Response to Request for Proposals


City Project No. PW 1522

ELECTRONIC COPY
June 29, 2020

Innovating Through Informatics™
June 29, 2020

Mr. Jeffrey Aube
Junior Engineer, Traffic
City of Stockton
Public Works Department
22 E. Weber Avenue, Room 301
Stockton, CA 95202


Dear Mr. Aube:

The transportation system is rapidly changing and evolving with new and improved communication systems, continuous improvement of Connected and Autonomous Vehicle (CAV) systems, private sector involvement in transportation services, multimodal options, and cyber security concerns. To be prepared for these, and other, future transportation demands, agencies are seeking to leverage established technologies and incorporate emerging field device and communications technologies in order to improve mobility across all modes. To support the goals and objectives of the City of Stockton, Iteris, Inc. (Iteris) is pleased to submit the enclosed response to the Request for Proposal (RFP) to provide Traffic Management System (TMS) Configuration Report and Traffic Signal Design and Operations Guide services.

Iteris has a long track record of assisting progressive agencies, such as the City of Stockton, to successfully plan, design, deploy, integrate, and operate the latest transportation technologies in a manner that provides improved safety and mobility to the traveling public. Iteris’ project qualifications presented in this Proposal were selected specifically to focus our experience with Advanced Traffic Management System (ATMS) needs analysis, communications networks, Traffic Management Center (TMC) design and construction, and Smart Cities, as well as demonstrate the following benefits that our team will provide to the City of Stockton:

✓ SOLUTIONS THAT WORK
Iteris and our proposed staff routinely work on projects that span the entire Intelligent Transportation System (ITS) and Traffic Signal System (TSS) spectrum, from high-level strategic planning, to Systems Engineering (SE), through detailed design, and finally to implementation, deployment and ongoing Operations and Maintenance (O&M). Iteris is unique in this regard. Most firms focus on either the planning and design portion, or the implementation and deployment portion of the spectrum. This complete project lifecycle experience reduces risk for the City by allowing us to apply lessons learned in the field to our strategic planning, SE, detailed designed projects, and ongoing operations. This results in clear, concise, and more comprehensive deliverables – ultimately producing a better solution deployed in the field.

✓ SOLUTIONS THAT INNOVATE
Iteris staff are experts with the latest technologies, focused on designing and integrating robust, redundant modern transportation communication systems for today’s needs and tomorrow’s systems. Iteris’ communication design and system integration expertise incorporates the latest security standards required by Homeland Security for Utility Systems, allowing agencies to leverage communication networks for multiple departments for real-world Smart City applications. Iteris staff are assisting agencies throughout the country to prepare for CAV with modern and secure communication systems and software systems to manage the vast amount of data generated with these modern systems.
SOLUTIONS THAT ARE SMART
The term Smart Cities captures the type of innovative cross discipline solutions Iteris has been providing our clients for years. Many of Iteris’ solutions have allowed cities to expand a transportation-focused fiber network from only serving traffic related applications to a Smart City network that supports traffic, Information Technology (IT), SCADA/utilities, and enabling the possibility of leasing bandwidth. In fact, with the emergence of 5G, a properly designed fiber network can position a city to leverage fiber in the ground and street lights along the roads, to generate a significant amount of revenue that can be reinvested in the city to further improve quality of life for the public. Smart Cities makes use of infrastructure to solve multi-disciplinary problems; be it transportation related or another critical agency provided service. Iteris staff have the experience needed to support the City of Stockton in the development of infrastructure that is robust, modern, secure and fully capable of supporting emerging transportation technologies.

Proposed Project Manager (PM), Mr. Richard Shinn, is the right PM to implement this project for the City of Stockton. He has led the Modesto TSS Master Plan project, the San Mateo County Smart Corridor systems integration and network monitoring for over nine years, and is currently assisting the Metropolitan Transportation Commission (MTC) pilot Connected Vehicle technologies for five local agencies. In addition, Rich has an extensive background in the deployment of transportation technologies and has played a significant technical, or managerial role, in most of the major Northern California ITS projects for the last 18 years.

Thank you for the opportunity to submit our proposal. This proposal is submitted subject to the successful negotiation of a mutually agreeable contract between Iteris and The City of Stockton. Iteris looks forward to assisting the City of Stockton on this important TMS project. Please contact me or the designated PM, Mr. Shinn, should you have any questions or comments. Our full contact information is as follows:

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Senior Vice President and General Manager
1700 Carnegie Ave, Suite 100
Santa Ana, CA 92705
P: (949) 270-9527
E: rmm@iteris.com

Richard Shinn
Associate Vice President
1999 Harrison Street, Suite 2125
Oakland, CA 94612
P: (925) 872-0834
E: rjs@iteris.com

Sincerely,
Iteris, Inc.

Ramin Massoumi, PE
Senior Vice President and General Manager
Transportation Systems
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EXECUTIVE SUMMARY

Iteris has developed a comprehensive work plan that combines elements of FHWA’s SE process, elements of an ATMS selection process and elements of a traditional Intelligent Transportation Management Plan to assist the City in modernizing their TMS. We have divided the TMS Configuration Report into separate but coordinated efforts focused on developing individual Concept of Operations (ConOps) and Systems Requirements documents for the ATMS system, communications network, TMC and Smart Cities and CAV. Upon completion of the System Requirements, Iteris will develop a single Transition Plan that maps out the steps for deploying and upgrading the City’s traffic management infrastructure in terms of technologies, locations and associated capital and O&M costs. **We have successfully employed this hybrid approach for several clients including the City of Modesto and City of San Mateo.** Following the FHWA SE process enhances the City’s ability to successfully compete for federal funds while employing traditional ITS Master Planning strategies in the Transition Plan aids the City with their short and long-term budget planning. Recognizing the City is looking to possibly procure a new ATMS system, we have included all the steps needed for the City to accomplish a new ATMS. We have included an ATMS System Vendor RFI and Evaluation in the System Requirements effort and an ATMS Acceptance Test Plan and System Vendor RFP in the Transition Plan effort.

We are confident in our ability to complete this project within in the five month window listed in the RFP and have developed a schedule to reflect that. For brevity purposes, we have included a high level schedule graphic in our proposal. This graphic is based on a detailed schedule prepared using MS Project. The ConOps and System Requirements efforts will be led by individual Iteris staff members with deep experience in their assigned area. David Huynh will lead the ATMS, Matt Wages will lead communications with assistance from Tuan Nguyen who has a plethora of Cisco certifications. George Gener will lead the TMC Analysis and Monique Fuhrman will lead the Smart Cities/Connected and Autonomous Vehicle Analysis. Our Project Manager, Richard Shinn, will be involved with all four elements and lead the development of the combined Transition Plan. David Huynh will also lead the update of the Traffic Signal Design & Operations Guide. In completing this task, he will draw upon his 13 years of experience as the City of Fremont’s Traffic Engineer where he wrote those exact documents and has assisted other clients with the same work during his six years with Iteris. Further, in February 2020, Richard Shinn, David Huynh, Monique Fuhrman, Matt Wages and Kassra Rafiee completed a very similar ITS planning project that included a Concept of Operations and development of standard specifications for the City of Modesto’s traffic control and ITS field elements.

We are not your typical traffic engineering consulting firm that mainly focuses on planning, design and signal timing. Our expertise literally spans the entire spectrum of transportation technology from high level planning where we have developed and updated the National ITS Architecture and helped position US DOT and FHWA for Connected and Autonomous Vehicles, to high level ITS planning and Systems Engineering followed by detailed design, integration and ongoing O&M in the field. Simply put, projects of this nature are what Iteris does best. We invite you to contact not only the three references provided in Section 8 of this proposal, but any reference listed with the project qualifications.

The ConOps and System Requirements are the primary planning documents FHWA requires when making funding decisions on potential ITS projects. Although not specifically called for in the RFP or follow-up Q&A, we have included these documents based on our prior experience working with FHWA staff on similar on a variety of ITS planning efforts.
4 PROJECT TEAM

Company Overview

Iteris is the market leader in developing tailored technology solutions to the transportation industry since 1987. Iteris’ 377 staff have decades of expertise in traffic management, along with superior services and patented products that help detect, measure, and manage traffic and vehicular performance; minimize traffic congestion; and empower Iteris clients with solutions to better manage their transportation networks. The firm has 13 offices nationwide including our office in downtown Oakland that will be managing this project.

Iteris team members are experts in the fields of transportation planning, traffic engineering, and ITS. Knowledge of these practice areas enables Iteris to provide comprehensive services ranging from initial traffic impact studies, transportation modeling, planning, systems engineering, and detailed design, through implementation, operations and performance monitoring. Iteris combines the knowledge of transportation engineers, systems engineers, system integrators, software engineers, and transportation planners to offer an unmatched combination of talent and experience. Iteris develops and deploys innovative solutions that help agencies reduce traffic congestion, enhance transit use, monitor and manage transportation networks, and provide greater access to reliable traveler information.

Project Manager- Trusted Leadership

Mr. Rich Shinn, will serve as the PM for this project and will be the principal contact with the City and other entities per the City’s direction. Mr. Shinn will be responsible for coordinating staff activities, coordinating meetings, project strategy, and will oversee work from project inception to completion. Mr. Shinn has played a project management or lead technical role in several major Northern California ITS projects over the last 15 including the MTC IDEA Program, MTC NGAOP Program, San Mateo County Smart Corridor, I-80 Integrated Corridor Management (ICM) Program, and Santa Clara TOS Program. From 2006-2009, Mr. Shinn provided first level support for the City’s TransSuite traffic control system.

Directly relatable project experience include:

- MTC IDEA Category 2 Concept Development Support and SE
- City of Modesto TSS Project
- City of San Mateo Traffic Signal Master Plan
- San Mateo County Smart Corridor System Integrator Project

His high-level skills involve fiber optic cable system design, video system design, wireless communications, and Gigabit Ethernet network design. Elements include the design of Traffic Operations Centers, preparation of PS&E documents, preparation of FHWA Systems Engineering documents, and system integration services. In addition he has led Iteris’ extensive involvement in the San Mateo County Smart Corridor for the last nine years. Mr. Shinn’s an industry leader in ITS Strategic Planning for small- and medium-sized communities and has been assisting public agencies with preparing for CAV.

Project Team Organization

Iteris has the resources of over 100 team members throughout California dedicated to Traffic Engineering, Transportation Planning, and ITS. Iteris’ proposed team organization is provided in Figure 1. Table 1 summarizes Iteris’ key team members and their specific role and experience. Resumes are included in Appendix B.
Figure 1 – Project Team Organization

Table 1 – Key Team Members, Role and Experience

<table>
<thead>
<tr>
<th>STAFF</th>
<th>ROLE</th>
<th>LOCATION</th>
<th>AVAILABILITY</th>
<th>ATMS</th>
<th>Communications Architecture</th>
<th>TMC Analysis</th>
<th>Smart City/CAV</th>
<th>Transition Plans</th>
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<tr>
<td>Rich Shinn</td>
<td>PM &amp; Transition Plan Leader</td>
<td>Oakland, CA</td>
<td>50%</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Gabriel Murillo, TE</td>
<td>Principal-In-Charge</td>
<td>Santa Ana, CA</td>
<td>20%</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>David Huynh, PE</td>
<td>Task Leader/ATMS Lead</td>
<td>Oakland, CA</td>
<td>50%</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Monique Fuhrman, PE</td>
<td>Project Engineer</td>
<td>Oakland, CA</td>
<td>45%</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td>George Gener, CCNA</td>
<td>TMC Lead</td>
<td>Boise, ID</td>
<td>40%</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Tuan Nguyen, CCDP, CCNP, CCNA</td>
<td>Project Engineer</td>
<td>Houston, TX</td>
<td>40%</td>
<td>●</td>
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<tr>
<td>Kassra Rafiee</td>
<td>Project Engineer</td>
<td>Oakland, CA</td>
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<tr>
<td>Matt Wages, PE</td>
<td>Project Engineer</td>
<td>Oakland, CA</td>
<td>55%</td>
<td>●</td>
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Quality Assurance/Quality Control (QA/QC)

Iteris’ ability to implement high-quality deliverables is a direct result of Iteris’ adherence to a QA/QC program that ensures accuracy, product usability, and an overall commitment to product excellence and user satisfaction. Mr. Shinn, Iteris’ proposed Project Manager, will ensure the team commitment to these objectives by identifying goals at the outset of the project and monitoring the product implementation and delivery process. The Iteris QA/QC Plan is an all-encompassing plan that covers every aspects of the project production including evaluation process, project documentation, design plans, graphics and presentations. The QA/QC process is a major factor in reducing project issues and errors and will assist with identifying conflicts or inconsistencies within project documentation.

Figure 2 illustrates Iteris’ QA/QC flowchart. In addition to project budget, ample time must be provided in the project schedule to complete reviews, as well as provide sufficient time for comments to be addressed and incorporated into the final delivery to the City of Stockton. Delivery of top quality and error-free product(s) to the City will be the Iteris Team’s number one project goal. All documents produced by Iteris associates and team members, whether for transmittal to a client, prospective client, another consulting firm, or for public distribution, are reviewed by someone with expertise in the relevant area other than the author to ensure that they are comprehensible and well written.

5 PROJECT UNDERSTANDING AND APPROACH

The City seeks assistance to evaluate and make recommendations to improve the City’s existing TMS that currently includes two time-of-day ATMS, two Adaptive Traffic Control Systems (ATCS), 295 analog Closed-Circuit Television (CCTV) cameras, a mixture of serial and Ethernet communications protocols, multiple traffic controller types deployed at 303 intersections, and the various other subsystems including video detection, Transit Signal Priority (TSP)/Emergency Vehicle Preemption (EVP), Weigh-in-Motion and Bluetooth readers. Supporting the existing field devices is an extremely robust fiber optic network provided through a long-term leasing agreement with AT&T as well as an array of unmanaged Ethernet switches installed in the vast majority of the City’s traffic controller cabinets. This is all managed from a TMC that is slated to relocate to another City building in the near future. The City’s intent is to establish principles and guidelines for upgrading the City’s TMS infrastructure for the purpose of improving traffic operations in a manner that will improve air quality, traffic flow, and pedestrian/citizen safety.

Iteris understands the City seeks to develop a Traffic Signal Design and Operations Guide that will clearly document the standardized technologies to be deployed, operated and maintained in the field. This document will reflect the recommendations put forth in the TMS Configuration Report and position the City of Stockton to support the introduction of CAV in the future.

To position the City to maximize future federal funding opportunities, our technical approach to this project starts with the scope from the RFP and enhances it by incorporating FHWA’s SE processes.
These processes were introduced to the transportation industry by FHWA after a series of high profile ITS project failures in the late 1990’s and early 2000’s. The intent of the SE process is to reduce the risks of project overruns, reduce schedule delays, and deploy solutions that meet or exceed the project’s original needs, goals and objectives. FHWA requires all ITS projects that receive federal funding follow these principles. FHWA recognizes that no two projects are the same, so the SE process was designed to be flexible enough to match the size and scope of each individual project.

In reviewing the RFP, it is apparent that virtually everything included in the task descriptions was covered in FHWA’s SE Guidebook for ITS (www.fhwa.dot.gov/cadiv/segb/), just organized differently. Consequently, our proposed scope of work will format the deliverables in a manner that is consistent with FHWA’s systems engineering process from the very beginning with a strong focus on ATMS, Communications, TMC and Smart Cities-CAV.

In particular, Iteris will focus on the left side, or planning side, of FHWA’s “Vee” diagram to complete separate Concept of Operations and System Requirements documents for each of the four focus areas. These documents will serve as the building blocks for the various testing and validation plans that are prepared once the system has been designed and deployed. Put another way, the ConOps and System Requirements are prerequisites for completing System Validation and System/Subsystem Verification Plans located on the right side of the “Vee” diagram. This will better position the City for future federal grant funds because completing these in advance of a grant application demonstrates to FHWA that the City is focused deploying technologies that are focused on meeting specific needs, goals and objectives.

We will then draw from the SE documents to complete a single Transition Plan for the entire TMS program and is more focused on supporting the City’s budgeting and financial planning processes. Our project manager has followed a similar process for projects in the City of Modesto and City of San Mateo. Iteris has a long track record of applying these principles to help local agencies grow their program from a single pilot deployment to a multi-phase, State-of-the-Art ITS/Smart City program. Examples of this are provided in Section 6 of this proposal and include the Cities of Oxnard, Corona, and Fountain Valley, among others.

As the City alluded to in the RFP, the transportation industry is changing rapidly. New technologies are being introduced on a seemingly daily basis. ITS field devices that were once considered “dumb” are now generating massive amounts of data. Bandwidth of communications networks that were miniscule not too long ago, have now multiplied by a factor of 20 or more. The introduction of 5G wireless communications will make widespread Gigabit communications (1,000 Mbps) a reality in the near future. The result being that an abundance of raw data can be quickly transformed into actionable information, providing insight that can be acted upon by public agencies to improve the transportation system. Our company as a whole, and our PM, Rich Shinn in particular, has been focused on the technology side of the industry and assisting agencies such as the City of Stockton with navigating this new frontier, and deploying leading edge technologies that make a difference in the community. Simply put, projects of this nature are what we do best. We are very excited for the opportunity to work with the City of Stockton on this project.
6 EXAMPLES OF EXPERIENCE WITH SIMILAR TYPE OF WORK

―Iteris has been very easy to work with and great with delivering the projects on time. The project had tight deadlines to complete and Iteris was able to meet with no issues or change orders. I would highly recommend them for any project in the future.‖

– Scott Collins, PE, Traffic Operations Engineer, City of Modesto

TRAFFIC SIGNAL SYSTEM (TSS) CONSULTING SERVICES – MODESTO, CA

<table>
<thead>
<tr>
<th>Client Reference</th>
<th>Scott Collins, PE, Traffic Operations Engineer, City of Modesto, (209) 577-5431, <a href="mailto:scollins@modestogov.com">scollins@modestogov.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Staff</td>
<td>Richard Shinn (PM), David Huynh, Matt Wages, Monique Fuhrman, Kassra Rafiee</td>
</tr>
<tr>
<td>Relevance</td>
<td>Delivered a roadmap for modernizing the City’s Traffic Management System using the SE process.</td>
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</tbody>
</table>

Iteris is evaluating and providing recommendations to improve the City’s existing TSS infrastructure that includes the ATMS, CCTV camera system, communications network and topology, traffic signals, and the various application platforms that are often used to manage this infrastructure. The focus is to provide an intelligent traffic management system that will improve air quality, traffic flow, and pedestrian/citizen safety in the City while making recommendations for the improvements to the City’s ITS infrastructure. In order to maximize future federal funding opportunities, Iteris’ technical approach incorporates FHWA’s SE processes.

Having completed the original scope of work under budget, City staff tasked Iteris with developing specifications for all TSS and ITS field devices including traffic controller hardware, ATC cabinets, video detection, edge Ethernet switches, Hub Ethernet switches and routers, fiber optic cable, fiber optic termination panels, fiber optic splice vaults, Bluetooth detectors, CCTV cameras, Trailblazer Signs, Ethernet radios and others. In addition, Iteris has been tasked with documenting the City’s 26 miles of existing fiber optic cable. To accomplish this, Iteris will review all as-built drawings as well as document and photograph all existing splice enclosures and fiber trays for the purpose of creating GIS layers and AutoCAD drawings showing details of every splice location in the network.

TRAFFIC SIGNAL MASTER PLAN – SAN MATEO, CA

<table>
<thead>
<tr>
<th>Client Reference</th>
<th>Bethany Lopez, PE, Associate Engineer, City of San Mateo, (650) 522-7313, <a href="mailto:blopez@cityofsanmateo.org">blopez@cityofsanmateo.org</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Staff</td>
<td>Richard Shinn (PM), Monique Fuhrman, Kassra Rafiee</td>
</tr>
<tr>
<td>Relevance</td>
<td>Delivering a roadmap for modernizing the City’s Traffic Management System using the SE process.</td>
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The City of San Mateo initiated the Traffic Signal Master Plan project to provide a roadmap for improving the City’s existing TSS infrastructure which includes the ATMS, CCTV camera system, communications network and topology, traffic signals and the various application platforms that are often used to manage this infrastructure. The Project’s intent is to provide an intelligent traffic management system that leverages the existing infrastructure while introducing new technologies for the purpose of improving air quality, traffic flow and pedestrian mobility in the City, while making recommendations for improvements to the City’s ITS infrastructure. The TSS project involves an Existing Conditions Analysis, ConOps, and Master Plan.

IDEA CATEGORY 2 PROJECTS SYSTEM ENGINEER – SAN FRANCISCO BAY AREA, CA

<table>
<thead>
<tr>
<th>Client Reference</th>
<th>Rob Rich, Project Manager, MTC, (415) 778-6621, <a href="mailto:rrich@bayareametro.gov">rrich@bayareametro.gov</a></th>
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</thead>
<tbody>
<tr>
<td>Key Staff</td>
<td>Richard Shinn (PM), David Huynh, Kassra Rafiee</td>
</tr>
<tr>
<td>Relevance</td>
<td>Evaluated, planned and supported the deployment of emerging Smart Cities and C/AV technologies.</td>
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MTC established a new regional initiative, the Innovative Deployments to Enhance Arterials (IDEA) program. IDEA is both a funding program and an MTC initiative to encourage and support local Bay Area agencies to deploy advanced technologies along arterials to enhance mobility, sustainability and safety across all modes. The IDEA program is divided into two categories.
Category 1 projects are focused on more mature, commercially-available advanced technologies. Category 2 projects are focused on advanced and less mature technologies such as CAV technologies. Iteris was selected to be the System Engineer for five projects that were funded under Category 2. The five projects included deployment of Virtual Bicycle Detection/Bicycle Signal Priority, Automated Traffic Signal Performance Measures (ATSPM), conditional cloud-based TSP and deployment of Shared Autonomous Vehicles (SAV) on public streets. Iteris’ work as the System Engineer includes the development of various SE documents (the System Engineering Management Plan (SEMP), the ConOps, System Requirements, and System Verification Plan), developing procurement documents and assisting with the procurement process, and providing technical oversight and assistance during deployment.

**DALY CITY TRAFFIC MANAGEMENT SYSTEM – DALY CITY, CA**

Client Reference Shirley Chan, PE, Traffic Engineer, City of Daly City, (650) 991-8231, schan@dalycity.org

Key Staff David Huynh (PM), Richard Shinn, Kassra Rafiee

Relevance Supported the selection of a new ATMS and designed field improvements to support the new system.

Iteris was selected to assist the City to upgrade the City’s TSS. The project included: 1) an evaluation, procurement, and deployment assistance of a new traffic signal management and traffic controllers to replace the existing legacy system; and 2) preparation of design Plans, Specifications, and Estimates (PS&E) for various field improvements to support the new traffic management system. As part of the field improvements, the City will upgrade and standardize on the deployment of traffic signal controllers, traffic signal cabinets, and battery back-up systems. In addition, all communications to traffic signal controllers will be upgraded to Ethernet IP deploying a combination of Ethernet-over-copper communication devices and wireless IP radios.

**TRAFFIC SIGNAL SYNCHRONIZATION PROJECT – MODESTO, CA**

Client Reference Scott Collins, Traffic Operations Engineer, City of Modesto, (209) 577-5431, scollins@modestogov.com

Key Staff David Huynh (PM), Matt Wages, Kassra Rafiee

Relevance Retimed 153 signalized intersections while developing the City’s roadmap for modernizing their TMS.

The City received a CMAQ Improvement program grant to deploy optimized signal timing plans along various corridors throughout the City, outside of Downtown. The project includes 153 signalized intersections to implement new optimized coordination plans during various weekday peak periods (i.e., AM peak, midday peak, and PM peak) and the weekend peak period. In addition to City-owned traffic signals, the City partnered with Caltrans to re-timed the traffic signals along the various State routes within the City, as these traffic signals are controlled by the State.

**SANTA CLARA TRAFFIC MANAGEMENT CENTER – SANTA CLARA, CA**

Client Reference Benison Tran, Associate Engineer, City of Santa Clara, (408) 615-3024, btran@santaclara.gov

Key Staff George Gener (PM), David Huynh

Relevance Designed and deployed a new TMC including video wall and custom furniture.

The Santa Clara TMC project included design and remodeling of the existing office spaces (removal of existing conference room walls, TMC System Architecture design, equipment storage area, and new cubicle arrangements) within the existing City Public Works Building. Iteris provided all planning, design and coordination with City forces including coordination and contracting of a project Architect to provide required construction drawings and permits. Iteris staff worked directly with City Maintenance staff to complete all required construction changes. The existing office area was replaced with a new TMC work area including a custom designed TMC console desk, new staff cubicle layouts, a 4x2 46” PLANAR video wall, and addition of new workstations within the TMC console, along with other ancillary equipment employed for traffic technician use and TMC systems.
The City of College Station contracted with Iteris to assist City staff in the planning, design, implementation, integration of the initial phase of their planned ITS improvements. Iteris’ scope of work included:

- Developed the College Station TSS Upgrade Plan
- Procured equipment required to upgrade the communication network and equipment in the signal cabinet
- Installed communication equipment, TMC equipment and supporting software
- Designed and installed the Municipal Court TMC video wall equipment
- Upgraded the central signal system software to Tactics 3.0
- Designed and constructed the Traffic Signal Shop TMC
- Video Management System deployment

7 DETAILED WORK PLAN

This section details Iteris’ approach to the proposed work plan for development and implementation of the program as described in the Scope of Work (SOW).

TASK 1. TMS CONFIGURATION REPORT

Working within FHWA’s SE process, Iteris will complete an Existing Conditions Analysis, ConOps and System Requirements for each of the four elements included in the RFP – ATMS, Communications Architecture, TMC and Smart Cities/CAV technologies. For the sake of brevity, Iteris has combined the SE document scope for all four elements into one consolidated scope. While the systems engineering documents will focus on individual elements, a single Transition Plan will be developed that treats the entire TMS as a single entity.

CONOPS

The ConOps is a key step and provides a model of the activities the system will ultimately support and what it is that the new TMS will accomplish that the current system is not able to accomplish. The ConOps will be from the perspective of the City, the users of the system, and not the system itself. The intent of this document is to:

- Describe operations not achievable with current system;
- Identify operational challenges the City has and wants to solve;
- Describe what needs to be done (needs and objectives); and
- Describe how the City will use the new signal system.

Figure 4 illustrates the components of the ConOps document that will be developed as part of this effort. The following further details the activities Iteris will take on in order to complete the ConOps for each of the TMS elements.
Identify Stakeholder’s Roles and Responsibilities - At the heart of the ConOps will be the needs identified by the stakeholders. The needs of a system start with the stakeholder’s roles and responsibilities. It is important to identify the operational responsibility between stakeholders involved in the project and what they do, as well as how an upgraded system will be used to mitigate the challenges identified. For the City, the stakeholders will primarily be engineering staff responsible for traffic and signal operations. Other stakeholders include other City stakeholders will include Public Works maintenance, the Police Department, and IT Department.

Identify Needs – Operational needs will be driven by the answers to the questions on the operational objectives and strategies, desired signal operational features, and type of operational concept the City plans to implement. User needs will be driven by the answers to the questions about user interface, reporting and monitoring and maintenance requirements, and any additional input from City staff and other project stakeholders. Iteris will conduct a meeting with City staff and other project stakeholders to develop the needs of each TMS element. These needs will be documented and then used to develop the system requirements.

Recommended Solutions - Iteris will complete a set of opportunities and recommended solutions based on the comprehensive analysis of system deficiencies, system goals and objectives, and City’s needs. The opportunities and solutions will define requirements for future systems and deployments, and create solutions and performance measures. The strategies identified will also address industry best practices and assess impacts of maintenance needs on the City’s existing staff. Iteris will develop costs and benefits of opportunities and recommended solutions for each location. Areas of focus for each TMS element include:

- **ATMS**: developing a City standard for time-of-day and adaptive central systems; traffic controller cabinets; controller hardware; and controller firmware.
- **Communications Architecture**: identifying the networking technologies and management strategies to deploy a secure, reliable and robust Ethernet network that is free of broadcast storms. With the emerging concept of Smart Cities, and the inevitable deployment of connected and autonomous vehicles, a more comprehensive communications network will be essential if for no other reason than the traffic sensors and the communication network will become a mission critical element of the City’s infrastructure.
- **TMC**: identifying the technologies and facilities needed to manage all of the City’s traffic field devices and operations.

Completing a ConOps and System Requirements will increase Stockton’s chances of receiving federal aid to upgrade their TMS.

The ConOps describes the operation of the system being developed from the various stakeholder viewpoints. It is written in a manner that non-technical stakeholders can easily understand and serves as the basis for the System Requirements and System Validation documents.
**Smart Cities/CAV:** Iteris will conduct an exhaustive review of current literature and pilot deployment projects. Iteris will assess in detail each application for emerging transportation vehicle technologies following the methodology in AASHTO’s Connected Vehicle Field Infrastructure Footprint Analysis. Iteris will work with the City to shortlist the selected applications to be considered. Iteris will ensure that applications will be considered because they will help solve an existing problem, meets the City’s needs to address strategic transportation challenges, and not deployed for the sake of simply advancing technology.

**Deliverables**

- Draft and Final ATMS Concept of Operations (Task 1.1)
- Draft and Final Communications Architecture Concept of Operations (Task 1.2)
- Draft and Final TMC Concept of Operations (Task 1.3)
- Draft and Final Smart Cities/CAV Concept of Operations (Task 1.4)

**SYSTEM REQUIREMENTS**

The System Requirements stage is where the higher level concepts discussed previously are translated into terms that others will use to design, develop, construct and deploy integrated solutions. It is a critical stage of the systems engineering process and serves as the basis for all testing, verification and validation. In our experience, a series of meetings with smaller groups of stakeholders has been most successful. In the first meeting, Iteris will interview the stakeholders to obtain their perspective. We will utilize the operational scenarios in the ConOps to get the conversation going. After the initial interviews, Iteris will develop requirements that are unambiguous, testable or measurable and necessary. Succinctness and precision are paramount in this process. These requirements will then be sorted into a number of categories including functional, performance, interface, non-functional and enabling. In addition, any constraints will be documented.

The output of this process will be a Draft System Requirements document that is presented for review. Upon receipt of comments, Iteris will follow up with individual stakeholders or small groups as needed and develop a final System Requirements document. The requirements will be traceable to stakeholder needs in the documentation and their structure, will be consistent with industry best practice, and sufficient to support the development of PS&E documents. The following System Requirements subtask will be performed for the ATMS element. These subtasks are needed in order to assist the City with procuring a new ATMS application.

**REVIEW OF AVAILABLE ATMS SYSTEMS**

Based on the draft ATMS system requirements, Iteris will work with City staff and project stakeholders to identify the top four signal systems on the market that has the best potential of satisfying all or most of the requirements. Iteris’ approach is designed to address these important considerations and it has proven successful on numerous signal system evaluations in the past. This approach will be applied to the available off-the-shelf signals systems using the goals, needs, and requirements. This serves two purposes: 1) it ensures at least one system exists that satisfies the set of requirements developed; and 2) it provides a basis for Iteris to develop a relative score for each system based on its ability to meet the City’s goals, needs and requirements.

Iteris proposes to utilize a Request for Interest (RFI) solicitation to signal system vendors as part of this evaluation process. There are numerous signal systems on the market, however, their functionalities are constantly changing with the changing market. Once the requirements have been completed, issuing an RFI to all of the vendors to see if a significant number of the requirements can be met by the vendors will allow the City to gauge what is feasible. This would also provide a gauge on the level of interest in the market. Utilizing this process provides a mechanism to shortlist a few vendors to come in and demonstrate their systems to provide proof of how their systems fulfill the requirements.

Iteris will prepare an RFI for the City to send to potential signal system vendors. Vendors will be asked to respond with a statement of their interest in being considered, and if interested, to respond to the RFI. The RFI will be prepared in consultation with City staff and project stakeholders and will include project background and statement of goals (via the
ConOps report) and a list of questions including a requested response by the vendor’s proposed signal system’s ability to meet the preliminary system requirements. The RFI will also ask if the vendor is willing to provide a presentation of the proposed system along with furnishing a complete set of test equipment and software for a field demonstration. The RFI will be delivered to the City in electronic format along with a list of available signal system vendors for the City to issue. The vendor response to the RFI will be utilized to identify the top four signal systems for further consideration and demonstration.

Iteris will develop the criteria and weighting factors for the City’s use in evaluating the responses to the RFI. As shown in Figure 5, all of the elements are used to evaluate each system. The criteria will be developed independent of any specific system. While Iteris will provide assistance and guidance during this process, this will require input from the City in the form of determining the weighting factors of each criteria, reviewing the RFI responses, attending presentations and demonstrations, and scoring each response. Since City staff will be the ultimate users of the selected system, City staff will be the ultimate judge on how well the system provides the required features.

**Figure 5 – Signal System Evaluation Elements**

Iteris will prepare a report summarizing the evaluation process and outcomes, discuss the various signal systems and their functional capabilities, and rank the signal systems evaluated for further consideration by the City.

**Deliverables**
- Draft and Final ATMS System Requirements (Task 1.1)
- Draft and Final Communications Architecture System Requirements (Task 1.2)
- Draft and Final TMC System Requirements (Task 1.3)
- Draft and Final Smart Cities/CAV System Requirements (Task 1.4)
- Draft and Final ATMS RFI (Task 1.3)
- Draft and Final ATMS Evaluation Summary (Task 1.3)

**TASK 1.5. TRANSITION PLANS**

**Task Lead** Richard Shinn

The objective of the Transition Plan is to identify a phased approach to develop solutions and strategies for a state-of-the-practice TMS, develop a plan for improved citywide communications to all signalized intersections and ITS devices, and to develop solutions and strategies for improving and enhancing the City’s traffic signal operations, TMC capabilities and position the City to take advantage of emerging and relevant Smart City technologies. Drawing upon the SE plans prepared previously, Iteris will prepare a draft Transition Plans at the 65%, 95%, and 100% stage as well as a final Transition Plan. The plan will detail the phased deployment of the recommended infrastructure solutions to improve the capabilities and management of the City’s traffic signal and ITS infrastructure. This task will be performed in parallel with the SE effort with the 65% draft commencing upon completion of the Concept of Operations workshop, 95% draft commencing upon completion of the Draft System Requirements, 100% commencing upon completion of the Final System Requirements and the Final Transition Plan.

The focus of the Transition Plan will be detailing the phases of deployment for solutions enhancing the City’s ATMS, Communications, and TMC while taking advantage of emerging technologies in the Smart Cities and Connected and Autonomous Vehicle arena. A key element of this document will be to create a prioritized ranking and critical path for the solutions identified.
Another key element of the Transition Plan is the development of an investment strategy to fund and implement solutions. Identifying possible funding opportunities and positioning the City to successfully pursue additional project funding are key outcomes of the Plan. Potential funding opportunities must not only address the capital cost of projects, but also the operations and maintenance costs associated with deployments. Identification of possible funding opportunities and preparing a strategy to pursue such funding are key to the success of a Transition Plan. All project requirements, relationships between projects, and critical paths to full deployment will be discussed. The final plan will also present prioritized solutions, phases of deployment, associated capital and O&M costs, and funding opportunities. A key element of the final plan will include a prioritized ranking of recommended projects based upon stakeholder needs, project cost and schedule, and availability of existing infrastructure. The Plan is envisioned to include the following elements:

- Identification of deficiencies within existing system
- Development of system goals and objectives
- Preparation of system needs and definition requirements
- Prioritized listing of projects
- Planning level cost estimates associated with each solution
- Schedule for the deployment of the projects
- Summary matrix of projects by priority and implementation schedule
- Capital improvements and associated costs
- Recommendation for the deployment of communications architecture enhancements
- Recommended approach to Virtual Local Area Network (VLAN) and IP address schema
- Recommendations for deployment of traffic signal equipment, ATMS equipment, and communications equipment
- Operations, maintenance, and life-cycle costs

The Transition Plan will identify the needs and readiness to integrate with certain technological advancements such as connected/automated vehicles. Iteris has a current contract with the FHWA to help develop and implement the design architecture of connected vehicles for future connectivity. Connected vehicles apply new communication capabilities, new data sources, and security to the increasingly complex ITS environment. The Plan will detail out the future of the City’s ITS network with ability to expand as connected and autonomous vehicles become more commonplace in the market. The resulting final Transition Plan will serve as a living document to guide the City to plan, fund, deploy, and operate future projects aimed at improving the City’s traffic management capabilities. As part of the ATMS Transition Plan, the following subtasks will be performed to aid the City in selecting a new ATMS application.

**ATMS ACCEPTANCE TEST PLAN (ATP)**

Iteris will also develop a preliminary ATP that will ensure that the signal system deployed meets all functional requirements proposed by the system vendor. The ATP describes how the system will be tested to ensure that it meets the requirements. The plan describes and records the activities, which will be done by the selected signal system vendor that verify the signal system meets the user needs developed in the ConOps, by fulfilling the requirements described in the requirements documents. The ATP will be prepared as a draft document, to be finalized by the signal system vendor/contractor, as they will have the lead role in completing the acceptance testing as it relates to the detailed test procedures associated with each requirement and ultimately the selected system. Preparing the Acceptance Test Plan in preliminary form and including it in the procurement document will identify clear expectations of any vendor/contractor selected to deploy the system.

**DEVELOP ATMS SYSTEM VENDOR RFP**

Iteris will prepare a signal system vendor RFP for the procurement of the signal system. Iteris will rely on the City to provide any front-end boilerplate language that is typical of the City’s RFP process. Iteris will incorporate the City’s front-end language and will develop the technical portions for a complete RFP.

**ATMS SYSTEM PROCUREMENT SUPPORT**

Iteris will support the City during the procurement phase of the project. Iteris support will include attending a pre-bid meeting (if necessary), providing clarification to vendor/contractor questions on the technical portions of the RFP, draft
addenda (if needed), analyzing submitted proposals, participating in any vendor interviews, and assisting with the system selection recommendation.

**Deliverables**
- 65%, 95%, 100%, and Final Transition Plans
- Draft and Final ATMS Acceptance Test Plan
- Draft and Final ATMS System Vendor RFP

**TASK 2. TRAFFIC SIGNAL DESIGN & OPERATIONS GUIDE**

**Task Lead** David Huynh, PE

The design guide can be used by both internal City staff (for new staff to show how “things are done” in Stockton) as well as to share with consultants working on capital and development projects to document the City’s preferences and standards as a way to set clear expectations, reduce questions to City staff, and minimize the City’s review effort. Iteris can develop the guide as a single document with two main sections: one on signal design and one on signal operations, or we can develop two separate documents, one for each. This guide would serve to provide uniformity and consistency in how traffic signals are built and how they would operate. This directly translates to easier maintenance and improved safety when all equipment is properly functioning and downtime is minimized.

While there are many standards that guide the signal design process and operations, there is also a lot of flexibility and options in the type of equipment, layout, placement, operational parameters, etc. that the City may want to standardize. We will work with City staff to identify all signal design and operational parameters to determine the City’s preferences and will recommend best practices if the City currently does not have a preference. As part of the signal operations guide, we will also recommend best practices and work with the City to identify your preferences related to process for tracking and documenting signal timing changes, database version control and management, ensuring consistency between field controller and central databases, etc.

For signal design, some design preferences to establish may include:

- Standardized phasing convention (i.e., phase 2 is always northbound)
- Standardized EVP and TSP phasing convention
- Standardized conduit size and routing
- Standardized pull box sizes based on use type and location
- Standardized traffic signal cabinet equipment and layout
- Standardized detection requirements and layout (especially in consideration to support ATSPM, traffic responsive, adaptive, and bicycles) based on detection technology type
- Communications and ITS infrastructure requirements, equipment requirement, and standardized mounting and location within the cabinet

For signal operations, some standardized traffic signal controller timing parameters to establish may include:

- Minimum green for main street through, protected left turns, side street approaches
- Minimum green for bicycle
- All-red interval main street through, protected left turns, side street approaches
- Walk and pedestrian clearance intervals
- Minimum values for phase splits for coordinated operation
- EVP parameters
- TSP parameters

**Deliverables:**
- 65%, 95%, and 100% Traffic Signal Design and Operations Guide
- Diagrams, maps, and graphics (original formats)
8 REFERENCES

Iteris has provided the following client references as shown in Table 2. All of the references listed below are familiar with our Project Manager and key personnel. Detailed project descriptions for each reference are provided in Section 6 of this proposal.

<table>
<thead>
<tr>
<th>Scott Collins, PE</th>
<th>Rob Rich</th>
<th>Shirley Chan, PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Operations Engineer</td>
<td>Project Manager</td>
<td>Traffic Engineer</td>
</tr>
<tr>
<td>City of Modesto</td>
<td>MTC</td>
<td>City of Daly City</td>
</tr>
<tr>
<td>1010 10th Street, Suite 4100 Modesto CA 95354 (209) 577-5431 <a href="mailto:scollins@modestorgov.com">scollins@modestorgov.com</a></td>
<td>375 Beale Street, Suite 800 San Francisco CA 94105 (415) 778-6621 <a href="mailto:rrich@bayareametro.gov">rrich@bayareametro.gov</a></td>
<td>333 90th Street Daly City CA 94015 (650) 991-8231 <a href="mailto:schan@dalycity.org">schan@dalycity.org</a></td>
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</table>

9 PROJECT WORK MATRIX

Table 3 provides hours by task for all team members that will be assigned to this project. A detailed rates Cost Proposal and Work Matrix is provided separately.

<table>
<thead>
<tr>
<th>TASKS</th>
<th>Rich Shinn</th>
<th>Gabe Murillo, TE</th>
<th>David Huynh, PE</th>
<th>George Gener, CCNA</th>
<th>Matt Wages, PE</th>
<th>Tuan Nguyen, CCDP, CCNP, CCNA</th>
<th>Monique Fuhrman, PE</th>
<th>Kassra Rafiee</th>
<th>Admin Support</th>
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<td>6</td>
<td>116</td>
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All other direct costs will be billed to the City at cost with 10% administrative markup. All mileage rates will be based upon IRS standard rates.
Figures 6-8 provides project duration of five months in Microsoft Project Schedule.

**Figure 6 – Project Schedule (1 of 3)**

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<td>1 day</td>
<td>Wed 1/6/21</td>
<td>Wed 1/6/21</td>
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Project: Stockton TMS Schedule
Date: Fri 6/26/20

---

RFP – Updates of the TMS Configuration Report and Traffic Signal Design and Operations Guide
Iteris, Inc. | 15
### Figure 7 – Project Schedule (2 of 3)

<table>
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<th>ID</th>
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<td>Tue 11/10/20</td>
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**Figure 8 – Project Schedule (3 of 3)**

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*Project: Stockton TMS Schedule*

*Date: Fri 6/26/20*
11 LOCAL PREFERENCE

Iteris does not have any subconsultants in this project and does not qualify as a local business.

12 COST PROPOSAL

Iteris has provided Cost Proposal in a separate document.
APPENDIX A FORMS

- City of Stockton business license
- DIR- Labor Compliance Self-Certification
- Title VI Violation Self Certification
- Non Collusion Declaration
CITY OF STOCKTON
BUSINESS LICENSE TAX CERTIFICATE

BUSINESS LICENSE TAX ACCOUNT NUMBER: 20-00129307
CONTROL NUMBER (0111628)

ITERIS, INC
1700 CARNEGIE AVE STE 100
SANTA ANA CA 92705

BUSINESS ADDRESS: 9999999 O.L. OUT OF TOWN
STOCKTON CA 95202

EXPIRATION DATE: November 30, 2020

BUSINESS LICENSE CLASSIFICATION: PROFESSIONS & PROF.BUSINESSES

BUSINESS DESCRIPTION: ENGINEERING AND CONSULTING

THIS LICENSE MUST BE KEPT AT THE FIXED LOCATION OF THE BUSINESS IT HAS BEEN ISSUED FOR, AND DISPLAYED UPON DEMAND.
- OR -
IN THE CASE OF A LICENSEE NOT AT A FIXED LOCATION, THE LICENSEE SHALL KEEP THIS LICENSE UPON HIS PERSON AT ALL TIMES WHILE TRANSACTING AND CARRYING ON BUSINESS AND DISPLAY IT UPON DEMAND.

Licenses must be renewed by the last day of the month following the expiration date, which is the date the license tax has been paid through. It is the business owner’s responsibility to renew the business license or notify the city that they are no longer doing business, even if they do not receive a renewal application by mail.

Notify the City of Stockton, Business License Customer Service unit of any changes to the business either by mail City of Stockton, P.O. Box 1570, Stockton, CA 95201-1570, or in our office City Hall, Administrative Services Department, 425 North El Dorado Street, Stockton, CA 95202.

Office hours are Monday through Friday 8:00 a.m. to 5:00 p.m.
Open through lunch, Closed every other Friday

Authorized Agent for City of Stockton
DEPARTMENT OF INDUSTRIAL RELATIONS
LABOR COMPLIANCE
SELF-CERTIFICATION

We, the undersigned, self-certify that we will comply with all California Department of Industrial Relations (DIR) laws, rules and regulations that apply to Public Work as defined in Labor Code Section 1720(a)(1), as well as Senate Bill 854 (2014), and all other related statutes.

In addition, we acknowledge that to be eligible to bid on City of Stockton Public Works projects, we and all subcontractors under us are registered, and will remain registered with the DIR until project completion; otherwise, we will be disqualified from consideration as a bidder for the subject project.

CONTRACTOR: Iteris, Inc.

BY: Ramin Massoumi, PE

TITLE: Senior Vice President and General Manager

DATE: June 29, 2020
### Contractor Information

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<tr>
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<tr>
<td>Trade Name/DBA</td>
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<td>License Number(s)</td>
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### Legal Entity Information

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<td>Federal Employment Identification Number</td>
<td>JOE BERGERA</td>
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<tr>
<td>President Name:</td>
<td>JOE BERGERA</td>
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<tr>
<td>Vice President Name:</td>
<td>Douglas Groves</td>
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<td>Treasurer Name:</td>
<td>Douglas Groves</td>
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<tr>
<td>Secretary Name:</td>
<td></td>
</tr>
<tr>
<td>CEO Name:</td>
<td>JOE BERGERA</td>
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</table>

| Agent of Service Name: | REGISTERED AGENT SOLUTIONS INC |
| Agent of Service Mailing Address: | 1220 S. ST STE 150 SACRAMENTO 95811 CA United States of America |

### Registration History

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<tr>
<td>7/1/2020</td>
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Do you lease employees through Professional Employer Organization (PEO)?: No

Please provide your current workers compensation insurance information below:

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<tr>
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Insured by Carrier

**Policy Holder Name:** TWC700100812

**Insurance Carrier:** Continental Insurance Company

**Policy Number:** 6057544401

**Inception date:** 3/30/2020

**Expiration Date:** 3/31/2021
TITLE VI VIOLATION SELF-CERTIFICATION

We, the undersigned, self-certify that pursuant to Federal Code of Regulations (CFR), 23 CFR 200.9, 633 and 49 CFR 21.7, we do not have any unresolved violations under Title VI of the Civil Rights Act of 1964 and related statutes, including Americans with Disabilities Act (ADA). In addition, we acknowledge that an unresolved Title VI violation will disqualify us for consideration as a bidder for the subject project.

CONTRACTOR: Iteris, Inc. __________________________

BY: Ramin Massoumi, PE __________________________

Senior Vice President and General Manager

TITLE

DATE: June 29, 2020
NON-COLLUSION DECLARATION

(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

To the CITY of STOCKTON DEPARTMENT OF PUBLIC WORKS.

The undersigned declares:

I am the __________________________, of __________________________, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on __________ at __________ (city), __________ (state).

______________________________
(Signature)  
Ramin Massoumi, PE - Senior Vice President and General Manager
APPENDIX B RESUMES

- Rich Shinn
- Gabriel Murillo, TE
- David Huynh, PE
- George Gener, CCNA
- Matt Wages, PE
- Monique Fuhrman, PE
- Tuan Nguyen, CCDP, CCNP, CCNA
- Kassra Rafiee
RICHARD SHINN
Associate Vice President

Mr. Shinn serves as an Associate Vice President of Iteris’ Transportation Systems division and has been with the firm since May 2011. He has over 30 years of experience in Intelligent Transportation Systems (ITS), Smart Cities, Internet-of-Things (IOT), systems engineering, telecommunications engineering, network analysis, systems management and system integration. This has involved fiber optic cable system design, video system design, wireless communications, and Gigabit Ethernet network design. Elements include the design of Traffic Operations Centers, preparation of PS&E documents, preparation of FHWA Systems Engineering documents, and system integration services. Mr. Shinn is a practitioner in the expanding Integrated Corridor Management (ICM) field, having played a key role in the systems engineering aspects of the I-80 ICM project as well as the design and construction of Washington State’s first ICM deployment. In addition he has led Iteris’ extensive involvement in the San Mateo County Smart Corridor for the last eight years. Mr. Shinn’s an industry leader in ITS Strategic Planning for small- and medium-sized communities and has been assisting public agencies with preparing for Connected and Automated Vehicles (CAV). As an Information Technology Manager responsible for IT operations for a 700 person division of a Fortune 500 company and an officer in the United States Navy, he managed 25 separate systems integration projects for enterprises ranging from 200 to 11,000 people.

EDUCATION
MS, Systems Technology (Scientific & Technical Intelligence), United States Naval Postgraduate School, Monterey, CA, 1995
BS, Accountancy, Villanova University, Villanova, PA, 1990

YEARS OF EXPERIENCE
With Iteris: 9  Total: 30

CORE DISCIPLINES
Smart Cities/ITS Planning
ITS Design
Connected & Autonomous Vehicles
ITS Systems Engineering & Architecture

AFFILIATIONS
Institute of Electrical and Electronics Engineers (IEEE), Member
Institute of Transportation Engineers (ITE)

IDEA Category 2 Concept Development Support and Systems Engineering (MTC) – San Francisco Bay Area, CA

Mr. Shinn serves as Project Manager on this Connected and Autonomous Vehicle (CAV) pilot deployment program. MTC divided the Innovative Deployments to Enhance Arterials (IDEA) into two categories. Category 1 projects are focused on more, mature, commercially-available technologies. Category 2 projects are focused on advanced, less mature technologies such as connected and automated vehicle technologies. Iteris was selected to identify any gaps or ambiguities in the initial grant applications and refine the scope of work. In a separate procurement, Iteris was selected to be the System Engineer for five following five projects:

- City of Dublin, CAV and Multimodal ITS Improvements – Implementation of connected vehicle application(s) for functional testing and operations of an electric shared autonomous vehicle (SAV) on public streets.
- Contra Costa Transportation Authority (CCTA), Transit and Mobility Improvements for Routes 15 and 20 – Implementation of conditional transit signal priority (TSP) using a connected-vehicle application.
- City of Walnut Creek, V2I Approach to Conditional Transit Priority – Implementation of conditional transit signal priority (TSP) using a connected-vehicle application.
- Emeryville, Bicycle Signal Prioritization – Implementation of a cloud-based mobile application for virtualized bicycle detection and

Did you know? Mr. Shinn has visited 16 different countries while serving in the United States Navy.

Project Experience
at traffic signals. The project also includes the deployment of an automated traffic signal performance measurement (ATSPM) system.

- **Los Gatos, Smartphone Initiated Bicycle Signal Prioritization** – Implementation of a cloud-based mobile application for virtualized bicycle detection and prioritization at traffic signals. The project also includes the deployment of an adaptive traffic signal system and automated traffic signal performance measurement (ATSPM) system.

Iteris’ work as the System Engineer includes the development of various SE documents (the System Engineering Management Plan (SEMP), the Concept of Operations (ConOps), System Requirements, and System Verification Plan), developing procurement documents and assisting with the procurement process, and providing technical oversight and assistance during deployment. The Concept Development Support project began in February 2018 and was completed in April 2018. The System Engineer project began in August 2018 and will be completed in June 2021.

**Traffic Signal System Project – City of Modesto, CA**
Mr. Shinn is serving as Project Manager for and lead author. This project will assess the City’s existing ITS and communications infrastructure, document the City’s needs, prepare a Concept of Operations document that strictly adheres to FHWA’s Systems Engineering process and develop a plan for deploying the selected ITS strategies in a phases and coordinated manner. In addition, this project is providing recommendations on the following:

- City-wide ITS communications architecture;
- Communications infrastructure sharing with other City departments;
- Suitability of wireless communications for ITS purposes;
- Improvements to the existing Traffic Management Center (TMC);
- Suitability of deploying Transit Signal Priority (TSP) and Emergency Vehicle Preemption (EVP);
- Suitability of deploying real-time traffic data collection technologies;
- Suitability of piloting Connected and Automated Vehicle (C/AV) technologies.

This project began in February 2019 and was completed in November 2019.

**Santa Clara Changeable Message Sign (CMS) Project – Santa Clara, CA**
Mr. Shinn is serving as Project Manager responsible for determining the exact CMS locations and technologies; preparation of a complete set of Plans, Specifications & Estimates (PS&E); assisting the City during the construction contractor bid process and construction; and integrating the constructed CMS units into the City’s overall ITS program. In addition to Levi’s Stadium, this area of the City hosts a number of hotels, office parks, Mission College, Great America Theme Park, and the Santa Clara Convention Center with more development slated including City Place. Eight Changeable Message Signs (CMS) are envisioned along three key corridors in the City (Great America Parkway, Tasman Drive and Lafayette Street). Four CMS units are envisioned on Great America Parkway, two full overhead and two partial overhead. Each full overhead sign will have two display panels mounting back to back with one spanning half the roadway’s width and the other spanning the entire roadway. Along Tasman Drive and Lafayette Street, two partial overhead CMS units are slated for deployment along each of these corridors. The project began in March 2017 and is ongoing.

**El Dorado County ITS Master Plan – El Dorado County, CA**
Mr. Shinn served as subconsultant Project Manager for developing the County’s ITS Master Plan. This project produced a ITS Deployment Plan document with a prioritized list of ITS projects along with preliminary design and construction cost estimates and implementation schedule. The ITS Deployment Plan is based on a detailed inventory of El Dorado County’s current traffic management systems and capabilities, the identification and prioritization of Roseville’s traffic management needs. Acting in a subconsultant role, Mr. Shinn interviewed key project stakeholders within the El Dorado County (EDC) including the EDC Department of Transportation, EDC Transportation Commission, EDC Office of Emergency Services, EDC Transit, City of Placerville, City of South Lake Tahoe, EDC Sheriff’s Department, Caltrans District 3, Sacramento County and Placer County. In addition, he led the Existing Conditions Analysis and Funding Strategies tasks and presented at two stakeholder workshops. This project began in January 2007 and completed in March 2009.
Mr. Murillo serves as a Vice President for Transportation Systems division and has been with the firm since September 2008. He has over 28 years of experience in Integrated Corridor Management (ICM), transportation systems design and analysis; Intelligent Transportation Systems (ITS) planning and design; traffic engineering; systems engineering, development and integration of real-time traffic systems utilizing system engineering practices. Mr. Murillo has served as Project Manager, Task Leader and Project Design Engineer on numerous projects. This includes providing regional-based signal timing analysis and deployment; and ITS-based traffic, transportation, transit priority and communications consulting systems engineering services to public agencies and transit operators.

Mr. Murillo is an expert with (ICM) planning and implementation, traffic operations and has hands-on experience having worked in Traffic Management Centers (TMC) for over 15 years. He has managed over 2,400 intersections, designing and implementing safety and operational improvements. Mr. Murillo is an expert with Adaptive Traffic Control Systems (ATCS) having managed traffic control systems with over 1,000 traffic signal intersections operating with “Adaptive” functions. He is highly experienced in the design, development and integration of coordinated Advanced Traffic Management Systems (ATMS) and Transit Signal Priority (TSP) systems, and the design and implementation of systems for arterial, highway, and transit and highway-railroad grade crossings. These applications have included the use of systems engineering practices to design, deploy and integrate ITS elements, Advanced Transportation Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS), TSP systems and Bus Rapid Transit (BRT) systems.

**Project Experience**

**TRAFFIC ENGINEERING & OPERATIONS**

Traffic Engineering and ITS Consulting Services – City of Chula Vista, CA

Mr. Murillo serves as Project Manager on this Traffic Engineering and Intelligent Transportation Systems On-Call project for the City of Chula Vista. He is overseeing Iteris staff who will are providing on-call services including Traffic Engineering, Transportation Engineering, Civil Engineering, ITS Design and maintenance and operations, communication system design and integration and traffic operations enhancements. A primary focus for this on-call is for the Autonomous Vehicle proving ground projects approved by FHWA. Iteris provides experts for on-call services that address all the elements and hands-on specialists to design, operate and maintain complex communication and ITS networks that will prepare Chula Vista for Smart City initiatives, Autonomous and Connected Vehicles. The project began in April 2018 and is scheduled to be completed in March 2020.

I-405 Design-Build Improvement Project, Orange County Transportation Authority (OCTA) – Orange County, CA

Mr. Murillo serves as ITS Integration Lead for Iteris, acting as a subconsultant of a multidisciplinary design and construction team, on this $1.2 billion dollar design-build project in Orange County. The project will improve 16 miles of I-405 between SR-73 in Costa Mesa and
the I-605 near the Los Angeles County line. The project includes adding one regular lane in each direction from Euclid St to I-605, making improvements to freeway entrances, exits and bridges, and will also implement Express Lanes that expands the existing HOV lane from one lane to two lanes in each direction from SR-73 to I-605. Iteris is responsible for design of the Caltrans ITS field infrastructure, temporary ITS field infrastructure supporting maintenance of traffic during construction, toll system infrastructure and coordination, street lighting, agency traffic signal improvements along the corridor and development of the project Traffic Management Plan (TMP). Mr. Murillo is responsible for System Integration of the ITS elements on the 405 corridor as well as QA/QC of the ITS design and the tolling system design. The project began in February 2017 and is ongoing.

Traffic Signal Timing Project – City of Escondido, CA
Mr. Murillo served as a Project Manager on this signal timing project which aimed to improve traffic flow by providing timing plans for intersections along two major corridors in the City of Escondido. Iteris provided analysis of existing conditions, including working directly with the agency to collect turning movement counts, agency standards, and speed survey data; developed recommended timing parameters and optimized timing plans, including cycle lengths, splits, and offsets, for the corridors; and implemented and fine-tuned optimized plans, conducted travel time studies; and quantified project benefits through measure of effectiveness; based on changes in speeds, travel times, number of stops, delays and emissions. Mr. Murillo provided QA/QC oversight for the project. The project began in July 2017 and completed in May 2018.

Fiber Smart Corridor Implementation – City of San Mateo, CA
Mr. Murillo served as Design Lead for the development of the Plans, Specifications and Estimates (PS&E) for the design of fiber optic communication system, Trailblazer Detour Signs, Dynamic Message Signs (DMS), Surveillance Closed-Circuit Television (CCTV) installations, System Detection Stations and traffic signal controller upgrades at ten City of San Mateo signalized intersections and 12 Caltrans District 4 signalized intersections. This project is the initial implementation for a larger Smart Corridor Regional Project that will coordinate traffic management between the freeway system and arterial traffic network. The project will initiate the City’s migration to an Ethernet-based network for Traffic Operations and develop data sharing link between Caltrans and the local agencies in the region. The project began in December 2008 and completed in June 2010.

ITS SYSTEMS ENGINEERING & ARCHITECTURE

Omaha Traffic Signal System Master Plan and System Manager – Omaha, NE
Mr. Murillo served as Project Engineer for development of a Traffic Signal System Master Plan for the City of Omaha and the subsequent System Manager project. The master plan addressed major system components including traffic signal system hardware and software, communications infrastructure, location and functionality of a traffic management center, ITS field devices such as video cameras, traffic sensors, and arterial Dynamic Message Signs (DMS), integration with other systems such as transit and parking management, data sharing among key stakeholders, and the provision of traveler information to the public and other stakeholders. Systems engineering documentation included Project Plan, Systems Engineering Management Plan, Concept of Operations (ConOps) and a Requirements and Verification Plan was integrated into the master plan process. The System Manager project consists of support of continued planning, design, deployment, construction, integration and acceptance testing of the Omaha Signal System upgrade including procurement of Advanced Traffic Management System (ATMS) hardware and software and other ITS components. The Traffic Signal System Master Plan began in January 2012 and completed in June 2013. The System Manager project began in November 2014 and completed in December 2017.

DynaMIT and Claire Integration – Los Angeles, CA
Mr. Murillo served as Project Manager for a demonstration project utilizing predictive traffic algorithms in DynaMIT (an MIT, Linux-based software package) and Claire (a French-based software system) for integration into Arterial Incident Detection Algorithm (AIDA). Through the coupling of incident detection and traffic flow prediction systems, operators would better
understand how traffic will circumvent heavily congested arterials. Systems engineering practices were utilized to integrate the disparate computer systems to create a functional traffic management system. The project began in June 2002 and completed in June 2005.

Arterial Incident Detection Algorithm (AIDA) – Los Angeles, CA
Mr. Murillo served as Project Manager for the real-time AIDA. This system was designed and developed by a team of engineers and programmers managed by Mr. Murillo. The team integrated the AIDA system into the real-time traffic control system in Los Angeles to detect possible incidents in the 3,300+ intersections controlled by the traffic management system. The system was successful at eliminating recurring congestion as identified incidents and facilitated the use of the system by posting incidents on a large message board mounted on a wall inside the Traffic Management Center (TMC). The project began in March 2002 and completed in March 2006.

SYSTEMS INTEGRATION

Citywide Ethernet Upgrade Design – City of San Marcos, CA
Mr. Murillo served as Project Manager for the City of San Marcos Ethernet Update Project to develop a modern design of the City’s ITS communication system. This project involves identifying the existing conditions for every traffic signal in the project area and documenting existing ITS and communication hardware. Based on the existing conditions, a design will be developed to accommodate a redundant Gigabit backbone and all current and future ITS hardware. Iteris will also provide construction support and integration services to have a fully operational ITS communication system at project completion. This project began in September 2014 and is ongoing.

Traffic Management Center (TMC) and ITS Integration – City of Newport Beach, CA
Mr. Murillo served as Systems Engineering and Integration Lead for the installation of ITS elements throughout the City of Newport Beach and the City’s TMC. The project includes improvements and/or upgrades for over 20 Closed-Circuit Television (CCTV) surveillance cameras, integration of Video Detection Systems, integration of a fiber optic Ethernet Ring, TMC video and traffic controller integration. The project involved coordination of the delivery of hardware to the contractor, scheduling integration of ITS devices in the field as well as the TMC with City staff and other contractors integrating the traffic control system.

OPERATIONS & MAINTENANCE

Fountain Valley Citywide Fiber Optic Maintenance and Support – City of Fountain Valley, CA
Mr. Murillo serves as Project Manager for the maintenance and support of the Citywide Fiber Optic Cable and communication infrastructure elements in the City of Fountain Valley. The project involves monitoring the citywide fiber optic system and the Traffic Management Center (TMC) and utility management center, responding to calls made by the City staff with regard to failures and communication deficiencies providing diagnostic and trouble-shooting support with any hardware, software, and networking issues at the TMC or in the field. For critical SCADA problems Iteris is required to diagnose the problem within 8 hours of being reported and provide repairs within 48 hours of diagnosed failure. The project began in July 2016 and is ongoing.

On-Call Maintenance and Support – City of Long Beach, CA
Mr. Murillo serves as Project Manager for the maintenance and support of ITS elements and the adaptive traffic system deployed in the City of Long Beach. The project involves monitoring the ITS infrastructure, responding to calls made by the City staff with regard to failures and traffic operations deficiencies providing diagnostic and trouble-shooting support with any hardware, software, and networking issues at the Traffic Management Center (TMC) or in the field. The project, which began in July 2011 and renews annually, is ongoing.
David Huynh serves as an Associate Vice President of Iteris’ Transportation Systems and has been with the firm since June 2014. He brings over 24 years of transportation experience having worked in both the public and private sectors with a focus on traffic engineering, design, Intelligent Transportation System (ITS), operations, signal systems, communications design, Transit Signal Priority (TSP) design and implementation, connected vehicle, and system engineering. Mr. Huynh previously served as the Senior Transportation Engineer for the City of Fremont where he managed the Transportation Group and was responsible for operation and management of the City’s traffic signals and central signal system, project delivery of capital projects, transportation analysis and plan review for new developments.

Project Experience

Daly City Traffic Management System – City of Daly City, CA
Mr. Huynh serves as the Project Manager on this signal system evaluation, design, and implementation support project for the City of Daly City. The project consists of developing a System Concept for the City’s traffic signal system, developing system requirements, and assisting the City in the procurement and implementation of a new traffic signal system. This citywide project would replace the City’s legacy signal system with an advanced traffic management system for all of the City’s 40 traffic signals. Iteris’ work also includes design (PS&E preparation) of an IP-based wired and wireless communications network to support the new signal system, cabinet and controller upgrades, and BBS installations. The project began in June 2017 and is currently ongoing.

Fremont On-Call Engineering – City of Fremont
Iteris has been retained by the City since 2005 for a multi-year on-call contract to provide engineering support covering traffic engineering, signal design, signal operations and management, and other general traffic engineering services. These services range include assisting transportation staff with design plan review for CIP and development projects, signal timing and coordination, management of the central signal system, fiber optic and copper interconnect communications design, responses to traffic service requests, and preparing RFPs for traffic signal maintenance services. Mr. Huynh currently serves as Project Manager. The project began in February 2015 and is currently ongoing.

Omaha Traffic Signal System Upgrade – Omaha, NE
Mr. Huynh was a Project Engineer where Iteris served as the System Manager project. The project addressed major system components including traffic signal system hardware and software, communications infrastructure, location and functionality of a traffic management center, Intelligent Transportation System (ITS) field devices such as video cameras, traffic sensors, and arterial dynamic message signs, integration with other systems such as transit and parking management, data sharing among key stakeholders, and the provision of traveler information to the public and other stakeholders. Systems Engineering (SE) documentation included Project Plan, SE Management Plan, Concept of Operations, and a Requirements and Verification Plan was integrated into the master plan process.

Education
MS, Civil Engineering (Transportation), University of California, Berkeley, 1995
BS, Civil Engineering, University of California, Irvine, 1994

Years of Experience
With Iteris: 6  Total: 24

Registrations
Civil Engineer (PE)
CA #60230, 2000

Core Disciplines
Signal Systems Operations & Management
ITS Planning & Design
Traffic Engineering & Operations
Design PS&E

Affiliations
Institute of Transportation Engineers (ITE)
ITS California
The System Manager project consists of support of continued planning, design, deployment, construction, integration and acceptance testing of the Omaha Signal System upgrade including procurement of Advanced Traffic Management System (ATMS) hardware and software and other Intelligent Transportation System (ITS) components.

Fremont Traffic Signal System Upgrade – City of Fremont, CA
Mr. Huynh managed the project to upgrade the City’s current signal system (Multisonics VMS) to a new traffic management system (Siemens/Eagle ACTRA). Project elements included an evaluation of various available commercial off the shelf, selection, procurement, and implementation of the new system. Implementation included the creation of a new traffic management center, installation of central signal system hardware and software, redesign of the communications system, and replacement of all existing controllers (Multisonics 820/870) with new NEMA TS2 and 2070 controllers.

Advanced Traffic Management System (ATMS) – City of Cupertino, CA
As Task Lead, Mr. Huynh designed and implemented a new Advanced Traffic Management System (ATMS) for the City of Cupertino that was compliant with the National ITS Architecture and NTCIP protocol. The project involved both elements at the City’s Traffic Operations Center (TOC) and in the field. Project elements at the TOC included a complete redesign of the TOC including replacement of the existing VMS 330 central signal system with the StreetWise signal system, new signal system hardware and software, new traffic management console and equipment rack. In the field, the project replaced and upgraded a number of aging field traffic signal equipment for the project’s signalized intersections. Existing traffic controllers (Multisonics 820A) at all project signals were replaced with Naztec signal controllers built to NEMA TS-2 standards. All cabinets with the old printed circuit board load bay technology were replaced with NEMA TS-2, Type 1 cabinets. Mr. Huynh prepared and supervised others in the preparation of the Plans, Specifications and Estimates (PS&E) design package for the project. Developed new coordinated signal timings using the Synchro software and implemented the new timings for the AM, midday, and PM peak along three project corridors comprising of 33 signals. Mr. Huynh also provided training to City staff on the use of signal timing optimization software and served as in-house project manager responsible for managing subconsultant work, maintaining project budget and schedule, invoicing client, and preparing monthly progress reports.

Advanced Traffic Management System (ATMS) – City of Stockton, CA
As Project Engineer, Mr. Huynh designed and implemented an integrated traffic management system which involved the development of a Master Plan to integrate the ATMS between several agencies including Caltrans and the County of San Joaquin. The plan included an analysis and comparison of alternatives for traffic signal systems and Intelligent Transportation System (ITS) elements, a data communications network to support these systems, and the essential elements for system integration. The implemented system architecture included a fully-deployed Traffic Operations Center, a workstation console with computer and video monitors, a central signal system with distributed control of local intersections, Closed-Circuit Television (CCTV) cameras, system detection, coordination of traffic signals across jurisdictional boundaries, traffic responsive signal timing, and the ability for each of three involved jurisdictions to access the other jurisdictions’ systems on a read-only basis. The communications network involved a comprehensive fiber optic network with trunklines and fiber branches to outlying areas including state-controlled ramp signals and CCTV cameras.

Program for Arterial System Synchronization (PASS) and Regional Signal Timing Program (RSTP), Metropolitan Transportation Commission (MTC) – San Francisco Bay Area, CA
Mr. Huynh serves as Project Manager on this regional program that provides technical assistance to Bay Area agencies to improve the safety and efficiency of arterial operations in the region. Mr. Huynh is responsible for the development of optimized signal timing plans for a number of agencies through the nine-county Bay Area. The projects include the analysis, deployment and fine-tuning of optimized signal coordination plans for both weekday and weekends.
Mr. Gener serves as a Principal Engineer for Iteris’ Transportation Systems division and has been with the firm since September 2000. He has over 35 years of systems engineering, systems integration, system testing, and project management experience in a wide array of technologies and applications. Mr. Gener has served as Project Manager, Task Manager and Project Engineer on numerous Intelligent Transportation Systems (ITS) projects including the incorporation of Advanced Traffic Management System (ATMS), Advanced Traveler Information System (ATIS) and their supporting communications system elements. He is experienced in the areas of traffic control system software, application of ITS, Traffic Management Center (TMC) design, IP network communication design/ configuration/ integration, Closed-Circuit Television (CCTV) design and deployment, traffic website development and design of data sharing and exchange systems. Mr. Gener’s management responsibilities have ranged from project deliverables, project quality, project liaison, research and development, schedules, training and budget maintenance. He has held engineering and management positions for large scale Transportation and ITS projects in excess of $4 million in contract value.

Did you know? George is an outdoor enthusiast and enjoys surfing, skiing and spending time with his dog.

Project Experience

Santa Clara Changeable Message Sign (CMS) Project – Santa Clara, CA
Mr. Gener is serving as Integration Task Lead for this ITS Planning and Design Project for the City of Santa Clara. This project will install eight Changeable Message Signs (CMS) along the adjacent arterial streets to Levi’s Stadium allowing for the diversion of traffic to be routed into or out of the Stadium efficiently. The project began in March 2017 and is scheduled to be completed in December 2019.

College Station Traffic Signal System Upgrade – College Station, TX
Mr. Gener served as Technical Lead and System Engineer for the upgrade of the City’s Ethernet field communication network, including installation of field hardware, design and installation of a new Traffic Management Center (TMC), a video wall and related equipment. He led the design, installation and integration of all VMS and TMC software, as well as network gear upgrades and its integration with field systems into the TMC. Mr. Gener was a key contributor to the design and upgrade of the communication network upgrade from serial to IP/ Ethernet and the design and installation of the TMC. The project included 77 intersections that were converted from serial to IP Ethernet communications. All network switches were installed and configured with Mr. Gener’s lead. Other field equipment installed and configured included M52L controllers, malfunction management units, Iteris’ Edge® Connect, 35 PTZ Closed-Circuit Television (CCTV) and 22 Iteris’ Vantage Velocity® Bluetooth travel time units. Phase 2 of the project tripled the number of cameras on the system and deployed a second TMC in the City’s Signal Shop of equal size. The project began in October 2014 and was completed in January 2016 with a 6-month deployment schedule.
GEORGE GENER, CCNA  
Principal Engineer

A recent 2018 upgrade to this project includes a new TMC dedicated for the City’s Signal Shop staff use, where Mr. Gener was again the lead designer and integrator for this work. The Signal Shop TMC was completed March of 2018. This is the second TMC to be deployed for this same client.

Oxnard Intelligent Transportation System (ITS) Master Plan Design Project – City of Oxnard, CA
Mr. Gener was the Integration Task Lead for the Oxnard ITS Master Plan Design Project that implemented Ethernet-based communications the City’s 150 signalized intersections and city facilities. The Ethernet network was primarily supported by new fiber optic cable installed in existing conduit, replacing the City’s existing twisted pair cable. Several of the signalized intersections were also supported by wireless Ethernet radios. For cost saving measures, select signalized intersections retained twisted pair cable for Ethernet communications. Some backbone fiber circuits were completed using BridgeWave GigE wireless backhaul links. The Ethernet network will be shared with other City departments to provide communications to City facilities including police stations, fire stations and City buildings. Mr. Gener also provided design, installation and integration services for the City’s new Traffic Management Center (TMC) including a 3x2 PLANAR® video wall with 55” monitors and all associated servers and network equipment. The services Mr. Gener provided included video wall design, procurement and installation, console selection and deployment, video wall and server and network equipment installation, room design and construction modifications, Video Management System (VMS) evaluation, selection, procurement and final deployment, and City staff training. The project began in December 2010 and completed in October 2014.

San Mateo County Smart Corridor Implementation Project, City/County Association of Governments (C/CAG) – San Mateo County, CA
Mr. Gener was the Network Design and Integration Lead for the deployment of fiber optic communications network, with Closed-Circuit Television (CCTV) cameras, Changeable Message Signs (CMS) and traffic signal controller upgrades. Mr. Gener is responsible for router and switch network equipment configuration and network integration, IP design and interfacing with Caltrans District 4 and City of San Mateo IT staff to ensure proper network operations across a T1 connection and locally connected Gigabit Ethernet firewall connections. The project was later expanded to its second phase, where Mr. Gener was again the Lead Integrator for the overall project which now tied together 10 Bay Area cities with Caltrans for video and data sharing. Additional requests from Caltrans included deployment of an Avigilon Video Management System (VMS) which was being deployed across all cities lead by Mr. Gener and the project team. Mr. Gener’s involvement began in April 2013 and completed in 2015, however ongoing as-needed support is being provided via yearly maintenance contracts.

Sacramento Traffic Management Center (TMC) and Video Wall Upgrade – City of Sacramento, CA
Mr. Gener participated as Integration and Design Lead for both phases of the Sacramento TMC upgrades. Originally opened in 2004 as strictly a Traffic Operations Center (TOC), the work space evolved into a Traffic and Emergency Operations Center (EOC) that supports three full-time ITS/Traffic engineers and technicians. Mr. Gener designed and deployed the original facility and provided support for the next round of upgrades in 2013 where Iteris was tasked with redesign the workspace to accommodate the TOC’s new assignments. Mr. Gener conducted an alternatives analysis that presented three various floor layouts and four video wall configuration choices. He also provided the detailed design and received a second task order to furnish and install a 4x2 PLANAR® Clarity® video wall with 55” LCD monitors and Video Control System™ (VCM) processor. In order to accommodate for a planned freeway closure that significantly impacted downtown Sacramento, Mr. Gener completed procurement of all systems in three weeks and the installation in four days. Once installed, the City was able to control all ITS and traffic control systems from three workstations connected to the video wall. In addition, the video wall also supported Cable Television (CATV) inputs to allow TOC operators to be better informed while managing emergencies or incidents. The project began in December 2013 and completed in July 2014.
Mr. Wages serves as a Senior Engineer for Iteris’ Transportation Systems division and has been with the firm since August 2019. He has more than 12 years of hands-on technical and project management experience in many areas of Intelligent Transportation Systems (ITS), traffic engineering and design, traffic signal timing and systems integration. Mr. Wages’ main focus is in the areas of advanced technologies for ITS, transportation management systems, communications networks, Closed-Circuit Television (CCTV) systems, Bus Rapid Transit (BRT) and Transit Signal Priority (TSP), and railroad and Emergency Vehicle Preemption (EVP). His wide range of skills focuses on the planning, design, deployment and integration of advanced technologies and electrical systems for transportation management.

**Previous Project Experience**

Program for Arterial System Synchronization (PASS), Metropolitan Transportation Commission (MTC) – San Francisco Bay Area, CA

Mr. Wages served as a Project Engineer for multiple PASS programs. He worked with the Metropolitan Transportation Commission (MTC) and Caltrans to provide traffic signal timing and operations services to various agencies in the Bay Area under the Program for Arterial Signal Synchronization (PASS). Services included review of base signal timings and actuated settings, review of collision history and timing parameters to help reduce collisions, and development of signal coordination plans for AM, midday, and PM peak periods. In addition, the projects include development of incident management plans, development of transit signal priority (TSP) timing, development of traffic responsive timing, and transit evaluation. The PASS program is ongoing.

**AC Transit Line 97 South County Corridors Transit Performance Initiative (TPI) Project Adaptive Traffic Control System (ATCS) – Hayward to San Leandro, CA**

Mr. Wages served as Project Engineer and system integration lead working with AC Transit to deploy the Kadence adaptive system at 34 intersections along the Hesperian Boulevard corridor from San Leandro to Hayward as part of a larger program of improvements for Line 97 that involved deploying transit signal priority (TSP) and other infrastructure and signal timing improvements at 61 traffic signals. The entire Line 97 route is 13 miles long and runs between the Bayfair BART station and the Union City BART station along Hesperian Boulevard, Union City Boulevard, Alvarado-Niles Road, and Decoto Road. In addition to significant commuter and local traffic, the corridor frequently experiences traffic diverting off I-880 and significant volume fluctuations when incidents occur along the freeway. The adaptive system will allow the signal timing to respond to the volume fluctuations along the corridor and improve overall signal operations. In addition, the adaptive system will provide transit priority along the corridor to enhance bus operations for the Line 97 route. Mr. Wages and team were responsible for furnishing, installing, integrating, and testing all software and hardware for an operational adaptive system for the project intersections. This project was accepted in spring of 2019.

**EDUCATION**

BS, Civil Engineering, California State Polytechnic University, San Luis Obispo, CA, 2008

**YEARS OF EXPERIENCE**

With Iteris: 2  Total: 12

**REGISTRATIONS**

Civil Engineer (PE)
CA #82548, 2014

**CORE DISCIPLINES**

ITS Planning/Design/Integration
Traffic Engineering & Operations
Signal Systems Operations & Management
Transit

**AFFILIATIONS**

Institute of Transportation Engineers (ITE)
ITS California

**Did you know?**

Matt is an experienced wild mushroom forager and enjoys road-tripping with his wife and dog in their van.
San Mateo Smart Corridor Incident Response and Coordination Project, City/County Association of Governments of San Mateo County (C/CAG) – San Mateo County, CA
Mr. Wages served as Project Engineer and worked with C/CAG, in conjunction with Caltrans and local agencies in San Mateo County to develop and implement incident response signal timing for 250 signals on various “alternate” routes to US-101. The Smart Corridor Program was established to enable stakeholders to implement traffic management strategies through Intelligent Transportation Systems (ITS) on state and local roadways. Through the Smart Corridor Program, deployment of the necessary ITS field devices, signal systems upgrades, and system integration allows Caltrans and the local agencies to strategically and proactively manage changes in traffic demand on the local roadways. The scope of services include collecting traffic data, developing incident response strategies and framework, preparing signal timing and simulation models, developing incident response timing, and implementation of signal timing, including the upgrade and cutover of local agency controllers.

San Ramon Intelligent Transportation System Master Plan – San Ramon, CA
Mr. Wages served as Project Engineer for the City of San Ramon to develop their ITS Master Plan. The primary goal of the plan is to establish a clear roadmap for systematic ITS implementation, outline opportunities for utilizing new, advanced technology, and to equip the City with the tools to be a forward-thinking partner in the region. This effort includes assisting the City with identifying new signal equipment, communications infrastructure, traffic signal controller hardware and firmware, video system, traveler information components, and completing a citywide communications plan. The plan completed in early 2019.

Design of Operational Improvements along Parallel Arterials – City of Concord, CA
Mr. Wages served as Project Manager on this communications network design project. The project prepared detailed designs (Plans, Specifications and Estimates/PS&E) for a fiber optic interconnect system along Concord Avenue, Willow Pass Road, Diamond Boulevard and Market Street. The project installed fiber-ready interconnect infrastructure, including conduit and vaults, upgraded existing infrastructure as necessary for fiber installation, and installed over eight miles of fiber optic cable. The project developed fiber optic connections to 28 traffic signals and to the traffic signal shop. The project also included the installation of three new traffic signal controller cabinets and four pan-tilt-zoom Closed-Circuit Television (CCTV) cameras for traffic monitoring purposes. Mr. Wages worked closely with the City on the preparation of the detailed design plans and specifications, and provided technical support during construction. The project completed in early 2019.

Charter Way Bus Rapid Transit (BRT) Phase IV – City of Stockton, CA
Mr. Wages served as Project Engineer for the design and integration of the fourth phase of the City of Stockton’s and San Joaquin Regional Transit District’s (SJRTD) BRT system. The project included traffic signal modifications and installation of Transit Signal Priority (TSP) treatments at 16 intersections along Charter Way. The BRT alignment included Caltrans intersections located at I-5 and on CA-4 requiring securing encroachment permits from Caltrans for the BRT work to be done on their right-of-way, as well as completing the Request for Authorization (RFA) package for construction. Project elements included new advanced traffic controllers and cabinets, Closed-Circuit Television (CCTV) systems, TSP system elements, including optical and GPS-based equipment, ADA improvements, and the development and implementation of signal timings with TSP. The project converted all traffic signal databases to the new advanced traffic controllers, prepared and implemented new coordinated signal timings, bench tested all the new traffic controllers with TSP, programmed, tested, and calibrated the TSP equipment in the field, and deployed the new controllers at the project intersections. The design phase of the project was completed in 2017 with final integration completed in early 2019.
Ms. Fuhrman serves as a Senior Engineer for Iteris’ Transportation Systems division and has been with the firm since October 2019. She has 9 years of experience working in the fields of traffic engineering, transportation design, ITS design and planning, public works engineering, and civil site engineering. Mr. Fuhrman has performed analyses as part of traffic studies using the traffic analysis software Synchro and HCS. She has also prepared traffic analysis and design in compliance with standards set forth by the California Department of Transportation (Caltrans), the Los Angeles Department of Transportation (LADOT), and various local municipalities in Northern and Southern California. Ms. Fuhrman has extensive experience with fiber optic communication projects, including signal interconnect, fiber, and wireless design for various communication applications. Her civil site engineering experience is in both public and private sector engineering projects. Ms. Fuhrman has provided support to various types and phases of projects including: signing and striping plans, grading, demolition plans, erosion control plans, storm water management, fiber optic design, street lighting design, communications, traffic impact studies, traffic signal modification, and utility design. She also has experience in all phases of design from proposals to preliminary studies to design packages and through final submittals and construction support.

**EDUCATION**

BS, Civil Engineering, California State Polytechnic University, San Luis Obispo, CA, 2010

**YEARS OF EXPERIENCE**

With Iteris: <1  Total: 9

**REGISTRATIONS**

Civil Engineer (PE)
CA #82740, 2014

**CORE DISCIPLINES**

ITS Planning/Design/Integration
Traffic Engineering & Operations
Transportation Planning

**AFFILIATIONS**

Institute of Transportation Engineers (ITE) – SF Bay Section, Member

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**Did you know?** Monique is mom to three boys, including a set of identical twins, and speaks three languages.

**Project Experience**

**Brea Place Adaptive Traffic Signal System Installation – City of Brea, CA**

Ms. Fuhrman served as Project Engineer on this project and prepared the Concept of Operations (ConOps) for the installation of a new SynchroGreen adaptive system on two corridors in the City of Brea. Iteris supported the City in the implementation of the adaptive system and the preparation of key systems engineering documentation for the implementation.

**Previous Project Experience**

**Kimley-Horn & Associates, Inc.**

**AC Transit, Line 51 Corridor Delay Reduction and Sustainability Project – Alameda/Berkeley/Oakland, CA**

Ms. Fuhrman served as Project Engineer on this project led by AC Transit to identify, deploy, and demonstrate transit corridor improvements that will achieve the District’s objectives to reduce transit vehicle delay and travel time, and enhance transit service reliability. The proposed improvements were designed to carefully and strategically fit within the boundaries of funding, environmental impacts, and public approval. Traffic signal and signal timing enhancements included providing TSP through the corridor, installation of queue jump (QJ) lanes and phasing at key locations, updating traffic signals to current standards to provided actuation where it previously did not exist, and optimizing traffic signal timing to balance the needs of all modes. These improvements now allow AC Transit to measure the change in bus speeds and route segment travel times.
Innovating Through Informatics™

Imperial Highway Traffic Signal Fiber-Optic Communication System and Upgrades Project, Task Order#CIP14-17 – Downey, CA
Ms. Fuhrman served as Project Manager on this Project which involved the extension of an existing City fiber-optic communications system to interconnect the traffic signals along Imperial Highway, including all other ITS field devices installed along the corridor. Design plans were prepared to fill fiber gaps from Bellflower Boulevard to Woodruff Avenue and provided design for signal upgrades, including video detection along the corridor that would tie into the new and existing City fiber-optic networks. The communications network essentially consists of a ring topology of field hubs and the TMC, as well as star topology of signalized intersections. The project length is approximately three miles and included eight signalized intersections.

Broadband Master Plan – Modesto, CA
Ms. Fuhrman served as Task Manager for this project. The City developed a Broadband Master Plan that evaluated the existing fiber infrastructure and envisioned an ultimate network that will benefit the City and its residents by serving as the foundation for new programs such as City-sponsored Wi-Fi and Smart City initiatives. This Plan, which was developed after an information gathering phase and a needs assessment/feasibility study, identified the fiber-related business/operation requirements for the City, local business community, and residential community; defined the City’s role in helping to meet local business and residential needs for broadband services; provided recommendations regarding effective use and integration of City fiber assets to meet those needs; recommended viable options for the build-out and use of the City’s broadband fiber optic infrastructure and services; proposed guidelines for network deployment and service expansion that the City will pursue in the future and a process the City can follow to evaluate areas of potential build-out; identified resource requirements for both capital investment and staffing levels; provided an implementation roadmap for continuing the fiber build-out and services plan based on the recommendations; and proposed a demonstration/pilot project that will provide an opportunity for the City to work out implementation details.

SAFETEA-LU - Parking Guidance and Information Systems Integrator, Manager, and Design (TMC) – Pasadena, CA
Ms. Fuhrman served as Project Engineer on this Project which included several sub-projects under this overall System Manager contract including a TMC upgrade, a new Parking Guidance System (PGS) for the City’s nine parking garages, Plans, Specifications, and Estimates (PS&E) documents for a new fiber optic connection, detailed designs for the integration of video detection cameras from the field to the TMC, and the conversion of traffic signal timings to a new controller firmware. Detailed design documents were prepared for all the project packages, which required close coordination with the City on converting over 160 traffic signal controllers to a new system. The work will integrate all the City’s nine parking garages housing over 6,000 parking spaces.

Visalia Traffic Management Center (TMC) Design – Visalia, CA
Ms. Fuhrman served as Task Manager. The scope of this project included the Plans, Specifications, and Estimates (PS&E) of the City’s new traffic management center, which is located in the City’s brand new emergency communications center. The design included such elements as a video wall, video management system, traffic signal system, office lighting, space planning, communications design, electrical design, and product evaluations for all systems. The design was completed in 2017 and is currently under construction.

Visalia Intelligent Transportation System (ITS) Strategic Plan – Visalia, CA
Ms. Fuhrman served as Project Engineer on this Project included the development of a detailed master strategic plan for deployment of ITS strategies in the City. The City had not deployed much by way of ITS elements like Closed-Circuit Television (CCTV), communications, and changeable message signs, but with growing population and Smart City goals, the City embarked the preparation of a plan to follow for deployment of these systems. The strategic plan included such strategies as prioritized deployments, short, medium and long term strategies, and development of specific projects for implementation of the strategies. Many of the projects are currently under construction or in design.
Mr. Nguyen serves as a Senior Manager for Systems Integration for Iteris’ Transportation Systems division. He has been with the firm since August 2019. He has over 16 years of experience working in the fields of ITS Network Systems Design, Integration, Operations, and Maintenance. He has extensive expertise with multi-vendor networking technology, video management systems, network operation management, and project management.

**EDUCATION**

MS, Computer Engineering, Computer Science, and Networking Technologies
Iowa State University of Science and Technology, Ames, IA, 2004

**YEARS OF EXPERIENCE**

With Iteris: 2  Total: 16

**CERTIFICATIONS**

Cisco Certified Design Professional (CCDP)
#CSCO12212819, exp. 2021

Cisco Certified Network Professional (CCNP)
#CSCO12212819, exp. 2021

Cisco Certified Network Associate – CCNA Security
#CSCO12212819, exp. 2021

**CORE DISCIPLINES**

Network Design Engineering
Network Operation Management
Planning/Design/Integration
Systems Engineering
ITS Architecture
Connected Vehicle Systems

**Professional Experience**

- Led the design and implementation of complex Layer II and Layer III fiber optic communication networks for ITS Architecture
- Worked with Engineers on Citywide or Regional concept of operation and fiber optic network master plan projects
- Managed and administered Cisco and Mikrotik network wireless, firewall appliances, and routers
- Monitored network bandwidth unitization, network performance baseline, and improve network redundancy and resiliency for Citywide and regional networks
- Evaluated and provided leading-edge technology solution to assist in the conversion of legacy network sites to next-generation network design specifications

**Previous Project Experience**

**NETWORK DESIGN, INTEGRATION, OPERATIONS & MAINTENANCE**

**Network Optimization – City of West Des Moines, IA**
Mr. Nguyen served as Project Manager and Network Engineer on this network optimization for City of West Des Moines. Assisted with the design and implementation plan to upgrade the client’s legacy fiber optic network communication infrastructure and enhance overall network performance. The current network architecture was brought up-to-date with a high-speed, reliable and scalable network system to support CCTV cameras, traffic signals, traffic signal adaptive systems, and many other ITS components. Mr. Nguyen’s involvement on the project began in 2012 and concluded in 2015. The project is on-going with maintenance and support until 2019.

**Network Design and Integration – St. Charles County, MO**
Mr. Nguyen served as Senior Systems Integration on this multi-agency network design and integration for St. Charles County – Gateway Green Light fiber optic network communication project. Mr. Nguyen assisted with the design and implementation of Cisco and other vendors’ network communication Ethernet switches. This was a multi-year, on-call support, maintenance and troubleshooting complex network communication project.
Innovating Through Informatics™

Integrated core and access layer switches to provide high-speed network communication for ITS network components were also implemented.

**Network Operation Management and Support – Kane County DOT, St. Charles, IL**

Mr. Nguyen served as the Project Manager and Network Engineer on this project. Mr. Nguyen assisted with the design and implementation plan to upgrade the legacy fiber optic network communication infrastructure and enhance overall network performance. The current network architecture was brought up-to-date with high-speed, reliable and scalable network system to support CCTV cameras, traffic signals, and many other ITS components. Mr. Nguyen’s involvement on the project began in 2016 and concluded in 2018. The project is on-going with support maintenance until 2019.

**Network Design and Bench Test – St. Charles City School District, MO**

Mr. Nguyen provided Senior Systems Integration on this network design and bench testing for St. Charles City School District fiber optic network communication project. Mr. Nguyen assisted with the design, bench test, and setup and support campus network communication infrastructure. Converted the legacy network architecture to high-speed fiber optic network with redundancy and resiliency.

**INTELLIGENT TRANSPORTATION SYSTEMS (ITS)**

**Omaha Systems Engineering – City of Omaha, NE**

Mr. Nguyen served as the Network Integration Engineer on this Omaha Systems Engineering for City of Omaha. Assisted Iteris’ Traffic Systems Engineering with network design layout, evaluation, bench test, and troubleshooting network issues during the construction phases. Mr. Nguyen’s involvement on the project began in 2014. The project is on-going with support maintenance.

**Fiber Optic Network Communication Master Plan – City of Waterloo, IA**

Mr. Nguyen served as the Network Design Engineer on this Fiber Optic Network Communication Master Plan for City of Waterloo. Mr. Nguyen assisted with network infrastructure and ITS architecture plan and design. Mr. Nguyen’s involvement on the project began in 2016 and concluded in 2017.

**Fiber Optic Network Communication Design and Integration Services – City of Cedar Rapids, IA**

Mr. Nguyen served as the Project Manager and the Network Engineer on this Fiber Optic Network Communication Design and Integration Services project. He assisted with network infrastructure and ITS architecture design and implementation. Mr. Nguyen’s involvement on the project began in 2015 and concluded in 2016.

**Fiber Optic Network Communication Design and Integration Services – IDOT District 5, IL**

Mr. Nguyen served as the Project Manager and the Network Engineer on this Fiber Optic Network Communication Design and Integration Services project. He assisted with the network infrastructure and ITS architecture design and implementation. Mr. Nguyen’s involvement on the project began in 2016 and concluded in 2017. The network support portion of the project is on-going.

**Fiber Optic Network Communication Design and Integration Services – City of Davenport, IA**

Mr. Nguyen served as the Project Manager and the Network Engineer on this Fiber Optic Network Communication Design and Integration Services project. Mr. Nguyen assisted with network infrastructure and ITS architecture design and implementation. Mr. Nguyen’s involvement on the project began in 2017 and concluded in 2018.

**Fiber Optic Network Communication Master Plan – City of Ames, IA**

Mr. Nguyen served as the Network Design Engineer on this Fiber Optic Network Communication Master Plan. He assisted with network infrastructure and the ITS architecture master plan and network design. Mr. Nguyen involvement on the project began in 2019.
Mr. Rafiee serves as an Associate Engineer for Iteris’ Transportation Systems division and has been with the firm since July 2016. Mr. Rafiee has two years of experience in engineering design and has background experience as a survey technician prior to his current position. Mr. Rafiee is proficient in AutoCAD, Synchro, SimTraffic, MicroStation, and ArcMap.

Did you know? Kassra enjoys playing multiple music instruments, including the bassoon and guitar.

Project Experience

Santa Clara Changeable Message Sign (CMS) Project – City of Santa Clara, CA
Mr. Rafiee serves as project engineer on this CMS Design project for City of Santa Clara. Mr. Rafiee was tasked with the creation of the base map for this project, as well as assisted in design field work. Mr. Rafiee will also be drafting the design plans and assisting in the preparation of the PS&E package for this project. The project began in March 2017 and is ongoing.

Daly City Traffic Management System – City of Daly City, CA
Mr. Rafiee serves as Project Engineer on this signal system improvement project. Mr. Rafiee performed the inventory of the existing signal system and will assist in the PS&E portion of the project. The project began in June 2017 and is ongoing.

City of Modesto Signal Synchronization – City of Modesto, CA
Mr. Rafiee serves as Project Engineer on this Arterial Signal Synchronization project for City of Modesto. Mr. Rafiee built the Synchro network for this project and will be developing proposed basic timing and coordination parameters 153 project intersections. The project began in June 2019 and will be completed in March 2020.

Modesto Traffic Signal System Analysis – City of Modesto, CA
Mr. Rafiee serves as Project Engineer on this Master Plan project for City of Modesto. Mr. Rafiee has assisted in the field work necessary to provide detailed traffic signal/cabinet inventory spreadsheets, which he has also produced. Mr. Rafiee created a Master Inventory Spreadsheet detailing aspects of the 190 intersections in the area. This project began in April 2019 and completed in September 2019.

City of Fremont On-Call Services – City of Fremont, CA
Mr. Rafiee serves as project engineer on this on-call contract for City of Fremont. Mr. Rafiee has prepared fiber splice diagrams for the city’s upcoming developments as well as provided peer review support on various communications plans from said developments. The project began in 2014 and is ongoing. Mr. Rafiee’s involvement in the project began in December 2017.

Automated Traffic Management System (ATMS) – City of Irvine, CA
Mr. Rafiee serves as staff engineer in this ITS improvement project for the University of California at Irvine. He performs field work, prepares AutoCAD base maps, and performs cost estimates for the project. The project began in March 2017 and is tactfully being incorporated into related projects on campus.
Pacific Coast Highway Arterial Improvements Design Project – City of Redondo Beach, CA
Mr. Rafiee served as staff engineer in this ITS improvement project for the City of Redondo Beach. He performed field work, assisted with design, and creating a base map and inventory sheets. The project began in December 2016 and is ongoing; Mr. Rafiee’s involvement in the project began in March 2017 and completed in March 2019.

Citywide Traffic Signal Inventory and Design – City of Manhattan Beach, CA
Mr. Rafiee served as staff engineer in this traffic signal improvement project for the City of Manhattan Beach. He created base maps and performed field work. The project began in October 2016 and completed in February 2018.

Long Beach Blue Line Fiber Optic & Closed-Circuit Television (CCTV) Camera Design – City of Long Beach, CA
Mr. Rafiee served as Project Engineer on this Signal Prioritization project for City of Long Beach. There were 52 intersections involved in the scope of this project, which aimed to provide signal priority for the Metro Blue Line. For this project, Mr. Rafiee assisted in the creation of the project’s base map, traffic cabinet inventory/conduit verification field work, fiber optic communication design, and cost estimation for the project. Furthermore, Mr. Rafiee has taken part in preparing fiber assignments schematics for the project. This project began in March 2016 and completed March 2017.

Newport Beach Phase 9 ITS Project – City of Newport Beach, CA
Mr. Rafiee serves as Project Engineer on this Traffic Signal Synchronization project for OCTA. This project involves design for the installation of new fiber optic cable as well as three new CCTV locations. There are a total of 28 intersections involved in the scope of the project. Mr. Rafiee prepared the base map for this project, performed necessary field work for traffic cabinet inventory/verification from previous phases, and carried out the fiber optic communication design. The project began in June 2016 and is ongoing.

Buena Vista Street Safety Improvement Project – City of Burbank, CA
Mr. Rafiee served as Project Engineer on this Safety Improvement Project for the City of Burbank. Mr. Rafiee’s task in this project was the design of the Flashing Yellow Arrow implementation. Signal modification plans were drafted after full fieldwork at each of the six intersections. Mr. Rafiee also took on the fiber design and System Loop Detector design portion of this project. The project began in August 2016 and completed in February 2017.

Pedestrian Signals/Rectangular Rapid Flashing Beacons (RRFB) – City of Newport Beach, CA
Mr. Rafiee served as Project Engineer on this RRFB Design Project for City of Newport Beach. Mr. Rafiee’s task in this project was the design of the implementation of these pedestrian signals. Appropriate field work was carried out in order to determine placement of RRFB poles, signage, striping, etc. Mr. Rafiee then proceeded to prepare design plans for the installation as well as the cost estimate for the project. The project began in September 2016 and completed in May 2017.

AC Transit Line 97 Transit Performance Initiative (TPI) Project– Cities of San Leandro, Hayward, Union City and Alameda County, CA
Mr. Rafiee served as Project Engineer on this Transit Performance Initiative (TPI) project. Mr. Rafiee lead the signal modification/communication/bus stop modification design portion of this project. This project began in January 2017 and completed in February 2019.

Program for Arterial System Synchronization (PASS) and Regional Signal Timing Program (RSTP), Metropolitan Transportation Commission (MTC) – San Francisco Bay Area, CA
Mr. Rafiee served as Project Engineer on this Arterial Signal Synchronization project for Cities of San Jose and Cupertino. Mr. Rafiee built the Synchro network for this project and assisted in developing proposed basic timing parameters for the project. The project began in August 2017 and completed in June 2018.
About Us

Iteris is the global leader in applied informatics for transportation and agriculture. We turn big data into big breakthrough solutions by equipping our customers with contextually relevant, science-backed insights to make transportation safer and more efficient, and agriculture sustainable and more productive.