutdowns, database archiving for corrupted files, and saved system set-up based on restart.	M		Product Demonstration			
Vendor Response:							
ATMS User Interface							
5.01	The ATMS user interface shall be graphics-based. All ATMS user accessible software shall use a graphical user interface (GUI).	M		Product Demonstration			
Vendor Response:							
5.02	The ATMS user interface shall provide a complete searchable list of intersections showing at least: type of control, name, description, ID number and communications status.	M		Product Demonstration			
Vendor Response:							
5.03	The ATMS user interface shall provide a complete searchable list of intersections with autocomplete based on alphanumeric matching.	M		Product Demonstration			
Vendor Response:							
5.04	ATMS Users shall be able to pan maps, zoom maps to provide more detailed intersection views including phase layout, detection position, and status, and zoom the map to the full extend possible of the image through the use of a mouse.	M		Product Demonstration			
Vendor Response:							
5.05	ATMS Users shall be able to pan maps, zoom maps to provide more detailed intersection views including phase layout, detection position, and status, and zoom the map to the full extend possible of the image through key strokes and keyboard navigation.	M		Product Demonstration			
Vendor Response:							
5.06	The ATMS GUI shall provide Users with drop-down menus for commands to the system and mouse clicking and dragging, text input, button actions, and menu command actions.	M		Product Demonstration			
Vendor Response:							
5.07	The ATMS GUI shall provide context sensitive on-line help.	M		Product Demonstration			
Vendor Response:							
5.08	The ATMS user interface shall provide GIS based layer management compatible to MARC GIS standards.		O	Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.08a	a	ESRI based "base maps" from Kansas Regional GIS.		O	Product Demonstration			
Vendor Response:								
5.09		The ATMS maps shall allow the display of arterial incidents, traffic speeds etc., from 3rd party providers such as Google Maps, Bing, Waze, HERE etc.,	M		Product Demonstration			
Vendor Response:								
5.10		The ATMS Users with proper access level shall be able to edit base maps.	M		Product Demonstration			
Vendor Response:								
5.11		The ATMS GUI Software shall provide the User with a graphical operating environment of the type commonly found on today's desktop computers.	M		Product Demonstration			
Vendor Response:								
5.12		The ATMS GUI shall allow the User to select objects on the screen by point-and-click manipulation with a mouse, thereby minimizing typing and the need to memorize lengthy commands.	M		Product Demonstration			
Vendor Response:								
5.13		It shall be possible to add or delete an intersection from a section through point-and-click manipulation of the intersection on the ATMS GUI.	M		Product Demonstration			
Vendor Response:								
5.14		The ATMS user interface shall allow an operator to attach links or documents to an intersection (such as clearance calcs, e-mail requests and as-builts).		O	Product Demonstration			
Vendor Response:								
5.15		The ATMS GUI shall be fully operational multi-tasking environment. It shall be Windows™ GUI-based, and support the use of standard Windows™ OS features and interface standards, such as multi-tasking, scalable windows, minimization, clipboard, etc.	M		Product Demonstration			
Vendor Response:								
5.16		The ATMS GUI shall include standard Windows™ printer interfaces and utilize standard Windows™ printer drivers.	M		Product Demonstration			
Vendor Response:								
5.17		The ATMS GUI shall incorporate the following features/functionality (at a minimum):						
.17a	a	Interactive screens & autamatic scaling/zoom	M		Product Demonstration			
.17b	b	Pop-up multiple display objects (or windows)	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.17c	c	Pull-down display objects (or windows)	M		Product Demonstration			
.17d	d	Menu icons and controls	M		Product Demonstration			
.17e	e	Dialog boxes	M		Product Demonstration			
.17f	f	Push button and other active commands	M		Product Demonstration			
.17g	g	Tool bars	M		Product Demonstration			
.17h	h	Visual and audio alarms	M		Product Demonstration			
.17i	i	Use of object characteristics such as colors, highlighting, and flashing to inform Users of status changes	M		Product Demonstration			
Vendor Response:								
5.18		Within the ATMS GUI, several windows may be active at the same time and may overlap on the screen; however, the User shall be able to interact with only one (1) window at a time.	M		Product Demonstration			
Vendor Response:								
5.19		Within the ATMS GUI, the User shall be able to easily switch from one (1) window to another, such as pointing with the mouse cursor to the uncovered part of another window.	M		Product Demonstration			
Vendor Response:								
5.20		Within the ATMS GUI, the User shall be able to move any window on the screen, to change window size, and to collapse a window to an icon.	M		Product Demonstration			
Vendor Response:								
5.21		The ATMS workstation client shall be able to operate normally with additional software programs operating concurrently on the workstation. This includes such functions as office software, Internet browsers, and model or analysis programs (i.e., MS Office, Explorer, Mozilla-Firefox, SYNCHRO, etc.).	M		Product Demonstration			
Vendor Response:								
5.22		Within the ATMS, the graphic display area shall be capable of being displayed on workstation monitors and the video wall with a minimum resolution of 1920x1080 pixels and support a simultaneous display of at least 65,536 colors.	M		Product Demonstration			
Vendor Response:								
5.23		Pull down or pop-up menus shall provide access to the entire functionality of the ATMS.	M		Product Demonstration			
Vendor Response:								

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
5.24	The ATMS User input shall include, but not be limited to, mouse clicking and dragging, text input, button actions, and menu command actions.		M		Product Demonstration			
Vendor Response:								
5.25	The ATMS shall provide full GUI display of database tables.		M		Product Demonstration			
Vendor Response:								
5.26	The ATMS database configuration shall allow for an operator to select lines of data for "cut", "copy", "paste" functions.		M		Product Demonstration			
Vendor Response:								
5.27	The ATMS intersection list shall allow for an operator to select lines of data for "cut", "copy", "paste" functions.		M		Product Demonstration			
Vendor Response:								
5.28	Drag and drop facilities shall be provided to the ATMS User where appropriate.		M		Product Demonstration			
Vendor Response:								
5.29	The ATMS shall provide a “Help” feature. The Help facility shall include an on-line version of the ATMS User Guide and provide the following assistance (at a minimum):							
.29a	a	List of contents	M		Product Demonstration			
.29b	b	Keyword search facility	M		Product Demonstration			
.29c	c	Printing of Help topics	M		Product Demonstration			
.29d	d	Help on using Help	M		Product Demonstration			
.29e	e	Navigation through Help topics using hypertext links	M		Product Demonstration			
.29f	f	Context sensitive Help for all screens	M		Product Demonstration			
.29g	g	The software version of each application or optional module displayed in the Help/About dialog.	M		Product Demonstration			
Vendor Response:								
5.3	The ATMS shall provide functions allowing the users with defined privileges to copy the data including timing plan of an existing intersection and allow pasting the data to a new intersection database created within the ATMS database.		M		Product Demonstration			
Vendor Response:								
ATMS Multi-User Capability								
6.01	The supplier-furnished software shall support a multi-terminal, multi-user interface and shall allow access to multiple levels of the ATMS software simultaneously.		M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
6.02	Within the ATMS, common icons shall be used to the extent possible for all display levels.	M		Product Demonstration			
Vendor Response:							
6.03	Within the ATMS, a list of Users that are currently logged onto the ATMS shall be available to be viewed by a user-defined set of Users and/or Administrators.	M		Product Demonstration			
Vendor Response:							
6.04	The ATMS shall support a variable number of User workstations for the system as a whole and at individual locations.	M		Product Demonstration			
Vendor Response:							
ATMS Confirmation and Error Checking							
7.01	Within the ATMS, validity checking shall be incorporated in all forms.	M		Product Demonstration			
Vendor Response:							
7.02	Within the ATMS, range error checking shall be performed at each controller, if possible.	M		Product Demonstration			
Vendor Response:							
7.03	Within the ATMS, consistency error checking shall be performed and user shall have the option to acknowledge and save/download changes to the database accordingly. Example 1: if the allowable maximum cycle length is 60-seconds and the User inputs 90-seconds, the ATMS will check and inform the User of the situation/problem. Example 2: Before storing a Timing change a check will be performed by the ATMS to verify the phase cycle summary matches the cycle length. Example 3: Before storing a Timing change a check will be performed by the ATMS to verify that the splits on each side of the barrier added up, and the summation of the min. green and clearance is not violated.	M		Product Demonstration			
Vendor Response:							
7.04	The ATMS User shall be asked to confirm any action that would result in data being modified or deleted in the database.	M		Product Demonstration			
Vendor Response:							
ATMS Multi-Tasking Capabilities							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
8.01	Within the ATMS, several User interface applications shall be able to be accessed concurrently by a User, a minimum of 16 interfaces.	M		Product Demonstration			
Vendor Response:							
8.02	Within a single ATMS User interface application, and where applicable, the User shall be able to initiate several operations that may execute concurrently (such as report generation).	M		Product Demonstration			
Vendor Response:							
8.03	The ATMS shall allow all Users to view any specified data concurrently.	M		Product Demonstration			
Vendor Response:							
8.04	The ATMS shall prevent a User from modifying data that is currently being modified by another User.	M		Product Demonstration			
Vendor Response:							
8.05	The ATMS User profiles shall be able to be stored and subsequently restored when the User logs in again.	M		Product Demonstration			
Vendor Response:							
ATMS Map Displays & Real-Time Displays							
9.01	The ATMS GUI shall incorporate a system map that covers the entire limits of the controlled area.	M		Product Demonstration			
Vendor Response:							
9.02	Within the ATMS, graphical views (when maximized) shall return to the scale at which they were displayed immediately prior to being minimized.	M		Product Demonstration			
Vendor Response:							
9.03	Within the ATMS, clicking on areas of the system map shall select more detailed views of controlled areas (area maps).	M		Product Demonstration			
Vendor Response:							
9.04	The ATMS shall provide the capability to draw map and graphic displays.	M		Product Demonstration			
Vendor Response:							
9.05	The ATMS shall provide the capability to import map displays from a Geographic Information System (GIS)	M		Product Demonstration			
Vendor Response:							
9.06	The ATMS shall provide the capability to import graphics in the following formats (at a minimum):						
.06a	a .bmp	M		Product Demonstration			
.06b	b .wmf		O	Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.06c	c .jpg	M		Product Demonstration			
.06d	d .tiff	M		Product Demonstration			
Vendor Response:							
9.07	The ATMS shall integrate a system map using ESRI imagery service formats.		O	Product Demonstration			
Vendor Response:							
9.08	The ATMS shall integrate a system map using ESRI geospatial data formats.		O	Product Demonstration			
Vendor Response:							
9.09	The ATMS shall integrate a system map using ESRI web service data formats.		O	Product Demonstration			
Vendor Response:							
9.10	The ATMS shall integrate with pictometry oblique aerial imagery using ESRI web service data formats.		O	Product Demonstration			
Vendor Response:							
9.11	The ATMS shall integrate latest aerial imagery corresponding to OGL Network.		O	Product Demonstration			
Vendor Response:							
9.12	The ATMS's dynamic mapping shall incorporate full pan/zoom capability on system and area maps.	M		Product Demonstration			
Vendor Response:							
9.13	The ATMS 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.	M		Product Demonstration			
Vendor Response:							
9.14	Within the ATMS, different layers shall be enabled as a default at different zoom levels.	M		Product Demonstration			
Vendor Response:							
9.15	By setting the zoom scale range and appropriately enabled/disabled layers, the ATMS Operator shall be able to control which layers display at different zoom scales. For example, at the Region-wide scale level the Operator can enable roadway centerlines (static information) as well as a communication status indication (dynamic information) for each intersection controller in the system.	M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
9.16	The ATMS shall display third party speed data as an ATMS Speed Condition map layer.						
.16a	a HERE	M		Product Demonstration			
.16b	b INRIX	M		Product Demonstration			
.16c	c WAZE	M		Product Demonstration			
.16d	d Google	M		Product Demonstration			
.16e	e Bing	M		Product Demonstration			
Vendor Response:							
9.17	The ATMS shall refresh the third party speed data as an ATMS Speed Condition map layer at a user specified interval.						
.17a	a HERE	M		Product Demonstration			
.17b	b INRIX	M		Product Demonstration			
.17c	c WAZE	M		Product Demonstration			
.17d	d Google	M		Product Demonstration			
.17e	e Bing	M		Product Demonstration			
Vendor Response:							
9.18	The ATMS User shall be able to turn off the Speed Condition map layer.	M		Product Demonstration			
Vendor Response:							
9.19	The ATMS shall be capable of displaying arterial traffic data from a 3rd party data source located within the entire limits of its controller area.						
.19a	a maintenance activities		O	Product Demonstration			
.19b	b construction activities		O	Product Demonstration			
.19c	c by lane speed differential		O	Product Demonstration			
.19d	d connected vehicles	M		Product Demonstration			
Vendor Response:							
9.20	The ATMS shall support multiple base maps, where Users may select the map to be displayed. Graphical and GIS map image formats should be supported.		O	Product Demonstration			
Vendor Response:							
9.21	ATMS Users shall be able to display a minimum of four (4) unique map sessions within any system client.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
9.22	The ATMS shall support user-interactive panning and zooming commands for the map (i.e., extent of pan and zoom are defined by the User, using the mouse). Pre-defined, locked zoom and pan extents may also be used.	M		Product Demonstration			
Vendor Response:							
9.23	ATMS map elements (i.e., streets, speed/flow segments, device icons, etc.) shall be scalable between zoom levels, such that they are resized appropriately at each zoom level.	M		Product Demonstration			
Vendor Response:							
9.24	Within the ATMS, clickable areas on the maps shall allow switching to more detailed views of the jurisdiction, sections, or intersections.	M		Product Demonstration			
Vendor Response:							
9.25	The ATMS's map display shall be able to be run on multiple workstations so that each workstation shall be able to display data from the same or different intersections simultaneously.	M		Product Demonstration			
Vendor Response:							
9.26	Within the ATMS, objects on the map shall be capable of being programmed to turn on or off at different zoom levels. Text labels shall be comparable in size between different zoom levels.	M		Product Demonstration			
Vendor Response:							
ATMS Intersection Displays							
10.01	The ATMS shall allow Users to view real-time detector status/data (e.g., speed, volume, occupancy, etc.) overlaid on maps and graphic displays showing the layout of the intersection. The ATMS shall provide at a minimum refresh rates of intersection operations.	M		Product Demonstration			
.01a	a 30 - 60 second polling of detector status	M		Product Demonstration			
.01b	b 180 second summary of speed, volume, occupancy.	M		Product Demonstration			
Vendor Response:							
10.02	The ATMS User shall be able to double-click on a section of the main map area to maximize the previously minimized intersection graphics.	M		Product Demonstration			
Vendor Response:							
10.03	Within the ATMS, the intersection graphics shall fill the entire screen when commanded by the User.	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.03a	a	In all menu selections, the ATMS shall include a list of intersections by standard name and number.	M		Product Demonstration			
Vendor Response:								
10.04		The ATMS User shall be able to define unique names to an intersection.	M		Product Demonstration			
Vendor Response:								
10.05		The ATMS User shall be able to assign unique ID numbers to an intersection.	M		Product Demonstration			
Vendor Response:								
10.06		When an intersection graphics window is minimized within the ATMS, it shall be possible to maximize the window by selecting the same intersection from the menus.	M		Product Demonstration			
Vendor Response:								
10.07		The ATMS shall display status of conflict monitor.		O	Product Demonstration			
Vendor Response:								
10.08		The ATMS shall display details of coordination at a controller (i.e. Coordination timers; such as transition and the relation between current and programmed offset).	M		Product Demonstration			
Vendor Response:								
10.09		The ATMS shall display status of coordination at each controller.	M		Product Demonstration			
Vendor Response:								
10.10		The ATMS shall display the pedestrian push button calls in real-time (within 2 seconds).	M		Product Demonstration			
.10a	a	The ATMS shall allow placing a pedestrian and vehicle calls from status and intersection layout graphical display. This task shall be accomplished with no more than 3 mouse clicks and 5 seconds. There shall be an optional termination time for the call to automatically be removed.	M		Product Demonstration			
Vendor Response:								
10.11		The ATMS shall display an indication of which interval is currently timing on each controller.	M		Product Demonstration			
Vendor Response:								

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
10.12		The ATMS GUI shall have the capability to display a real-time green-band time-space display.						
.12a	a	The ATMS GUI shall have the capibility to display real time-space diagram.	M		Product Demonstration			
.12b	b	The ATMS GUI shall have the capibility to display programmed time-space diagram.	M		Product Demonstration			
.12c	c	The ATMS GUI shall have the capibility to display historical actual time-space diagram.	M		Product Demonstration			
.12d	d	The ATMS GUI shall have the capability of display historical programmed time-space diagram.	M		Product Demonstration			
.12e	e	The ATMS GUI shall have the capability of superimposing actual and programmed time-space diagram.	M		Product Demonstration			
.12f	f	The ATMS GUI shall be able to create time space diagrams automatically based on already known/configured phase layouts with directions, detector assignments, intersection spacing/locations as specified on the system map. User shall be able to override these initial settings when necessary.	M		Product Demonstration			
Vendor Response:								
10.13		The ATMS shall allow the GUI to modify a subset of the intersection timing plan database items (typically offset or green splits) via a time-space diagram editor.		O	Product Demonstration			
Vendor Response:								
10.14		At a minimum, the ATMS intersection displays shall depict/include static displays of the following:						
.14a	a	Street names	M		Product Demonstration			
.14b	b	Intersection number	M		Product Demonstration			
.14c	c	Phase numbering	M		Product Demonstration			
.14d	d	Special function definition (i.e. blank-out signs, etc.)	M		Product Demonstration			
.14e	e	North arrow	M		Product Demonstration			
.14f	f	Roadway curb lines	M		Product Demonstration			
.14g	g	Roadway lane lines	M		Product Demonstration			
Vendor Response:								
10.15		The ATMS intersection displays shall also include dynamic indicators. At a minimum, the intersection displays shall indicate the status of the following:						
.15a	a	Controller operational mode (e.g., TOD/DOW, traffic responsive, manual, free, free/flash, technical flash, etc.)	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.15b	b	Controller status (e.g., offset transition, pre-empted, type of preemption, conflict flash, priority, etc.)	M		Product Demonstration			
.15c	c	Difference between the programmed, historical, and the actual real-time offset	M		Product Demonstration			
.15d	d	Difference between the programmed, historical and the actual real-time split	M		Product Demonstration			
.15e	e	Difference between the programmed, historical and the actual real-time cycle length	M		Product Demonstration			
.15f	f	Communications status (e.g., on-line, bad communication, no communication, etc.)	M		Product Demonstration			
.15g	g	Cabinet door status	M		Product Demonstration, Field Observation			
.15h	h	Timing parameters currently in effect (e.g., control mode, transition status, control section assignment, timing plan number, cycle length, offset, split values, etc.)	M		Product Demonstration			
.15i	i	Color status of all vehicular phases and overlaps (including the circular red, yellow, and green indications and all arrows)	M		Product Demonstration			
.15j	j	Status of pedestrian push-buttons	M		Product Demonstration			
.15k	k	Color status of all pedestrian phases (including walk, flashing don't walk, and steady don't walk)	M		Product Demonstration			
.15l	l	Actuation status of all local detectors (vehicular and pedestrian) and all system detectors associated with the intersection	M		Product Demonstration			
.15m	m	Pre-emption in effect and what pre-emption mode	M		Product Demonstration			
.15n	n	priority in effect and what priority mode	M		Product Demonstration			
15o	o	Special function status (i.e. Blank-out Signs, etc.)	M		Product Demonstration			
.15p	p	Indication of failure and type of failure	M		Product Demonstration			
.15q	q	Master and Local Cycle Counters	M		Product Demonstration			
.15r	r	Count-up of the number of seconds for the split of the phase in service	M		Product Demonstration			
.15s	s	status of user named special phases (including the circular red, yellow, and green indications and all arrows)	M		Product Demonstration			
.15t	t	status of user named special detection	M		Product Demonstration			
.15u	u	Adaptive Signal Control Technology System	M		Product Demonstration			
.15v	v	Advance warning flashers	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.15w	w	Flashing Yellow Arrow	M		Product Demonstration			
Vendor Response:								
10.16	The ATMS shall refresh the status of dynamic indicators based in real-time.		M		Product Demonstration			
Vendor Response:								
10.17	The ATMS shall provide for the ability to count detector actuations for a user-specified detector (i.e. count pedestrian actuations).		M		Product Demonstration			
Vendor Response:								
10.18	The ATMS shall provide for the ability to specify when the system begins and ends counting detector actuations for a user-specified detector (i.e. count pedestrian actuations from time X to time Y).		M		Product Demonstration			
Vendor Response:								
10.19	The ATMS shall provide for the ability to specify a user-defined detector at a user-defined intersection for a user-defined date and time (i.e. count pedestrian actuations from time X to time Y).		M		Product Demonstration			
Vendor Response:								
10.20	The ATMS database shall have the ability to summarize the number of actuations for a user-defined detector at a user-defined intersection for a user-defined date and time (summary shall show individual time stamp of actuations).		M		Product Demonstration			
Vendor Response:								
10.21	The ATMS intersection graphics window shall include a window header with the standard intersection name and number in it.		M		Product Demonstration			
Vendor Response:								
10.22	The ATMS shall be able to identify HAWK signals with an unique icon.		M		Product Demonstration			
Vendor Response:								
ATMS Detector Displays								
11.01	The ATMS shall allow users to view real-time intersection status and detector status/data (e.g., speed, volume, occupancy, etc.) overlaid on maps and graphic displays showing the layout of the intersection.		M		Product Demonstration			
Vendor Response:								

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
11.02	Detector status for a given intersection shall be displayed on the screen with the intersection graphics.	M		Product Demonstration			
Vendor Response:							
11.03	The ATMS shall refresh intersection status and detector status in real-time.	M		Product Demonstration			
Vendor Response:							
11.04	Within the ATMS, traffic detector information (e.g., volume, occupancy, speed, congestion level quantities, etc.) shall be displayed.	M		Product Demonstration			
Vendor Response:							
11.05	Within the ATMS, detector information (e.g., volume, occupancy, speed, congestion level quantities, V+kO, etc.) shall be displayed as colored links.	M		Product Demonstration			
Vendor Response:							
11.06	Within the ATMS, the User shall be able to select the relevant item(s) for display via the GUI (e.g., detector status, traffic detector information, link detector information, etc.).	M		Product Demonstration			
Vendor Response:							
11.07	Within the ATMS, V+kO values shall be displayed per detector.	M		Product Demonstration			
Vendor Response:							
11.08	Within the ATMS, new data types available from existing or new controllers will be able to be displayed. Once new data is configured, it will be available to the rest of the ATMS without further configuration.	M		Product Demonstration			
Vendor Response:							
11.09	The ATMS shall display detector occupancy in percentages (%). Occupancy shall be defined as the percentage of time the detector loop is occupied.	M		Product Demonstration			
Vendor Response:							
11.10	The ATMS shall display average speed over a detector. Speed shall be calculated if based on the output from detector loops. If calculated and not measured directly, the ATMS shall calculate a speed value for links based on an assumed vehicle length and loop size.	M		Product Demonstration			
Vendor Response:							
11.11	The ATMS shall display vehicle detector calls.	M		Product Demonstration			
Vendor Response:							

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
11.12	The ATMS shall display detector volume counts. Volume shall be defined as the number of vehicles counted in an interval of time.		M		Product Demonstration			
Vendor Response:								
11.13	The ATMS shall display bicycle detector calls.		M		Product Demonstration			
Vendor Response:								
11.14	The ATMS shall display detector bicycle volume counts. Volume shall be defined as the number of bicycle counted in an interval of time.		M		Product Demonstration			
Vendor Response:								
ATMS Report Generation								
12.01	The ATMS shall be capable of generating reports from ATMS-generated data.		M		Product Demonstration			
Vendor Response:								
12.02	The ATMS shall be capable of generating maintenance reports for use by the following parties:							
.02a	a	Operations Staff		O	Product Demonstration			
.02b	b	Maintenance Staff		O	Product Demonstration			
.02c	c	Signal Maintenance Contractor(s)		O	Product Demonstration			
Vendor Response:								
12.03	The ATMS shall be capable of automatically generating reports via time-of-day (TOD) scheduling.		M		Product Demonstration			
Vendor Response:								
12.04	The ATMS shall be able to generate reports for logged events, splits i.e. split logger, detector data, measures of effectiveness (MOEs), and communications statistics. The user shall be able to access reports with less than 4 mouse clicks and less than 10 seconds.		M		Product Demonstration			
Vendor Response:								
12.05	The ATMS shall generate reports on detector malfunctions at an detector level, phase level, intersection level, section level, jurisdiction level, and system level.		M		Product Demonstration			
Vendor Response:								
12.06	ATMS Users shall be able to print out full or user defined partial database reports with formatted layouts		M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:								
12.07	Once a report is displayed on the screen, the ATMS User shall be able to print the report (as a minimum: time-space diagrams, split monitors, VOS graphics/tables, and system status.		M		Product Demonstration			
Vendor Response:								
12.08	The ATMS shall be able to generate and download user selected customized reports.		M		Product Demonstration			
12.09	The ATMS shall be able to generate reports by custom time period related to occupancy, volumes, speeds, split failures, preempts/priorities, detectors, ped buttons, controller hardware issues, flash events, etc..		M		Product Demonstration			
Vendor Response:								
ATMS Detector Reports								
13.01	The ATMS shall print formatted reports from logged volume, occupancy, and speed data.		M		Product Demonstration			
Vendor Response:								
13.02	The ATMS shall interface with legacy detector outputs.		M		Product Demonstration			
Vendor Response:								
13.03	The ATMS shall provide a report on "Monthly Delay Average" per phase, per intersection, per section, per jurisdiction and system-wide.			O	Product Demonstration			
Vendor Response:								
13.04	The ATMS shall provide the following graphical and tabular reports for a detector:							
.04a	a	Speed	M		Product Demonstration			
.04b	b	V+kO	M		Product Demonstration			
.04c	c	Volume	M		Product Demonstration			
.04d	d	Occupancy	M		Product Demonstration			
Vendor Response:								
13.05	The ATMS shall provide a report computing Seasonal Volume Coefficients.			O	Product Demonstration			
Vendor Response:								
13.06	The ATMS shall provide a report of Historical Traffic Flow Reports (1-year).			O	Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number	Requirements		Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:								
13.07	The ATMS User shall be able to select the time period for traffic counting reports.		M		Product Demonstration			
Vendor Response:								
13.08	The ATMS User shall be able to schedule automatic report generation via the TOD Scheduler.		M		Product Demonstration			
Vendor Response:								
ATMS Security and Access (User Hierarchy)								
14.01	The ATMS shall be able to assign access privileges by previously defined groups of Users/Operators.		M		Product Demonstration			
Vendor Response:								
14.02	The ATMS shall have different access levels. Access levels shall control access to functions and to equipment.		M		Product Demonstration			
Vendor Response:								
14.03	ATMS Administrators shall assign a unique name and password to each User.		M		Product Demonstration			
.03a	a	Each User name shall be unique throughout the ATMS.	M		Product Demonstration			
Vendor Response:								
14.04	The ATMS shall log all Users actions that modify its behavior. The log entry shall include User name, action, and date of action.		M		Product Demonstration			
Vendor Response:								
14.05	The ATMS security levels shall include (at a minimum):							
.05a	a	No-access	M		Product Demonstration			
.05b	b	View-only	M		Product Demonstration			
.05c	c	Upload-only	M		Product Demonstration			
.05d	d	Download-only	M		Product Demonstration			
.05e	e	Upload & Download	M		Product Demonstration			
.05e	e	Full-Access	M		Product Demonstration			
Vendor Response:								
14.06	A unique set of access privileges per user shall apply to the ATMS application software.		M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
14.07	A unique set of access privileges per user shall apply to the ATMS database.	M		Product Demonstration			
Vendor Response:							
14.08	The ATMS shall provide operators with access that is secured and encrypted and meets current industry standards. The encryption shall not affect system performance. The ATMS shall login all Users using two factor authentication process.	M		Product Demonstration			
14.09	The ATMS shall allow an authorized user to remote access controller database and upload /download the database to neighboring agencies' controller through C2C.	M		Product Demonstration			
14.10	A unique set of user permissions shall apply to each jurisdiction within a system.	M		Product Demonstration			
Vendor Response:							
ATMS Traffic Control Modes							
15.01	The ATMS shall support "ASCT" mode of operation - The controllers operate according to near real-time detector information and sequenced and non-sequenced based algorithms.	M		Product Demonstration			
Vendor Response:							
15.02	The ATMS shall support the “Central Coordinated” mode of operation - the controllers operate according to a pre-determined coordinated timing plan schedule that is stored in the central database.	M		Product Demonstration			
Vendor Response:							
15.03	The ATMS shall support the "Local Coordinated" mode of operation - the controllers operate according to a pre-determined coordinated timing plan schedule that is stored locally in the individual controllers.	M		Product Demonstration			
Vendor Response:							
15.04	The ATMS shall support the “Local Isolated (Free Operation)” mode of operation – the controller is not being commanded for on-line operation by a Central System.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
15.05	The ATMS shall support the “Manual” mode of operation – the controller responds to system commands for plan selection issued from the central control using manual override.	M		Product Demonstration			
Vendor Response:							
15.06	The ATMS shall support the “Traffic Responsive” mode of operation – the controller responds to system commands for plan selection issued from the central control based on the traffic-responsive algorithm. This approach selects timing plans by comparing system detection thresholds for which the plan has been developed to the real-time traffic conditions in the field.	M		Product Demonstration			
Vendor Response:							
15.07	The ATMS shall support the "Flashing" mode of operation - the controller is put on flash either manually by the central or at the cabinet. This also includes tripped conflict monitor at the local intersection.	M		Product Demonstration			
Vendor Response:							
15.08	The ATMS shall support the "Pre-Empted" mode of operation - the controller is pre-empted by an external system to provide priority to fire, police, or emergency service vehicles.	M		Product Demonstration			
15.09	The ATMS shall support centralized traffic signal priority control system.	M		Product Demonstration			
Vendor Response:							
ATMS Upload/Download Features							
16.01	The ATMS shall allow for the download on a system-wide, section, or intersection basis from the ATMS server to the local controller.	M		Product Demonstration			
Vendor Response:							
16.02	The ATMS shall allow for the upload on a system-wide, section, or intersection basis from the local controller to the ATMS server.	M		Product Demonstration			
Vendor Response:							
16.03	The ATMS shall allow execution of command between the ATMS and the field controllers, especially modern controllers such as ASC/3, Cobalt, etc., in a reasonable time-frame. The following operations shall be completed within the time-limit specified below:						
.03a	a Open controller database with 15 seconds	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
.03b	b	Full upload of controller database within 3 minutes	M		Product Demonstration			
.03c	c	Full download of controller database within 3 minutes	M		Product Demonstration			
.03d	d	Compare controller database within 5 seconds for 100 differences	M		Product Demonstration			
.03e	e	Save the controller database within 15 seconds	M		Product Demonstration			
Vendor Response:								
16.04		The ATMS shall provide the ability to upload and download portions of the controller database.	M		Product Demonstration			
.04a	a	The ATMS shall provide the ability to upload and download the entire controller database.	M		Product Demonstration			
Vendor Response:								
16.05		The ATMS shall highlight errors or missing data in timing plans prior to permitting download of the timing plans to a controller.	M		Product Demonstration			
Vendor Response:								
16.06		The ATMS shall generate a comparison report listing all data discrepancies between the database and controller.	M		Product Demonstration			
.06a	a	Comparison of database shall be able to exclude dynamic status field.	M		Product Demonstration			
Vendor Response:								
16.07		The ATMS shall time stamp signal controller modifications written to the database.	M		Product Demonstration			
Vendor Response:								
16.08		The ATMS shall allow reports to be saved as text file for printing or editing.	M		Product Demonstration			
Vendor Response:								
16.09		The ATMS shall provide the ability to print to a designated printer or PDF file.	M		Product Demonstration			
Vendor Response:								
16.10		The ATMS database shall allow all reports to be exported to csv, xls, etc. formats.	M		Product Demonstration			
Vendor Response:								

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
16.11		The ATMS shall export real time data to a public facing website.	M		Product Demonstration			
Vendor Response:								
16.12		The ATMS shall export archived data to a server.	M		Product Demonstration			
Vendor Response:								
16.13		The ATMS database shall time stamp (date and time) with User ID all data entries.	M		Product Demonstration			
Vendor Response:								
16.14		The ATMS database shall time stamp (date and time) with User ID all uploads and downloads changes to and from each signalized intersection.						
.14a	a	What parameters were changed?	M		Product Demonstration			
.14b	b	Who made the changes?	M		Product Demonstration			
.14c	c	What was the original data?	M		Product Demonstration			
.14d	d	What is the new data?	M		Product Demonstration			
Vendor Response:								
16.15		It shall be possible to schedule uploads and compares by TOD (auto-compare).	M		Product Demonstration			
Vendor Response:								
16.16		The results of the auto-compare will be logged and made available to the ATMS User for review.	M		Product Demonstration			
Vendor Response:								
16.17		It shall be possible to request a download from the field without the need for ATMS User support (remote download request).	M		Product Demonstration, Field Observation			
Vendor Response:								
16.18		It shall be possible to place controllers in a local isolated mode on a system-wide, section, or intersection basis.	M		Product Demonstration			
Vendor Response:								
16.19		The ATMS shall be able to disable central control to a series of controllers through the user interface and place a controller in stand-by mode.	M		Product Demonstration			
Vendor Response:								

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
16.20	When in stand-by mode, the ATMS shall not command the controller and the controller shall run its local TOD/DOW schedule.	M		Product Demonstration			
Vendor Response:							
16.21	The ATMS User shall have the ability to re-activate stand-by (disabled central control) intersections via the ATMS.	M		Product Demonstration			
Vendor Response:							
16.22	The ATMS shall display with a unique color any intersection that a User placed into stand-by mode without displaying the status as a communications failure.	M		Product Demonstration			
Vendor Response:							
16.23	The ATMS User shall be able to monitor the intersection components through the ATMS, even while not commanding it (Flash & Free/Flash)	M		Product Demonstration			
Vendor Response:							
ATMS Traffic Responsive							
17.01	In the traffic responsive mode of operation, the ATMS 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.	M		Product Demonstration			
Vendor Response:							
17.02	Once the traffic responsive process has selected the appropriate timing plan, the plan number shall be commanded to the intersections on a continual basis until the traffic responsive process recognizes, based on sufficient change in traffic conditions, the need to command a different timing plan.	M		Product Demonstration			
Vendor Response:							
17.03	The traffic responsive algorithm shall be based on the UTCS algorithm or other approved traffic-responsive algorithm.	M		Product Demonstration			
Vendor Response:							
17.04	The ATMS User shall be able to define a single detector station as a section.	M		Product Demonstration			

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:								
17.05		When the traffic-responsive process detects that this detector station has exceeded User-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).	M		Product Demonstration			
Vendor Response:								
17.06		It shall be possible to group commands together by device or section.	M		Product Demonstration			
Vendor Response:								
Generate Timing Plans								
18.01		It shall be possible to export data to SYNCHRO - UTDF format						
.01a	a	timing data	M		Product Demonstration			
.01b	b	phasing data	M		Product Demonstration			
.01c	c	Offset data	M		Product Demonstration			
Vendor Response:								
18.02		It shall be possible to import timings generated by SYNCHRO.		O	Product Demonstration			
Vendor Response:								
18.03		The ATMS User must approve imported timings before storing SYNCHRO-generated timings into the controller database.		O	Product Demonstration			
Vendor Response:								
.03a	a	Prior to approval a user shall be able to compare the timing database to the recent SYNCHRO generated database.		O	Product Demonstration			
Vendor Response:								
18.04		A user with appropriate privileges shall be able to upload a timing database for an intersection or for a corridor to be reviewed by controlling stakeholders.	M		Product Demonstration			

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
	Vendor Response:						
ATMS - Synchronize Clocks							
19.01	Time bases in the ATMS shall be synchronized to the source by server.	M		Product Demonstration			
Vendor Response:							
19.02	The ATMS shall synchronize ATMS clocks based on an external, universal time reference time.	M		Product Demonstration			
Vendor Response:							
19.03	The ATMS shall provide time-of-day synchronization of controllers. The controller's time-of-day clock shall be updated at least once a day by the ATMS.	M		Product Demonstration			
Vendor Response:							
19.04	The ATMS shall provide for the automatic downloading of clock updates to each field controller.	M		Product Demonstration			
Vendor Response:							
19.05	The ATMS shall also permit the controller clock to be updated when a controller is brought on-line.	M		Product Demonstration			
Vendor Response:							
Manage Timing Plans							
20.01	The ATMS shall permit the User to switch from the stored database to an uploaded controller database without either database closing or losing changes.	M		Product Demonstration			
Vendor Response:							
20.02	The ATMS shall have the ability to support all the number of timing plans, timing plan pages, and coordinated plan pages that are part of the field controller.	M		Product Demonstration, Product Review			
Vendor Response:							
20.03	Each timing plan shall be able to contain unique values for cycle length and offset, a phase sequence, and split values.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements			Requirement Priority		Verification			
Reqs Number		Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
20.04		The ATMS shall permit the User to select a subset or group of the signal system and name it as a distinct group.	M		Product Demonstration			
20.04a		Criteria for different groups may include but not limited to:						
.04a.1	1	- Group that needs their clock set more frequently	M		Product Demonstration			
.04a.2	2	- Group that needs special timings due to shopping mall	M		Product Demonstration			
.04a.3	3	- Group that needs special timings due to construction activity	M		Product Demonstration			
.04a.4	4	- Group that needs special timings due to nearby school	M		Product Demonstration			
Vendor Response:								
20.05		The ATMS shall maintain full intersection capabilities and operational requirements as described in this document within a distinct subset or group.	M		Product Demonstration			
Vendor Response:								
20.06		The ATMS shall permit the User to select multiple signals and update timing plan pages such as schedule, coordination plan side-by-side.	M		Product Demonstration			
Vendor Response:								
20.07		The ATMS shall support bicycle timings.	M		Product Demonstration			
Vendor Response:								
ATMS - Monitor Congestion								
21.01		The ATMS shall provide congestion monitoring capabilities (with associated alarms) for recurrent and non-recurrent congestion.	M		Product Demonstration			
Vendor Response:								
21.02		The ATMS shall provide methods in the user interface to show levels of congestion for intersections including (at a minimum):						
.02a	a	Level-of-Service	M		Product Demonstration			
.02b	b	Detector volumes, occupancy, and average speed	M		Product Demonstration			
.02c	c	Aggregate intersection detector volumes, occupancy, and average speed	M		Product Demonstration			
Vendor Response:								
Closed Circuit Television System								

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
22.01	The ATMS shall be able to be integrated with the Genetec Video Management Software.		O	Product Review			
Vendor Response:							
Dynamic Message Signs							
23.01	The ATMS shall support at least 80 individual Dynamic Message Signs (DMS), expandable to the limits of the system hardware.		O	Product Review			
Vendor Response:							
23.02	The ATMS shall support multiple sign controllers using different serial protocols.		O	Product Demonstration			
Vendor Response:							
23.03	The project shall deploy DMS with 3 lines and 12 characters per line.		O	Product Review			
Vendor Response:							
23.04	The project shall deploy DMS that communicates with NTCIP protocol.		O	Product Review			
Vendor Response:							
23.05	The ATMS shall support Internet Protocol (IP) communications to the individual signs.		O	Product Demonstration			
Vendor Response:							
23.06	The ATMS Administration shall be able to associate a specific sign protocol to individual signs.		O	Product Demonstration			
Vendor Response:							
23.07	The ATMS shall support serial and/or IP communication to the sign controller.		O	Product Demonstration			
Vendor Response:							
ATMS - Emergency Vehicle Pre-Emption and Priority							
24.01	The ATMS shall recognize the occurrence of locally initiated pre-emption for emergency vehicles and thereby not erroneously diagnose a coordination failure because the local controller has been pre-empted.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
24.02	The ATMS shall recognize the occurrence of locally initiated priority for transit vehicles and thereby not erroneously diagnose a coordination failure because the local controller has been pre-empted.	M		Product Demonstration			
Vendor Response:							
24.03	The beginning and ending times of all pre-emption events shall be recorded in the system log.	M		Product Demonstration			
Vendor Response:							
24.04	The beginning and ending times of all priority events shall be recorded in the system log.	M		Product Demonstration			
Vendor Response:							
24.05	The ATMS shall monitor and uniquely differentiate and display the preemption versus priority.	M		Product Demonstration			
Vendor Response:							
24.06	The ATMS shall include reports and displays that show the beginning and ending times (or alternately, the beginning time and duration) of all pre-emption events for a selected time period.	M		Product Demonstration			
Vendor Response:							
24.07	The ATMS shall include reports and displays that show the beginning and ending times (or alternately, the beginning time and duration) of all priority events for a selected time period.	M		Product Demonstration			
Vendor Response:							
24.08	Vehicle preemptions shall be reported by approach, intersection, section, jurisdiction, and system.	M		Product Demonstration			
Vendor Response:							
24.09	Vehicle priority shall be reported by approach, intersection, section, jurisdiction, and system.	M		Product Demonstration			
Vendor Response:							
ATMS - Communications							
25.01	The ATMS shall support different rates for communications channels to the controllers.	M		Product Demonstration			
Vendor Response:							
25.02	The ATMS shall communicate with each intersection once per second.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
25.03	The ATMS shall support multiple communications protocols as needed by the specific installation.	M		Product Demonstration			
Vendor Response:							
25.04	The ATMS shall be transparent to the User regarding the communication methods and medium used to access system devices (I.e., commands and UI's should be the same regardless of communications method). The system shall support control, data and video, communications using fiber optic, and wireless mediums.	M		Product Demonstration			
Vendor Response:							
ATMS Data Collection							
26.01	The ATMS shall be able to collect data from all connected roadside ITS devices.	M		Product Demonstration			
Vendor Response:							
Vendor Response:							
26.02	The ATMS shall be able to process the collected data so that it can be used to perform the required ATMS functionality.	M		Product Demonstration			
Vendor Response:							
26.03	The ATMS shall provide database management functions include archiving, back-up, diagnosing, displaying, distributing, processing, recovery, removing, retrieving, storing, and viewing of all data stored in the system.	M		Product Demonstration			
Vendor Response:							
26.04	All data collected by the ATMS shall be stored in a database.	M		Product Demonstration			
Vendor Response:							
26.05	The ATMS shall be able to compare detection data/information with historical plans within its database(s) and update for forecasting purposes.		O	Product Demonstration			
Vendor Response:							
26.06	The ATMS software shall retrieve and log the high resolution controller data in accordance with the Purdue enumeration document.	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
26.07	The ATMS software shall process reports based upon the high resolution controller data in accordance with the Utah DOT reporting software.	M		Product Demonstration			
Vendor Response:							
26.08	The ATMS shall provide graphical Measures of Effectiveness (MOE) based upon high resolution data, collected by the controller at a rate of at least 10 times per second.	M		Product Demonstration			
Vendor Response:							
26.09	The ATMS shall be able to selectively schedule the MOE data collection through the Scheduler.	M		Product Demonstration			
Vendor Response:							
26.10	The ATMS software shall process this data in accordance with the Purdue enumeration document and “Performance Measures For Traffic Signal Systems” report.	M		Product Demonstration			
Vendor Response:							
26.11	The ATMS shall be capable of receiving, storing, and displaying in a user-friendly format time stamped high resolution data sent from a local traffic signal controller.	M		Product Demonstration			
Vendor Response:							
26.12	When MOE polling is enabled, the ATMS software shall upload MOE data once per minute.	M		Product Demonstration			
Vendor Response:							
26.13	The ATMS software shall export data via standard XML protocols.	M		Product Demonstration			
Vendor Response:							
26.14	The ATMS software shall export data at a user-specified rate.	M		Product Demonstration			
Vendor Response:							
26.15	The ATMS shall be capable of producing MOE reports for a user selectable date for which data has been collected.	M		Product Demonstration			
Vendor Response:							
26.16	The MOE reports shall include the Purdue Coordination Diagram (PCD).	M		Product Demonstration			
Vendor Response:							

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ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
26.17	The PCD shall visually display vehicles arriving on green, yellow, and red portions of the cycle.	M		Product Demonstration			
Vendor Response:							
26.18	The PCD shall visually indicate pattern changes throughout the day.	M		Product Demonstration			
Vendor Response:							
ATMS - ASCT Integration							
27.01	The ATMS shall provide capabilities for real-time Adaptive Traffic Control System (ASCT) either through an "add-on" module or through another system that can be managed through the ATMS.		O	Product Review			
Vendor Response:							
27.02	The ATMS shall provide for the ability to turn the ASCT system off and revert to time of day plan within the ATMS.		O	Product Review			
Vendor Response:							
27.03	The ATMS shall monitor the ASCT System automatically.		O	Product Review			
Vendor Response:							
27.04	The ATMS shall store operational data calculated by the ASCT System.		O	Product Review			
Vendor Response:							
27.05	The ATMS shall store signal timing parameters calculated by the ASCT System.		O	Product Review			
Vendor Response:							
27.06	The ATMS shall automatically pass alarms and alerts from the ASCT System.		O	Product Review			
Vendor Response:							
ATMS - Traffic Responsive System Integration							
28.01	The ATMS shall provide capabilities for Traffic Responsive System either through an "add-on" module or through another system that can be managed through the ATMS.	M		Product Review			
Vendor Response:							
28.02	The ATMS shall provide for the ability to turn Traffic Responsive system off and revert to time of day plan within the ATMS.	M		Product Review			

Appendix A: Requirements with Preliminary Verification Methods

ATMS Requirements		Requirement Priority		Verification			
Reqs Number	Requirements	Mandatory	Optional	Verification Method	Met	Partially Met	Not Met
Vendor Response:							
28.03	The ATMS shall monitor the Traffic Responsive System automatically.	M		Product Review			
Vendor Response:							
28.04	The ATMS shall store operational data calculated by the Traffic Responsive System.	M		Product Review			
Vendor Response:							
28.05	The ATMS shall store signal timing parameters calculated by the Traffic Responsive System.	M		Product Review			
Vendor Response:							
28.06	The ATMS shall automatically pass alarms and alerts from the Traffic Responsive System.	M		Product Review			
Vendor Response:							

ATTACHMENT J

COST PROPOSAL FORM FOR REQUIRED ITEMS

Annual usage/ quantity figures provided are estimates and are not to be construed as either a minimum or maximum purchase quantity. The orders shall be for the actual quantities of each item ordered by or for any agency during the life of the contract. Proposer shall not impose minimum order requirements.

Quantity (approximate)	**Description**	**Unit**	**Unit price**	**Extension price** (unit price x quantity)
4	Furnish and install ATMS Software on servers	LS	$	$
40*	Furnish, install, and configure ATMS Client on Existing MARC Staff and applicable partner agencies' staff Computers and/or Tablets	EA	$	$
70*	Fully Integrate Existing OGL Controller to ATMS	Intersection	$	$
			TOTAL COST PROPOSAL :	$

*Additional quantity may be purchased at the unit price as the project progresses.

Price quoted shall be unit price, shall be firm for 120 days from date of an award and during the term of the contract, including renewals, and are to be net; including transportation and delivery charges fully prepaid by the Bidder F.O.B. Destination as specified. No additional charges will be allowed for packing, handling, fuel surcharge, or partial delivery costs. Further documentation may be required by MARC, to authenticate the increase (such as manufacturer invoices). Failure to supply any requested supporting documentation may be grounds to cancel the contract. MARC further reserves the right to reject any proposed price increase(s), cancel the contract and re-bid if determined to be in the best interest of MARC. MARC will be given full proportionate benefit of any decrease for the term of the contract. No price increases are to be billed to MARC without prior written approval by MARC.

Software Proposed (include version): _____

Contractors must provide pricing for all items listed on the Cost Proposal form. Failure to do so will be cause for rejection of proposal.

ATTACHMENT K

COST PROPOSAL FORM FOR OPTIONAL ITEMS

Pricing for optional items

Quantity (approximate)	**Description**	**Unit**	**Unit price**	**Extension price** (unit price x quantity)
1	Fully Integrate Non-OGL Signal to New ATMS	Intersection	$	$
12	Install SPM Module to the New ATMS	Intersection	$	$
1	Convert Unsupported Existing Controller to the New ATMS	Intersection	$	$
1	Additional ATMS Training	LS	$	$

*Additional quantity may be purchased at the unit price as the project progresses.

Pricing for additional ATMS Technical Support and Software Maintenance Renewals:

Description	**Extension price** (unit price x quantity)
ATMS Technical support and software maintenance renewals for one (1) additional year (year 3)	$
ATMS Technical support and software maintenance renewals for one (1) additional year (year 4)	$
ATMS Technical support and software maintenance renewals for one (1) additional year (year 5)	$

MARC reserves the right to reject any or all of the optional items listed on this form.

Price quoted shall be unit price and shall be firm for 5 years from date of an award and during the term of the resulting contract and are to be net; including transportation and delivery charges fully prepaid by the Bidder F.O.B. Destination as specified. No additional charges will be allowed for packing, handling, fuel surcharge, or partial delivery costs. An Invitation to an increase must be submitted in writing to MARC a minimum of 30 days prior to proposed effective date of increase and must show cause and be accompanied by supporting documentation (such as notification letter from manufacturer). Further documentation may be required by MARC, to authenticate the increase (such as manufacturer invoices). Failure to supply any requested supporting documentation may be grounds to cancel the contract. MARC further reserves the right to reject any proposed price increase(s), cancel the contract and re-bid if determined to be in the best interest of MARC. MARC will be given full proportionate benefit of any decrease for the term of the contract. No price increases are to be billed to MARC without prior written approval by MARC.