UPDATES OF THE TMS CONFIGURATION REPORT AND TRAFFIC SIGNAL DESIGN AND OPERATION GUIDE

CITY PROJECT NO. PW1522

JUNE 2020
Dear Mr. Aube and Members of the Selection Committee:

The City of Stockton’s goal is to outline plans to consolidate the existing traffic control systems into one or two systems, identify a robust communication network, and decommission the outdated security platform for the video system. The DKS Associates (DKS) team understands that the City is seeking a firm to update the City’s traffic management system configuration report and traffic signal design and operations guide. The City also seeks opportunities to future-proof its traffic signal system and make it ready for the seamless deployment of smart cities and connected vehicle applications.

The City of Stockton can rest assured that the DKS team is the most qualified to deliver this important project. Our team brings the following advantages:

- **Staff resources.** We have dedicated a team of experienced and passionate staff to help the City meet its aggressive timeline for the project. Our subconsultant, Siegfried Engineering, a local Stockton engineering firm, will provide additional support services for the final reports.

- **Knowledge and working history as the authors of the previous two documents.** We will have no learning curve as the author of the Traffic Management System Configuration Report and Traffic Signal Design and Operations Guide documents that will be updated in this project. With our extensive traffic signal timing (time of day, adaptive, traffic responsive) and ITS/traffic signal design experience, we will be able to cost-effectively assist the City to deliver the project in a short time frame.

- **Demonstrated ability to deliver excellent documents.** Led by our proposed project manager David Mahama, DKS led City staff through an intersection control evaluation (ICE) process to update the City of Stockton Traffic Signal, Roundabout, and Protected Left-turn Phasing Priority Studies document. The high-quality deliverables and the final ICE package were well-received by City staff.

- **Extensive experience servicing City of Stockton equipment.** Our subconsultant, Ojo Technology brings exceptional value to the DKS team because of their working knowledge and history of maintaining and servicing the existing citywide surveillance system for the City of Stockton.

- **Extensive experience preparing traffic management system plans.** The City will benefit from the wealth of knowledge the DKS team has gathered assisting several agencies including the cities of South San Francisco, Concord, and Chico to prepare their traffic management system plans.

- **Leaders in Systems Engineering for traffic signal systems.** The DKS team are leaders in applying systems engineering for the selection of local, central, and adaptive signal control technology (ASCT). We are currently assisting the City of Union City to procure a central traffic signal system and deploy ASCT on the Union
City Boulevard corridor. DKS team members were the primary authors for the FHWA Traffic Signal Management Plan Guidance Document which assists agencies in better managing their traffic signal systems through the systematic alignment of maintenance, design, and operations activities and resources.

- **Vendor neutrality.** We do not sell traffic signal systems and equipment. We are independent evaluators and engineers and understand the importance of assessing factors such as which local controllers work with certain central systems or which may have unique communications requirements. DKS has the best interests of the City, the stakeholders, and the public in mind.

- **Experiences with federal requirements.** DKS understands the importance of meeting all federal guidelines for ITS projects.

- **Expertise in traffic signal system operations.** We understand what strategies best align with specific on-street operational objectives. This expertise is crucial for successfully evaluating intersection and corridor operations and implementing a new traffic signal control system.

- **Experience applying leading-edge technology.** We have assisted numerous agencies to deploy advanced traffic management systems (ATMS) and are currently providing Systems Engineering services to the cities of San Jose, Union City, South San Francisco, and San Rafael under the MTC sponsored Innovative Deployment to Enhance Arterial (IDEA) Program. The project elements include upgrading a central traffic management system (TMS), deployment of ASCT, procurement of automated traffic signal performance measurement (ATSPM) systems, bike and passive pedestrian detection systems, and the deployment of variable lane assignment (VLA) operation.

Our approach will maximize investment in your signal system and reduce risk by aligning your needs and objectives with the system’s functionality.

Proposed project manager, David Mahama, will be the point of contact for the duration of the proposal evaluation. He may be reached at 510.267.6613 or via email at dcm@dksassociates.com. I may be reached directly at 503.449.6077 or via email at jmp@dksassociates.com for any contract-related matters.

This proposal is a firm offer to enter into a contract with the City of Stockton according to the terms of the RFP and valid for 120 days following the date of this submission. We have read Attachment A, Instructions to Proposers, and will comply. To the best of our knowledge, DKS does not have any potential conflict of interest. I am authorized to negotiate and contractually bind the firm with the City of Stockton at any time during that period.

We look forward to discussing how our team can support you in evaluating your Traffic Management System.

Sincerely,

Jim Peters, PE  
Principal, DKS Associates

David Mahama, PE  
Senior Project Manager, DKS Associates
## TRANSACTION DETAILS
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- **Transaction Type:** Signature Request
- **Sent At:** 06/25/2020 19:18 EDT
- **Executed At:** 06/26/2020 17:00 EDT
- **Identity Method:** email
- **Distribution Method:** email
- **Signed Checksum:** 

## SIGNERS
**Name:** David Mahama  
**Email:** dcm@dksassociates.com  
**Signer Sequence:** 1  
**Components:** 1  
**Status:** signed  
**Multi-factor Digital Fingerprint Checksum:** 
**IP Address:** 73.15.141.24  
**Device:** Chrome via Windows  
**Drawn Signature:**

**Name:** Jim Peters  
**Email:** jmp@dksassociates.com  
**Signer Sequence:** 0  
**Components:** 1  
**Status:** signed  
**Multi-factor Digital Fingerprint Checksum:** 
**IP Address:** 172.58.44.35  
**Device:** Chrome via Mac  
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EXECUTIVE SUMMARY

INTRODUCTION

DKS will work closely with City staff to outline plans to consolidate the existing traffic control systems into one or two systems, identify a robust communication network design, decommission the outdated security platform for the video system, and future-proof the traffic signal system to enable the seamless deployment of smart cities and connected vehicles application. DKS will guide City staff through a logical, simplified, and cost-effective systems engineering process to select and procure the best system(s) and equipment available on the market that meets the City's needs and operational goals and objectives.

PROJECT TEAM

DKS will lead this effort as the prime consultant. We have added Siegfried Engineering and Ojo Technology to the team to provide support services. Siegfried, a local Stockton civil engineering and land surveying firm, will provide graphics/documentation support for the project deliverables and Ojo, an IT and security integrator firm, will bring exceptional value to the team with their working knowledge and history of maintaining and servicing the existing citywide surveillance system for the City.

Elliot Hubbard will lead the connected vehicle (CV)/smart city component. He brings a deep understanding of the CV and smart city technology landscape. Karl Typolt, an ITS communications expert, will oversee the IT/system integration. His relationships with traffic signal system vendors have led to a wealth of knowledge resulting in projects that integrate new technologies to accomplish a unique set of goals. Our team is rounded out by an experienced Principal in Charge, Jim Peters, who will provide technical oversight and quality review. In addition to these key team members, we have added support personnel to provide resources to meet critical project deadlines.

QUALITY CONTROL AND PROJECT MANAGEMENT

DKS has a well-established project management approach that will ensure complete coordination between the project team and the City's project manager. Our approach includes monitoring and managing projects to control schedules and budgets without sacrificing quality. This is primarily supported by good communication and a thorough understanding of the work involved. We will achieve our goals by 1) ensuring the availability of key personnel, 2) controlling project schedule and cost, and 3) using our tested internal quality control procedures.

PROJECT UNDERSTANDING AND APPROACH

The City of Stockton owns and operates over 300 traffic signals using a variety of local, central, and adaptive traffic signal systems including Sepac/Tactics, D4/TransSuite, SCOOT, and Insyc. The City also employs various ITS systems, including data collection, vehicle detection, and CCTV. Agency needs and technology have changed drastically since the current systems were deployed, creating the need to assess the state of the traffic signal system and related ITS devices.

This project will update the traffic management systems (TMS) report that documents the physical infrastructure needed to manage the traffic signal system and the Traffic Signal Design and Operations Guide, which documents how the system is designed and operated. Both of these documents provide the base that will enable the City of Stockton to effectively design, operate, and maintain the traffic signal system.
and communications network. This, in turn, provides a safe and efficient experience for all users.

Our approach is to conduct the systems engineering in close collaboration with City staff through frequent meetings to review the deliverables. To meet the aggressive schedule, we have put together a team that has extensive experience in preparing systems engineering documents to support the procurement of central traffic management systems, evaluating traffic signal systems, preparing traffic signal standard documents, preparing traffic signal timing and operations documents, designing and installing security platforms for CCTV/video cameras, and developing communication system architecture and traffic management center (TMC) configuration design. Key elements of our approach include:

- Bi-weekly phone check-in meetings
- Reviewing past City ITS project documents
- Reviewing documents pertaining to the existing City traffic signal system
- Documenting existing conditions and identifying user needs based on stakeholder input
- Evaluating traffic management system options
- Developing seamless transition/deployment plan that will not adversely affect day-to-day operations of City staff
- Updating traffic signal design standards & communication network infrastructure based on current Caltrans MUTCD, standard plans and specifications, and City preferences
- Updating traffic operations guidelines based on the institute of transportation engineers (ITE) recommended practice and California MUTCD for determining traffic signal timing parameters

**DETAILED WORK PLAN**

Our proposed work plan is based on our understanding of the project needs and our experience conducting similar systems engineering projects and developing traffic signal systems documents. We have developed a series of tasks in our work plan that layout our proposed approach. Our tasks are slightly different than listed in the RFP, and we feel that our work plan will provide a systematic framework to efficiently and cost-effectively deliver the project. We have incorporated numerous check-in meetings with City staff to ensure that we have buy-in and acceptance of our work before we proceed to the next stage. The work plan proposed includes three main tasks with significant sub-tasks as follows:

<table>
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<th>Task 1: Project Management and Systems Engineering Management Plan</th>
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<tr>
<td>• Project Coordination and Meetings</td>
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<td>• System Engineering Management Plan Documents</td>
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<th>Task 2: TMS Configuration Report</th>
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<td>• Existing Conditions Inventory and User Needs Assessment</td>
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<td>• Signal System Evaluation and Selection</td>
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<td>• Concept of Operations Documents</td>
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<td>• System Requirements Documents</td>
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<td>• Systems Operations Evaluation Documents</td>
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<tr>
<td>• Procurement and Vendor Selection Support</td>
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<td>• Field Demonstration of New System by Vendors</td>
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<td>• Communication System Architecture and TMC Configuration Design</td>
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<td>• Transition/Deployment Plan</td>
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<td>• Compile Master Traffic Management</td>
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<th>Task 3: Traffic Signal Design and Operations Guide</th>
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**PROJECT EXPERIENCE**

We have provided sample systems engineering projects to assist agencies to select, procure, and evaluate central traffic management systems, adaptive traffic control technologies, ITS equipment and devices, and develop preliminary design plans for new traffic management centers.

**PROJECT WORK MATRIX AND COST**

Our scope of work is limited to applicable components of the Systems Engineering V Diagram that is suitable for the project.

The level of effort for Systems Engineering is highly variable depending upon the desires of the City and we look forward to discussing our approach and methodology with the City.

**PROJECT SCHEDULE**

We are committed to delivering the final submittal within five (5) months after authorization to proceed.

Assuming a notice to proceed by 10/07/20, we anticipate completing the document updates by early March 2021. The duration includes one to two weeks for City review of our deliverables.

**LOCAL PREFERENCE**

Local engineering firm, Siegfried Engineering, will provide graphics support for documentation.
PROJECT TEAM

DKS ASSOCIATES – PRIME CONSULTANT
DKS provides transportation engineering and planning services for public agencies and is an industry leader in traffic signal systems and traffic operations and understands what strategies best align with an agency's needs and operational objectives. DKS has a proven record of successfully applying the systems engineering process to traffic signal systems and understands how to maximize the performance of a signal system.

Department of Industrial Relations Information
Contractor's Legal Name: DKS Associates
Registration Number: 1000054635
License Type/Number: CA License C0919234
Registration Date: 7/31/19 | Expiration Date: 6/30/20

OJO TECHNOLOGY – SUBCONSULTANT
Role: IT/Security Integrator
Ojo Technology is a specialized security integrator focusing on enterprise, tier-one, network-centric, physical, and cloud-based systems for the transportation, education, commercial, and state and municipal markets. They have worked with all major municipal transportation districts in Northern California.

Ojo will bring exceptional value to the DKS team, bringing a working knowledge and history of maintaining and servicing the existing citywide surveillance system for the City of Stockton.

Department of Industrial Relations Information
Contractor's Legal Name: Ojo Technology
Registration Number: 1000016707
License Type/Number: Other CE62498, Other LA5595, Surveyor L8247, Other FSE4550, Surveyor 8660
Registration Date: 7/1/20 | Expiration Date: 6/30/23

PROJECT TEAM EXPERTISE
The following shows our team’s organization and some of the advantages our key/task leaders bring to the project.

Legends
DKS
Ojo Technology
★ Task Lead

PROJECT MANAGER: JEFFREY AUBE

PROJECT MANAGER
David Mahama, PE

PIC | QA/QC
Jim Peters, PE

TRAFFIC MANAGEMENT SYSTEM
IT/System Integration
Karl Typolt, PE★
Derek Tokuda
Anthony Krolik
Systems Engineering
Pam O’Brien, PE, PTOE★
Meron Shiferaw, PE, PTOE
David Mahama, PE
Jim Peters, PE

SMART CITIES
Elliot Hubbard★
Jim Peters, PE

TRAFFIC SIGNAL DESIGN & OPERATIONS GUIDE
David Mahama, PE★
Meron Shiferaw, PE, PTOE
Jielin Pan, PhD, PE
**David Mahama, PE, Project Manager.** David is an expert in developing traffic signal management and master plans for cities. He provides expertise with his extensive knowledge of various advanced traffic management systems. David brings familiarity with the City of Stockton Traffic Signal System, experience gained working on the Stockton Controller Upgrade Project, and extensive familiarity with the California MUTCD and Caltrans Standard Plans and Specs for designing Traffic Signals. His experience extends to preparing systems engineering documents for the MTC Joint Operations Center Traffic Management Center, ATSPMs for multiple cities, and over 23 years of experience timing more than 2,000 traffic signals. David is an instructor for the “TE-04 Signal Timing and Operations” and “TE-10 Advanced Traffic Signal Operations” classes offered by the University of California, Berkeley Technology Transfer program.

**Jim Peters, PE, Principal in Charge/QC.** Jim will also serve as a technical advisor and review the project work for quality. He will offer his expertise in developing ITS Architecture and systems engineering for the deployment of TMS. He has successfully delivered over two dozen transportation system implementations and has hands-on experience with numerous central and local traffic signal systems.

**Pam O’Brien, PE, PTOE, Senior Systems Engineer.** Pam is an expert in systems engineering and has helped many agencies evaluate and choose new traffic signal systems (local, central, adaptive, and ATSPM systems). Her national exposure from working with FHWA as a co-investigator to develop a guidance document to help agencies document the costs and benefits of deploying an ATSPM system can help guide Stockton through the process. In addition to experience evaluating traffic signal systems, she brings hands-on experience at the city level, working for the City of Beaverton, OR as a City Traffic Engineer.

**Meron Shiferaw, PE, PTOE, Project Engineer.** Meron is a professional traffic operations engineer with expertise in timing and designing traffic signals. She is currently involved with several ITS planning and design projects. Meron is working as a key project engineer and coordinating work for the City of Fairfield Adaptive Traffic Control Technology project and the Texas DOT Transportation System Management and Operations (TSMO) project. Meron brings familiarity with the California MUTCD and Caltrans Standard Plans and Specs for Traffic Signals.

**Elliot Hubbard, Smart City/Connected Vehicle Advisor.** Elliot brings significant experience working with local, regional, and state agencies to develop transportation technology plans. He has a deep understanding of the connected vehicle and smart city technology landscape, with a focus on identifying supportive technology investments that are robust in the face of changing technologies, architectures, and standards.

**Karl Typolt, ITS/Communications Engineer.** Karl focuses on utilizing new and emerging technologies to meet the needs of public agencies and private clients. His project experience has included smart mobility and NextGen strategic plans; FHWA systems engineering; traffic signal design and advanced controller operation; and intelligent transportation systems (ITS) design. His relationships with vendors and West Coast traffic and transit agencies has led to a wealth of knowledge resulting in projects that integrate new technologies to accomplish a unique set of goals.

### Availability

Taking into account the team’s current and projected workload, availability is shown below.

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<tr>
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<td>Jim Peters, PIC/QC</td>
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<tr>
<td>Pam O’Brien, Senior Systems Engineer</td>
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<td>Meron Shiferaw, Project Engineer</td>
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<td>Elliot Hubbard, Smart Cities/CV Advisor</td>
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<td>Karl Typolt, Project Engineer</td>
<td>50%</td>
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<tr>
<td>Jielin Pan, Project Engineer</td>
<td>55%</td>
</tr>
<tr>
<td>Melissa Abadie, Visual Communications</td>
<td>53%</td>
</tr>
<tr>
<td>Derek Tokuda &amp; Anthony Krolik, IT/Security Integrators</td>
<td>50%</td>
</tr>
<tr>
<td>Chris Kay, Graphics</td>
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Thorough Understanding of Project
- Meet with client to fully understand goals, potential risks, & issues
- Identify critical success factors
- Set up Quality Management Plan

Consistent Communication
- Weekly internal team meetings for review of schedule & budget
- Regular meetings with core management team
- Pre-meeting check-ins with key stakeholders
- Use communication tools such as GoTo Meeting & Basecamp to share project status, action items, deadlines, review & comment logs, and deliverable progress

Documentation Review
- Comment logs used to track all client & QC manager comments & will include responses stating solutions
- Technical discipline peer review to verify project deliverables are accurate & complete
- QC manager will perform a high-level review of project deliverables to verify design elements are met, verify coordination between disciplines, & confirm all prior directions from client have been completed
- A quality assurance audit will also be performed

Project Completion & Insights
- Internal review of project performance to reinforce successful practices & apply the lessons learned to future projects
- Conduct client surveys annually to assess project performance

REFERENCES

PROJECT & CONTACT

MTC Joint Operation Center (JOC) (2016)
Metropolitan Transportation Commission
Jay Stagi, Associate Planner
o: 415.778.5208
e: jstagi@mtc.ca.gov

MTC IDEA ATSPM Projects
Metropolitan Transportation Commission
Lulu Mao, Design & Project Delivery
o: 415.778.6634 | c: 443.226.6617
e: lmao@bayareametro.gov

SSF Signal Master Plan/Street Light Design Guide
City of South San Francisco
Bianca Liu, PE, QSD/P, Senior Engineer
c: 650.829.6697 | e: bianca.liu@ssf.net

Portland Regional Signal System Evaluation
City of Portland
Willie Rotich, Senior ITS Engineer
o: 503.823.7679
e: Willie.Rotich@portlandoregon.gov

SIMILAR CHALLENGES TO THE CITY OF STOCKTON PROJECT

- Facility for several MTC programs staff involved in day-to-day operations
- Facility that enable shared-use of systems across all included programs
- Location for the Emergency Operations Center (EOC) that can be quickly activated, allows seamless communication with the MTC programs’ operations staff, and allows it to be available for alternative uses when the EOC is not activated
- Accommodating potential growth in operations and EOC activities
- Providing for sustainable operation of the EOC and the JOC

- Building consensus among stakeholders with differing interests and objectives for their traffic signal systems (San Rafael IDEA ATSPM Systems Engineering)
- Guiding the City of Union City through a systems engineering process to select and procure multiple ITS systems (i.e. Central TMS, ASCT, Ped and Bike Detection Systems)
- Staff transition challenges – bringing new City staff up to speed

- Defining the City’s goals, vision, and objectives for their traffic signal system
- Bringing City staff up to speed with the master plan
- Assisting City staff with the implementation plan including procurement and deployment of the envisioned traffic signal system

- Building consensus among stakeholders (within the City of Portland and with five regional partners) with differing interests and objectives for their traffic signal systems
- Understanding how each agency uses the joint signal system
- Identifying current and future needs of the traffic signal system
- Evaluating multiple signal systems and communicating the benefits and drawbacks of each to the stakeholders
PROJECT UNDERSTANDING & APPROACH

The City of Stockton owns and operates over 300 traffic signals using a variety of local, central, and adaptive traffic signal systems including Sepac/Tactics, D4/TransSuite, SCOOT, and Insyc. The City also employs various ITS systems, including data collection, vehicle detection, and CCTV. Agency needs and technology have changed drastically since the current systems were deployed, creating the need to assess the state of the traffic signal system and related ITS devices.

This project will update the TMS report that documents the physical infrastructure needed to manage the traffic signal system and the Traffic Signal Design and Operations Guide, which documents how the system is designed and operated. Both of these documents provide the base that will enable the City of Stockton to effectively design, operate, and maintain the traffic signal system and communications network. This, in turn, provides a safe and efficient experience for all users.

The vision of this project is to take a holistic look at the traffic signal system to determine the best path to upgrade or replace the traffic signal system, communications, and other ITS devices. The main goal of the project is to consolidate the existing traffic control systems into one or two systems, identify a robust communication network design, and decommission the Bosch matrix security system. The City also seeks opportunities to future-proof their traffic signal system and make it ready for the seamless deployment of smart city and connected vehicle applications.

Our approach to meeting the project goals and objectives follows systems engineering guidance. Using systems engineering reduces the risk and increases the probability of successfully deploying a signal system that meets the City’s needs. This project will focus on the left side of the Systems Engineering V Diagram, shown below, to document user needs, identify a preferred collusion, and develop a high-level design of the traffic signal system. We will also provide guidance on the items on the right side of the diagram that are applicable. Consolidating the four different systems into fewer systems will avoid the need for extra staff training and maintenance costs to operate the traffic management system effectively.

The Traffic Signal Design and Operations Guide describes how the signals need to operate based on the context and the TMS Configuration Report provides the tools for the agency to achieve the operational objectives.

TMS CONFIGURATION REPORT

The TMS Configuration Report needs to identify the preferred traffic signal system solution and components. We will conduct the following to develop the TMS Configuration Report:

To do this, we must document the current system condition and deficiencies, collaboratively identify user needs, review system options, determine a preferred solution, and develop a transition plan.

SYSTEMS ENGINEERING “V” MODEL, FHWA
Document User Needs

We will document existing conditions and identify user needs based on stakeholder input. This includes traffic operations engineers, maintenance technicians, and information technology (IT) staff. The user needs will relate to both the existing and future operations and management of the signal system. The needs will be grouped into several categories, including database management, traffic signal monitoring, traffic signal control, and performance monitoring.

Evaluate System Options

Once we understand the existing systems (capabilities and limitations) and document the user needs, we will review a variety of options and work with the City to create a proposed solution. The solution may be to continue using the existing systems as is, upgrade the existing system, or procure a whole new system. We will discuss the benefits and drawbacks of each solution to arrive at a consensus of the most appropriate traffic signal system for the City. We will evaluate the system components including local, central, and adaptive traffic signal software, CCTV, data collection, performance monitoring, communication network, and smart city connected vehicle applications. The system must be user-friendly, efficient to operate, and provide City staff with the tools to operate and manage the system. We will facilitate vendor demonstrations for new systems or components.

One new component of the traffic signal system should be automated traffic signal performance measures (ATSPMs), which will allow the City to use real-time data to more efficiently operate and maintain the traffic signals. We will identify the detection and communications necessary to collect data and produce reports. The DKS team has been working with MTC and four Bay Area agencies to develop concepts of operation for an ATSPM system and are currently helping them evaluate and procure a system to meet each of their needs.

Develop Transition/Deployment Plan

Once a preferred solution has been identified, a transition/deployment plan will be developed. The plan needs to be seamless and not adversely affect the day-to-day operations of City staff. It will most likely be a phased approach and be implemented based on budget and priorities. The plan will include short-term and long-term solutions. An example of a short-term solution is to develop new detection layout standards to enable the collection of high-resolution data and develop ATSPM reports. An example of a long-term solution is to procure a new central traffic signal system, requiring the signals to move from the existing to the new central.

TRAFFIC SIGNAL DESIGN AND OPERATIONS GUIDE

The Traffic Signal Design and Operations Guide will create the foundation for how the traffic signals are operated. The document will consolidate all the policies, guidelines, and standards related to design and operations in one document. Traffic signal design, operations, and maintenance work hand-in-hand to create a safe environment for the traveling public. The Guide will be developed in conjunction with the TMS Configuration Report. It will be easy to read with an abundance of graphics and tables to summarize the technical information. The main components will be:

Traffic Signal Design Standards

The design standards for the traffic signals and communications infrastructure will be reviewed and updated (including traffic signal head placement, pedestrian push buttons, detection, and controllers). Standardizing equipment such as traffic signal controllers, detection, and communication switches will provide consistency for the installation and
maintenance of equipment. Typical layouts will be developed for vehicle, pedestrian, and bicycle detection that will provide safe and efficient operations and also allow for data collection for ATSPM reports. We will also identify equipment for future smart city and connected vehicle applications that the City could deploy in the future.

Traffic Operations Guidelines

Over the years, traffic signal timing standards and preferences change. Oftentimes, the parameters are updated when a construction project or coordination project occurs and only for a small group of signals. This results in inconsistent values from one intersection to another. We will develop a summary of the traffic signal timing parameters and recommended values/ranges based on ITE recommended practices and CA MUTCD. The timing parameters include local (min. green, walk, flashing don’t walk, yellow, all-red), coordinated (cycle, split, offset, sequence), and detection (min gap, extension).

Traffic signal timings should be based on the operational objective(s) of the intersection/corridor, such as smooth flow, maximizing throughput, and minimizing delay. The objectives are based on the context and may change by time of day. By understanding the objective (what the timings need to do), the City will be able to determine if the signals are operating as designed. We will also develop a process for signal timing review and updating. Historically, coordinated traffic signal timings were reviewed and updated based on a time period (every 5-7 years). With the accessibility to high-resolution data, the City will be able to determine when to update based on data (volumes, congestion, etc.) moving from reactive to proactive operations.

We will create Operational Scenarios that provide guidance on how to operate a traffic signal given certain conditions — think of it as a signal timing “playbook.” This “playbook” will provide consistent operation of traffic signals across the City and should be a living document and updated as new scenarios emerge. Below is a sample operational scenario:

<table>
<thead>
<tr>
<th>Description</th>
<th>Congested corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational objective</td>
<td>Manage queues</td>
</tr>
<tr>
<td>Signal timing strategy</td>
<td>Develop timings that minimize phase failures and provide progression</td>
</tr>
<tr>
<td>Signal timing tactics</td>
<td>Limit cycle length, review phase sequence, etc.</td>
</tr>
<tr>
<td>Performance metrics</td>
<td>Split failure, phase termination</td>
</tr>
<tr>
<td>Detection layout</td>
<td>Stop bar presence</td>
</tr>
</tbody>
</table>

We recently developed a TSMP for the Oregon DOT, which included much of the same information as discussed here, including the Operational Scenarios. In addition to the design and operations components, the TSMP also includes strategies and tactics related to maintenance of the signal system. This was so well-received by local agencies that they plan to develop something similar for their own use.

CHALLENGES IDENTIFIED TO ADDRESS

<table>
<thead>
<tr>
<th>CHALLENGE</th>
<th>POTENTIAL SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do we get input from the right people?</td>
<td>• Hold a series of workshops to gather input on user needs and objectives, including staff from design, operations, maintenance, and IT</td>
</tr>
</tbody>
</table>
| How do we determine which system is the “right” one? | • Use a systems engineering approach  
• Review different systems/components keeping the user needs and objectives in mind  
• Summarize the benefits and drawbacks and discuss  
• Coordinate vendor demonstrations |
| How do we future-proof the system?     | • Identify future needs and identify solutions, not specific technology  
• Summarize state of the industry related to smart city/connected vehicle applications  
• Develop controller and detection standards that will enable the City to collect high-resolution data and create reports |
| The documents must be easy to read and useful | • Utilize our communications/graphics team to translate detailed technical information into easy-to-read graphics  
• Review and update the existing Design and Operations Guide, taking into account updates to other local and national policies |
| How do we know if the systems are operating efficiently? | • Align performance metrics with operational objectives; the new system must be able to report and track on-street performance |
EXAMPLES OF EXPERIENCE

On the following pages are project examples that best showcase our team's expertise. The matrix on page 11 highlights additional projects that show DKS' extensive experience in systems engineering, adaptive traffic signal systems, and corridor operations.

PROJECT ELEMENT ICON KEY:

- Traffic Management System
- Traffic Signal Sys Requirements
- Traffic Signal Timing/Ops
- Benefits Evaluation
- Needs Assessment
- ITS Planning
- System Evaluation
- Corridor Operations
- Concept of Operations
- ITS Design/Traffic Signal Design
- Implementation

SOUTH SAN FRANCISCO TRAFFIC SIGNAL MASTER PLAN

DKS prepared a traffic signal master plan and a design guide document for street lighting for the City of South San Francisco. Following interviews and a workshop with key staff, a Concept of Operations was prepared including vision, goals, and objectives. A complete inventory was prepared for all traffic signals and ITS facilities. The master plan included life-cycle costing, a funding plan, and complementary stand-alone projects that could be implemented as funding became available.

DKS also developed similar plans for the City of Chico and the City of Concord.

Value to the City of Stockton

Systems engineering expertise to assist City staff to reconfigure/consolidate their traffic management system.

MTC JOINT OPERATIONS CENTER (JOC) SYSTEMS ENGINEERING & DESIGN

DKS developed preliminary design and specifications for a new JOC in MTC’s new headquarters building in San Francisco. The center acts as an Emergency Operations Center during emergencies and regularly operates as the center for coordination of other MTC operational programs, including 511, SAFE call boxes and the freeway service patrol (FSP), and Express Lanes (open tolling HOT lanes). DKS conducted a systems engineering analysis and developed the Concept of Operations and preliminary design for the MTC JOC.

Value to the City of Stockton

Ability to develop a preliminary design for the new Traffic Management Center.

MTC IDEA ATSPM PROJECTS

DKS was selected to provide systems engineering support for the deployment of Adaptive Signal Control Technology (ASCT), ATSPMs, bike and pedestrian detection systems, and Variable Lane Assignment (VLA) at signalized intersections under MTC’s Innovative Deployment to Enhance Arterials (IDEA) Grant Program. We are guiding the cities of San Jose, San Rafael, South San Francisco, and Union City to define user needs, develop a Concept of Operations, prepare systems requirement documents, and draft verification and training plans. Our effort also includes assisting with the procurement of the systems, selection of vendors, deployment oversight, and system verification.

Value to the City of Stockton

Systems engineering experience related to traffic signal systems. Experience assisting City staff to procure systems, select vendors, provide deployment oversight, and conduct system verification.
EAST BAY BUS RAPID TRANSIT

DKS developed the design plans for the traffic signal systems for the project. This multimodal project will modify International Boulevard and Broadway in Oakland to accommodate exclusive bus rapid transit lanes, continuous bicycle lanes, and install pedestrian traffic signals for crosswalks. The project involves the design and modification of 30 new and 87 existing traffic signals along International Boulevard. The project includes identifying existing traffic signal communication deficiencies and providing fiber optic traffic signal interconnect design to interconnect the traffic signals to Caltrans, the City of Oakland, City of San Leandro, and AC Transit TMCs. Other elements of the traffic signal design include video detection and CCTV cameras. Additionally, DKS is developing the system architecture for the transit signal priority system.

Value to the City of Stockton
Extensive experience with ITS design and familiarity with Caltrans MUTCD and Caltrans Standard Plans and Specs for Traffic Signals. This will aid in developing the Traffic Signal Design and Operations Guide.

FHWA TRAFFIC SIGNAL MANAGEMENT PLAN GUIDANCE DOCUMENT

DKS, with FHWA, developed a TSMP guidance document that will assist agencies in better managing their traffic signal systems through the systematic alignment of maintenance, design, and operations activities and resources. A TSMP is intended to document and connect, at a high level, the goals, objectives, strategies, and performance measures that an agency uses to achieve outcomes consistent with doing what is most important given a limited set of resources. The guidance document provides step-by-step instructions for documenting current activities, relating them to the agency’s goals and transportation objectives, and providing a structure that shows how the activities of all staff involved in traffic signal management support those objectives.

The TSMP Guide was prepared and tested with input from four case study agencies of various sizes, organizational structures, and capability/maturity. DKS arranged and managed a day-long workshop with each case study agency to introduce the concept of a TSMP, discuss their internal operations, and help them map their activities to the goals and objectives of the agency. The workshop case studies brought to light the level of effort and length of time that would be needed by agencies to develop a TSMP. DKS also developed four case studies that document how different agencies use performance measures to meet their operational objectives, such as smooth flow along a corridor.

Value to the City of Stockton
Working knowledge & extensive experience developing FHWA guidelines to assist agency staff develop & manage their ITS/traffic signal systems. Main focus of this document is to align actions of staff with overall agency goals, identify gaps (including technology and resources), and implement a plan to move forward.

MONTANA DOT STATEWIDE SIGNAL SYSTEM EVALUATION

DKS worked with the Montana Department of Transportation (MDT) on a project to develop a statewide Concept of Operations for local and central traffic signal systems. DKS facilitated stakeholder meetings with MDT and numerous local stakeholders to assemble user needs and perform field review of 14 corridors to document operational conditions and summarize use cases to determine locations where adaptive traffic signal control may be appropriate. DKS developed an implementation plan for near-term and long-term solutions to improve on-street signal operation and central signal management, including configuring a performance measures system.

Value to the City of Stockton
Ability to evaluate and select traffic signal systems and our extensive experience with traffic signal timing principles. This will aid in developing the Traffic Signal Design and Operations Guide.
## DETAILED WORK PLAN

### TASK 1: PROJECT MANAGEMENT & SYSTEMS ENGINEERING MANAGEMENT PLAN

**Task 1-1: Project Management and Coordination**

Our DKS project manager, David Mahama, will manage the scope, schedule, and budget and will coordinate with City Public Works staff and other stakeholders (Police, IT, contractor and vendors), to ensure project goals are satisfied, consistent progress is made, and technical oversight is provided. DKS will provide invoices and progress reports each month that summarize the work completed and budget remaining.

**Task 1-2: Project Meetings**

DKS will provide project status updates and identify key issues on a bi-weekly basis. The bi-weekly status updates will be conducted by teleconference throughout the duration of the project. DKS will plan and attend a combined kickoff meeting and workshop with City staff to establish a mutual understanding of the scope, schedule, and budget to avoid costly course corrections. We propose a half-day workshop to define the goals and objectives and discuss the technical components of the project. DKS will also plan and attend up to three project meetings related to specific tasks listed below. We will provide agenda and meeting minutes that summarize the discussions and log key decisions. The four meetings are tentatively planned as in-person meetings and may be revised to online meetings depending on the status of the COVID-19 pandemic.

**Task 1-3 and 1-4: Draft & Final Systems Engineering Management Plan (SEMP) Documents**

DKS will prepare a brief SEMP. This streamlined SEMP will identify what items are to be delivered, integrated, installed, verified, and supported. In addition, it will indicate the roles and responsibilities of all stakeholders involved in the project and identify when tasks will be done, who will do them, and how the products will be tested and managed.

**Task 1 Deliverables**

- Draft and Final SEMP document
- Monthly project status updates and invoices
- Attendance of one kickoff meeting and workshop
- Attendance of up to three project meetings
- Meeting agendas and meeting summaries

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### ADDITIONAL PROJECT EXPERIENCE

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TRAFFIC MANAGEMENT SYSTEM</th>
<th>NEEDS ASSESSMENT</th>
<th>CONCEPT OF OPERATIONS</th>
<th>TRAFFIC SIGNAL SYSTEM REQUIREMENTS</th>
<th>ITS PLANNING</th>
<th>ITS DESIGN/TRAFFIC SIGNAL DESIGN</th>
<th>TRAFFIC SIGNAL TIMING AND OPERATIONS</th>
<th>SYSTEM EVALUATION</th>
<th>IMPLEMENTATION</th>
<th>BENEFITS EVALUATION</th>
<th>CORRIDOR OPERATIONS</th>
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<td>WSDOT SRTMC ITS Architecture</td>
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<td>City of Pasadena Adaptive Traffic Control Implementation and Procurement</td>
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<td>City of Redmond Signal System Procurement</td>
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</table>
Task 2-1: Existing Conditions Inventory and User Needs Assessment

Existing Conditions: DKS, with assistance from City staff, will prepare a detailed inventory of traffic signal equipment at each intersection, components of the existing TMC, and other subsystems. This task will include:

- Listing controller and cabinet types, detection systems, TMC components, etc. and entering into a spreadsheet in a form that can be imported into the City’s GIS database.
- Developing an existing communication system map showing the locations and type of communication equipment and infrastructure. This will include existing conduits, signal interconnect and fiber optic cable, and wireless communications devices. The City’s IT department will provide data and a map showing the City’s broadband communications architecture, including all existing and proposed access points in GIS format.
- Preparing a diagram to illustrate the traffic signal infrastructure, including servers, work stations, field equipment, and communications equipment.

For budgeting purposes, this work plan assumes the City’s existing infrastructure documentation is in good condition and limited field investigation is needed by DKS. DKS will request and review documents pertaining to the City’s traffic signal system including the plans and specifications for past ITS projects.

User Needs Assessment: DKS will work with the City to conduct a user needs assessment. The needs will be grouped into several categories, including database management, traffic signal monitoring, traffic signal control, and performance monitoring. This task will include:

- Holding one workshop for stakeholders including planning, operations, and maintenance staff; IT staff; and Police and Fire. The purpose of the workshop is to gather information on the successes, ongoing challenges and opportunities of the existing system, and what the user’s needs are for the proposed system.
- Documenting user’s needs based on input from the project stakeholders.

Task 2-2: Signal System Evaluation and Selection

The purpose of this task is to evaluate a minimum of four traffic signal control systems (local, central, adaptive, ATSPM, etc.) that are available on the market and propose a solution that will effectively address the user’s needs. The proposed system may be a modified version of the existing system or a combination of entirely new systems. The following subtasks will be completed as part of this task:

Concept of Operations: The Concept of Operations will document the stakeholders’ shared understanding of the system to be developed and how it will be operated and maintained. The document will describe various scenarios that the systems will be required to accommodate and will clearly define the roles and responsibilities of each project stakeholder.

The operational scenarios will document a range of conditions, such as:

- Normal operation under typical conditions (such as normal peak periods, business hours, evenings, and weekends)
- Operation under unusual traffic conditions (such as incidents on the freeways, incidents on City arterials, and major planned events that generate significant traffic or close streets)
- Operation under fault conditions (such as failure of signal system servers, communication failures, power failures, and detector failures)
- Operation under stress conditions (such as non-traffic incidents (e.g., major fire) on City streets, natural disaster, and major security incidents)

These scenarios will be used to define acceptable levels of reliability for the system, identify critical components of the system that need redundancy, and develop fallback or fail-safe operational requirements. The Concept of Operations will also define the Measures of Effectiveness (MOEs) for the transportation system controlled by the signal system, as well as
measures of performance and reliability of the system itself (reliability, downtime, etc.).

System Requirements: We will develop system requirements for the proposed traffic management system based on the needs documented in Task 2. The final list of requirements will be converted into a questionnaire that will be distributed to all vendors that meet the basic needs of the City.

One of the most important attributes of a successful project is a clear statement of requirements that meet the stakeholders’ needs. The DKS team will develop System Requirements, including functional and performance requirements, based on the concept and system components identified in the ConOps (Task 2). Functional requirements define “what” the system must do, performance requirements define “how well” the system must perform its functions, and a variety of other requirements define “under what conditions” the system must operate.

Systems Operations Evaluation: We will evaluate the various signal control systems that are available on the market and facilitate vendor demonstrations for those systems that the City currently does not use. This task includes:

- Converting the final list of Functional Requirements into a questionnaire that will be distributed to all signal system vendors that meet the basic needs of the City
- Vendors will be asked to propose a signal system package that can be installed complete under one contract
- Responses from vendors will be scored based on a weighing of the importance of each feature versus how well each vendor meets the functional requirements
- Coordinating with vendors and manufacturers to facilitate field demonstrations of key components of the systems to allow City staff an opportunity to bench test the systems and provide feedback
- Reviewing FHWA’s ITS Strategic Plan and San Joaquin County Council of Governments’ regional ITS Plan to identify future improvements for smart city and connected vehicles readiness and select a proposed system that is future-proof

Task 2-2 Deliverables
- Draft Concept of Operations document (one hard copy and one PDF)
- Final Concept of Operations document (one bound hard copy and one PDF)
- Draft System Requirements document (one hard copy and one PDF)
- Final System Requirements document (one bound hard copy and one PDF)
- Draft Signal System Evaluation and Selection technical memorandum (one hard copy and one PDF)
- Final Signal System Evaluation and Selection technical memorandum (one bound hard copy and one PDF)

Task 2-3: Communications System Architecture and Traffic Management Center Configuration Design

We will develop a communications network design that maps out the concept for communication from the TMC to all field devices and propose alternative communication network improvements. As part of this task, DKS will:

- Evaluate the proposed system’s data communication needs
- Evaluate alternative communication network configuration
- Develop a proposed communications system architecture for a phased deployment and a cost estimate for each phase

This task will also involve developing key components of the City’s new TMC, as well as satellite stations at the City’s Operation and Maintenance Division, San Joaquin County Public Works, and Caltrans District 10.

- Evaluate video wall alternatives
- Evaluate multi-monitor personal computer options
- Develop draft and final conceptual TMC design

Task 2-3 Deliverables
- Draft Communications System Architecture and Traffic Management Center Configuration Design document (one hard copy and one PDF)
- Final Communications System Architecture and Traffic Management Center Configuration Design document (one bound hard copy and one PDF)

Task 2-4: Transition/Deployment Plan

Before the signal system can be installed, the City must first develop a transition/deployment plan that identifies a phased approach to converting from the existing systems to the new system.
The first step in the plan will be to define the system that will be required to provide the functionality described in the operational scenarios. Based on the inventory of existing conditions, the plan will identify necessary upgrades, expansion, and equipment replacement needed to achieve the envisioned system. This will include the physical accommodation of computers and communication equipment. DKS will assess the existing communication status and make recommendations to integrate the intersections that are currently offline.

A cost estimate will be prepared for all the necessary work. A staging plan will be prepared, mapping a logical sequence of expansion, upgrade, and replacement. Temporary or permanent interfaces to legacy systems and migration to new systems will be identified. A schedule will be prepared, based on the life-cycle estimates of the existing equipment, to define the rate at which activities need to take place in order to maintain efficient operation and minimize ongoing maintenance and repair activities. This will provide a baseline for estimating required expenditures for budgeting purposes.

The signal communications implementation plan will be used to identify the supporting communications infrastructure for the selected traffic signal system. The primary goals are to identify the most suitable communications mode for each signal, establish a field-to-center link for all signals, and set the stage for future infrastructure improvements.

The implementation sequence may be tied to external events or activities such as the timing of development and redevelopment projects or the timing of other transportation projects not under the City’s control. These will be identified so that the signal system budget may be kept in step with outside influences.

DKS will work with system vendors and the City’s IT personnel to develop procurement specifications for server hardware, operating system, database software, and other related components. This may include using virtual servers to reduce cost, improve reliability, and simplify support.

The implementation plan will also identify other enabling activities that will be necessary preconditions for the implementation of elements for the traffic signal management system. This may include the completion of other City activities, such as modifications to the broadband communications backbone, inter-agency agreements with neighboring jurisdictions to ensure the cooperation of related activities under various scenarios, or coordination of their equipment’s operation.

**Task 2-4 Deliverables**
- Draft Transition Plan document (one hard copy and one PDF)
- Final Transition Plan document (one bound hard copy and one PDF)

**Task 2-5: Compile Master Traffic Management System (TMS) Configuration Report**

Once all final documents in the previous tasks have been completed and approved by the City, DKS will compile each document into a consolidated master plan. Additional elements will be prepared to explain other enabling activities that will be necessary to allow the implementation and operation to proceed. This would include inter-department and inter-agency agreements. The TMS report will include the following sections:

- System Engineering Management Plan
- Existing Conditions Inventory and Needs Assessment
- Concept of Operations
- Functional Requirements
- Signal System Evaluation and Selection
- Proposed Communications System Architecture
- Proposed TMC Configuration
- Transition/Deployment Plan

**Task 2-5 Deliverables**
- Draft TMS Report (one hard copy and one PDF)
- Final TMS Report (one bound hard copy and one PDF)

This task will include developing a traffic signal design guide document based on the proposed system and equipment upgrades. The design guide will adhere to standards included in the CA MUTCD, City, and Caltrans Standard Specifications and drawings. The signal timing parameters will be updated based on ITE recommended best practices and Caltrans MUTCD. The guide will document traffic signal standards and
signal management processes for the new system, including, but not limited to:

- Signal head and pedestrian push button placement
- Detector layout and input numbering
- Emergency vehicle preemption channel direction and phase grouping
- Controller type and firmware
- Communications equipment and settings
- Future smart city applications
- Signal phase orientation
- CCTV camera installation
- General signal timing variables such as walk, flashing don’t walk, min and max green, volume density, etc.
- Processes for data management
- Processes for timing review and update

We will develop typical layouts for vehicle and bicycle detection that will provide safe and efficient operations and also allow for data collection for ATSPM reports.

We will also create Operational Scenarios that provide guidance on how to operate a traffic signal given certain conditions — think of it as a signal timing “playbook”. This “playbook” will provide consistent operation of traffic signals across the City and should be a living document and updated as new scenarios emerge.

**Task 3 Deliverables**

- Draft Traffic Signal Design and Operation Guide document at 65%, 95%, and 100% complete (Four hard copy sets and one PDF at each deliverable milestone)
- Final Traffic Signal Design and Operation Guide document (five bound hard copy sets and one PDF)
- Diagrams, maps, and other visuals in their original formats

**REFERENCES**

DKS has included contact information of key clients with whom we have worked on projects similar to the City of Stockton project. We encourage you to contact our references for their insights into our work quality and level of client service.

<table>
<thead>
<tr>
<th>REFERENCE CONTACT</th>
<th>PROJECT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>City of Chico</strong></td>
<td><em>City of Chico ITS Plan.</em> DKS assisted the City in its effort to prepare an intelligent transportation system (ITS) planning document to guide the development and management of the traffic signal system infrastructure throughout the City within the next five years. Our support was undertaken in two phases. The first phase included preparing a traffic signal systems plan document to support an application for the Economic Development Administration (EDA) grant to improve the City of Chico’s traffic signal system. The second phase included detailed documentation for the Concept of Operations, implementation plan, and operations and management plan.</td>
</tr>
</tbody>
</table>
| Bikram Kahlon, Senior Traffic Engineer | Bikram Kahlon, Senior Traffic Engineer  
  o: 530.879.6940  
  c: 530.434.2017  
  e: bikram.kahlon@chicoca.gov  
  Personnel involved:  
  David Mahama, Jim Peters, Meron Shiferaw |
| **City of Fairfield** | *Fairfield Adaptive Signal Control Technology - Phase I.* DKS is providing systems engineering and implementation services for the proposed adaptive traffic control system at 16 intersections on Travis Boulevard and North Texas Street. The project will be delivered in two phases. Phase I will focus on systems engineering and preliminary engineering. Phase II will focus on the design plan specifications and estimates and deployment of the system. |
| Ryan Panganiban, PE, Senior Civil Engineer  
  Design Division  
  o: 707.428.7017  
  e: rpanganiban@fairfield.ca.gov  
  Personnel involved:  
  David Mahama, Jim Peters, Pam O’Brien, Meron Shiferaw, Karl Typolt, Jielin Pan | **City of San Mateo**  
  Bethany Lopez, PE, Senior Engineer  
  o: 650.522.7313  
  c: 951.965.0736  
  e: blopez@cityofsanmateo.org  
  Personnel involved:  
  David Mahama, Meron Shiferaw | *Traffic Signal Design Services.* DKS provided traffic signal design services for the Saratoga Drive/E. Hillsdale Boulevard intersection in the City of San Mateo. The traffic signal was modified to reduce traffic delay at the intersection. The recommended improvements include modifying the southbound Saratoga Drive approach to include two southbound left-turn lanes, one through lane and two right-turn lanes, relocating the east crosswalk to the west leg, and operating the double northbound and southbound Saratoga Drive right-turn lanes to overlap with the E. Hillsdale Boulevard westbound left-turn and eastbound left turn approaches respectively. |
PROJECT WORK MATRIX

The Project Work Matrix which identifies all key team members, including subconsultants, in a work chart, including their name, title, hours per task, hourly rate, total hours, direct labor, overhead, and percentage of work by task can be found in the separate cost proposal email as requested in the RFP.
LOCAL PREFERENCE

The DKS team includes a local engineering firm, Siegfried, to provide graphics support for documentation. They will work with our visual communications team to translate detailed technical information into easy-to-read graphics for the final reports.

**Role:** Graphics Support for Documentation

**Address:** 3428 Brookside Road, Stockton, CA 95219

The cost proposal provides the portion of the total fee and percentage that will be expended.
RESUMES
DAVID MAHAMA, PE

SENIOR PROJECT MANAGER

David’s professional experience includes traffic operations, traffic signal systems, traffic signal design, and intelligent transportation systems (ITS) planning and design. David is an instructor for the “TE-04 Signal Timing and Operations” and “TE-10 Advanced Traffic Signal Operations” classes offered by the University of California, Berkeley Technology Transfer program. He has an excellent record of successfully managing and delivering projects on time and under budget.

VALUE TO THE CITY OF STOCKTON

- Familiarity with the City of Stockton Traffic Signal System - Stockton Controller Upgrade Project, California MUTCD, and Caltrans Standard Plans and Specs for Traffic Signals
- Traffic signal systems expertise with various advanced traffic management systems including TACTICS/SEPAC, Transuite/D4, CUBIC/Trafficware ATMS.now, Q-Free Maxview ATMS, Centracs/ Econolite AC2 8000, QuicNet system/BiTran 200, 233 and 2033, Caltrans C8.4 and 2070, and Insync Adaptive
- Expert in developing traffic signal management plans for the cities of Concord, South San Francisco, and Chico
- Experience in preparing systems engineering documents for the MTC Joint Operations Center Traffic Management Center and Automated Traffic Signal Performance Measures for cities including San Jose, San Rafael, South San Francisco, and Union City
- Experience preparing systems engineering documents for the Fairfield and Union City Adaptive Signal Control Technology projects
- Over 23 years of experience timing over 2,000 traffic signals and teaching two signal timing and operations courses for the UC Berkeley Technology Transfer Program

SELECT EXPERIENCE

Metropolitan Transportation Commission (MTC) IDEA Automated Traffic Signal Performance Measure (ATSPM) Projects, CA. David is leading the DKS team in developing systems engineering documents for innovative corridor solutions for the cities of San Rafael, San Jose, South San Francisco, and Union City.

RSTP and PASS Projects, Bay Area, CA. David is the project manager and technical lead for the MTC sponsored Program for Arterial System Synchronization (PASS) projects. He has successfully managed,
implemented, and evaluated traffic signal coordination plans for over 1,500 traffic signals throughout the nine-county Bay Area.

**Adaptive Traffic Control System, Fairfield, CA.** David is leading the DKS team to provide systems engineering and implementation services for the proposed adaptive traffic control system at 16 intersections on Travis Boulevard and North Texas Street. The project will be delivered in two phases. Phase I will focus on the systems engineering and preliminary engineering and Phase II will focus on the design plan specifications and estimates and deployment of the system.

**MTC Joint Operations Center (JOC), CA.** DKS Associates developed preliminary design and specifications for a new JOC in MTC’s new headquarters building. The center acts as an Emergency Operations Center during emergencies and regularly operates as the center for coordination of other MTC operational programs, including 511, SAFE call boxes and the Freeway Service Patrol (FSP), and Express Lanes (open tolling HOT lanes). David assisted with the preparation of the Needs Assessment and Concept of Operations (ConOps) documents. He facilitated coordination with stakeholders including Caltrans District 4 staff and staff from the following MTC programs: MTC Emergency Operation Center; MTC Bay Area Toll Authority (BATA); and the Transportation Management System Service Authority for Freeways and Expressway (SAFE) which provide the FSP.

**Traffic Signal Controller Upgrades and Retiming Project, Stockton, CA.** David provided technical assistance to City staff to replace 20 obsolete Traconex 390 controllers with 2070N controllers and replace five traffic signal controller cabinets. He also helped during construction. After the construction of the project, David worked with City staff to convert the Traconex 390 signal timing database to the Siemens Tactics database at the traffic management center. He helped with the bench testing of the uploaded signal timing database into the new controllers before installation in the field cabinets.

**East Bay Bus Rapid Transit Project, Oakland, CA.** David led the traffic signal design for this multimodal project that will modify International Boulevard and Broadway in Oakland to accommodate exclusive bus rapid transit lanes, continuous bicycle lanes, and install pedestrian traffic signals for crosswalks. The project involves the design of 30 new traffic signals, modification of 87 existing traffic signals, and fiber optic interconnect design. Other elements of the design include video detection cameras, CCTV cameras, emergency vehicle preemption, and transit signal priority system design. Additionally, he authored the design basis memorandum for the traffic signal design and the traffic management plan for the project.

**Traffic Signal Master Plans, South San Francisco, Chico, and Concord, CA.** David led the DKS team to prepare ITS and traffic signal master plans for the cities, including a design guide document for street lighting for the City of South San Francisco. Following interviews and a workshop with key staff, a ConOps was prepared including vision, goals, and objectives. A complete inventory was prepared of all traffic signal and ITS facilities. The master plan included a traffic signal communications plan, life-cycle costing, a funding plan, and complementary stand-alone projects that could be implemented as funding became available.

**AC Transit Telegraph Avenue Rapid Corridor Design, Berkeley and Oakland, CA.** David is leading a multi-disciplinary team to improve transit performance and reduce transit delay by upgrading the TSP system along the Telegraph Avenue and West Grand Avenue project corridors. The DKS team is providing design services to improve the existing transportation infrastructure along the Telegraph Avenue and West Grand Avenue project corridors and project corridor areas in Southside Berkeley. The project improvements include upgrading the existing TSP technology, installing/upgrading/repairing traffic signal interconnect cables (SIC) communication, and enhancing/relocating key bus stops.
JIM PETERS, PE
DIRECTOR OF TRANSPORTATION TECHNOLOGY | PRINCIPAL

Jim specializes in planning and design for transportation system management and operations and has an excellent record as a senior project manager and a technical specialist. Jim is an expert in systems engineering, ITS, traffic operations, adaptive traffic signal systems, transit signal priority, and traffic analysis of arterial roadway corridors. He has evaluated, designed, and/or implemented over 15 adaptive traffic signal control systems for agencies throughout the west coast, all of which are still operational.

Jim provides expertise in the preparation of local and coordinated signal timings, transit signal priority installations, and the design and planning of ATMS, traffic signal communication networks, traffic signal systems, cameras, incident management plans, regional architectures and ITS plans, and operations center design and integration. He is a nationally recognized expert in signal timing, transit priority, and signal systems.

VALUE TO THE CITY OF STOCKTON

- Delivered over two dozen successful transportation system implementations with no failures
- Expert understanding of the systems engineering process and benefits
- Experience implementing automated transportation performance measures and designing field systems to collect data
- Hands-on experience with numerous central and local traffic signal software systems

SELECT EXPERIENCE

**Metropolitan Transportation Commission (MTC) IDEA Automated Traffic Signal Performance Measure (ATSPM) Projects, CA.**

Jim served as Principal-in-Charge for these projects to provide systems engineering for the deployment of Adaptive Signal Control Technology (ASCT), ATSPMs, bike, and pedestrian detection systems under MTC’s Innovative Deployment to Enhance Arterials (IDEA) Grant Program. Jim and the team provided the systems engineering and procurement services for the cities of San Jose, San Rafael, South San Francisco, and Union City.

**Federal Highway Administration (FHWA) Traffic Signal Management Plan Guidebook.** Jim served as a technical advisor for this project that creates a guidebook for creating a traffic signal management plan (TSMP). The TSMP describes the goals, objectives, strategies, and tactics that a local agency traffic signal operations program would use.

PROFESSIONAL HIGHLIGHTS

Years of Experience: 26

EDUCATION

BS, Civil Engineering, University of Washington, 1994

REGISTRATIONS

Oregon Professional Civil Engineer No. 72367
Washington Professional Civil Engineer No. 37922

Your team was able to develop innovative solutions, make early contact with stakeholders, and generally keep a close eye on the project to make sure that it was delivered within the required timeframe.

Matt Freitag, Oregon DOT
Jim advised the development team on content and provided a quality review of the proposed guidebook material.

**FHWA Model Transportation Systems Management and Operations Deployments in Corridors and Subareas Primer.** Jim served as quality manager and developed key content to showcase to planners, transportation engineers, and decision-makers an effective and sustainable strategy, program, and package of project deployments for TSMO for corridors and subareas. The primer was published as “Model Transportation Systems Management and Operations: Deployments in Corridors and Subareas Primer” (FHWA-HOP-18-026).

**FHWA Model System Engineering Documents for Adaptive Signal Control Technology (ASCT) Systems.** Jim served as one of the primary authors responsible for the model systems engineering documents for ASCT. The documents assist agencies in their ability to apply the systems engineering process to procuring ASCT systems. The documents should reduce the level of effort required and the risks associated with the procurement of ASCT. Jim applied his experience from implementing ASCT for many agencies.

**ODOT Traffic Signal System Systems Engineering, OR.** Jim managed systems engineering services for selecting an adaptive traffic signal system for the state of Oregon. Jim prepared the Concept Of Operations and detailed requirements for three traffic signal system components – local signal controller software, central signal software, and adaptive signal software. ODOT used the Concept of Operations and requirements to obtain a new vendor for its statewide traffic signal system. Jim led stakeholder meetings and communicated with the client and vendors.

**Clark County Signal Timing Evaluation, Verification, and Enhancement (STEVE) Project, WA.** As the project manager, Jim managed a team of engineers, planners, university researchers, and visualization specialists to determine the arterial performance monitoring requirements for Clark County. Jim and the team developed a Concept of Operations, defined the specific operations objectives and corridor needs in a corridor atlas, and developed a framework for producing key performance measures and sample visualizations that will be used for future automation.

**Southwest Washington Transportation System Management and Operations Plan, WA.** Jim served as a project engineer/planner providing ITS planning expertise with arterial operations. He participated in the development of a regional 10-year TSMO strategic plan to better integrate transportation operations, ITS investment, and regional transportation planning in SW Washington. The plan includes a multimodal and multiagency TSMO vision, identification of relevant and practical strategies, and helps to increase policy-maker awareness.

**Vancouver Area Smart Trek Transportation System Management and Operations Pilot Project, WA.** Jim managed the focus on improving arterial operations using system management and operations techniques to reduce travel times and delays including new systems that offer real-time and historic monitoring of arterial performance. Jim designed detection systems that measure travel times, volumes, vehicle classification, and origins-destinations.

**MDT Statewide Traffic Signal System Evaluation Project, MT.** As Principal-in-Charge, Jim developed corridor atlases that describe the timing objectives and transportation operations issues on 12 corridors, interviewed stakeholders to document the current conditions and the user needs, evaluated the potential for adaptive traffic signal control on each of the corridors, and developed a phased implementation plan for statewide traffic signal system improvements in Montana.
PAMELA O’BRIEN, PE, PTOE
SENIOR TRANSPORTATION ENGINEER

Pam has extensive experience in traffic operations and systems engineering, including operational analysis, signal timing development and implementation, traffic signal and communications design, advanced operations, and automated traffic signal performance measurement (ATSPM). She has been responsible for the implementation and field fine-tuning of signal timing for dozens of corridors involving over 500 signals. Pam focuses on linking the traffic signal timings to the corridor operational objectives.

She is an expert in systems engineering and has helped many agencies evaluate and choose new signal systems (local, central, adaptive, and ATSPM systems). Pam’s hands-on traffic signal timing field experience gives her the ability to troubleshoot software and hardware issues.

VALUE TO THE CITY OF STOCKTON
• Expertise gathered from working on the FHWA Objectives and Performance Based Management of Traffic Signal Operations
• National exposure developing the FHWA Model Systems Engineering Documents for Adaptive Traffic Signal Control
• Leading the Systems Engineering task for the deployment of the ATSPM system for four cities in the Bay Area under the MTC IDEA Grant Program
• Extensive hands-on experience with developing and deploying traffic signal timing plans

SELECT EXPERIENCE

Metropolitan Transportation Commission (MTC) IDEA Automated Traffic Signal Performance Measure (ATSPM) Projects, CA. Pam is the technical lead to provide systems engineering support to four agencies (San Rafael, San Jose, South San Francisco, and Union City) to help each procure an ATSPM system. Pam led the user needs assessment and Concept of Operations development to document the issues, describe how the system would work, and identify infrastructure needs and roles and responsibilities. She is currently providing high-level guidance on system procurement and will assist with the system verification as each city deploys its system.

FHWA Objectives and Performance Based Management of Traffic Signal Operations. Pam was the co-investigator on this project to document case studies and describe best practices, benefits and costs of objectives, and performance-based management of traffic

PROFESSIONAL HIGHLIGHTS
Years of Experience: 26

EDUCATION
BS, Civil Engineering, University of Minnesota, 1994

REGISTRATIONS
Oregon Professional Civil Engineer No. 65811
Washington Professional Civil Engineer No. 51767
Idaho Professional Civil Engineer No. 15231
Texas Professional Civil Engineer No. 117630
Montana Professional Engineer No. 49366
Professional Traffic Operations Engineer (PTOE) No. 220
signal programs. She worked with the team, which included experts from private, public, and academic sectors, to develop a white paper that describes the methodology to evaluate the benefits and costs of ATSPM system deployments. She helped develop a guide that includes best practices and lessons learned to help agencies as they deploy and operate future systems.

**ODOT Traffic Signal Management Plan (TSMP), OR.** Pam developed ODOT’s first TSMP, which provides the framework for how an agency designs, operates, and maintains the traffic signal system. She worked with ODOT to develop goals and objectives, identify the existing policies and standards, and document the day-to-day activities conducted by staff related to design, operations, and maintenance. She identified gaps and created an action plan to help ODOT move from reactive to proactive operations. A unique component of this project was a playbook of operational scenarios (congested arterial, isolated intersection, etc.) along with suggested signal timing strategies and performance metrics used to track performance.

**FHWA Model System Engineering Document for Traffic Signal Systems.** Pam was the task lead for this project to develop Model Documents for use by agencies to guide the development of a Concept of Operations and requirements for the procurement of traffic signal systems. The Model Documents build on the highly successful Model SE Documents for Adaptive Signal Control Technology, which were also updated based on user feedback.

**ODOT Signal System Evaluation and Testing, OR.** Pam managed this project to develop a statewide ConOps for new local controller, central, and adaptive traffic signal systems. She facilitated a series of meetings with ODOT and several local agency stakeholders to discuss and document their needs relating to the traffic signal system. From the user needs, system requirements were developed for each of the systems, for use in the procurement process. Pam also provided system verification testing of the local and central signal systems. She worked with ODOT and the vendor at the ODOT testing facility to verify the system requirements to ensure that the systems functioned as required.

**MDT Statewide Signal System Evaluation, MT.** Pam worked with the Montana Department of Transportation (MDT) on a Statewide Signal System Evaluation project to develop a statewide Concept of Operations for local and central traffic signal systems. She facilitated stakeholder meetings with MDT and numerous local stakeholders to assemble user needs. She performed a field review of 14 corridors to document operational conditions and summarize use cases to determine locations where adaptive traffic signal control would be appropriate. She developed an implementation plan for near-term and long-term solutions to improve on-street signal operation and central signal management, including configuring a performance measures system.

**FHWA Traffic Signal Management Plan (TSMP) Guide.** Pam was the task lead for this project to develop a TSMP Guide for FHWA. A TSMP will document how traffic signal operations support an agency’s transportation mobility goals and objectives. It will provide a basis and justification for operational strategies and tactics, along with design standards and maintenance practices. Pam developed a Goals, Objectives, Strategies, Tactics (GOST) matrix, which provided the framework for the creation of a TSMP. She led workshops with several stakeholders to develop case studies to document the level of effort and length of time involved in preparing TSMPs of varying levels of complexity. Guidance was also provided for the selection of measures of performance appropriate for the agency’s objectives and recommendations on cost-effective methods of quantifying the performance.
MERON SHIFERAW, PE, PTOE
TRANSPORTATION ENGINEER

Meron has eight years of traffic engineering experience working on public and private projects. Her professional experience includes traffic studies, traffic signal design, systems engineering, signal timing, signal warrant analyses, temporary traffic control design, signing and pavement marking design, and intelligent transportation systems design (ITS). Her software experiences include Synchro, SimTraffic, SIDRA Intersection, TORUS, AGI, Microstation, and SignCAD.

VALUE TO THE CITY OF STOCKTON
- Signal design expertise; Meron served as project manager, design engineer, and Engineer of Record for signal designs in multiple jurisdictions in Texas, California, and North Carolina
- Systems engineering experience developing Concepts of Operation for adaptive signal control systems
- Extensive familiarity with traffic signal requirements set forth in the CA MUTCD
- Signal timing expertise for coordinated as well as isolated systems

SELECT EXPERIENCE

Adaptive Traffic Control System, Fairfield, CA. Meron is currently serving as the deputy project manager and project engineer to complete the systems engineering and the preliminary engineering for implementing Adaptive Signal Control Technology (ASCT) along two corridors in Fairfield, CA. This project will implement ASCT at a total of 20 intersections along Travis Boulevard and North Texas Street. Preliminary engineering tasks include evaluating the existing communication network and making recommendations for improvement.

TxDOT Houston TSMO Program Plan, Houston, TX. Meron is currently serving as project engineer on this project, which is aimed at institutionalizing Transportation Systems Management and Operations (TSMO) into the core business processes, systems and technology, performance measurement, organization and workforce, culture, and collaboration for the TxDOT Houston District. She is working with internal TxDOT stakeholders and external partners so that TSMO is considered in all aspects of transportation—research, planning, programming, design, construction, operations, and maintenance to make the most use of TxDOT’s existing roadway capacity. Ultimately, a TSMO program plan will be developed for each District with a clear implementation plan for integrating TSMO.
**Custer Road Traffic Signals, McKinney, TX.** Meron served as the design engineer for four new traffic signals and fiber optic interconnect design along Custer Road in McKinney, TX. The signals were designed with VIVDS, red light confirmation, emergency vehicle pre-emption, and wire capacity to later install PTZ cameras. Protected left-turn phasing was used along Custer Road and flashing yellow arrows were designed for left turns from the side streets. Fiber optic cables were designed to use existing conduit along the median. The design included fiber splicing to existing fiber at US 380 (the north project limits) and connected to a communication hub on Virginia Parkway on the south.

**SH 288 Toll Lanes Design-Build, Houston, TX.** Meron served as a project engineer for this design-build project currently under construction in Houston, TX. This project added managed tolling lanes to 10 miles of SH 288 between US 59 and Beltway 8. The ITS and tolling system design included an ITS communications backbone, HUB buildings, DMS, CCTVs, Bluetooth Travel Time Readers, weather stations, microwave vehicle detection, tolling zones, and traffic signals. This project utilized a fast-tracked design that required extensive coordination with all disciplines on the project. As a part of the construction effort, existing ITS devices and the existing fiber communications backbone had to be maintained during construction until the new backbone was installed, tested, and accepted. Meron also served as the task lead for the signing and pavement marking portion of this project.

**McCart and Altamesa Corridors Signal Timing, Fort Worth, TX.** Meron developed AM, Mid-day, and PM signal timing plans for two intersecting corridors. The project included a total of 27 intersections along McCart Avenue and Altamesa Boulevard in Fort Worth, TX. She conducted site visits to all intersections, created existing and Synchro models, performed cycle length analysis, and developed proposed timing plans.

**US 62/82 ITS Communications Network, Lubbock, TX.** Meron served as a project engineer for the fiber and power design to one Dynamic Message Sign (DMS) and two PTC closed-circuit television (CCTV) devices. The project involved the design of conduits, ground boxes, power cables, and the 72 single-mode fiber optic cable backbone along US 62/82 from just west of 82nd Avenue to Milwaukee Avenue and ties into the existing cable that feeds the TxDOT Combined Transportation Emergency and Communication Center (CTECC) at Milwaukee Avenue.
ELLIOIT HUBBARD
REGIONAL MANAGER FOR SMART CITIES/CONNECTED VEHICLES

Elliot has 17 years of experience as a project manager in the public and private sectors for transportation engineering projects for local, state, and national clients. He has led systems engineering efforts with large stakeholder groups and brings significant experience in the connected vehicle, intelligent transportation systems (ITS), and transportation planning domains. Elliot’s project management experience spans the full systems engineering lifecycle, from concept development, requirements, design, implementation, and testing.

VALUE TO THE CITY OF STOCKTON

- Significant experience working with local, regional, and state clients to develop technology plans that are tailored to the specific needs of the client
- Deep understanding of the connected vehicle and smart city technology landscape, with a focus on identifying supportive technology investments that are robust in the face of changing technologies, architectures, and standards

SELECT EXPERIENCE

Santa Clara County Valley Transportation Authority (VTA)
Transportation Technology Strategy Plan, San Jose, CA. Elliot was a task lead for this project to help VTA develop its Transportation Technology Strategy Plan (TTSP), a countywide smart region plan to provide a common vision of the future of transportation technology and recommend initial bold steps toward establishing a Smart Region. Elliot authored the transit and smart mobility white papers to identify the concepts, strategies, technologies, and policies that can be implemented by VTA and its agency partners to support the advancement and evolution of transit and smart mobility services for the region.

Fremont Boulevard Smart and Safe Corridor Scoping Project, Fremont, CA. Elliot was the project manager on this project to help the City of Fremont develop a vision for smart city strategies in the Fremont Boulevard corridor to ensure the safe movement of all road users, enhance transit service, and support future initiatives to demonstrate new technologies that advance the City of Fremont’s Vision Zero Policy and Climate Action Plan. Elliot worked closely with the city to generate recommendations that included adaptive signal systems, transit signal priority, real-time transit information, automated speed enforcement, V2x communication, smart parking, open data platforms, bicycle and pedestrian sensors, energy-efficient street...
lighting, and revenue generation through leasing and advertising arrangements with the private sector. As a result of this project, the City of Fremont was able to secure $10 million in grant funding from Alameda CTC to implement the recommendations from this scoping plan.

**WSDOT Transportation Systems Management and Operations (TSMO) Reference Website.** As a TSMO and ITS subject matter expert, Elliot authored technical content for WSDOT’s TSMO website (TSMOWA.org), a technical reference and implementation guide for internal staff and agency partners for use in TSMO planning and project development.

Intended as a resource for a broad but technical audience, the website had to be both informative and understandable for non-expert readers. Elliot was able to combine his technical expertise and communication skills to present material clearly and concisely, to make the guide a useful reference to practitioners and other users wishing to learn more about TSMO, compare strategies, and understand how they may be best deployed to address common conditions.

**Clark County Connected Vehicle Program Strategy Paper, Vancouver, WA.** Elliot was the primary author of this strategic planning white paper to establish a roadmap for the County’s connected vehicle program. It confirmed the County’s goals, objectives, and priorities for CV in the region, provided background on the current state of CV research and deployments, and suggested practical next steps to define and begin advancing the CV roadmap. Finally, the white paper proposed a work plan to identify and sequence the next steps for the County to implement.

**ODOT Statewide ITS Connected Vehicles Architecture & Concept Plan Update, Salem, OR.** For this ODOT project to identify and document recommendations for how the state should prepare for connected and automated vehicles in Oregon, Elliot was the task lead and primary report author for the Pilot Project Opportunities and Pilot Project Plan tasks. Elliot provided high-level guidance to inform the Agency’s selection and advancement of Connected Vehicle (CV) concepts for near-term deployment and developed the near-term deployment evaluation criteria to help the Agency target the most promising pilot project opportunities. As a result of this work, ODOT has subsequently funded the implementation of select pilot recommendations generated by this project.

**FHWA Fed Primers on Integrated Corridor Management and Smart Cities/Connected-Automated Vehicles, Washington, D.C.** As a subconsultant, Elliot served as a subject matter expert and co-author for two FHWA primers on the intersection of Integrated Corridor Management (ICM) and emerging concepts related to Smart Cities and Connected-Automated Vehicles (CAV). The purpose of the primers was to provide guidance to transportation operations professionals, facility operators, and other practitioners around how Smart Cities and CAV concepts can be integrated into ICM deployments, identifying the key institutional, operational, and technical integration opportunity areas and the benefits for such coordination.

**Caltrans District 9 ITS Master Plan, Bishop, CA.** Elliot served as the subconsultant project manager to develop a 10-year ITS strategic plan, with a focus on safety solutions to address weather-related challenges unique to this District’s rural context. Elliot developed the regional ITS Architecture and supported the identification, evaluation, and prioritization of near-term ITS projects to address the District’s unique weather-related issues and leveraged existing ITS installations and investments. Additionally, Elliot led a task to recommend emerging ITS strategies relevant to the needs of the District that take advantage of technology developments related to connected vehicle and ubiquitous mobile connectivity. Intended for longer-range investment, these emerging strategies included virtual CMS (in-vehicle signing), automated TMC functions tied to advanced video analytics, and enhanced road weather information systems.
KARL TYPOLT, PE
SENIOR TRANSPORTATION ENGINEER

Karl brings over 12 years of experience in ITS planning, design, and operations. He focuses on utilizing new and emerging technologies to streamline and simplify public agency maintenance and operations efforts. His project experience has included smart mobility and NextGen strategic plans; FHWA systems engineering; traffic signal design and advanced controller operation; and intelligent transportation systems (ITS) design. Relevant ITS planning experience has included ITS inventory and gap analysis, stakeholder needs assessment, communications network expansion and upgrades, and ITS and traffic signal strategic plans and guidelines.

VALUE TO THE CITY OF STOCKTON
• Experience implementing Siemens, Q-Freelntelight, Cubic|Trafficware, Rhythm, Econolite, and Transcore local and central signal control systems
• Led multi-agency and multi-department workshops
• Seamlessly integrated high-resolution and third-party probe data into agency operations
• Evaluated communication networks for resiliency, redundancy, and future capacity in support of smart city and CV future
• Upgraded CCTVs from analog to IP applying AI for safety applications

SELECT EXPERIENCE

City of Seattle DOT (SDOT) Next Generation ITS Program, Seattle, WA. Karl provided guidance to SDOT regarding future ITS implementation throughout the City. ITS improvements included adaptive signal control technology, placement of license plate reader cameras, Bluetooth/WiFi sensors, non-intrusive vehicle detection throughout downtown, and design support for SDOT’s new Transportation Operations Center.

Mercer St. SCOOT Adaptive Deployment and Before-After Analysis, Seattle, WA. Karl was the project manager for the City of Seattle’s first deployment of Siemens SCOOT adaptive signal system. The project included the development of FHWA Systems Engineering documents, detection installation oversight, and on-going performance measure evaluation to support a before-after study. Internal performance measures were used by City staff to make operational changes while external performance measures were shared with public officials to help identify the return on investment of the SCOOT adaptive system.
Automated Traffic Signal Performance Measurement (ATSPM) and Probe Data Strategic Plan, Irvine, CA. Karl supported the City in a standardized approach to signal system performance measurement. The project evaluated ATSPM platforms including Intelight MaxView, Econolite Centracs, Iteris SPM, and UDOT ATSPMs. The project also evaluated the use of third-party data for transportation network monitoring including INRIX, Streetlight, and Verizon.

ITS Improvements, Sammamish, WA. Karl was the project manager and lead designer on the project which will install six miles of aerial and underground fiber optic cable connecting four Washington DOT and four city signalized intersections, upgrade two city signalized intersections to Rhythm InSync ASC, and construct a new Traffic Management Center (TMC) at City Hall. Karl led the PS&E bid package for the ITS corridor plans and oversaw the TMC design and systems engineering for the video wall management system. The City will look to upgrade to IP-based CCTV cameras and install dynamic message signs at strategic locations.

ITS Expansion Plan and TMC Design, Nampa, ID. Karl supported the City during the planning process to upgrade traffic signal controllers, expand communications to remote intersections, and upgrade intersection detection to accommodate multiple modes including freight, transit, bike/pedestrians, and general-purpose vehicles. The project also included interagency partnerships with the City’s police department to deploy CCTVs, apply enforcement and near-miss artificial intelligence, and create a shared Traffic Management and Emergency Operations Center.

Federal Way Adaptive Signal Control, Federal Way, WA. Karl was the design lead for the Systems Engineering and PS&E design documents for adaptive signal control deployment at City, WSDOT, and King County intersections. During this effort, Karl worked directly with King County signal maintenance crews to document existing signal controller and detection equipment. The City selected the Siemens SCOOT adaptive signal control system.

ASC Systems Engineering, Redmond, WA. Karl is the systems engineering lead for the procurement of the City of Redmond’s first ASC system. Tasks include the development of a Concept of Operations, System Requirements, and Request for Proposal. The City currently operates Econolite Cobalt controllers and Intelight MaxView central system.

Pierce Transit BRT Communications Design, Tacoma, WA. Karl created the communications basis-of-design for Pierce Transit’s BRT corridor which will connect proposed BRT stations to Pierce Transit Headquarters. The basis-of-design evaluated existing infrastructure, bandwidth requirements to support CCTV cameras at each station, and fiber routing and termination details.

Pierce Transit Transit Signal Priority, Tacoma, WA. Karl is currently the lead systems engineer on Pierce Transit’s TSP upgrade project which will replace the existing GTT IR system with the GTT GPS system. The project also includes signal controller upgrades for the City of Tacoma (Siemens M60 controllers with SEPAC) and Washington DOT (Econolite EOS). The upgraded TSP system will leverage GTT’s Central Management System for TSP and preemption reporting, helping quantify the impacts of TSP on signal progression and transit travel times.

Snohomish County ASC Phase 2, Everett, WA. Karl is the systems engineering lead for the expansion of Snohomish County’s Intelight ASC system and the City of Lynnwood’s Trafficware ASC system. Tasks include stakeholder engagement, detection and communications evaluation, and System Engineering and procurement documentation. Detection upgrades will seek to leverage Iteris stop bar and advance detection.
JIELIN PAN, PHD, PE
TRANSPORTATION ENGINEERING/PLANNING ASSISTANT

As a member of the planning and engineering design group, Jielin is primarily involved in projects involving safety and design work. She has worked on a variety of projects including traffic control design, signal and wiring plan design, traffic safety analyses, pavement evaluation and design, roadway and drainage design, transportation planning, signal warrant analyses, and Geographic Information System (GIS) analyses. Jielin is familiar with a variety of manuals, including HCM, HDM, HSM, MUTCD, and ITE Trip Generation Manual, etc. She is also proficient in a variety of relevant software packages, including Synchro, HCS, ArcGIS, AutoCAD Civil 3D, MicroStation, and IHSDM, etc.

VALUE TO THE CITY OF STOCKTON
- Successfully performed traffic signal timing and operational analyses to determine traffic signal timing and operational improvements for roadway networks
- Hands-on electrical design experience for traffic signals, street lighting, pedestrian crosswalk warning systems, and transportation technology projects
- Familiarity with Caltrans MUTCD and Caltrans Standard Plans and Specifications documents

SELECT EXPERIENCE

**AC Transit Rapid Corridor, Oakland and Berkeley, CA.** Jielin designed the Transit Signal Priority (TSP) system for AC Transit Line 6 and 800 along Telegraph Avenue. She also assisted with the fiber optic communication design and Traffic Management Center (TMC) design.

**Adaptive Traffic Control System, Fairfield, CA.** Jielin assisted the preliminary engineering study and design for the implementation of adaptive signal control technology (ASCT) along two corridors in Fairfield – N Texas Street and Travis Boulevard. She conducted concept signal modification design for the ASCT installation and report writing.

**Sunnyvale Signal Timing Optimization, Sunnyvale, CA.** Jielin assisted with intersection pedestrian and cyclist crossing signal timing determination and wrote an existing condition report for the study corridor.
Dublin Amador Valley Boulevard & Stagecoach Drive Intersection Traffic Signal Design (TSD), Dublin, CA. Jielin designed traffic signals at the Dublin Amador Valley Boulevard/Stagecoach Drive intersection and a Rectangular Rapid Flashing Beacon (RRFB) system at the Dublin Amador Valley Boulevard/Wildwood Road intersection to improve traffic flow and pedestrian safety. She conducted traffic signal, signing and pavement marking plan design, construction detail design, pollution prevention design, whole plan sheet setup, and cost estimates.

I-280/Winchester Boulevard Improvements, San Jose, CA. Jielin’s contribution to this project was traffic forecasting which involved traffic flow adjustments based on the VTA Countywide Travel Demand Model and intersection volumes forecast.

US-101/Blossom Hill Road Interchange Improvement, San Jose, CA. Jielin’s contribution to this project was synchro network model modifications which involved studied network refinement based on the future 2020 and 2040 plans.

NMDOT North I-25 Freeway Operations Study, Albuquerque, NM. Jielin assisted with the evaluation of the traffic operational performance of mainline I-25 based on a 2040 design year. The study involved traffic forecasting and evaluation of different conceptual design alternatives using 2010 Highway Capacity Software. (HCS 2010).

Silicon Valley Express Lane (SVEL) Phase 4, San Jose, CA. Jielin’s contribution to this project was freeway network modeling and operational analysis which involved defining build alternative refinement and evaluation.
MELISSA ABADIE
VISUAL COMMUNICATION MANAGER

Melissa leads the Visual Communication Group at DKS which focuses on strategic branding and visual design of reports, communications materials, and data visualization. She has over 22 years of experience developing creative strategies for public agencies and private companies. Melissa possesses a wide range of skills including creative direction, project management, branding, and graphic design.

SELECT EXPERIENCE

Innovative Deployments to Enhance Arterials (IDEA) Initiative, CA. Melissa worked with DKS engineers to produce multiple reports under the Metropolitan Transportation Commission IDEA Grant Program in Northern California. The goal of the project was to improve operations of arterials systems, decrease motor vehicle emissions/fuel consumption, and to enhance the readiness of the Bay Area for connected and automated vehicle technologies.

Regional Transportation Council Origin-Destination Study, Clark County, WA. Melissa designed the final report layout to effectively communicate the analysis of regional origin-destination patterns and freeway operations. Data visualization throughout the report used data from Inrix and Moonshadow’s DB4IoT visualization platform to communicate key pieces of origin-destination.

ODOT/City of Corvallis Transportation System Plan (TSP) Update, OR. Melissa created the final report layout containing the traffic forecasting for the City of Corvallis. The TSP update focused on meeting compliance requirements and addressed future growth in Corvallis. The City’s current TSP needed to be updated to reflect the latest community vision and included an emphasis on transit, resulting in the development of a separate Transit Development Plan. The new update also guided future expansion and enhancement of CTS service in Corvallis.

Bend TSP/Metropolitan Transportation Plan (MTP) Update, OR. Melissa developed cut sheets to explain project options, as well as created an executive summary for the TSP/MTP update. The project included workshops with the team using the Bend MTP travel demand model to select future roadway projects for inclusion in the MTP update.
DEREK TOKUDA
PRESALES ENGINEERING MANAGER, OJO TECHNOLOGY

Derek has more than seven years of experience with CCTV design and estimation. This experience includes video surveillance systems including, but not limited to, storage calculations of network video recorders; lens calculations for field of view and capture of forensic quality video; networking components including switches, routers, wireless bridges, and UPS sizing; “last mile” installations including solar powered installations; cellular communications; and horizontal cabling requirements including Category data cable and fiber optic cable.

ANTHONY KROLIK
TERRITORY ACCOUNT MANAGER, OJO TECHNOLOGY

Anthony has been in the security industry since 2003 designing, selling, installing, and programming various physical security systems (CCTV, access control, fire alarm, intrusion alarm, door entry, perimeter detection, emergency call stations, etc.). For the City of Stockton account, he will manage the overall health and maintenance of the account including site walks, system design, proposal creation/delivery, and provide solutions.
CHRIS KAY
MARKETING & COMMUNICATIONS MANAGER

An experienced marketing professional with a diverse background, Chris recognized for his high-level work coordinating outreach in the public sphere. From media buying to public relations, he has worked on a wide range of public outreach events and coordinated with elected officials.

With a passion for community involvement, he currently sits on four boards in the San Joaquin County area, and will serve as President of the Greater Stockton Chamber of Commerce starting in July of 2020.

RELEVANT EXPERIENCE

CHANNEL STREET PROJECT - Stockton, CA
This project will complete improvements along East Channel Street between North Aurora and 1/2 block west of North Stanislaus Street. It will enhance the walkability and connectivity between Cabral Station, RTD’s Downtown Transit Center, and Downtown Stockton. Siegfried is providing civil and structural engineering, landscape architecture, and surveying services to complete improvements that include bulb-outs, new sidewalks, street trees, paving, class III bicycle marking, and pedestrian-scaled lighting. Siegfried will identify, list, tie out/perform construction staking of survey monuments, and show existing survey monuments on construction plans. Siegfried will file all pre-construction Corner Records or Records of Survey with San Joaquin County and submit a copy to the SJRRC. Crosswalks will be stamped HMA, and pedestrian crossing signals will be installed along Channel Street crossing Stanislaus Street.

MAIN STREET COMPLETE STREETS - Stockton, CA
Siegfried is providing civil engineering, surveying, landscape architecture, and public outreach for the Main Street Complete Streets program. This corridor in East Stockton would connect the outskirts of Stockton with the Downtown core. Improvements include a road diet, bike lanes, and significant curb, gutter, and sidewalk improvements to bring them up to code. For Public Outreach, Siegfried is coordinating with local businesses and stakeholders to provide periodic updates, as well as coordinating public meetings.

SUNNYVALE LAWRENCE STATION - Sunnyvale, CA
Siegfried is providing civil engineering, landscape architecture, surveying, and public outreach for the Lawrence Station Area Sidewalks and Bike Facilities project in Sunnyvale. This grant-funded project is looking to create a safe path of travel for pedestrians and bicyclists from a CalTrain station into the main portion of town. Currently, there is no safe route for pedestrians, but the Siegfried team proposed an alternative path forward for the City that would save money by avoiding a naturally preserved area.

SAN JOAQUIN REGIONAL RAIL COMMISSION – ACEFORWARD - Stockton, CA
Provided outreach and support for the $1 billion capital improvement program for the San Joaquin Regional Rail Commission, which included expanded service for the current Altamont Corridor Express service from four trains to ten trains. Outreach, marketing, and meetings with public officials covered ten counties in Northern California. The proposed expansion would also connect with future California High-Speed Rail service in both the Bay Area and Central Valley, and aimed to increase ridership to over 2 million passengers per year by 2027.
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: DKS Associates

BY: Jim Peters, PE

TITLE: Principal

DATE: 6/3/2020
APPLICATION FOR
PUBLIC WORKS CONTRACTOR REGISTRATION

Registration Information
Type: Renewal
Period: July 31, 2019 – June 30, 2020

Contractor Information
Contractor Name: DKS ASSOCIATES
Trade Name:
License Type Number: 1000054635

Contractor Physical Address
Physical Business Country: United States of America
Physical Business Address: 1970 BROADWAY, Suite 740

Physical Business City/ Province: OAKLAND
Physical Business State: CA
Physical Business Postal Code: 94612

Contractor Mailing Address
Mailing Business Country:
Mailing Business Address:

Mailing Business City/ Province:
Mailing Business State:
Mailing Business Postal Code:

Contact Info
Daytime Phone:
Mobile Phone:
Daytime Phone Ext.:
Business Email: jjh@dkassociates.com
Applicant’s Email: adminoak@dkassociates.com
Workers’ Compensation

Professional Employer Organization (PEO)

Do you lease employees through Professional Employer Organization? No

Workers’ Compensation Overview

Insured by carrier

Carrier: THE HARTFORD
Policyholder Name: DKS ASSOCIATES
Policy Number: 57WEGEO0049

Inception Date: May 1, 2015
Expiration Date: May 1, 2020

Certification

Yes I certify that I do not have any delinquent liability to an employee or the state for any assessment of back wages or related damages, interest, fines, or penalties pursuant to any final judgment, order, or determination by a court or any federal, state, or local administrative agency, including a confirmed arbitration award.

Yes I certify that the contractor is not currently debarred under Section 1777.1 or under any other federal or state law providing for the debarment of contractors from public works.

Yes I certify that one of the following is true: (1) I am licensed by the Contractors State License Board (CSLB) in accordance with Chapter 9 (commencing with Section 7000) of the Business and Professions Code; or (2) my business or trade is not subject to licensing by the CSLB.

I understand refunds are not authorized

I, Office Admin, the undersigned, am DKS ASSOCIATES with the authority to act for and on behalf of the above named contractor. I certify under penalty of perjury that all of the above information provided is true and correct. I further acknowledge that any untruthful information provided in this application could result in the certification being canceled.

I certify this on: 7/31/2019 3:24:24 PM

Legal Entity Information

Legal Entity Type: Corporation

Name: DKS ASSOCIATES
State of California  
Department of Industrial Relations

Contractor Information
Legal Entity Name: DKS ASSOCIATES  
Legal Entity Type: Corporation  
Status: Active  
Registration Number: 1000544635  
Registration effective date: 07/01/39  
Registration expiration date: 06/30/20  
Mailing Address: 720 SW WASHINGTON, SUITE 550 D, PORTLAND 97205 OR United States of America  
Physical Address: 1970 BROADWAY, SUITE 740, OAKLAND 94612 CA United States of America  
Email Address: jh@dksspecialists.com  
Trade Name(s): DKS  
License Number(s):  

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Legal Entity Information
Corporation Entity Number: CD919234  
Federal Employer Identification Number: 942583153  
President Name: PETER CONEY  
Vice President Name:  
Treasurer Name:  
Secretary Name: CARL SPRINGER  
CEO Name:  
Agency for Service: DKS ASSOCIATES  
Agent of Service Mailing Address: 1970 BROADWAY, SUITE 740, OAKLAND 94612 CA United States of America  

Worker's Compensation
Do you lease employees through Professional Employer Organization (PEO)? No  
Please provide your current worker's compensation insurance information below:  
PEO: DKS ASSOCIATES  
PEO Information Name:  
Phone:  
Email:  
Insured by Carrier:  
Policy Holder Name:  
Insuree Carrier: THE HARTFORD  
Policy Number: 57W36306X49  
Inception Date: 05/01/15  
Expiration Date: 05/01/20
Contractor Information

Legal Entity Name: CIO TECHNOLOGY
Legal Entity Type: Corporation
Status: Active
Registration Number: 1000000115
Registration Effective Date: 07/01/39
Registration Expiration Date: 06/30/20
Mailing Address: 103 HAMMOND AVE PREMONT 94639 CA United States of America
Physical Address: 103 HAMMOND AVE PREMONT 94639 CA United States of America
Email Address: awong@ojitech.com
Trade Names/DBA: CIO TECHNOLOGY
License Number(s): CSLB.991252

Registration History

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Legal Entity Information

Corporation Entity Number: CB91252
Federal Employment Identification Number: 020066113
President Name: ANGELA WONG
Vice President Name: ANGELA WONG
Treasurer Name: ANGELA WONG
Secretary Name: ANGELA WONG
CEO Name: ANGELA WONG
Agency for Service of Process:
Agent of Service Name: CIO TECHNOLOGY
Agent of Service Mailing Address: 103 HAMMOND AVE PREMONT 94639 CA United States of America

Worker's Compensation

Do you lease employees through Professional Employer Organization (PEO)?: No
Please provide your current worker's compensation insurance information below:

PEO Information Name: Phone: Email:
Insured by Carrier:
Policy Holder Name: CIO TECHNOLOGY
Insurance Carrier: SECURITY NATIONAL INSURANCE COMPANY
Policy Number: SWC1211003
Inception Date: 09/25/15
Expiration Date: 09/25/19
### Contractor Information

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**Agent for Service**
- Agent of Service Name: PAUL SCHNEIDER
- Agent of Service Mailing Address: 3428 BROOKSIDE ROAD STOCKTON, 95219 CA United States of America

### Worker's Compensation

- Do you lease employees through Professional Employer Organization (PEO)?: No
- Please provide your current worker's compensation insurance information below:
  - PEO: SIEGFRIED ENGINEERING, INC
  - PEO Information Name: FIREMANS FUND INSURANCE COMPANY
  - Policy Number: SCW0040581BD1
  - Inception date: 09/01/19
  - Expiration Date: 09/01/20
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:  DKS Associates____________________

BY:  Jim Peters, PE ______________________

Principal ______________________ TITLE

DATE:  6/3/2020____________________
NON-COLLUSION DECLARATION

To the CITY of STOCKTON DEPARTMENT OF PUBLIC WORKS.

The undersigned declares:

I am the Principal __________, of DKS Associates __________, 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 6/3/2020 at Portland (city), OR (state).

______________________________
(Signature)
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## Signers

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