Proposal for

PROFESSIONAL ENGINEERING SERVICES FOR UPDATES OF THE STOCKTON TRAFFIC & MANAGEMENT SYSTEM CONFIGURATION REPORT & TRAFFIC SIGNAL DESIGN & OPERATIONS GUIDE

City Project No. PW1522

June 29, 2020
Jeffrey Aube
City of Stockton Public Works Department
22 E. Weber Avenue, Room 301
Stockton, CA 95202


Dear Mr. Aube:

Thank you for providing TJKM Transportation Consultants the opportunity to present our team’s proposal and work plan to provide professional engineering services for Updates of the Stockton Traffic Management System Configuration Report & Traffic Signal Design & Operations Guide for the City of Stockton.

Working for both public and private clients since 1974, TJKM has significant experience with signal systems, signal timing, and ITS planning and design work and currently working on signal design projects with the City of Stockton. We are confident the TJKM Team will meet the City’s goals and objectives for this project, all while exceeding your service expectations.

The City has embarked on a commendable initiative to completely modernize their traffic management system in a series of well-planned steps. When completed, this effort has the potential significantly enhancing the ease and safety of mobility on city roads. It is also noteworthy that the first step in this process is a Configuration planning study for all system components before procuring or installing any of the subsystems. The primary constituent – or the brains of the system, will be the central system that will control/manage all field elements. The current project will establish the overall architecture and desired functionality that best meets the City’s present and future needs.

In order to keep the current configuration planning step completely objective and unbiased, our best-practices based recommendation is that the City select a team that brings hands-on familiarity and in-depth experience with all candidate systems without being a system supplier itself. This is a critical criterion to ensure that the final outcome of recommendations is completely free of any system bias.

TJKM commits to the project a dedicated, multi-disciplinary staff of seasoned, experienced experts who have demonstrated capabilities to meet the technical, managerial and schedule challenges to be encountered on this project. To meet the specific needs of the City of Stockton, we are pleased to propose Mr. Atul Patel, PE, TE, PTOE as our Project Manager. Mr. Patel has successfully managed and completed similar ITS planning and design projects with other jurisdictions and has worked with the City of Stockton on many signal projects throughout his career and is ideally suited to manage the work required for this project.

Subconsultants
TJKM does not anticipate the use of subconsultants on this contract.

Conflict of Interest
TJKM is not aware of any financial, business, or other relationship with the City of Stockton, or any member of the City staff, that would have an impact on the outcome of this project. Furthermore, we are not aware that any of our clients, nor our subconsultant’s clients have a financial interest in the outcome of this project.

Commitment
As President of the firm, I am authorized to bind TJKM to a contract and you have my personal assurance that all the resources necessary to address the City of Stockton’s needs will be made available and ready to perform when the opportunity arises.

We look forward to the opportunity to answer any questions you may have regarding our qualifications and project approach at the interview. During the proposal process, please feel free to contact Mr. Patel via phone at 925.264.5003 or via email at apatel@tjkm.com.

Sincerely,

TJKM Transportation Consultants

Nayan Amin, President
4305 Hacienda Drive, Suite 550 Pleasanton, CA 94588 | namin@tjkm.com | 408.410.2977
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Executive Summary

The City is currently requesting proposals to update its outdated Traffic Management System Configuration Report and Traffic Signal Design and Operations Guide. The consultant will help the City determine key aspects of its prospective traffic system and communication network by updating the reports. The consultant will evaluate a number of viable options for each system and component and make suggestions according to the City’s current needs as well as its potential future needs.

- The City operates on two main ATMS platforms
- Siemens/Tactics with Sepac Software – 260+ signals (Siemens 2070, m50 and some m60 controllers)
- Scoot Adaptive on two corridors operate close to 20-30 signals
- Transcore/D4 firmware – 20+ signals (Siemens 2070 controllers)
- Insync adaptive on few corridors which operate during the AM, Midday, and PM peak periods. Outside of that it runs on Tactics

The City wishes to upgrade the more outdated controllers so they operate with either ATMS platform. The TMC has two workstations that handle two separate ATMS platforms. There is a Satellite office near City Hall serves as back up to TMC. Both City Hall and satellite TMC need to be relocated in two years when the City leaves the existing City Hall to new building. The Traffic Management System Configuration report will provide recommendations on new TMC size and equipment and functional requirements as well as communication network layout.
TJKM Transportation Consultants, (TJKM) founded in 1974, is a traffic engineering and transportation planning firm that provides professional services throughout California, Texas, and Florida. TJKM currently has a staff of 40 employees with offices in Pleasanton, San Jose, Fresno, Sacramento, and Santa Rosa, CA, Austin, TX, and Tampa, FL. For over 45 years, more than 3,500 satisfied clients have entrusted TJKM with their critical work. We serve a full-range of clients, including municipalities, congestion management agencies, metropolitan planning organizations, transportation agencies, private developers, other consulting firms, and attorneys. TJKM has been involved in more than 8,000 transportation projects throughout California, and averages about 240 new projects each year. TJKM’s primary service categories include traffic engineering design (including PS&E), transportation planning, traffic operations, corridor studies, intelligent transportation systems (ITS), traffic safety, and multimodal studies. Our motivation comes from satisfying clients’ objectives and improving communities. TJKM has a strong roster of both public and private sector clients and continually builds upon this base.

Our engineers have worked on the public side of the desk for years as municipal engineers, developing superior skills in collaborating with the public and city councils and, more importantly, crafting excellent relationships with the right people.

Our project managers, engineers, and planners have “hands on” experience and understand the latest requirements, technologies, trends, and standards. Our experience with local agency processes keeps projects moving faster; and know-how from thousands of engagements helps us complete projects on time and within budget.

**Expertise**

**Traffic Signal Design & Construction Support**

TJKM has designed more than 2,000 traffic signals in nearly 200 jurisdictions throughout Northern and Central California. Our design staff are very experienced in preparing PS&E for new and modified traffic signal systems, and pavement delineation to improve capacity and safety. TJKM’s design process includes a thorough site investigation to verify existing information such as; lane geometry, sight distance issues, signal poles, controller cabinets, service pedestals, pull boxes, conduits, street lighting circuits and other pertinent information.

Due to the detailed site investigation performed, the design staff has hands-on experience for constructible designs, with an extensive track record of successful design projects, and our team is dedicated to providing high quality and accurate PS&E. Many of our traffic signal design projects require design for interconnect and coordination that include fiber optic, copper wire and wireless communications. Due to the evolving environment of signal design and traffic monitoring over the years, the TJKM Design Team is vary familiar with modifying and installing new signals that are equipped with traffic surveillance cameras, video detection systems, and wireless devices to support Adaptive Traffic Control Systems (ATCS), Automated Traffic Signal Performance Measure (ATSPM), and Connected Vehicle applications.

TJKM’s staff routinely provides construction assistance for our design projects, including traffic calming devices and traffic signal systems. We attend pre-bid and pre-construction conferences to provide in-field assistance, and work effectively with contractors. TJKM also designs traffic / construction zone control plans that show how traffic will be handled during construction periods.

**Intelligent Transportation Systems**

Our Team is recognized worldwide for transportation planning and design capabilities and we have worked with many agencies to improve the efficiency of surface transportation systems through the planning, design, operation, and maintenance of Intelligent Transportation Systems (ITS). Our team members have gained significant experience in the design and development of ITS systems during the last 10 years. Through our work, we have developed a process that provides efficient ITS design through a multi-leveled approach, which addresses each element from concept and communications technology to implementation. Our Team members have successfully applied this approach to several similar projects throughout the nation, tailoring each project to our client’s needs. On our ITS design projects, we inventory existing conditions, develop base maps and prepare plans, specifications and estimates for traffic signals at 35%, 60%, 90% and Final.

**Traffic Management System Design**

Mr. Saxena will lead the TJKM Team both as a task leader for central system configuration and as a hands-on, working-level principal in charge Mr. Kamlesh Saxena. Based on almost forty years of experience working through major consulting firms, he is regarded as a national and international expert in the design, integration, and deployment of advanced traffic management systems with complex legacy system requirements. He specializes in the design of standards-based, open-architecture ATMS that have complete reverse-compatibility with existing controllers and cabinets. As chief system designer or PM in numerous projects from Honolulu, HI to Hamilton, Ontario, he has successfully deployed system where the legacy installed infrastructure included Siemens SEPAcontrollers under TACTICS, D4 firmware controllers under TranSuite, and SCOOT adaptive system. He designed a GPS-based countywide bus priority and emergency preemption system for Miami-Dade County.
In the area of citywide communications network design, Mr. Saxena brings unparalleled experience designing networks employing both wired (or fiber optics based) media and wireless networks in the same system. The wireless networks included both leased, utility-provided networks such as 3G and 4G cellular channels, and dedicated wireless networks from specialty suppliers. These networks served both controllers for data and CCTV cameras for traffic surveillance.

He brings deep hands-on and high-level experience in the migration from legacy to new systems. Leading joint crews of county/contractor/consultants, he has led multiple teams that transitioned as many as 60-70 controllers from old to new in a single day.

**Subconsultants**

TJKM does not anticipate the use of subconsultants on this project.

**Organizational Chart**

Our Team Organization Chart illustrates our proven “chain of command” for performance on similar projects. Work performed will be conducted under the direct supervision/direction of the Project Manager, Mr. Atul Patel, TE, PTOE. He will be responsible for overall coordination on this contract, maintaining the effectiveness and efficiency of the work, schedule, and ensuring the work products are to the satisfaction of the City of Stockton. We anticipate working closely with City staff to ensure understanding of project objectives from start to project completion. Mr. Patel will be responsible for day-to-day coordination and activities. He will be available to the City at a short notice.

**Team Qualifications**

The proposed individuals for the TJKM Team are the most qualified professionals in their respective areas of specialization. We can confidently state that our staff will be fully available for this project from beginning to end. In addition, we have a vast base of highly qualified technical members who will be made fully available to the project as required based on the project needs. The TJKM Team has been carefully crafted to provide the City with the full range of expertise. We form an integrated team that can enhance the City’s resources, work in close cooperation with your staff, and deliver a successful Traffic Management System Configuration Report, and Traffic Signal Design, and Operations Guide Project. Our proposed team members will be made available to the City as needed for the duration of the project, and will not be substituted without approval from the City.
The following table summarizes the qualifications of our proposed team members.

<table>
<thead>
<tr>
<th>Name, Role, Years of Experience</th>
<th>Registration Number</th>
<th>Specialized Expertise</th>
<th>Qualifications &amp; Experience</th>
</tr>
</thead>
</table>
| Kamlesh Saxena, CCP Principal-In-Charge & Central System Configuration Task Lead 40 Years of Experience | CCP 940075 | ▪ Intelligent Transportation Design  
▪ ITS Planning  
▪ Traffic Control Systems  
▪ System Hardware & Software Design & Integration | ▪ Design/integration of over 30 small, medium, and large ATMS  
▪ Led several ITS architecture projects including the first Florida Statewide ITS Arch  
▪ Complete ITS system design for arterials and freeways  
▪ Has led ATMS hardware and software design/development for 10 systems nationally and internationally. |
| Atul Patel, TE, PTOE Project Manager & Community Network Architecture Task Lead 30 Years of Experience | TR 2321 PTOE 1640 | ▪ ITS Planning & Design Traffic Signal Designs  
▪ Traffic Operational Analysis  
▪ Bicycle & Pedestrian Studies  
▪ Parking Studies | ▪ Traffic Signal Update Project HSIP, Manteca  
▪ Miner Avenue Complete Streets PS&E, Stockton  
▪ Hunter Street Road Diet, Stockton  
▪ Traffic Signal Modifications at Central Expressway & Castro Street, Mountain View  
▪ Five Signal Modifications Project, Visalia |
| Ruta Jariwala, PE, TE QA/QC 21 Years of Experience | CE 73840 TR 2465 | ▪ Signal Coordination  
▪ Project Management  
▪ Traffic Impact Studies  
▪ Freeway Operations  
▪ Traffic Operations  
▪ Traffic Planning | ▪ Preliminary Engineering & Environmental Services for the Port of Oakland CIP Projects, Oakland  
▪ Citywide Traffic Model, Oakley  
▪ I-80/Gilman Street Interchange PA/ED Project, Alameda County  
▪ HSIP Traffic Signal Improvement Project, Pittsburg  
▪ HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights |
| Nayan Amin, TE Operation Guide Task Lead 30 Years of Experience | TE 2290 | ▪ Transportation Planning  
▪ Traffic Impact Studies  
▪ Transportation Management Plans  
▪ Traffic Operations  
▪ Transit Priority  
▪ Freeway & Arterial Management Studies | ▪ Preliminary Engineering & Environmental Services for the Port of Oakland CIP Projects, Oakland  
▪ Traffic Operations Center Feasibility Study, Mountain View  
▪ HSIP Traffic Signal Improvement Project, Pittsburg  
▪ HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights  
▪ HSIP Citywide Traffic Signal Hardware Upgrade, Concord |
| Rutvij Patel, EIT Operation Needs & Vendor Demos Task Lead 13 Years of Experience | EIT 154117 | ▪ Traffic Operations  
▪ Signage Plans  
▪ Bicycle & Pedestrian Implementation  
▪ Complete Streets  
▪ Safe Routes to School  
▪ Traffic Signal Design  
▪ ITS Planning & Design | ▪ Traffic Signal Update Project HSIP, Manteca  
▪ Miner Avenue Complete Streets PS&E, Stockton  
▪ Hunter Street Road Diet, Stockton  
▪ Traffic Signal Modifications at Central Expressway & Castro Street, Mountain View  
▪ Five Signal Modifications Project, Visalia |
| Sandeep Paparaju Transition Plan Task Lead 6 Years of Experience | N/A | ▪ Transportation Planning  
▪ Construction Management  
▪ Corridor Studies  
▪ Complete Streets  
▪ Traffic Signal Systems | ▪ Signal Coordination Timing & Optimization, Sunnyvale  
▪ MTC PASS, San Francisco Bay Area  
▪ Implementation & Fine-tuning of Signal Timing Plan on Buskirk Avenue, Pleasant Hill  
▪ Fair Oaks/Howe Signal Modification, Sacramento  
▪ Cypress Avenue Signal Coordination, Redding |
| Erik Bjorklund Project Engineer 25 Years of Experience | N/A | ▪ Street & Highway Lighting  
▪ Traffic Signal Design & Modification  
▪ Signing & Striping Design  
▪ Signal Timing  
▪ Arterial/Interchange Design  
▪ AutoCAD  
▪ Traffic Handling Plans  
▪ Interconnect | ▪ HSIP Traffic Signal Improvement Project, Pittsburg  
▪ HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights  
▪ HSIP Citywide Traffic Signal Hardware Upgrade, Concord  
▪ Five Signal Modifications Project, Visalia  
▪ Mathilda/Indio Intersection Improvements, Sunnyvale |
| Andrew Dickinson Assistant Transportation Engineer 4 Years of Experience | N/A | ▪ Traffic Handling  
▪ Pavement Delineation  
▪ Signage Plans  
▪ Traffic Signal Design | ▪ HSIP Traffic Signal Improvement Project, Pittsburg  
▪ HSIP Citywide Traffic Signal Hardware Upgrade, Concord  
▪ Traffic Signal Update Project, HSIP, Manteca |

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<th>Specialized Expertise</th>
<th>Qualifications &amp; Experience</th>
</tr>
</thead>
</table>
| Anna Highsmith, EIT Assistant Transportation Engineer 3 Years of Experience | EIT 164696 | • Traffic Signal Design  
• Traffic Handling  
• Pavement Delineation  
• Signage Plans | • HSIP Traffic Signal Improvement Project, Pittsburg  
• HSIP Citywide Traffic Signal Hardware Upgrade, Concord  
• Barstow Avenue & Palm Avenue Traffic Signal, Fresno |
| Manuel Montero Assistant Transportation Engineer 3 Years of Experience | N/A | • Traffic Handling  
• Pavement Delineation  
• Signage Plans  
• Traffic Signal Design | • Preliminary Engineering & Environmental Services  
Port of Oakland CIP Projects, Oakland  
• HSIP Traffic Signal Improvement Project, Pittsburg  
• Main Street & Cedar Way Traffic Signal Modification, Milpitas |

Reference of TMS Related Project

Lorenzo Lopez, City Traffic Engineer  
500 Castro Street, Mountain View, CA 94041  
650.903.6311  
lorenzo.lopez@mountainview.gov

Traffic Operations Center Feasibility Study, Mountain View

Workload Commitment

The City of Stockton is an important client for our proposed team and we are committed to completing any task order of any magnitude resulting as a part of this project, on time and within budget. Key personnel listed in our organization chart will be available to the City, as needed, throughout the duration of this contract. Additional support staff will also be available to support activities on this contract, if required.

Project Management

The TJKM Project Management Plan that will be used on these projects is based on proven management, lessons learned and administrative systems developed to enhance communication among the City of Stockton, the TJKM Project Manager and team members, and other affected agencies. This management approach has been used successfully on numerous projects throughout California. The TJKM Project Management Plan has the following elements:

Work Plan

It is a TJKM policy to prepare a Work Plan for all projects, large and small. Upon receipt of a Notice-to-Proceed, we will prepare, in consultation with the City and other local jurisdictions, an overall project work plan that includes detailed work elements for each team specialty. A TJKM work plan typically includes: definition of the project purpose; task objectives; scope of services; staffing; coordination requirements; deliverables; budget; schedule; and monitoring and reporting procedures.

Coordination & Communication

Frequent and effective communication between the City, other local jurisdictions, and the TJKM Team is needed to maintain the project schedule and ensure a quality product. The key to our success is an integrated team approach. Our goal is "no surprises" and a partnership that has common understanding and expectations every step of the way. Mr. Patel will maintain close communication with the City’s Project Manager by personal contact, telephone, written communications, and meetings. Our project manager strongly believes in the necessity and benefit of scheduled monthly progress meetings. Mr. Patel, as well as other key team members, will meet with the City’s Project Manager monthly to discuss project issues, status, schedule, budget and invoicing items. This will ensure that our “no surprises” goal is maintained and the City is thoroughly aware of all aspects of the project.

The TJKM Team will maintain regular contact with City staff to ensure clear communication on project tasks, products, meetings and schedule. Specifically we will:

- Hold scheduled conference calls to review project status and discuss key issues. During these calls we will discuss various project deliverables including workshop agendas, workshop summaries, proposed alternatives, preferred alternative, draft plan and final plan documents.
- Participate in additional calls and meet with City staff, as needed at key stages during the planning effort to review key ideas, products, deliverables, project status and overall project direction and budget.
- Manage all aspects of the project to maintain project schedule and budget, maintain continuous liaison with the City and other stakeholders.
- Prepare and submit monthly progress status updates to the City. The reports will include progress of work; status of public involvement; updated project schedule; information/decisions required to maintain schedule and complete deliverables; problems encountered that may affect schedule; budget or work products and anticipated work products for the following month.

**Cost Control**

Cost control of project costs will be accomplished by monitoring on a task level basis. This detailed task level will roll up into milestone summaries and a project summary. Our cost accounting system is a "live" database that the project manager can access to determine the financial status of the project at any time. Cost control reporting to TJKM’s Project Manager will be implemented through the invoicing process. Progress reports will also be included to relay information on project progress and critical issues.

**Schedule Control**

Establishing a schedule that meets the project objectives is relatively easy. Maintaining this schedule during changing project priorities, unforeseen conditions, public consensus building, etc., is a challenge. The project work scope will be broken down by function and separated into defined tasks. Tasks will be linked logically and will be sufficiently detailed to allow for realistic representation of the project. Project progress will also be monitored by percent complete for each task.

**Quality Control**

**QA/QC Procedures** – TJKM’s Design Quality Assurance Procedures are utilized throughout the life of the Project. Quality Control starts at the proposal and scope definition stage and continues through the completion of all assignments. To assure that errors, omissions and ambiguities in submittals and drawings are limited to an absolute minimum, the responsibilities for technical review, peer review/coordination checking, and technical audit functions are assigned to the appropriate TJKM Team members. TJKM’s approach integrates the work of our subconsultants into the quality control system through the use of established procedures and our peer review/independent checking capability augmented with technical audits.

**Quality Control (QC)** – TJKM’s QC Program provides quality services and products that meet or exceed the expectations of our clients. Quality Control is an integral part of TJKM's entire professional service process, which is integrated into our work plan, and CADD design and drafting processes. The formal Quality Control Reviews consist of "Constructability Reviews" and "Project Manager and Project Engineer Reviews". All formal Quality Control Reviews will result in comments recorded on Comment Sheets. TJKM’s established Quality Control Plan ensures that TJKM will receive thorough and accurate design documents and reports that are prepared in formats consistent with local agency and Caltrans guidelines.

**Resumes**

With specialists in transportation planning, traffic operations, traffic engineering, public outreach, pedestrian and bicycle facilities, surveying and civil engineering, TJKM offers the experience needed to successfully complete the Install of Left-Turn Signals for the City of Stockton. Our Team skills and depth of resources have been proven by the successful completion of hundreds of projects for local agencies, cities, counties and Caltrans. TJKM commits a dedicated, multi-disciplinary staff of seasoned, experienced experts who have demonstrated capabilities to meet the technical, managerial, public outreach, and scheduling challenges that can be encountered during the project. The Team offered by TJKM is not only unparalleled in each of these areas, but has the creativity to develop innovative approaches to meet this project’s challenges. The TJKM Team is uniquely qualified to meet all of the City’s goals and objectives for this project.

On the following pages are resumes of our key staff. Due to the page limit support staff resumes are available upon request.
Mr. Saxena brings an unparalleled record serving national and international clients in their infrastructure design and transportation technology needs. Mr. Saxena directs software and system engineering activities for TJKM’s traffic, freeway, and intelligent transportation systems (ITS) projects. His experience includes program management involving all phases of ITS, freeway, and traffic control systems, including planning, design, specifications, implementation, and construction. He is a specialist in the design and integration of system hardware and software. Mr. Saxena has 40 years of experience managing numerous computerized control system projects throughout the United States and abroad, through the phases of feasibility, planning, design, construction, and implementation. He has held numerous lead roles in professional organizations and led the team that developed the U.S. Congress mandated first National ITS Program Plan. Mr. Saxena has a master’s degrees in Physics and in management Science/Information Systems.

Kamlesh Saxena, CCP

DIRECTOR OF CORPORATE AFFAIRS

Project Role: Principal-In-Charge & Central System Configuration Task Lead

Project Experience

Palm Beach County Traffic Management Center (KITS Palm Beach County), FL — In late 2006, Palm Beach County’s Traffic Engineering Department had already selected a design-build contractor to construct their new county office building and the floor designated for their new TMC. However, no planning had yet been done on how to accommodate the desired video wall system and interface it with field CCTV cameras. They needed a firm to design a central traffic management center (including a large video wall) that would be functionally, electronically, and spatially backward-compatible with the pre-selected elements of the overall system. KHA performed all this work as a subconsultant on a design-build team. Our team overcame numerous challenges to retrofit the design into the system architecture and given space. By late 2007, KHA’s software experts had already designed, installed, and deployed the video wall system. Today, this facility is a showcase example of a modern county TMC interfacing with hundreds of controllers and cameras in the field over fiber-optic communications.

KITS Advanced Traffic Management System, Dallas, TX — For the unique needs in Dallas, the implementation of ESCORT, Kimley-Horn’s state-of-the-art Advanced Traffic Management System, included simultaneous use of multiple communication mediums—bandwidth on the cable TV system, city-owned twisted-pair cable, and wireless/radio frequency (RF) communication. ESCORT’s ability to use RF communication was especially beneficial along North Central Expressway, since the corridor was under major reconstruction. Dallas traffic engineers created “portable” controller cabinets and custom-designed RF modems, which enabled ESCORT to maintain communication during construction.

Miami-Dade County Advanced Traffic Management System (ATMS) Project, Miami-Dade County, FL — Principal for the design and implementation of a county-wide ATMS budgeted at $100+ million in capital program for 2800 intersections. The KITS implementation will integrate existing Model 170 controllers and provide a platform for the integration of a new advanced traffic controller in the future. The KITS software capabilities will be expanded as part of this project to provide VAL-based emergency and transit priority
operations. The KITS implementation will be part of a larger project that includes design services related to the upgrade of the County’s infrastructure.

Tallahassee Advanced Traffic Management System (TATMS), FL — Served as principal-in-charge for the software design/supply and integration consultant for the implementation of a distributed control-based signal system. The system incorporated ITS features such as closed circuit television surveillance, changeable message signs control, a flood detection and warning subsystem, and a traffic advisory radio subsystem.

Illinois State Tollway Authority ITS Consulting, IL — Serves as principal-in-charge for the firm’s tollway technology consulting support to this state agency which collects over a billion dollars toll annually and operates tollways in 15 northern Illinois counties with 22 mainline all-electronic toll plazas and 54 ramp plazas. Kimley-Horn is providing consulting in performance based planning as part of the Authority’s 12 billion dollar capital improvement program.

Florida Statewide ITS Communication Protocol Study, FDOT Central Office, Statewide, FL — Project manager for the development of a standardized communications protocol that will incorporate the requirements of all of Florida’s urban and freeway systems’ communications exchange needs.

I-95 Golden Glades Interchange ITS Technology Evaluation, FDOT District Six, Miami, FL — Due to our extensive hands-on experience in the implementation of ITS technologies, Kimley-Horn was selected by the Florida Department of Transportation to conduct a comparative evaluation of alternative motorist information and traffic surveillance technologies at Florida’s most heavily traveled freeway interchange. As project manager in charge of system evaluation, directs the assessment of four different types of variable message signs, including fiber optic and LED signs, two types of traffic surveillance technologies (inductive loops and video image detection), spread spectrum radio communications, and digital video transmission over leased T-1 lines.

ITS Needs Definition for All FDOT Districts, Statewide, FL — Project manager on this effort to define the ITS needs of all of FDOT’s districts as part of an RFP development that will result in the installation of fiber optic cable throughout the 1,900-mile limited access roadway network in Florida.

Jacksonville I-95 ITS Design-Build Criteria, FDOT District Two, Jacksonville, FL — Project manager involved with providing a design-build criteria package for an Intelligent Transportation System (ITS) along 13 miles of I-95 between I-10 and I-295 South in Duval County. The project includes the preparation of base plans and development of functional specifications for detector stations, changeable message signs, closed-circuit television surveillance, fiber optic communication lines and hubs, and hardware and software for a Control Center located in the District Two Urban Office. The specifications are also being written for use on future ITS projects on other interstate and expressway projects in the Jacksonville area. The estimated construction cost of the project is $5 million.

Jacksonville ITS Early Deployment Study, FDOT District Two, Jacksonville, FL — Project manager on this long-range study for the deployment of intelligent transportation systems in the Northeast Florida region. This study includes consideration of multimodal alternatives to enhance mobility in the region.

Statewide Intelligent Transportation System (ITS) Architecture and Standards Development, FDOT Central Office, Statewide, FL — Project manager on this project for the Florida Department of Transportation Central Office to develop a statewide ITS architecture compliant with the national ITS architecture. This project will also formalize Florida’s approach to NTCIP and other critical ITS standards.

Electronics and Security Systems Consulting Services, Palm Beach County, FL — Serves as principal in charge. The first task under this contract is a security system upgrade for the Palm Beach County Courthouse, including upgrades to court audio/visual systems, security systems, and correctional facilities. Scope of work includes planning support, design support, construction plans development, procurement management, and construction administration services.

ADOT Freeway Management System/AZTech Model Deployment Initiative, Phoenix, AZ — Responsible for software development for this multi-year, 140-mile freeway management system based on networked SUN host computers and workstations. This project’s uniqueness stems from an extensive use of CASE tools in an open UNIX environment. Multi-level control, including the use of 179 controllers is employed. The system includes interfaces for other agencies’ systems, ATIS systems, a video wall, and real-time graphics.

Center City Signal Improvement Project (KITS), Philadelphia, PA — Served as project manager for the design of this signal improvement project that utilizes a centralized configuration fully comprised of networked PC’s running standard TCP/IP protocol. This system is fully integrated with communication servers, adaptive control servers, remote access servers, alarm monitors and workstation running Escort software to control over one hundred and thirty Type 170 controllers across a fiber optic network.
Mr. Patel has 30 years of traffic engineering and transportation planning experience, and has worked in both the public and private sectors. Prior to joining TJKM, he served as the City of Menlo Park’s Traffic Engineer where he co-developed the City’s signal design and equipment standards. Mr. Patel has designed several traffic signal installations and modifications involving Caltrans and obtained encroachment permits for these clients. Some of these projects have included installation of traffic signal interconnect conduit and cable to the adjacent signals, installation of curb ramps that comply with the Americans with Disabilities Act (ADA), video detection systems, video surveillance systems, emergency vehicle pre-emption, fiber optic communication hubs. He has also completed railroad signal pre-emption for the adjacent Union Pacific Railroad, signing and striping at the intersection as well as along the arterial, and construction assistance after the design was completed.

Mr. Patel has developed bus rapid transit projects involving design and construction of transit signal priority hardware at existing traffic signal locations in Oakland and Stockton. Some of the other ITS projects he has managed have included strategic plan development, Concept of Operations, multi-jurisdictional systems integration, and technical specifications development.

Atul Patel, TE, PTOE

DIRECTOR OF ITS & DESIGN

Project Role: Project Manager & Community Network Architecture Task Lead

Project Experience

Traffic Signal Update Project HSIP, Manteca, CA, City of Manteca, 2017- Ongoing, $478K: Task Lead on project for the inventory of existing signalized intersections signal controller hardware and firmware, signal communications equipment and signal hardware at 47 intersections; identifying the signal equipment and signal communications hardware needing upgrades; integrating asset data collection into the City’s VueWorks Asset Management System; designing a citywide wireless signal interconnect communications network for the traffic signal system between the signalized intersections; retime the major corridors for improved traffic signal timing coordination; and assisting the City with evaluating and selecting a Centralized Signal System.

In addition, TJKM developed a Fiber Optic Communication Master Plan and PS&E for hard-wired fiber installation for the initial phase of the project.

Miner Avenue Complete Streets PS&E, Stockton, CA, Siegfried Engineering, 2018-Ongoing, $125K: Project Manager assisting with preparing PS&E for the Miner Avenue Complete Streets Project. Responsibilities include signing and striping, traffic signal designs, street lighting, and signal interconnect designs, and bid and construction support services during construction. He was involved with the conceptual plan preparation for the plan line study and this project is a continuation of the project through the detailed design phase.

Hunter Street Road Diet, Stockton, CA, City of Stockton, 2018-Ongoing, $60K: QA/QC Manager assisting with preparing the project through HSIP Cycle 7 funding, the City of Stockton has awarded TJKM the Hunter Street Road Diet project. The project goal is to reduce the travel lanes from two to one in either direction, with a dedicated two-way turn lane and Class II bike lane facilities for the entire corridor. TJKM will prepare the signage and striping plans along with signal modification plans at the intersection of Miner...
Avenue and Hunter Street. TJKM will also take the lead on preparation of full PS&E package and provide support to the City of Stockton during the bidding and construction phase of this project.

**Traffic Signal Modifications at Central Expressway & Castro Street, Mountain View, CA, City of Mountain View, 2016-Ongoing, $72K:** Principal-In-Charge overseeing plans to remove the dual left turns out of Castro Street onto Central Expressway. TJKM is responsible for the development of a full set of construction ready PS&E for signal modification at the intersection of Central Expressway and Castro Street/Moffett Boulevard. Also responsible for the electrical, signage, and striping improvements.

**HSIP Traffic Analysis of 5 Intersection Signal Modifications, Visalia, CA, City of Visalia, 2014-2015, $157K:** As Project Manager, assisted in analyzing the effect of proposed signal modifications on traffic signal operations. Developed existing and proposed conditions Synchro models, updated timing parameters, and prepared technical memorandum consisting of the existing and proposed conditions analyses.

**HSIP Traffic Signal Improvement Project, Pittsburg, CA, City of Pittsburg, 2020-Ongoing, $164K:** Project Manager who assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $1.6M in funding for the citywide improvements. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM is also assisting the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights, CA, City of Citrus Heights, 2018-Ongoing, $68K:** Project Manager. The County applied for a federal HSIP grant for Cycle 8 and was successfully awarded funding for the project. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Citywide Traffic Signal Hardware Upgrade, Concord, CA, City of Concord, 2020-Ongoing, $273K:** Project Manager assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $2.4M in funding for the citywide improvements. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**Barstow Avenue & Palm Avenue Traffic Signal, Fresno, CA, City of Fresno, 2019-Ongoing, $32K:** PI&C and QA/QC overseeing the preparation of a full set of construction drawings to modify the signal at Palm Avenue and Barstow Avenue. This involves upgrading the existing signal to eight phases, curb ramp work, signage and striping improvements. The team is responsible for the signal modification and signage and striping plans, our civil sub consultant will design the curb ramps for the project. The team will prepare a full set of plans, specifications, and estimate for a construction ready package.

**Mathilda/Indio Intersection Improvements, Sunnyvale, CA, City of Sunnyvale, 2017-2018, $138K:** Project Manager was responsible for assisting the City in preparing the E-76 forms necessary to obtain the Request for Authorization for construction approval from Caltrans Local Assistance Program, including the right-of-way, and utility certification forms. TJKM prepared the PS&E for the civil and traffic signal and signing and striping improvements. The project also involved coordination with VTA for relocating bus stop benches and signs to the new sidewalk areas. The Team also provided bid and construction support services during construction.

**Intersection Improvements at Grant Road & Phyllis Avenue/Martens Avenue, Mountain View, CA, City of Mountain View, 2016-2018, $98K:** Project Manager responsible for preparing the PS&E for modifying the traffic signal at Grant Road and Phyllis Avenue/Martens Avenue. The improvements consisted of:

- Installation of an eastbound bike lane on Phyllis
- Median island modifications
- Right of way acquisition document preparation
- New ADA curb ramps
- Sidewalk installation along Martens Avenue
- New pedestrian bulb outs
- Curb and gutter
- Modification of the existing six phase signal operation to an eight phase operation
- Restriping to add left turn pockets on Martens Avenue
- High visibility crosswalks
- Removal of pork chop islands for replacement with new pedestrian bulb outs

Bid and construction support services were also provided.

**Traffic Signal Hardware & Wiring 2017 Project, Sunnyvale, CA, City of Sunnyvale, 2017-Ongoing, $115K:** Project Manager responsible for the design of a full signal modification, all four corner curb ramp upgrades to ADA compliance, operational improvements to signal timing and railroad preemption, and lastly signage and striping improvements. TJKM is coordinating with Caltrain/JPB to obtain an encroachment permit approval. TJKM leads the effort to coordinate with UPRR and California Utilities Commission (CPUC) for necessary approvals to signal/railroad pre-emption timing updates. The Team will provide bid and construction support during construction.
Ms. Jariwala has 21 years of professional experience in the areas of traffic operations, transportation planning, freeway and arterial management studies, signal coordination, traffic signal systems, traffic impact studies/EIRs and intelligent transportation systems planning, design and construction oversight. She has extensive experience in macro and microscopic model development and application for analysis of traffic operations for express lane studies as well as multimodal operations, light-rail, bus rapid transit, pedestrian, bicyclists, and traffic safety studies.

**Ruta Jariwala, PE, TE**

**PRINCIPAL**

**Project Role: QA/QC**

**Project Experience**

Preliminary Engineering & Environmental Services for the Port of Oakland CIP Projects, Oakland, CA, Jacobs, 2016-Ongoing, $468K

As Task Lead, led the review of existing plans, projects, infrastructure and facilities, and prepared an inventory of completed and planned projects, including those of project agency partners that could be integrated as part of this project. Project partners included MTC, Alameda CTC, Port of Oakland, City of Oakland, and Caltrans.

She is assisting in providing support on the development of the Systems Engineering Management Plan (SEMP) which will be used as a project guide for the systems engineering process in the development of the ITST Master Plan and in subsequent ITST procurements, projects and capital investments. She is also assisting in supporting the development of the ConOps document. The development of the ConOps has been informed by private maritime stakeholder and agency project partner input in the form of a ConOps CAC. In addition, she is also assisting in supporting the ITST Master Plan development, which focuses on developing a basic ITS architecture and communications network for projects using commercially available technologies, and providing a backbone for future implementation of Freight Advanced Traveler information System (FRATIS), Connected Vehicle (CV) technologies, and other feasible technologies.

Citywide Traffic Model, Oakley, CA, City of Oakley, 2015-Ongoing, $59K

Project Manager responsible for the development of the City of Oakley’s citywide traffic model. The model will assist the City in monitoring near- and mid-term levels of service (LOS) at key intersections throughout the City. She is using a Vistro model, which is the updated version of the Traffic model. Task include selecting and counting the study intersections, calculating intersection LOS, establishing traffic distribution patterns to create the Vistro model, and maintain the model for the City.

I-80/Gilman Street Interchange

PA/ED Project, Alameda County, CA, Parsons Transportation Group, 2015-2017, $177K

Task Leader on the project which she prepared Traffic Operational Analysis Report for the I-80/Gilman Street Interchange PA/ED Project in Alameda County to support the preparation of Environmental Document for the project. The purpose of the I-80/Gilman Street Interchange Improvement project was to relieve congestion by improving traffic operations and enhancing mobility for the motoring public, bicyclists, and pedestrians. The project includes roadway, landscape, utility, and drainage modifications; ROW acquisition; and creating a gateway into the City of Berkeley. She was responsible for relevant data collection, analysis of existing and future...
conditions, evaluation of proposed alternatives, travel demand forecasting and evaluation of impacts during construction. Local intersections analysis was conducted using the Synchro/SimTraffic software analysis package and freeway analysis was conducted using standard Highway Capacity Manual methods and VISSIM micro-simulation models. Traffic demands were projected utilizing the Alameda County Regional Travel Demand Model.

**HSIP Traffic Signal Improvement Project, Pittsburg, CA, City of Pittsburg, 2020-ongoing, $164K:** Deputy Project Manager who assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $1.6M in funding for the citywide improvements. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM is also assisting the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights, CA, City of Citrus Heights, 2018-ongoing, $68K:** QA/QC. The County applied for a federal HSIP grant for Cycle 8 and was successfully awarded funding for the project. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Citywide Traffic Signal Hardware Upgrade, Concord, CA, City of Concord, 2020-ongoing, $273K:** Task Lead assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $2.4M in funding for the citywide improvements. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. We will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**Mathilda/Indio Intersection Improvements, Sunnyvale, CA, City of Sunnyvale, 2017-2018, $138K:** QA/QC Manager that assisted the City in preparing the E-76 forms necessary for obtaining the Request for Authorization for construction approval from Caltrans Local Assistance Program, including the Right-of-Way, and Utility Certification forms. TJKM, as part of a team, prepared the PS&E for the civil and traffic signal and signing and striping improvements. The project also involved coordination with VTA for relocating bus stop benches and signs to the new sidewalk areas. The PS&E has been completed and the project is being ready to be advertised for bidding for construction. The Team will provide bid and construction support services during construction.

**AC Transit Line 97 South County Corridors Transit Performance Initiative Project Adaptive Traffic Control System, Alameda County, CA, Iteris, 2017-2019, $231K:** Deputy Project Manager for the project which she prepared signal modification plans to install wireless devices to detect buses going through each intersection. Preparation of PS&E documents which included technical specifications, crosscheck bid schedule line items, design plans in AutoCAD, prepared Engineer’s opinion of probable construction cost estimate and technical specifications, prepared final bid package. She also provided signal coordination/signal timing preparation and implementations. Tasks included, data collection, before travel time runs, existing conditions baseline Synchro models, signal timing plan optimization, implementation and fine tuning, after travel time runs, and prepare a final report. She assisted with providing TSP system integration support relating to the 27 signalized intersections within City of Union City Limits in which she designed signal modifications.

**Traffic Signal Hardware & Wiring 2017 Project, Sunnyvale, CA, City of Sunnyvale, 2017-ongoing, $115K:** Principal-In-Charge on project to design of an all signal modification, all four curb ramp upgrades to ADA compliance, operational improvements to signal timing and railroad preemption, and lastly signage and striping improvements. The Team coordinated with Caltrain/JPB to obtain an encroachment permit approval. The Team will coordinate with UPRR and California Utilities Commission (CPUC) for necessary approvals to signal/railroad pre-emption timing updates. The team is currently in the design process and preparing the PS&E necessary for a construction ready package. The team will provide bid and construction support during construction.

**Three HSIP Projects for West Leland Corridor Safety Improvements, Pittsburg, CA, City of Pittsburg, 2017-ongoing, $159K:** QA/QC on project to construct safety improvements on West Leland Road. The City received three Federal HSIP grants to fund these improvements, which will include high friction surface treatments, solar powered radar speed feedback warning signage, centerline rumble strips/stripes, pavement markers and markings, and traffic signal modifications to provide protected left-turn phasing at two intersections. The HSIP projects will also include intersection lane striping improvements at the intersections of Railroad Avenue/California Avenue and East Leland Road/Loveridge Road. The TJKM Team is responsible for developing Plans, Specifications, and Estimate (PS&E) as well as bidding support.

**West Riggen Avenue at Akers Street Traffic Signal Installation Design, Visalia, CA, 4 Creeks, 2014-2015, $11K:** Project Manager in designing traffic signal near North West Middle School, which included detailed design PS&E, prepared construction bidding package and response to contractors during construction phase.
Mr. Amin has 30 years of both public and private sector experience in the areas of transportation planning, traffic impact studies, transportation management plans, construction scheduling, construction area signs, signing and stripping, traffic signal coordination, traffic operations, transit priority, traffic signal systems, freeway and arterial management studies, and intelligent transportation systems planning, design and construction oversight. He specializes in macro and microscopic model development and application for analysis of impacts across all modes of transportation. His projects range from traffic studies for developments, specific plans, general plans, corridor studies, and area-wide studies to long-term planning studies. Studies also include multimodal operations, light-rail, bus rapid transit, pedestrian, bicyclists and traffic safety and operations.

Nayan Amin, TE
PRESIDENT
Project Role: Operation Guide Task Lead

Project Experience
Preliminary Engineering & Environmental Services for the Port of Oakland CIP Projects, Oakland, CA, Jacobs, 2016-Ongoing, $468K
Project Manager who led the review of existing plans, projects, infrastructure and facilities, and prepared an inventory of completed and planned projects, including those of project agency partners that could be integrated as part of this project. Project partners included MTC, Alameda CTC, Port of Oakland, City of Oakland, and Caltrans. The team is providing support on the development of the Systems Engineering Management Plan (SEMP) which will be used as a project guide for the systems engineering process in the development of the ITST Master Plan and in subsequent ITST procurements, projects and capital investments. The team is also supporting the development of the ConOps document. The development of the ConOps has been informed by private maritime stakeholder and agency project partner input in the form of a ConOps CAC. In addition, supporting the ITST Master Plan development, which focuses on developing a basic ITS architecture and communications network for projects using commercially available technologies, and providing a backbone for future implementation of Freight Advanced Traveler information System (FRATIS), Connected Vehicle (CV) technologies, and other feasible technologies.

Traffic Operations Center Feasibility Study, Mountain View, CA, City of Mountain View, 2018-Ongoing, $99K
Project Manager for the project which included inventory of existing City infrastructure at City Hall for setting up a TOC. TJKM is also developing drawings for potential layout of the TOC at desired location within City Hall. TJKM is assisting the City on space planning by identifying the appropriate size of TOC, with seating for current and future growth, identify equipment to use that will fit City needs and help them be set for the future. TJKM is coordinating with various departments at City of Mountain View to identify strategic locations for communications equipment layout and design. After all coordination items are settled and City is in agreement with proposed option, TJKM will prepare a ConOps Report summarizing our findings and providing recommendations for feasibility of TOC at City Hall in Mountain View.

HSIP Traffic Signal Improvement Project, Pittsburg, CA, City of Pittsburg, 2020-Ongoing, $164K
Principal-In-Charge overseeing the project which assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9. HSIP grant call for projects. The City was successful in
being awarded $1.6M in funding for the citywide improvements. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM is also assisting the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights, CA, City of Citrus Heights, 2018-Ongoing, $68K**: Principal-In-Charge. The County applied for a federal HSIP grant for Cycle 8 and was successfully awarded funding for the project. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. We will also assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Citywide Traffic Signal Hardware Upgrade, Concord, CA, City of Concord, 2020-Ongoing, $273K**: Principal-in-Charge. The team assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $2.4M in funding for the citywide improvements. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. We will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**Traffic Signal Update Project HSIP, Manteca, CA, City of Manteca, 2017-Ongoing, $478K**: Project Manager on project for the inventory of existing signalized intersections signal controller hardware and firmware, signal communications equipment and signal hardware at 47 intersections; identifying the signal equipment and signal communications hardware needing upgrades; integrating asset data collection into the City’s VueWorks Asset Management System; designing a citywide wireless signal interconnect communications network for the traffic signal system between the signalized intersections; retimeing the major corridors for improved traffic signal timing coordination; and assisting the City with evaluating and selecting a Centralized Signal System.

**Traffic Signal Mathilda Avenue & Indio Avenue, Sunnyvale, CA, City of Sunnyvale, 2017-2018, $138K**: Principal-In-Charge overseeing Team to assist the City in preparing the E-76 forms necessary for obtaining the Request for Authorization for construction approval from Caltrans Local Assistance Program, including the Right-of-Way, and Utility Certification forms. TJKM and Siegfried prepared the PS&E for the civil and traffic signal and signing and striping improvements. The project also involved coordination with VTA for relocating bus stop benches and signs to the new sidewalk areas. TJKM and Siegfried will provide bid and construction support services during construction.

**Ralston Avenue Corridor Improvements – Segments 1 & 2, Belmont, CA, City of Belmont, 2018-Ongoing, $39K**: Principal-In-Charge. The project entails preparation of PS&E for the bicycle and pedestrian safety improvements along Ralston Avenue between US 101 and South Road. Preparing a traffic analysis technical memorandum for future improvements at El Camino Real and Ralston Avenue, preparing a technical memorandum of recommendations of improvements above what the Ralston Corridor Study recommended, addition of Class I, II, and III bicycle facilities, installation of two HAWK signals, reconstruction of curb ramps to be ADA compliant, and public outreach to businesses and residents for their input in the project. Coordinating with Caltrans for obtaining an encroachment permit for the work along El Camino Real and also at the US 101 interchange with Ralston Avenue. The project also is coordinating with the City’s Parks and Transportation Committees for the preferred alignment of the Twin Pines Park Class I bicycle path.

Traffic Signal Controller Upgrade Project, Hayward, CA, City of Hayward, 2010-2014, $89K: Principal-In-Charge. TJKM completed the 100% PS&E for traffic signal upgrades at 31 intersections along three major corridors in Hayward. The design plans included traffic signal controller upgrades, signal interconnecting using existing fiber/copper or wireless communication, video detection camera locations and communication, and appropriate notes and details. In addition, the team provided bidding and construction support. TJKM also prepared the final signal timing plans for all intersections. Once the upgrades required for all the signal coordination were complete, they were optimized and coordinated. The improved operations and maintenance capabilities offered by the use of more modern traffic signal controllers and video detection assisted in reducing travel times along the three-commute corridors, reduced delays to AC Transit buses, and enhanced overall safety. Implementation of this project allowed for proper clearance time to accommodate bicycle and pedestrian activity at the intersections and to enable bicycle detection at seven critical intersections on two corridors in compliance with current Complete Streets guidelines.

**Three HSIP Projects for West Leland Corridor Safety Improvements, Pittsburg, CA, City of Pittsburg, 2017-Ongoing, $159K**: Principal-In-Charge on project to construct safety improvements on West Leland Road. The City received three Federal HSIP grants to fund these improvements, which will include high friction surface treatments, solar powered radar speed feedback warning signage, centerline rumble strips/stripes, pavement markers and markings, and traffic signal modifications to provide protected left-turn phasing at two intersections. The HSIP projects will also include intersection lane striping improvements at the intersections of Railroad Avenue/California Avenue and East Leland Road/Loveridge Road. The team is responsible for developing the PS&E as well as bidding support.
Mr. Patel has 13 years of professional experience in transportation/traffic engineering and design. He has provided support on traffic impact studies, highway operation analysis, signal coordination projects and highway design plans, specifications and estimates (PS&E) packages. Mr. Patel has worked on various electrical design projects which include street lighting, traffic signal, and intelligent transportation system design plans, as well as the preparation of traffic handling, signage, and striping plans.

Mr. Patel has worked with various jurisdictions in the San Francisco Bay Area, Tri-Valley, Central Valley, and Northern California and is very familiar with their different standards and requirements. This knowledge often leads to the minimal need for plan check comments during the design phase. For all projects, Mr. Patel has developed project estimates, specifications to accompany the full plan set. He has met with clients for comment review meetings, assisted cities on answering contractor Requests for Information (RFI’s) on design work, and have met with them onsite to resolve any design questions.

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**Rutvij Patel, EIT**  
**PROJECT MANAGER**  
**Project Role: Operation Needs & Vendor Demos Task Lead**

**Traffic Experience**

Traffic Signal Update Project HSIP, Manteca, CA, City of Manteca, 2017-Ongoing, $478K: Task Lead on project for the inventory of existing signalized intersections, signal controller hardware and firmware, signal communications equipment and signal hardware at 47 intersections; identifying the signal equipment and signal communications hardware needing upgrades; integrating asset data collection into the City’s VueWorks Asset Management System; designing a citywide wireless signal interconnect communications network for the traffic signal system between the signalized intersections; retiming the major corridors for improved traffic signal timing coordination, and assisting the City with evaluating and selecting a Centralized Signal System.

Miner Avenue Complete Streets PS&E, Stockton, CA, Siegfried Engineering, 2018-Ongoing, $125K: Project Engineer assisting with preparing PS&E for the Miner Avenue Complete Streets Project. Responsibilities include signing and striping, traffic signal designs, street lighting, and signal interconnect designs, and bid and construction support services during construction. He was involved with the conceptual plan preparation for the plan line study and this project is a continuation of the project through the detailed design phase.

Hunter Street Road Diet, Stockton, CA, City of Stockton, 2018-Ongoing, $50K: Project Manager overseeing preparing the project that through HSIP Cycle 7 funding, the City of Stockton has awarded TJKM the Hunter Street Road Diet project. The project goal is to reduce the travel lanes from two to one in either direction, with a dedicated two-way turn lane and Class II bike lane facilities for the entire corridor. TJKM will prepare the signage and striping plans along with signal modification plans at the intersection of Miner Avenue and Hunter Street. TJKM will also take the lead on preparation of full PS&E package and provide support to the City of Stockton during the bidding and construction phase of this project.

Traffic Signal Modifications at Central Expressway & Castro Street, Mountain View, CA, City of Mountain View, 2016-Ongoing, $72K: Project Manager overseeing this interim improvement project, the City of Mountain View plans to remove the dual left turns out of Castro Street onto Central Expressway. The project also will add bike lanes on the Castro Street approach to tie in to
those on Moffett Boulevard, and signal operation will be adjusted to account for revised lane geometry. Also as part of this project, the two existing slip right turn movements on Central Expressway will be removed for the approaches; this will square out the intersection and improve pedestrian/bicyclists crossing safety.

**HSIP Citywide Traffic Signal Hardware Upgrade, Concord, CA, City of Concord, 2020-Ongoing, $273K:** Task Lead assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $2.4M in funding for the citywide improvements. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. We will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Traffic Signal Improvement Project, Pittsburg, CA, City of Pittsburg, 2020-Ongoing, $164K:** Task Lead assisted the City with preparing an HSIP grant application for upgrading citywide signal hardware at all the City’s signalized intersections as part of Cycle 9 HSIP grant call for projects. The City was successful in being awarded $1.6M in funding for the citywide improvements. The team is assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM is also assisting the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**HSIP Various Signalized Intersection Safety Improvements Project, Citrus Heights, CA, City of Citrus Heights, 2018-Ongoing, $68K:** Task Lead. The County applied for a federal HSIP grant for Cycle B and was successfully awarded funding for the project. Tasks include assisting the City with receiving NEPA clearance, preparation of PS&E documents, and bid and construction support services. TJKM will assist the City with obtaining E-76 permit approval through Caltrans Local Assistance Program.

**Barstow Avenue & Palm Avenue Traffic Signal, Fresno, CA, City of Fresno, 2019-Ongoing, $32K:** Project Manager to prepare a full set of construction drawing to modify the signal at Palm Avenue and Barstow Avenue. This involves upgrading the existing signal to eight phases, curb ramp work, signage and striping improvements. TJKM is responsible for the signal modification and signage and striping plans, our civil sub consultant will design the curb ramps for the project. TJKM team will prepare a full set of plans, specifications, and estimate for a construction ready package.

**Retroreflectivity Sign Project, Manteca, CA, City of Manteca, 2017-Ongoing, $389K:** Task Lead on project for conducting a citywide retroreflectivity sign inventory for the City of Manteca for all roadside signs. We will inventory all the sign attributes and merge them into the City’s VueWorks GIS system. Attribute tables with the sign properties will be developed. Once all the signs for replacement have been identified, the team will prepare PS&E for replacement of those signs. In addition, we will identify additional signs needed to ensure that the Manteca street system is adequately signed. Three public outreach meetings will be held during the design phase of the project.

**Three HSIP Projects for West Leland Corridor Safety Improvements, Pittsburg, CA, City of Pittsburg, 2017-Ongoing, $159K:** Task Lead. The City received three Federal HSIP grants to fund these improvements, which will include high friction surface treatments, solar powered radar speed feedback warning signage, centerline rumble strips/stripes, pavement markers and markings, and traffic signal modifications to protect provided left-turn phasing at two intersections. The HSIP projects will also include intersection lane striping improvements at the intersections of Railroad Avenue/California Avenue and East Leland Road/Loveridge Road. He is currently in the design phase and responsible for assisting in developing Plans, Specifications, and Estimate (PS&E) as well as bidding support.

**Mathilda/Indio Intersection Improvements, Sunnyvale, CA, City of Sunnyvale, 2017-2018, $138K:** Project Engineer assisted the City in preparing the E-76 forms necessary for obtaining the Request for Authorization for construction approval from Caltrans Local Assistance Program, including the Right-of-Way, and Utility Certification forms. He, as part of a team, prepared the PS&E for the civil and traffic signal and signing and striping improvements. The project also involved coordination with VTA for relocating bus stop benches and signs to the new sidewalk areas. The PS&E has been completed and the project is being ready to be advertised for bidding for construction. He will assist in providing bid and construction support services during construction.

**East 14th Streetscape Project, Alameda County, CA, Bellecci & Associates, 2018-Ongoing, $168K:** Project Engineer assisting with the following tasks: Traffic Queueing Analysis at Turn Pockets (four intersections), Prepare Plans, Specifications and Estimate along E. 14th Street for Signal Improvements at: 163rd Ave, 164th Ave, 165th Ave, 167th Ave, and 170th Ave, Street Lighting Plans from 162nd Ave to 172nd Ave., Stage Construction and Traffic Handling Plans from 162nd Ave to 172nd Ave., Signage and Striping Plans from 162nd Ave to 172nd Ave., Rectangular Rapid Flashing Beacon (RRFB) at: 166th Ave and 168th Ave., assisted in Public Outreach Meetings and City Review meetings.

**Dinuba Signal Synchronization Project, Dinuba, CA, City of Dinuba, 2017-Ongoing, $90K:** Task Lead on project to provide PS&E for wireless interconnection of eight signals along Alta Avenue and copper signal interconnect between four signals along El Monte Way. Along with preparation of PS&E, the team is preparing signal coordination plans for 11 signals along Alta Avenue and El Monte Way for the AM, Midday, and PM weekday periods and implementing and fine-tuning the plans along with providing training to the staff on the Synchro system.
Mr. Paparaju has more than seven years of professional experience in the areas of professional experience in the areas of traffic operations, signal coordination, traffic impact studies, bridge design, and construction oversight.

Sandeep Paparaju
TRANSPORTATION ENGINEER
Project Role: Transition Plan Task Lead

Project Experience
Signal Coordination Timing & Optimization, Sunnyvale, CA, City of Sunnyvale, 2016-2018, $72K Project Engineer which assisted the City of Sunnyvale to reduce delays, queues, fuel consumption, CO2 emissions experienced during the peak periods along Wolfe Road, Mathilda Avenue/Sunnyvale-Saratoga Road, and Homestead Road. The overall objective of the project were to improve travel time; improve traffic flow; and improve overall safety for vehicular, pedestrian, and bicycle traffic along the study corridors. The key tasks of the project included data collection, before and after studies; validation of the data; development of traffic operational models; calibration and validation of operational models to existing conditions; development of optimized timing plans for weekdays and weekends; implementation and fine-tuning of optimized timing plans; and preparation of the report for the project.

Implementation & Fine-tuning of Signal Timing Plan on Buskirk Avenue, Pleasant Hill, CA, T.Y. Lin International, 2015-2017, $13K Project Engineer assisting with the corridor study between Contra Costa Center Driveway and Monument Boulevard in the City of Pleasant Hill to reduce delays, queues, fuel consumption, CO2 emissions experienced during the peak periods. The overall objective of the project is to improve travel time; improve traffic flow; and improve overall safety for vehicular, pedestrian, and bicycle traffic along the study corridor. The key tasks of the project include data collection, including before and after studies; validation of the data; development of traffic operational models; calibration and validation of operational models to existing conditions; development of optimized timing plans for weekdays; implementation and fine-tuning of optimized timing plans; and preparation of the report for the project.

MetroPac Transportation Commission (MTC) Program for Arterial System Synchronization (PASS), Multiple San Francisco Bay Area Jurisdictions, CA, MTC, 2014- Ongoing, $333K per year. Project Engineer assisted with updating existing signal timing plans to achieve operational efficiency of the traffic signals, reduce traffic congestion, traffic delays, emission of harmful greenhouse gases, automobile and transit travel time along the study corridors, and improve traffic safety. Assisted in the development of existing conditions synchro models, assisted in field surveys, "before" travel time runs along study corridors using Tru-Traffic software, analyzed field data and prepared existing conditions report.


Cypress Avenue Signal Coordination, Redding, CA, City of Redding, 2015, $40K Project Engineer assisted in data collection, analysis and development of optimized signal timing plans.
Project Understanding & Approach

Project Understanding

As one of California’s largest cities and the county seat of San Joaquin County, the City of Stockton is located at the crossroads of the Central valley. With Interstate 5, State Route 99 and California’s major north-south thoroughfares passing through the city limits, Stockton is well-served by a relatively extensive highway network. The City’s traffic signal network however, has benefited only from incremental improvements resulting in four separate systems being operated today.

City’s current leadership is to be commended in initiating a plan aimed at bringing all of the City’s 300+ signals under the control of a single, integrated central traffic system with a one-point user/operator interface. The vast majority of the city’s signals (approximately 250) have Type 2070 or M60 controllers operating the SEPAC controller firmware and are controlled by a Siemens’s Tactics central system. This system is over ten years old. In addition to this, approximately 20 signals have 2070’s with D4 firmware and controlled by Transcore-supplied central system (TranSuite). There are also two different adaptive systems in use covering 3 corridors. These are Siemens’s SCOOT and Rhythm Engineering’s InSync system. There is also a two-level signal priority and emergency preemption system. At the low-level, a bus route transit signal priority (TSP) system using GTT’s Opticom infra-red based field hardware and operated under a TranSuite central. The high-level component of this GTT system provides emergency vehicle pre-emption. A weigh-in-motion system (WIM) provided by IRD is also in use.

Current Challenges:

First, the presence of four different systems is an undesirable burden on the TMC operating staff who have to learn different user interfaces. Secondly, the development, fine-tuning, and data entry of signal timing plan database is made unnecessarily complex by the four different data formats that must be dealt with. In an ideal scenario, all of the City’s signals will operate under a universal time synchronization signal that will lead to a smooth progression among the different corridors.

The impending plan to relocate the TMC from its current location at City Hall to the Waterfront Towers is yet another reason for the City to strongly consider migrating the central system from a fragmented control to an integrated, user-friendly control under a single user interface.

Operational Needs:

Along with an upgrade of the central system, this is also an opportune time to re-evaluate the effectiveness of some of the City’s older signal controllers and determine if some of these should be upgraded to more modern controllers. While the AT&T leased fiber-optic network connecting the controllers to the TMC is considered to be providing an acceptable level of service, its daisy-chained, point-to-point network architecture is considered obsolete. Such point-to-point links are highly susceptible to loss of signal in case of a construction-related field cut. Most modern urban communications networks today are based on a true-network topology with redundant paths at each segment. Such an architecture is far more resilient and can continue to provide real-time connectivity even in case of a segment cut.

A complete change-out of the City’s 295 analog CCTV cameras currently operated under a Bosch matrix is also badly needed as the camera hardware has become un-maintainable due to obsolescence. In an ideal situation, the choice of the traffic system central software will be such that the video management function is integrated with the traffic system. When configured correctly, an integrated traffic+video system will be able to use pre-loaded artificial intelligence (AI) algorithms to highlight congestion points. In particular, it will point the appropriate CCTV camera to an intersection or an approach that is experiencing the biggest delays based on a historical comparison.

GTT’s Opticom based bus-proximity detectors should be changed to GPS-based locators to facilitate more advance arrival information. This advance-arrival information can lead to a far smoother signal timing transition to a TSP timing plan that is less disruptive to side street traffic progression.

Project Approach

TJKM Team’s approach to preparing the City’s traffic system modernization plan will be guided by time-proven life-cycle benefits principles that have helped us develop practical, implementable plans for numerous other clients. First, in terms of the field operation functionality, we believe that the traffic system should be flexible and expandable in order to meet the City’s current and projected traffic operation needs. As an example, the City in future may have the need to communicate signal phase and timing (SPaT) information as an in-dash display to motorists. The central system must then be able to be modified or updated to provide that function.
Further, the system should also fit seamlessly with the operational style of the traffic group organization. For example, if the traffic group’s organization requires multiple points of system control for backup or other reasons, the system must facilitate with ease. In summary, in view of fast changing operational needs and a rapidly emerging technology offerings, it would be prudent for the City to not be locked in with a rigid, canned central system. The central system must also be based on the most updated industry standards including the use of NTCIP to allow for easy interoperability with other standards-compliant devices.

Our Team will also evaluate multiple alternatives for the new central system architecture. For example, in one approach, the currently operating systems may be allowed to continue operation as separate systems, and there may only be an Integrated Work Station that will allow the user to control all systems from a single integrated workstation. This approach may be referred to as a soft integration. In an alternative scenario, the central system functions currently performed by these separate systems may be incorporated into a new versatile, multi-function central and the separate systems can be eliminated. This would be referred to as deep integration.

Similarly, our planning approach for upgrading field devices emphasizes defining the required functionality in such a way as to allow enough room for both innovation and competitive bidding. As your plan consultant, our team keeps closely in touch with marketplace offerings to attract the most leading-edge and operationally proven technologies.

The field communications network serves as the veins and arteries of the traffic system. While the City’s current arrangement by way of leasing fiber lines form AT&T appears to be satisfactory, its topology can be vastly improved to provide a redundant-path architecture in the future. In the current daisy-chained fiber linkages, a field cut due to construction activity can result in loss of system control during the repair period. A true network architecture “works around” the cut to maintain a far more resilient network. Further, a software-enabled, intelligent fiber network also yields second-by-second diagnostics to isolate and service degradation fault points before they become a failure point.

Our Team is intimately familiar with the California MUTCD guidelines and the Caltrans Standard Specifications and Plans. We have worked on numerous projects based on FHWA’s ITS Strategic Plan and San Joaquin County’s regional ITS plans – including the use of the V-diagram as a traffic system planning tool. Our design engineers and specifications writers have successfully prepared hundreds of traffic signal designs and specified signal and communications cabinets for dozens of cities. Our practical in-field experience serves as a guide to what works in the often unpredictable construction environment. Based on the knowledge and experience described above, our team is best qualified to develop Traffic Signal Design and Operations Guide to serve Stockton’s needs for years to come.

The implementation phase of the traffic system upgrade project may witness the change-out of numerous controllers and/or cabinets, plus any required modifications to lane configurations, signing and marking, signal phase and signal timing changes. Communications connections may undergo a network-wide reconfiguration. New field installations will have to undergo multi-level testing including device level tests (for controllers, detectors, cameras individually), as-installed subsystem level (whole-of-cabinet, etc.), and system level integration tests. New signal timings will have to be developed, loaded into the central and controller data bases, and field operation verified for proper, safe operation. The new central system may have a slightly different method of exercising control over the controllers. Field signal contractors will have to follow detailed instructions and sequence to result in a painless cutover form the existing to the new system. These instructions and suggested work sequence will be part of a comprehensive Transition or System Migration Plan. TJKM Team members have prepared such detailed Transition Plans for cities/counties with thousands of controllers to be migrated over. Our deep experience in developing such a Transition Plan will be reflected in a very practical, easy-to-follow document.

Although operated by the traffic engineering group, modern traffic systems share many common resources with the City’s overall IT environment. In particular, often the traffic system central software operates in the City’s server bank that also operates the IT services for non-traffic city functions. The same may be true for the city-wide communications network, and/or the CCTV cameras system. Our Team members bring extensive experience in interfacing with the City IT department so as to plan a configuration and operating procedures that keep both sides secure. The use of firewalls and other cyber-security techniques will be recommended.
Examples of Experience with Similar Types of Work
Examples of Experience with Similar Type of Work

Relevant projects for TJKM are shown below.

**Preliminary Engineering & Environmental Services for the Port of Oakland Capital Improvement Projects, Oakland | 2016-Ongoing**

*Reference: Chwen Siripocanont | Alameda County Transportation Commission | 510.208.7452 | csiripocanont@alamedactc.org*

For the Alameda County Transportation Commission (Alameda CTC), TJKM is providing support on the preliminary engineering and environmental services for the 7th Street Grade Separation Project, Middle Harbor Road Improvement Project, and Intelligent Transportation Systems and Technology Master Plan, collectively referred to as the Port of Oakland Capital Improvement Projects.

TJKM led the review of existing plans, projects, infrastructure and facilities, and prepared an inventory of completed and planned projects, including those of project agency partners that could be integrated as part of this project. Project partners included Metropolitan Transportation Commission (MTC), Alameda CTC, Port of Oakland, City of Oakland and Caltrans.

TJKM is providing support on the development of the Systems Engineering Management Plan (SEMP) which will be used as a project guide for the systems engineering process in the development of the Intelligent Transportation Systems and Technology (ITST) Master Plan and in subsequent ITST procurements, projects and capital investments. TJKM is also supporting the development of the Concept of Operations (ConOps) document. The development of the ConOps has been informed by private maritime stakeholder and agency project partner input in the form of a ConOps Advisory Committee (CAC). In addition, TJKM is also supporting the ITST Master Plan development, which focuses on developing a basic ITS architecture and communications network for projects using commercially available technologies, and providing a backbone for future implementation of Freight Advanced Traveler information System (FRATIS), Connected Vehicle (CV) technologies, and other feasible technologies.

Built upon available data and follow-on data collections, surveys, coordination, utility identification, right-of-way, permits, TJKM will support the development of preliminary engineering drawings for the feasible alternatives recommended in the ITST Master Plan, leading to the selection of a preferred project alternative for the environmental assessment. TJKM will refine preliminary engineering design plans and construction cost estimates for the preferred project to 35% design level, resulting in a complete set of drawings that can be advanced to final PS&E. TJKM will also support the preparation of a draft Preliminary Engineering Report (PER) and a final PER.

**Traffic Operations Center Feasibility Study, Mountain View | 2018-Ongoing**

*Reference: Lorenzo Lopez | City of Mountain View | 650.903.6311 | lorenzo.lopez@mountainview.gov*

The City of Mountain View as the implementation agency has selected TJKM to conduct a feasibility study aimed at establishing and operating an advanced Traffic Operations Center (TOC) to monitor and manage traffic operations throughout the City. The scope of work for the feasibility study includes:

- Evaluating existing system infrastructure
- Developing Concept of Operations
- Developing System Functional Requirements
- Technology Evaluation and Providing Recommendations
- Proposing System Architecture
- Space Planning for the Proposed TOC
- Preparing Communications and Equipment Layout

TJKM held multiple discussions with the City staff to ensure the development of a comprehensive study that addresses the City’s needs. Workshops and vendor interviews with various Advance Traffic Management System (ATMS) were also conducted to select a preferred vendor based on the System Evaluation Criteria identified during the discussions with the City Staff.

TJKM is developing drawings for potential layout of the TOC at desired location and is also assisting the City on space planning by identifying the appropriate size of TOC, with seating for current and future growth, identify equipment to use that will fit City needs and help the City to be set for the future. TJKM is coordinating with various departments at City of Mountain View to identify strategic locations for communications equipment layout and design. After all coordination items are settled and City is in agreement with proposed option, TJKM will prepare a final Report summarizing our findings and providing recommendations for feasibility of TOC at a proposed location in the City of Mountain View. The final report will include recommendations that will be considered as detailed design plans and specifications are developed to construct the City of Mountain View Traffic Operations Center. The recommendations will include:

- An ATMS system that will accommodate a NEMA environment cabinet, controller and central system
- Design for Fiber communication Network
- Design for communication system to control and operate the ATMS functions and other proposed ITS functions
Below is our proposed detailed work plan.

**Task 4 Project Management & Meetings**

- The TJKM Team will meet with the City of Stockton to get the project started, coordinate on points of contact for TJKM and various City staff and begin project discussion.
- A bi-weekly meeting will be setup at time/date that works with City Schedule.
- TJKM will provide project management services, including meeting agendas and notes, maintaining the project schedule and budget, invoices, and regular communication with the City.
- Meetings required for coordination with systems vendor are billed under respective task below.

**Task 4 - Deliverables**

- Project Kick-Off Meeting
- Project Schedule with key milestones (Microsoft Project and PDF)
- Project Meeting Minutes
- Monthly Invoices and Progress Reports

**4.1 TMS Configuration Report**

TJKM will coordinate meetings with stakeholders, such as Public Works, Police, IT and City’s contractor for background and inventory; follow the “V” System Engineering model for system and component evaluations, See Figure 1 on this sheet. TJKM will follow the four plans; System Validation, System Verification/Acceptance, Subsystem Verification/Acceptance, and Unit/Device Test. The preparation of the Stockton TMS Configuration Report will include, but is not limited to the following tasks:

**4.1.1 – Operational Needs**

Determine the needs of the City.

Evaluate at minimum four traffic signal control systems (including the central management software and controllers), at least one of which should be existing systems, and make recommendations. The following key elements should be considered in the evaluations:

- Ease of use
- Time based signal coordination
- Pedestrian and bicycle timing
- Traffic Responsive
- Report functions
- Transit priority and preemption
- Tech support availability
- Timing data transfer between server, controller, laptop, and other storage devices
- Local and system mapping
- Compatibility with third party equipment and software such as, but not limited to, video detection and adaptive traffic control.
- Reliability of all components
- Open nature of architecture for expandability to incorporate functions/features for future needs

The evaluation of the key components such as traffic control system, traffic signal controller, and Ethernet switch will include field demonstrations of the recommended system and components that are not currently used by the City. TJKM will lead the effort to schedule date/time with Vendors and City staff for all Vendor presentations.

**4.1.2 – System Architecture**

TJKM will develop a system communication network architecture including the traffic signal and video subnetworks.

By following the ITS guidelines and IEEE standards, TJKM will determine what components are needed in the recommended network and the ideal configuration settings of components for network security and performance, ensure the compatibility with IT Department’s network (a Cisco system) in the traffic signal cabinets and in the City’s communication hub.
Our team members bring deep experience in designing reliable, cost-effective communications networks based on the Ethernet architecture. While a fiber optics medium is always preferable, sometimes it may be necessary to add wireless links for faster connectivity. Our team has designed such hybrid networks that can later be converted to all-fiber networks. We follow the latest issued NTCIP protocols for all devices. Wherever possible, the communications network design will emphasize redundancies at the physical path level as well as at the logic and data flow level. This approach leads to a more resilient communications network in case of accidental cuts due to construction or a traffic accident. Data loads in all network segments are carefully balanced. Network head-end equipment will be required to provide a set of communications network diagnostics to enable real-time network management.

4.1.3 – System Needs

TJKM will determine key components for a new Traffic Management Center and the satellite stations at City’s Operation and Maintenance Division, San Joaquin County Public Works, and Caltrans District 10.

TJKM Team members bring broad TMC design experience from the very large (approximately 50,000 square feet) to modest sized TMC’s in the range of under 1000 square feet. Key components of the TMC will include multiple operator workstations, an electronic display board or map, a separate, glass-partitioned server-and-communications equipment room to minimize ambient noise for the operators, office cubicles, filing space, and a meeting room(s). Access will be controlled by an electronic system enabled by multi-level passkeys or passwords. Unless already available in the building, a standby backup power source will be considered.

4.1.4 – Future Needs

Using FHWA’s ITS Strategic Plan as a guideline, in line with the provisions set by the San Joaquin County Council of Government’s regional ITS plans, research and identify future improvements and technologies for smart city and connected vehicles readiness.

We are aware that a Stockton ITS Strategic Vision was developed in 2005. Our team will familiarize themselves with its contents and base our activities accordingly on the relevant sections. The central system configuration will be envisioned to be ready to provide the support for future onset of connected/autonomous vehicles. One of the immediate technical requirements for CAV operation may be the availability of signal timing and phase (SPaT) information to vehicles through roadside DSRC devices. Our team member has previously led system design for an autonomous freight shuttle operation in Miami.

The citywide communications network installed for the traffic system can also serve as the foundational element for a smart city implementation in the future. We envision the network to be such that it can be accessed and employed by multiple city departments such as transit, parks and recreation, water and sewer, etc. This can make it possible for data integration to occur so that all city departments benefit from a common data platform leading to a smart city scenario.

4.1.5 – Transition Plan

Determine and develop detailed transition plans. Once the new system configuration has been decided upon and a central system deployment has been tested, a very carefully and detailed transition plan will guide the city, contractor, and consultant forces to effect the transfer of controllers to new system. Our team members have successfully guided and led hands-on such migrations for small, medium, and large systems. Safety and maintaining normal traffic flow will be the twin objectives that will guide our efforts in this area.

Task 4.1 Deliverables:
- For each identified plan in the System Engineering “V” model, provide one draft plan in PDF to the City for comment, and one bounded final plan
- Four sets of report to the City for review and comment when the reports are at 65%, 95%, and 100%, and five sets bounded final report plus a PDF file to the City for filing
- Diagrams, maps and other visuals in their original formats

4.2 Traffic Signal Design & Operation Guide

TJKM staff are very familiar with the latest CA MUTCD, Caltrans Standard Specifications and Plans, City’s Standard Specifications and Plans, and the existing TMS. Based on the system identified in the updated TMS Configuration Report, the Guide shall include the following contents:

- Determine the standard equipment for City’s traffic signal installation
- Standard perimeters on timing a traffic signal
- Standards on traffic signal design
- Communication setups in traffic signal cabinet
- Detection (including bicycle detection) setup
- Timing review and update process
- Traffic signal timing database and other collected data management
Our team members are thoroughly familiar with all the requirements of the above mentioned documents. Further, our team members also bring in-depth and operational-level experience with all of the major types of TMS that may be candidate systems for Stockton. From mast arms, signal heads, pedestrian signals, cabinets, pull boxes, risers, controller types, communications devices, conflict monitors, back-up power, and different types of detectors, we are intimately familiar to these components and will develop guidelines as the standard complement of equipment required in city signal sites.

For use by signal installation contractors, we will develop a set of signal installation guides including foundation size, room for spare power and signal cables, labeling of terminations points, etc.

The design of traffic signal design will be standardized through a set of standard guides. Intersection civil design, curbs and gutters, signing and striping will be covered under these guidelines.

Communications equipment in the cabinets is one of the most critical component as it links the signal to the brains of the system. Our team will establish the right type of communications devices to be used and their appropriate installation and configuration settings.

From loops, microwave, radar and IR, numerous types of vehicle and bicycle detectors are available in the marketplace today with their unique capabilities, limitations, reliability, and price points. Our engineers are experienced in their optimal use. We will be able to recommend the appropriate detector types.

Regardless of how superior an ATMS is, the benefit to road-users is still critically dependent on a set of up-to-date, well-optimized signal timing plans. Our recommendations will include periodic reviews of the effectiveness of timing plans including TOD schedules possibly using a smart phone applications for efficient travel-time studies. The selected TMS will facilitate easy re-programming of timing plans in the controllers from the TMC after a complete validation of proper operation.

A data base of timing plans will be stored, maintained, and periodically updated. Other collected data such as traffic flow data, travel speed data and other associated data elements will also be archived for later research and use.

**Task 4.2 Deliverables:**

- Four sets of report to the City for review and comment when the reports are at 65%, 95%, and 100%, and five sets bounded final report plus a PDF file to the City for filing
- Diagrams, maps and other visuals in their original formats
References

Nearly 85 percent of our clients are repeat clients. Prompt service, attention to details, strict adherence to schedule requirements, and commitment to our clients' goals are among the reasons for this steady client base. Our objective on every assignment is to provide the most cost-effective product that meets the specific needs and criteria of each client within the planned schedule and budget. We encourage the City to contact our references to learn about our performance. We are confident that you will be pleased with what our clients have to say about us.

<table>
<thead>
<tr>
<th>Reference Contact</th>
<th>Project &amp; Description of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rafael Ruiz</td>
<td>• Middlefield Road PS&amp;E - Prepared signage and striping improvements along Middlefield Road from Oregon Expressway to Forest Avenue.</td>
</tr>
<tr>
<td>City of Palo Alto</td>
<td>• Middlefield Road and Embarcadero Road signal modification.</td>
</tr>
<tr>
<td>(707) 838-5318</td>
<td>• Charleston/Arastradero Corridor signal modifications (14 locations).</td>
</tr>
<tr>
<td><a href="mailto:aperez@townofwindsor.com">aperez@townofwindsor.com</a></td>
<td></td>
</tr>
<tr>
<td>Billilee Saengchalem</td>
<td>• Oakley Traffic Signal Modifications - preparing traffic signal modification plans, specifications and estimates for improvements along multiple intersections in the City. These modifications include video detection and internally illuminated sign installations, pole relocations, signal phasing upgrades, lane geometry changes and verification of truck turning radii.</td>
</tr>
<tr>
<td>City of Oakley</td>
<td></td>
</tr>
<tr>
<td>(925) 625-7154</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:saengchalem@ci.oakley.ca.us">saengchalem@ci.oakley.ca.us</a></td>
<td></td>
</tr>
<tr>
<td>Victoria Walker</td>
<td>• Pedestrian Crossing Improvements for 4 Locations - Electrical upgrades to add RRFB system at all locations. Preparation of pedestrian crossing improvement PS&amp;E, meetings and construction support services.</td>
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<tr>
<td>City of Fremont</td>
<td>• New Signal installs at Mission Boulevard/Sullivan Underpass Road, Niles Boulevard and Rock Avenue, Mission Boulevard and Curtner Avenue.</td>
</tr>
<tr>
<td>(510) 494-4756</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:vwalker@fremont.gov">vwalker@fremont.gov</a></td>
<td></td>
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Below is a table showing the total hours per task per team member.

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<tr>
<th>Task</th>
<th>Kamlesh Saxena</th>
<th>Ruta Jariwala</th>
<th>Atul Patel</th>
<th>Nayan Amin</th>
<th>Rutvij Patel</th>
<th>Sandeep Paparaju</th>
<th>Andrew Dickinson</th>
<th>Anna Highsmith</th>
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Our proposed team is an experienced team with specific strengths in each of the areas required to deliver this project on schedule and within budget to the satisfaction of the City of Stockton. Our proposed team has a proven track record of successful similar projects and is dedicated to providing high-quality products. With our available resources and experience, TJKM is equipped to provide the level of responsiveness required by the City, all while providing professional and quality services. We have developed an individualized approach for each task that, combined with an active project management and team-oriented approach, will ensure the delivery of timely, high-quality services.

Establishing a schedule that meets the project objectives is relatively easy. Maintaining this schedule during changing project priorities, unforeseen conditions, public consensus building, etc., is a challenge. Our proposed approach and schedule is broken down by function and separated into defined tasks. Tasks are linked logically to allow for realistic representation of the project. Project progress will also be monitored by percent complete for each task. Our proposed staff has the availability to accept and complete this key project on schedule and within budget.

If the City anticipates reviews from other stakeholder agencies, we assume that the City PM will be responsible receiving and consolidating their review comments in a timely manner and sending a master set of comments for us to address.

TJKM will complete this project in accordance with the schedule shown below.

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<th>Task Name</th>
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<td>Mon 3/12/21</td>
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**Local Preference**

TJKM Corporate office is located at 4305 Hacienda Drive, Suite 550, Pleasanton, CA 94588.
Appendix A
Required Forms
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: TJKM Transportation Consultants

BY: Nayan Amin

TITLE: President

DATE: 06/29/2020
NON-COLLUSION DECLARATION
(Title 23 United States Code Section 112 and Public Contract Code Section 7106)

To the CITY of STOCKTON DEPARTMENT OF PUBLIC WORKS.

The undersigned declares:

I am the President, of TJKM, 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 June 29, 2020 at Pleasanton (city), CA (state).

_________________________________________________
(Signature)
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:  TJKM Transportation Consultants

BY:  Nayan Amin

President

TITLE

DATE: 06/29/2020