

**PROFESSIONAL SERVICES AGREEMENT  
(DESIGN SERVICES)  
WITH  
ITERIS, INC.**

THIS AGREEMENT is made and entered into this **20<sup>th</sup>** day of **March, 2023** ("Effective Date"), by and between the CITY OF LA HABRA, a municipal corporation ("CITY"), and ITERIS, INC., a Delaware corporation ("CONSULTANT").

**WITNESSETH:**

A. WHEREAS, CITY proposes to utilize the services of CONSULTANT as an independent contractor to ITERIS, INC., as more fully described herein; and

B. WHEREAS, CONSULTANT represents that it has that degree of specialized expertise contemplated within California Government Code Section 37103, and holds all necessary licenses to practice and perform the services herein contemplated; and

C. WHEREAS, CITY and CONSULTANT desire to contract for the specific services described in Exhibit "A" (the "Project") and desire to set forth their rights, duties and liabilities in connection with the services to be performed; and

D. WHEREAS, no official or employee of CITY has a financial interest, within the provisions of Sections 1090-1092 of the California Government Code, in the subject matter of this Agreement.

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions contained herein, the parties hereby agree as follows:

**1.0. SERVICES PROVIDED BY CONSULTANT**

1.1. Scope of Services. CONSULTANT shall provide the professional services described in the CONSULTANT's Proposal ("Proposal"), attached hereto as Exhibit "A" and incorporated herein by this reference.

1.2. Professional Practices. All professional services to be provided by CONSULTANT pursuant to this Agreement shall be provided by personnel experienced in their respective fields and in a manner consistent with the standards of care, diligence and skill ordinarily exercised by professional consultants in similar fields and circumstances in accordance with sound professional practices. CONSULTANT also warrants that it is familiar with all laws that may affect its performance of this Agreement and shall advise CITY of any changes in any laws that may affect CONSULTANT's performance of this Agreement. CONSULTANT shall keep itself informed of State and Federal laws and regulations which in any manner affect those employed by it or in any way affect the performance of its service pursuant to this Agreement. The CONSULTANT shall at all times observe and comply with all such laws and regulations. Officers and employees shall not be liable at law or in equity occasioned by failure of the CONSULTANT to comply with this section.

1.3. Performance to Satisfaction of City. CONSULTANT agrees to perform all the work to the complete satisfaction of the CITY and within the hereinafter specified. Evaluations of the work will be done by the Director or his or her designee. If the quality of work is not satisfactory, CITY in its discretion has the right to:

- (a) Meet with CONSULTANT to review the quality of the work and resolve the matters of concern;
- (b) Require CONSULTANT to repeat the work at no additional fee until it is satisfactory; and/or
- (c) Terminate the Agreement as hereinafter set forth.

1.4. Warranty. CONSULTANT warrants that it shall perform the services required by this Agreement in compliance with all applicable Federal and California employment laws, including, but not limited to, those laws related to minimum hours and wages; occupational health and safety; fair employment and employment practices; workers' compensation insurance and safety in employment; and all other Federal, State and local laws and ordinances applicable to the services required under this Agreement. CONSULTANT shall indemnify and hold harmless CITY from and against all claims, demands, payments, suits, actions, proceedings, and judgments of every nature and description including attorneys' fees and costs, presented, brought, or recovered against CITY for, or on account of any liability under any of the above-mentioned laws, which may be incurred by reason of CONSULTANT's performance under this Agreement.

1.5. Non-discrimination. In performing this Agreement, CONSULTANT shall not engage in, nor permit its agents to engage in, discrimination in employment of persons because of their race, religion, color, national origin, ancestry, age, physical handicap, medical condition, marital status, sexual gender or sexual orientation, except as permitted pursuant to Section 12940 of the Government Code. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. CONSULTANT agrees to post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

CONSULTANT shall, in all solicitations and advertisements for employees placed by, or on behalf of CONSULTANT shall state that all qualified applicants will receive consideration for employment without regard to age, race, color, religion, sex, marital status, national origin, or mental or physical disability. CONSULTANT shall cause the paragraphs contained in this Section to be inserted in all subcontracts for any work covered by the Agreement, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

1.6. Non-Exclusive Agreement. CONSULTANT acknowledges that CITY may enter into agreements with other consultants for services similar to the services that are subject to this Agreement or may have its own employees perform services similar to those services contemplated by this Agreement.

1.7. Delegation and Assignment. This is a personal service contract, and the duties set forth herein shall not be delegated or assigned to any person or entity without the prior written consent of CITY. CONSULTANT may engage a subcontractor(s) as permitted by law and may employ other personnel to perform services contemplated by this Agreement at CONSULTANT's sole cost and expense.

1.8. Confidentiality. Employees of CONSULTANT in the course of their duties may have access to financial, accounting, statistical, and personnel data of private individuals and employees of CITY. CONSULTANT covenants that all data, documents, discussion, or other information developed or received by CONSULTANT or provided for performance of this

Agreement are deemed confidential and shall not be disclosed by CONSULTANT without written authorization by CITY. CITY shall grant such authorization if disclosure is required by law. All CITY data shall be returned to CITY upon the termination of this Agreement. CONSULTANT's covenant under this Section shall survive the termination of this Agreement.

## **2.0. COMPENSATION AND BILLING**

2.1. Compensation. CONSULTANT shall be paid in accordance with the fee schedule set forth in Exhibit "A". CONSULTANT's total compensation shall not exceed One Million Two Hundred Ninety-Nine Thousand Nine Hundred Seventy-Four Dollars (\$ 1,299,974.00), unless CITY has given specific advance approval in writing.

2.2. Additional Services. CONSULTANT shall not receive compensation for any services provided outside the scope of services specified in the CONSULTANT's Proposal or which is inconsistent with or in violation of the provisions of this Agreement unless the CITY or the Project Manager for this Project, prior to CONSULTANT performing the additional services, approves such additional services in writing. It is specifically understood that oral requests and/or approvals of such additional services or additional compensation shall be barred and are unenforceable. Should the CITY request in writing additional services that increase the hereinabove described "SCOPE OF SERVICES", an additional fee based upon the CONSULTANT's standard hourly rates shall be paid to the CONSULTANT for such additional services. Such increase in additional fees shall be limited to 25% of the total contract sum or \$25,000 whichever is more. The CITY Engineer is authorized to approve a Change Order for such additional services.

2.3. Method of Billing. CONSULTANT may submit invoices to the CITY for approval on a progress basis, but no more often than two times a month. Said invoice shall be based on the total of all CONSULTANT's services which have been completed to CITY's sole satisfaction. CITY shall pay CONSULTANT's invoice within forty-five (45) days from the date CITY receives said invoice. Each invoice shall describe in detail, the services performed, the date of performance, and the associated time for completion. Any additional services approved and performed pursuant to this Agreement shall be designated as "Additional Services" and shall identify the number of the authorized change order, where applicable, on all invoices.

2.4. Records and Audits. Records of CONSULTANT's services relating to this Agreement shall be maintained in accordance with generally recognized accounting principles and shall be made available to CITY or its Project Manager for inspection and/or audit at mutually convenient times for a period of three (3) years from the Effective Date.

## **3.0. TIME OF PERFORMANCE**

3.1. Commencement and Completion of Work. The professional services to be performed pursuant to this Agreement shall commence within five (5) days from the Effective Date of this Agreement. Said services shall be performed in strict compliance with the Project Schedule approved by CITY as set forth in Exhibit "A."

3.2. Excusable Delays. Neither party shall be responsible for delays or lack of performance resulting from acts beyond the reasonable control of the party or parties. Such acts shall include, but not be limited to, acts of God, fire, strikes, material shortages, compliance with laws or regulations, riots, acts of war, or any other conditions beyond the reasonable control of a party. If a delay beyond the control of the CONSULTANT is encountered, a time extension may be mutually agreed upon in writing by the CITY and the CONSULTANT. The CONSULTANT shall present documentation satisfactory to the CITY to substantiate any request for a time

extension.

#### **4.0. TERM AND TERMINATION**

4.1. Term. This Agreement shall commence on the Effective Date and continue for a period of 60 months, ending on March 20, 2028, unless previously terminated as provided herein or as otherwise agreed to in writing by the parties.

4.2. Notice of Termination. The CITY reserves and has the right and privilege of canceling, suspending or abandoning the execution of all or any part of the work contemplated by this Agreement, with or without cause, at any time, by providing at least fifteen (15) days prior written notice to CONSULTANT. The termination of this Agreement shall be deemed effective upon receipt of the notice of termination. In the event of such termination, CONSULTANT shall immediately stop rendering services under this Agreement unless directed otherwise by the CITY. If the CITY suspends, terminates or abandons a portion of this Agreement such suspension, termination or abandonment shall not make void or invalidate the remainder of this Agreement.

If the CONSULTANT defaults in the performance of any of the terms or conditions of this Agreement, it shall have ten (10) days after service upon it of written notice of such default in which to cure the default by rendering a satisfactory performance. In the event that the CONSULTANT fails to cure its default within such period of time, the CITY shall have the right, notwithstanding any other provision of this Agreement, to terminate this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement.

CITY shall have the right, notwithstanding any other provisions of this Agreement, to terminate this Agreement, at its option and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement, immediately upon service of written notice of termination on the CONSULTANT, if the latter should:

- a. Be adjudged a bankrupt;
- b. Become insolvent or have a receiver of its assets or property appointed because of insolvency;
- c. Make a general assignment for the benefit of creditors;
- d. Default in the performance of any obligation or payment of any indebtedness under this Agreement;
- e. Suffer any judgment against it to remain unsatisfied or unbonded of record for thirty (30) days or longer; or
- f. Institute or suffer to be instituted any procedures for reorganization or rearrangement of its affairs.

4.3. Compensation. In the event of termination, CITY shall pay CONSULTANT for reasonable costs incurred and professional services satisfactorily performed up to and including the date of CITY's written notice of termination within thirty-five (35) days after service of the notice of termination. Compensation for work in progress shall be prorated based on the percentage of work completed as of the effective date of termination in accordance with the fees set forth herein. In ascertaining the professional services actually rendered hereunder up to the effective date of termination of this Agreement, consideration shall be given to both completed work and work in progress, to complete and incomplete drawings, and to other documents

pertaining to the services contemplated herein whether delivered to the CITY or in the possession of the CONSULTANT. CITY shall not be liable for any claim of lost profits.

4.4. Documents. In the event of termination of this Agreement, all documents prepared by CONSULTANT in its performance of this Agreement including, but not limited to, finished or unfinished design, development and construction documents, data studies, drawings, maps and reports, shall be delivered to the CITY within ten (10) days of delivery of termination notice to CONSULTANT, at no cost to CITY. Any use of uncompleted documents without specific written authorization from CONSULTANT shall be at CITY's sole risk and without liability or legal expense to CONSULTANT.

## **5.0. INSURANCE**

5.1. Minimum Scope and Limits of Insurance. CONSULTANT shall obtain, maintain, and keep in full force and effect during the life of this Agreement all of the following minimum scope of insurance coverages with an insurance company admitted to do business in California, rated "A," Class X, or better in the most recent Best's Key Insurance Rating Guide, and approved by CITY:

- (a) Broad-form commercial general liability, in a form at least as broad as ISO from #CG 00 01 11 88, including premises-operations, products/completed operations, broad form property damage, blanket contractual liability, independent contractors, personal injury or bodily injury with a policy limit of not less than One Million Dollars (\$1,000,000.00), combined single limits, per occurrence. If such insurance contains a general aggregate limit, it shall apply separately to this Agreement or shall be twice the required occurrence limit.
- (b) Business automobile liability for owned vehicles, hired, and non-owned vehicles, with a policy limit of not less than One Million Dollars (\$1,000,000.00), combined single limits, per occurrence for bodily injury and property damage.
- (c) Workers' compensation insurance as required by the State of California and Employers Liability Insurance with a minimum limit of \$1,000,000 per accident. CONSULTANT agrees to waive, and to obtain endorsements from its workers' compensation insurer waiving subrogation rights under its workers' compensation insurance policy against the CITY, its officers, agents, employees, and volunteers for losses arising from work performed by CONSULTANT for the CITY and to require each of its subcontractors, if any, to do likewise under their workers' compensation insurance policies.

Before execution of this Agreement by the CITY, the CONSULTANT shall file with the Administrative Services Director the following signed certification:

I am aware of, and will comply with, Section 3700 of the Labor Code, requiring every employer to be insured against liability of Workers' Compensation or to undertake self-insurance before commencing any of the work.

The CONSULTANT shall also comply with Section 3800 of the Labor Code by securing, paying for and maintaining in full force and effect for the

duration of this Agreement, complete Workers' Compensation Insurance, and shall furnish a Certificate of Insurance to the Public Works Director/City Engineer before execution of this Agreement by the CITY. CITY, its officers and employees shall not be responsible for any claims in law or equity occasioned by failure of the CONSULTANT to comply with this section.

- (d) Professional errors and omissions ("E&O") liability insurance with policy limits of not less than One Million Dollars (\$1,000,000.00), combined single limits, per occurrence and aggregate. If the policy is written as a "claims made" policy, the retro date shall be prior to the start of the contract work. CONSULTANT shall obtain and maintain, said E&O liability insurance during the life of this Agreement and for three years after completion of the work hereunder.

Neither CITY nor any of its elected or appointed officials, officers, agents, employees, or volunteers makes any representation that the types of insurance and the limits specified to be carried by CONSULTANT under this Agreement are adequate to protect CONSULTANT. If CONSULTANT believes that any such insurance coverage is insufficient, CONSULTANT shall provide, at its own expense, such additional insurance as CONSULTANT deems adequate.

5.2. Endorsements. The commercial general liability insurance policy and business automobile liability policy shall contain or be endorsed to contain the following provisions:

- (a) Additional insureds: "The CITY and its elected and appointed boards, officers, officials, agents, employees, and volunteers are additional insureds with respect to: liability arising out of activities performed by or on behalf of the CONSULTANT pursuant to its contract with the CITY; products and completed operations of the CONSULTANT; premises owned, occupied or used by the CONSULTANT; automobiles owned, leased, hired, or borrowed by the CONSULTANT."
- (b) Notice: "CONSULTANT shall provide immediate written notice if (1) any of the required insurance policies is terminated; (2) the limits of any of the required policies are reduced; (3) or the deductible or self-insured retention is increased. In the event of any cancellation or reduction in coverage or limits of any insurance, CONSULTANT shall forthwith obtain and submit proof of substitute insurance. Should CONSULTANT fail to immediately procure other insurance, as specified, to substitute for any canceled policy, CITY may procure such insurance at CONSULTANT's sole cost and expense."
- (c) Other insurance: "The CONSULTANT's insurance coverage shall be primary insurance as respects the CITY, its officers, officials, agents, employees, and volunteers. Any other insurance maintained by the CITY shall be excess and not contributing with the insurance provided by this policy."
- (d) Any failure to comply with the reporting provisions of the policies shall not affect coverage provided to CITY, its officers, officials, agents, employees, and volunteers.
- (e) The CONSULTANT's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the

limits of the insurer's liability.

5.3. Deductible or Self Insured Retention. If any of such policies provide for a deductible or self-insured retention to provide such coverage, the amount of such deductible or self-insured retention shall be approved in advance by CITY. No policy of insurance issued as to which CITY is an additional insured shall contain a provision which requires that no insured except the named insured can satisfy any such deductible or self-insured retention.

5.4. Certificates of Insurance. CONSULTANT shall provide to CITY certificates of insurance showing the insurance coverages and required endorsements described above, in a form and content approved by CITY, prior to performing any services under this Agreement. The certificates of insurance shall be attached hereto as Exhibit "B" and incorporated herein by this reference.

5.5. Non-limiting. Nothing in this Section shall be construed as limiting in any way, the indemnification provision contained in this Agreement, or the extent to which CONSULTANT may be held responsible for payments of damages to persons or property.

## **6.0. GENERAL PROVISIONS**

6.1. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to any matter referenced herein and supersedes any and all other prior writings and oral negotiations. This Agreement may be modified only in writing, and signed by the parties in interest at the time of such modification. The terms of this Agreement shall prevail over any inconsistent provision in any other contract document appurtenant hereto, including exhibits to this Agreement.

6.2. Representatives. The Executive Director or his or her designee shall be the representative of CITY for purposes of this Agreement and may issue all consents, approvals, directives and agreements on behalf of CITY, called for by this Agreement, except as otherwise expressly provided in this Agreement.

CONSULTANT shall designate a representative for purposes of this Agreement who shall be authorized to issue all consents, approvals, directives and agreements on behalf of CONSULTANT called for by this Agreement, except as otherwise expressly provided in this Agreement.

6.3. Project Managers. CITY shall designate a Project Manager to work directly with CONSULTANT in the performance of this Agreement. It shall be the CONSULTANT's responsibility to assure that the Project Manager is kept informed of the progress of the performance of the services and the CONSULTANT shall refer any decision, which must be made by CITY, to the Project Manager. Unless otherwise specified herein, any approval of CITY required hereunder shall mean the approval of the Project Manager.

CONSULTANT shall designate a Project Manager who shall represent it and be its agent in all consultations with CITY during the term of this Agreement and who shall not be changed by CONSULTANT without the express written approval by the CITY. CONSULTANT or its Project Manager shall attend and assist in all coordination meetings called by CITY.

6.4. Notices. Any notices, documents, correspondence or other communications concerning this Agreement or the work hereunder may be provided by personal delivery, facsimile or if mailed, shall be addressed as set forth below and placed in a sealed envelope, postage prepaid, and deposited in the United States Postal Service. Such communication shall be

deemed served or delivered: a) at the time of delivery if such communication is sent by personal delivery; b) at the time of transmission if such communication is sent by facsimile; and c) 72 hours after deposit in the U.S. Mail as reflected by the official U.S. postmark if such communication is sent through regular United States mail.

IF TO CONSULTANT:

ITERIS, INC.  
1700 Carnegie Ave., Ste. 100  
Santa Ana, CA 92705  
Tel: (949) 270-9578  
Fax: \_\_\_\_\_  
Attn: Scott E. Carlson, PE

IF TO CITY:

CITY OF LA HABRA  
110 East La Habra Blvd.  
La Habra, CA 90631  
Tel: (562) 383-4151  
Fax: \_\_\_\_\_  
Attn: Albert Mendoza, PE

6.5. Attorneys' Fees. In the event that litigation is brought by any party in connection with this Agreement, the prevailing party shall be entitled to recover from the opposing party all costs and expenses, including reasonable attorneys' fees, incurred by the prevailing party in the exercise of any of its rights or remedies hereunder or the enforcement of any of the terms, conditions, or provisions hereof.

6.6. Governing Law. This Agreement shall be governed by and construed under the laws of the State of California without giving effect to that body of laws pertaining to conflict of laws. In the event of any legal action to enforce or interpret this Agreement, the parties hereto agree that the sole and exclusive venue shall be a court of competent jurisdiction located in Los Angeles County, California. CONSULTANT agrees to submit to the personal jurisdiction of such court in the event of such action.

6.7. Assignment. CONSULTANT shall not voluntarily or by operation of law assign, transfer, sublet or encumber all or any part of CONSULTANT's interest in this Agreement without CITY's prior written consent. Any attempted assignment, transfer, subletting or encumbrance shall be void and shall constitute a breach of this Agreement and cause for termination of this Agreement. Regardless of CITY's consent, no subletting or assignment shall release CONSULTANT of CONSULTANT's obligation to perform all other obligations to be performed by CONSULTANT hereunder for the term of this Agreement.

6.8. Indemnification and Hold Harmless. To the fullest extent of the law, and consistent with Civil Code section 2782.8, CONSULTANT agrees to defend, indemnify, hold free and harmless the CITY, its elected and appointed officials, officers, agents and employees, at CONSULTANT's sole expense, from and against any and all claims, demands, actions, suits or other legal proceedings brought against CITY, its elected and appointed officials, officers, agents, and employees to the extent arising out of, pertaining to, or relating to the negligence, recklessness, or willful misconduct of the CONSULTANT, its employees, and/or authorized subcontractors, in performing design professional services pursuant to this Agreement. The defense obligation provided for hereunder shall apply without any advance showing of negligence, recklessness or willful misconduct of the CONSULTANT, its employees, and/or authorized subcontractors, but shall be required whenever any claim, action, complaint, or suit asserts as its basis the negligence, recklessness, or willful misconduct of CONSULTANT, its employees, and/or authorized subcontractors, and/or whenever any claim, action, complaint or suit asserts liability against the CITY, its elected and appointed officials, officers, agents, and employees based upon such negligence, recklessness, or willful misconduct, whether or not the CONSULTANT, its employees, and/or authorized subcontractors are specifically named or otherwise asserted to be liable. Notwithstanding the foregoing, the CONSULTANT shall not be

liable for the defense or indemnification of the CITY for claims, actions, complaints or suits arising out of the sole or active negligence or willful misconduct of the CITY. Further, in no event shall the cost to defend charged to the design professional exceed the design professional's proportionate percentage of fault, unless otherwise specified in Civil Code section 2782.8. This provision shall supersede and replace all other indemnity provisions contained either in the CITY's specifications or CONSULTANT's Proposal, which shall be of no force and effect.

6.9. Independent Contractor. CONSULTANT is and shall be acting at all times as an independent contractor and not as an employee of CITY or the CITY. CONSULTANT shall have no power to incur any debt, obligation, or liability on behalf of CITY or the CITY or otherwise act on behalf of CITY or the CITY as an agent. Neither CITY or the CITY nor any of its agents shall have control over the conduct of CONSULTANT or any of CONSULTANT's employees, except as set forth in this Agreement. CONSULTANT shall not, at any time, or in any manner, represent that it or any of its or employees are in any manner agents or employees of CITY. CONSULTANT shall secure, at its sole expense, and be responsible for any and all payment of Income Tax, Social Security, State Disability Insurance Compensation, Unemployment Compensation, and other payroll deductions for CONSULTANT and its officers, agents, and employees, and all business licenses, if any are required, in connection with the services to be performed hereunder. CONSULTANT shall indemnify and hold CITY harmless from any and all taxes, assessments, penalties, fines and interest asserted against CITY and any legal fee incurred by the City by reason of any challenge/claim made against CITY regarding the independent contractor relationship created by this Agreement. CONSULTANT further agrees to indemnify and hold CITY harmless from any failure of CONSULTANT to comply with the applicable worker's compensation laws. CITY shall have the right to offset against the amount of any fees due to CONSULTANT under this Agreement any amount due to CITY from CONSULTANT as a result of CONSULTANT's failure to promptly pay to CITY any reimbursement or indemnification arising under this paragraph.

6.10. PERS Eligibility Indemnification. In the event that CONSULTANT or any employee, agent, or subcontractor of CONSULTANT providing services under this Agreement claims or is determined by a court of competent jurisdiction or the California Public Employees Retirement System (PERS) to be eligible for enrollment in PERS as an employee of the CITY, CONSULTANT shall indemnify, defend, and hold harmless CITY for the payment of any employee and/or employer contributions for PERS benefits on behalf of CONSULTANT or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of CITY.

Notwithstanding any other agency, state or federal policy, rule, regulation, law or ordinance to the contrary, CONSULTANT and any of its employees, agents, and subcontractors providing service under this Agreement shall not qualify for or become entitled to, and hereby agree to waive any claims to, any compensation, benefit, or any incident of employment by CITY, including but not limited to eligibility to enroll in PERS as an employee of CITY and entitlement to any contribution to be paid by CITY for employer contribution and/or employee contributions for PERS benefits.

6.11. Cooperation. In the event any claim or action is brought against CITY relating to CONSULTANT's performance or services rendered under this Agreement, CONSULTANT shall render any reasonable assistance and cooperation which CITY might require.

6.12. Ownership of Documents. All findings, reports, documents, information and data including, but not limited to, computer tapes or discs, files and tapes furnished or prepared by CONSULTANT or any of its subcontractors in the course of performance of this Agreement, shall be and remain the sole property of CITY. CONSULTANT agrees that any such documents or

information shall not be made available to any individual or organization without the prior consent of CITY. Any use of such documents for other projects not contemplated by this Agreement, and any use of incomplete documents, shall be at the sole risk of CITY and without liability or legal exposure to CONSULTANT. CITY shall indemnify and hold harmless CONSULTANT from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from CITY's use of such documents for other projects not contemplated by this Agreement or use of incomplete documents furnished by CONSULTANT. CONSULTANT shall deliver to CITY any findings, reports, documents, information, data, in any form, including but not limited to, computer tapes, discs, files audio tapes or any other Project related items as requested by CITY or its authorized representative, at no additional cost to the CITY. CONSULTANT or CONSULTANT's agents shall execute such documents as may be necessary from time to time to confirm CITY's ownership of the copyright in such documents.

6.13. Public Records Act Disclosure. CONSULTANT has been advised and is aware that this Agreement and all reports, documents, information and data, including, but not limited to, computer tapes, discs or files furnished or prepared by CONSULTANT, or any of its subcontractors, pursuant to this Agreement and provided to CITY may be subject to public disclosure as required by the California Public Records Act (California Government Code Section 6250 *et seq.*). Exceptions to public disclosure may be those documents or information that qualify as trade secrets, as that term is defined in the California Government Code Section 6254.7, and of which CONSULTANT informs CITY of such trade secret. The CITY will endeavor to maintain as confidential all information obtained by it that is designated as a trade secret. CITY shall not, in any way, be liable or responsible for the disclosure of any trade secret including, without limitation, those records so marked if disclosure is deemed to be required by law or by order of the Court.

6.14. Conflict of Interest. CONSULTANT and its officers, employees, associates and subconsultants, if any, will comply with all conflict of interest statutes of the State of California applicable to CONSULTANT's services under this agreement, including, but not limited to, the Political Reform Act (Government Code Sections 81000, *et seq.*) and Government Code Section 1090. During the term of this Agreement, CONSULTANT and its officers, employees, associates and subconsultants shall not, without the prior written approval of the CITY Representative, perform work for another person or entity for whom CONSULTANT is not currently performing work that would require CONSULTANT or one of its officers, employees, associates or subconsultants to abstain from a decision under this Agreement pursuant to a conflict of interest statute.

6.15. Responsibility for Errors. CONSULTANT shall be responsible for its work and results under this Agreement. CONSULTANT, when requested, shall furnish clarification and/or explanation as may be required by the CITY's representative, regarding any services rendered under this Agreement at no additional cost to CITY. In the event that an error or omission attributable to CONSULTANT occurs, then CONSULTANT shall, at no cost to CITY, provide all necessary design drawings, estimates and other CONSULTANT professional services necessary to rectify and correct the matter to the sole satisfaction of CITY and to participate in any meeting required with regard to the correction.

6.16. Prohibited Employment. CONSULTANT will not employ any regular employee of CITY while this Agreement is in effect.

6.17. Order of Precedence. In the event of an inconsistency in this Agreement and any of the attached Exhibits, the terms set forth in this Agreement shall prevail. If, and to the extent this Agreement incorporates by reference any provision of any document, such provision shall be deemed a part of this Agreement. Nevertheless, if there is any conflict among the terms and

conditions of this Agreement and those of any such provision or provisions so incorporated by reference, this Agreement shall govern over the document referenced.

6.18. Costs. Each party shall bear its own costs and fees incurred in the preparation and negotiation of this Agreement and in the performance of its obligations hereunder except as expressly provided herein.

6.19. No Third Party Beneficiary Rights. This Agreement is entered into for the sole benefit of CITY and CONSULTANT and no other parties are intended to be direct or incidental beneficiaries of this Agreement and no third party shall have any right in, under or to this Agreement.

6.20. Headings. Paragraphs and subparagraph headings contained in this Agreement are included solely for convenience and are not intended to modify, explain or to be a full or accurate description of the content thereof and shall not in any way affect the meaning or interpretation of this Agreement.

6.21. Construction. The parties have participated jointly in the negotiation and drafting of this Agreement. In the event an ambiguity or question of intent or interpretation arises with respect to this Agreement, this Agreement shall be construed as if drafted jointly by the parties and in accordance with its fair meaning. There shall be no presumption or burden of proof favoring or disfavoring any party by virtue of the authorship of any of the provisions of this Agreement.

6.22. Amendments. Only a writing executed by the parties hereto or their respective successors and assigns may amend this Agreement.

6.23. Waiver. The delay or failure of either party at any time to require performance or compliance by the other of any of its obligations or agreements shall in no way be deemed a waiver of those rights to require such performance or compliance. No waiver of any provision of this Agreement shall be effective unless in writing and signed by a duly authorized representative of the party against whom enforcement of a waiver is sought. The waiver of any right or remedy in respect to any occurrence or event shall not be deemed a waiver of any right or remedy in respect to any other occurrence or event, nor shall any waiver constitute a continuing waiver.

6.24. Severability. If any provision of this Agreement is determined by a court of competent jurisdiction to be unenforceable in any circumstance, such determination shall not affect the validity or enforceability of the remaining terms and provisions hereof or of the offending provision in any other circumstance. Notwithstanding the foregoing, if the value of this Agreement, based upon the substantial benefit of the bargain for any party, is materially impaired, which determination made by the presiding court or arbitrator of competent jurisdiction shall be binding, then both parties agree to substitute such provision(s) through good faith negotiations.

6.25. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original. All counterparts shall be construed together and shall constitute one agreement.

6.26. Corporate Authority. The persons executing this Agreement on behalf of the parties hereto warrant that they are duly authorized to execute this Agreement on behalf of said parties and that by doing so the parties hereto are formally bound to the provisions of this Agreement.

**IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be executed by and through their respective authorized officers, as of the date first above written.

CITY OF LA HABRA,  
A municipal corporation

\_\_\_\_\_  
Jim Sadro, City Manager

Date: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Rhonda J. Barone, CMC, Acting City Clerk

CONSULTANT

\_\_\_\_\_  
Scott E. Carlson, PE, General Manager

Date: \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
Richard "Dick" Jones, City Attorney

Date: \_\_\_\_\_

**IN WITNESS WHEREOF**, the parties hereto have caused this Agreement to be executed by and through their respective authorized officers, as of the date first above written.

CITY OF LA HABRA,  
A municipal corporation

\_\_\_\_\_  
Jim Sadro, City Manager

Date: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Rhonda J. Barone, CMC, Acting City Clerk

CONSULTANT

**Scott Carlson** Digitally signed by Scott Carlson  
Date: 2023.03.03 14:32:53 -06'00'

\_\_\_\_\_  
Scott E. Carlson, PE, General Manager

Date: \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
Richard "Dick" Jones, City Attorney

Date: \_\_\_\_\_

**EXHIBIT A**  
**CONSULTANT'S PROPOSAL**



iteris<sup>®</sup>

Response to Request for Proposals for  
**EUCLID STREET CORRIDOR PROJECT REGIONAL  
TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM  
(RTSSP)**

OCTA PROJECT NO. 22-LHAB-TSP-4023

CITY PROJECT NO. 1-TC-22

**ELECTRONIC COPY**

January 12, 2023

Submitted to:



Moving smarter, together.

11477-115.23

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January 12<sup>th</sup>, 2023

Mr. Michael Plotnik, TE  
Traffic Manager  
City of La Habra  
Public Works Department  
110 E. La Habra Boulevard  
La Habra, CA 90631

11477-115.23

**Re: Response to Request for Proposal (RFP) to provide Professional Traffic Engineering Services for Euclid Street Corridor Project Regional Traffic Signal Synchronization Program (RTSSP)**

Dear Mr. Plotnik:

Iteris is excited to provide the enclosed proposal for the Euclid Street Corridor Traffic Signal Synchronization Project in the Cities of La Habra, Fullerton, Anaheim, Garden Grove, Santa Ana, and Fountain Valley as well as Caltrans along. We are eager to continue our excellent working relationship with the participating agencies of this RTSSP project to improve safety and mobility for all modes of transportation along this corridor. Euclid Street serves as a primary north/south arterial crossing the north county from La Habra through all the participating cities to the 405 freeway in Fountain Valley in the south end. Iteris understands the current challenges and the City's goals to achieve along this corridor. The theme of our strategy for this project will not only satisfy the stated objectives of this project but also provide a sound approach for maintaining the traffic signal system in the years to come. **Advantages that set Iteris' team apart from other firms include:**

**Person with Authority to Negotiate on Behalf of the Firm**

**Scott E. Carlson, PE**  
1700 Carnegie Ave., Ste. 100  
Santa Ana, CA 92705  
(949) 270-9578

**Unparalleled  
RTSSP Experience  
Insures  
Stakeholders'  
Confidence**

Since program inception in 2011, with 90 projects awarded to date, **Iteris has had the privilege of working on 30 Regional Traffic Signal Synchronization Program (RTSSP) projects.** This unrivaled experience is evidence of not only the level of trust and confidence OCTA and local agencies have in our expertise, but also our ability to deliver the highest quality of work within budget and on time. Iteris has also **pioneered in analyzing and developing unique solutions** and customized quality control tools for RTSSP projects.

**Expertise in Every  
Traffic Signal  
Technology being  
Developed through  
This Project**

**Unmatched experience in the evaluation, design, and deployment of advanced ITS and Communications technologies enables us to offer the most soundest and practical solutions.** We have recently installed a new **Intelight MAXVIEW** system for more than 200 signals in the City of Glendale and assisted the City of Brea in the development of **ATMS.now central system and SynchroGreen Adaptive Operation System** that includes the key intersection of Lambert Road at State College Boulevard. Iteris' engineers are experts with signal communication systems and signal infrastructure in this area. **The addition of LLG, our subconsultant, further enhances our capabilities and provides additional depth to our team talent with detailed knowledge of the traffic systems in La Habra and Fullerton as well as leading Construction Management for the overall project construction phase.** Using this unparalleled knowledge of the signal system in all project cities, as well as

new innovating approaches and the use of technology, Iteris is highly confident that we will successfully implement this project and provide an effective and sustainable traffic signal management system for the future.

### Advanced Signal Operation Experience

Not only has Iteris staff supported cities, states, and federal, in the selection, design, and training of advanced signal operation technologies but also in the actual implementation and integration of these complex systems. Our **Project Manager, Mr. Jason Xu, PE, PTOE, PMP** is a-recognized expert in responsive signal operation, Adaptive Traffic Control System (ATCS). He served as PM for Santa Monica Responsive Signal Operation Study using the MAXVIEW system, Irvine Adaptive System Evaluation, and adaptive system deployment in Brea. **Mr. Gabriel Murillo, TE** our Deputy **Project Manager (PM)**, developed Adaptive Operations and Traffic Responsive plans for the City of Newport Beach to compare and contrast the operational differences and similarities.

### We Consider Land Uses and Travel Pattern Shifts Beyond COVID-19 and Economic Changes

**Unprecedented changes due to COVID-19 have affected our communities and traffic patterns.** Iteris has utilized our ClearGuide™ corridor performance measurement and traffic monitoring system to understand changes in travel behavior in Orange County and along the Euclid Street Corridor (see **Section A**). This data-driven, dynamic approach will be an input in the proposal for any new timing patterns during the life of this project.

Iteris' proposed PM, **Mr. Jason Xu, PE, PTOE, PMP**, based in our Santa Ana office, will be the principal contact with the City. He will oversee work from project inception to completion and will also be responsible for coordinating staff activities and meetings. As one of Iteris' most experienced PMs, Mr. Xu has been working on similar TSSP projects as PM or Task Manager since 2012, including seven TSSP corridors: Lincoln Avenue, Trabuco Road, Harbor Boulevard, Orangetown Avenue, Katella Avenue, Pacific Coast Highway, and La Palma Avenue. **Mr. Gabriel Murillo, TE** will assist as the Deputy Project Manager. He is more than qualified with over 8,000 traffic signals optimized and designing ITS upgrades for over 32 years.

**Mr. Bernard Li, TE, EE, TE, PTOE** will serve as Principal-in-Charge and Quality Assurance/Quality Control (QA/QC) Manager. He has an extensive history in engineering solutions for TSS projects throughout Orange County. **Based on the above, we are confident that Iteris will provide the City of La Habra and all project Cities and Caltrans with Traffic Engineering consulting services that will be unparalleled in quality, responsiveness, and added value.**

This proposal and cost/rate schedule are good for 90 days from the date of submission to the City of La Habra. Iteris does not have any existing or potential conflict of interest that could impair or undermine our ability or credibility regarding the proposed services. Iteris looks forward to assisting the City of La Habra on this important project. Please contact me, or the designated PM, Mr. Xu, should you have any questions.

Sincerely,  
**Iteris, Inc.**



Scott Carlson, P.E.  
General Manager  
Mobility Consulting Solutions

## A. PROJECT UNDERSTANDING

Euclid Street is one of the primary north-south arterials in Orange County with a mix of residential, light industrial, and highway-oriented commercial land uses beginning at La Habra Boulevard in the north to the 405 freeway to the south. This corridor is a Signal Synchronization Network Corridor in the Regional Traffic Signal Synchronization Master Plan. This project corridor is also classified as a Major/Primary arterial highway in the Orange County Master Plan of Arterial Highways (MPAH) classified by OCTA.

This project will provide ITS upgrades, new traffic signal control equipment, communication improvements, and traffic signal synchronization for 67 traffic signal intersections on Euclid Street and an additional 69 adjacent signalized intersections on crossings to Euclid Street in the Cities of La Habra, Fullerton, Anaheim, Santa Ana, Fountain Valley, and Caltrans jurisdictions. We view this project as a critical way to have optimized and integrated signal operations across multiple jurisdictions to enhance mobility and safety for all roadway users and reduce congestion and minimize traffic impacts within local communities.



Iteris monitors the impacts due to COVID-19 which presents challenges to transportation as the pandemic is ending. Iteris utilizes analytics tools to provide near real-time monitoring of the changing traffic patterns and to assist in the development of optimal signal timing.

### The main goals of this project are:

- Provide signal synchronization that improves traffic progressions and operations for existing traffic patterns as well as anticipated growth in traffic.
- Improve traffic flow along the entire project corridor
- Enhancing public safety for all modes of transportation
- Reducing traffic delays by decreasing stops and smoothing the flow of traffic across the corridor.
- Reduce emissions and greenhouse gasses
- Update traffic signal controller equipment to new ATC standard, upgrade ATMS system software and ensure compatibility with existing central systems
- Provide ITS upgrades including fiber communication gap closure, installation of new smart detection and CCTV cameras, and central system upgrades and integration
- Cultivating proactive traffic management by leveraging technologies like Signal Performance Measure (SPM) system through improved ITS/communication infrastructure
- Maintain improved traffic operations for 2 years after signal timing implementation

The overarching goals of this project all are related to improved traffic management along the corridor. To achieve the project goals, Iteris will execute the project tasks with frequent communication with project stakeholders to satisfactorily complete all the project activities as summarized in the scope of work of the RFP. To demonstrate Iteris' commitment to delivering the project while achieving the best results for safe and efficient mobility along the corridor, our staff conducted considerable field work along the project corridor in support of our proposal. **Figure 1** provides a map of the corridor, its characteristics and key observations realized through our field reconnaissance along with **Table 1** to highlight land use.

As with other recent RTSSP projects, Iteris understands we are still experiencing an evolution of transportation demands due to the unpredictable COVID-19 pandemic that changed our lifestyles and traveling behavior and presents challenges to effectively manage transportation mobility that we have never

Figure 1 – Euclid Street Corridor Characteristics and Key Observations

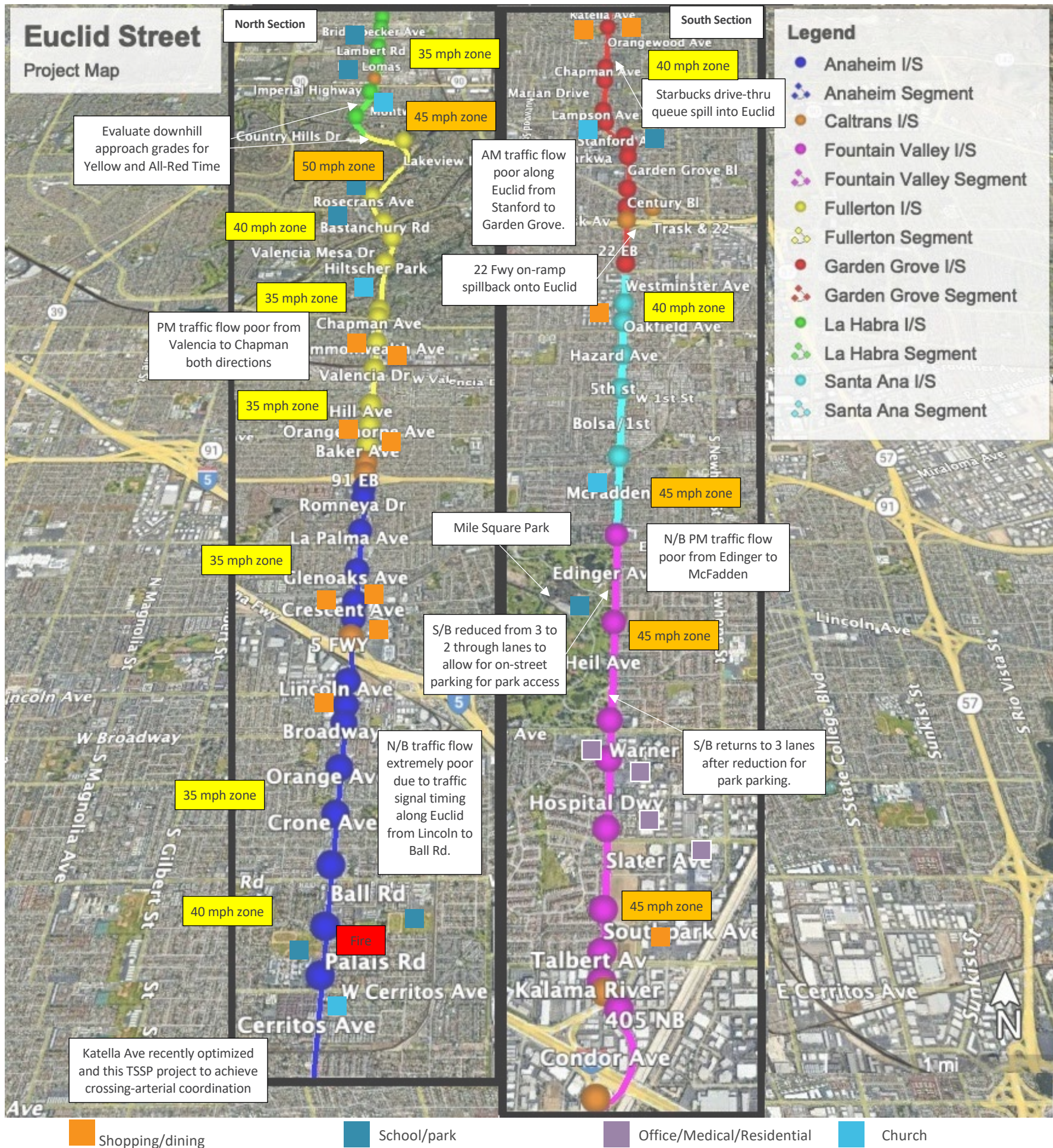


Table 1 – Land Uses along Euclid Street

EXISTING LAND USE	TYPICAL TRAFFIC PATTERNS	SOURCE OF DATA DRIVEN DECISIONS
<b>SCHOOLS</b>	Morning drop-off and afternoon pick-up with some pick up later in the day due to after-school daycare. High concentration of traffic (vehicle, pedestrian, bike) during a short peak period.	SPM data to identify new peaks at intersections near schools.
<b>RECREATIONAL/PARKS</b>	Demand is driven by the day of week, time of day and weather. Typically traffic demands are highest on warm weekends and weekday evenings.	ClearGuide probe-based origin-destination data and probe-based volume changes to identify hot spots during different days and seasons
<b>RESIDENTIAL</b>	Shorter cycle lengths are preferred in residential areas. Shorter wait time on side streets or left turns is often requested by residents.	ClearGuide data to verify traffic volumes changes. SPM data to verify pedestrian push button actuations at intersections.
<b>RETAIL/SHOPPING/RESTAURANTS</b>	More traffic was observed around lunch hours and weekends, especially around holiday seasons	ClearGuide data to identify traffic volumes fluctuations. SPM data to check turning movements at shopping center signaled intersections
<b>OTHER</b>	High concentration of traffic during short peak periods (e.g., Sunday for churches and weekday AM and PM for office buildings)	SPM data to identify new peaks at intersections.

experienced before. The long-term effects from the pandemic that we are experiencing and may change include the shifting of the peak periods where the AM peak is flattened out and spread out to a longer period as is the PM peak which begins earlier in the afternoon and extends to the typical period end but at a lower level of traffic. Iteris is the only firm that can offer the **comprehensive transportation analytics provided by our SPM and ClearGuide™ systems** to achieve near real-time monitoring of the changing traffic patterns that will in turn contribute to the most suitable signal timing at initial deployment as well as throughout the entire O&M period of the project.

The Euclid Street corridor being nearly 17 miles in length contains several land uses and varying traffic patterns from end to end. The corridor operates with varying operational needs where the North section (North of the 91 Freeway) is mostly residential with some businesses and industrial businesses around Commonwealth Avenue. The Anaheim section changes to more retail and business frontage and then becomes a mix of residential and retail/business south of Anaheim. In the residential areas, most of the residential driveways and home front yards are not Euclid facing. Thus, most of the access from residential areas are from side streets.

The following discusses the project requirements and our approach to successfully achieve all the stakeholder's goals for this project. The primary objective for RTSSP such as this one is to implement optimized traffic signal timing to improve traffic flow across the entire corridor as well as technology upgrades for ITS and traffic systems that directly provides a positive impact to the monitoring and management of traffic flow along the entire corridor. The effectiveness of the traffic operations will be maintained for 2 years beyond the date of complete project implementation acceptance.

## Traffic Signal System Upgrades and intersection ITS Improvements

This project intends to modernize each City's traffic signal system along Euclid Street to take full advantage of the opportunities and benefits offered by the latest technologies such as ATC standard controllers and central system software. All Cities on this project will obtain the latest High Definition (HD) camera surveillance technology, modern ATC traffic signal controllers, and communication upgrades to leverage the infrastructure for distribution of HD video and real-time traffic control data from the field to the TMC. There are specific needs for each City that these improvements will address. To ensure the system upgrades occur without issue, Iteris is employing two construction support leads in **Felipe Ortega from LLG** and **Omid Modaghegh from Iteris** for all system upgrades and intersection improvements. This not only provides backup throughout the construction phase, but also creates efficiency for the contractor's crews to have field meetings that could occur simultaneously which will directly affect the schedule by minimizing potential delays.

### City of La Habra Improvements

La Habra has a number of ITS improvements identified for this project including ATC controller upgrades, video detection, CCTV cameras, UPS/BBS, and Ethernet and fiber communication upgrades. The project also will integrate the devices deployed at the intersection in the TMC, including the upgraded traffic signal controllers to the City's new ATMS. Two new cabinets on existing foundations and new Safety Monitors.



### City of Fullerton Improvements

City of Fullerton has a substantial number of ITS improvements identified for Euclid Street including ATC controller upgrades, service upgrades, video detection, CCTV cameras, and UPS/BBS. The project will also provide new fiber in existing conduit and Ethernet communication switches, as well as new signal cabinets with new foundations at two (2) locations.

### City of Anaheim Improvements

City of Anaheim also has a considerable number of ITS improvements identified for Euclid Street. These include ATC controller upgrades, new IP Safety Monitors, video detection system, CCTV cameras, ADA pushbuttons, EVP, pedestrian countdown heads, and UPS/BBS. The project will also provide new Ethernet communication switches and a new signal cabinet on existing foundations. The Anaheim traffic signals will be entered into the City's existing Signal Performance Measures system.

Through the Katella project, the City received a new Cisco core router with 10 Gigabit backbone capability. Iteris will develop the final solution so the hubs on Euclid can be upgraded to provide the 10 Gigabit backbone and develop a robust redundant network citywide.

### City of Garden Grove Improvements

The city of Garden Grove has a sizable number of ITS improvements identified for Euclid Street including ATC controller upgrades, service upgrades, video detection, CCTV cameras, communication upgrades, controller cabinet and foundation upgrades and pedestrian countdown heads. Garden Grove will have signals that receive complete rewiring to modern signal cable. Garden Grove also will have a new cabinet on an existing foundation but also a new foundation using the existing cabinet.

### City of Santa Ana Improvements

City of Santa Ana has ITS improvements identified for Euclid Street including ATC controller upgrades, EVP, video detection, CCTV cameras, and ADA pushbuttons. The project will also provide new Ethernet communication switches. The Santa Ana traffic signals will be entered into the City's existing Signal Performance Measures system.

### City of Fountain Valley Improvements

City of Fountain Valley has ITS improvements identified for Euclid Street including ATC controller upgrades, video detection, CCTV cameras, new service, new foundation, and new fiber Ethernet switches.

## System Construction and Integration Support

**Iteris is the only engineering firm that provides full integration services, in-house, for all ITS elements, from the TMC to the field, and all communication hubs in between.** Iteris staff are experts at developing a vision for citywide ITS communication design ensuring any single project, such as this one, contributes to an overall citywide robust system development from a performance and security objective. We performed this for Anaheim and Fountain Valley. Also, Iteris expert traffic operations staff provide the essential hands-on configuration of traffic controllers to ensure proper operation of new traffic control equipment when the Contractor installs critical hardware such as traffic signal controllers and detection systems.

Iteris will preload all traffic signal controllers with signal timing parameters prior to intersections being placed on flash and coordinate the swap out of traffic control equipment. This ensures a close working relationship with the Contractor throughout the construction phase of the project and ensures the systems

and project elements are installed as required and specified. Having engineers integrate the system also ensures the system is deployed optimally and the system elements provide the necessary performance not only for this project but future projects and serve a Citywide objective for future projects. This also ensures the documentation during integration from the network schematics, the IP schema and the testing is fully documented and provided to the City upon construction completion. The Iteris team has Cisco certified staff to ensure all the communication hardware and IP schema designs not only satisfy the needs for this project, but also ensure the overall citywide communication needs are satisfied for each agency. Like the construction support tasks, the integration task will have two leads with **Felipe Ortega from LLG** and **Omid Modagheh from Iteris** to ensure efficiency and rapid response for all integration needs.

## Traffic Signal Synchronization Implementation

The Euclid Street corridor runs between the La Habra Boulevard intersection in the City of La Habra to the southern end of the City of Fountain Valley at the 405 Southbound off-ramps where the street changes names. This corridor is extremely long and has ramps to four separate heavily travelled freeways as well as a busy intersection to SR90. The land uses changes throughout the corridor with primarily residential in the north to more mixed residential retail and business/light industrial south of the 91 freeway. Thus, it is expected that the corridor will not operate as a homogenous thoroughfare. The entire corridor will be carefully analyzed and evaluated for the optimal timing plans for improved traffic flow. The following are critical crossings that could require creative timing solutions as these are corridors that were recently updated or are in the process of being updated:

- **Katella Avenue** – A major crossing arterial in O&M with recent timing deployment in May 2022 by Iteris. We will update the timing as needed to ensure the Euclid corridor is optimal in the Anaheim segment.
- **La Palma** – A major crossing arterial in O&M with timing deployed in June 2021. This intersection will be modified as needed and nearby La Palma intersections will be updated to maintain coordination.
- **Warner** – A major crossing arterial that is currently being synchronized and implemented in the next 6 months by Iteris. We will ensure that the Euclid corridor needs are accommodated during this update.
- **1<sup>st</sup> / Bolsa** – A major crossing arterial that is currently being synchronized and implemented in the next 6 months, also by Iteris. We will ensure that the Euclid corridor needs are accommodated during this update.
- **Imperial** – A major heavily used arterial in the City of La Habra with heavy vehicular turning movements and high pedestrian crossing demand during “normal” traffic conditions. These features, coupled with relatively long crosswalks across all legs of the intersection, result in the need to use relatively long cycles. This corridor was updated within the past 5 years and will likely be a fixed timing point to maintain coordination on this arterial.
- **Edinger** – A major crossing arterial that is currently being synchronized and implementation expected before Euclid is implemented. We will ensure that the Euclid corridor needs are accommodated during this update.
- **MacArthur / Talbert** – A major crossing arterial that is currently being synchronized and implementation expected before Euclid is implemented. We will ensure that the Euclid corridor needs are accommodated during this update.
- **Lambert** – A major crossing arterial that is currently being synchronized and implementation expected before Euclid is implemented. We will ensure that the Euclid corridor needs are

accommodated during this update.

- **Westminster** – A major crossing arterial that was implemented within the past 5 years. We will ensure that the Euclid corridor needs are accommodated during this update and adjacent intersections will be updated as needed on Westminster to maintain smooth flow.
- **Garden Grove** – A major crossing arterial that was implemented within the past 5 years. We will ensure that the Euclid corridor needs are accommodated during this update and adjacent intersections will be updated as needed on Garden Grove to maintain smooth flow.
- **Chapman** – A major crossing arterial that was implemented within the past 5 years. We will ensure that the Euclid corridor needs are accommodated during this update and adjacent intersections will be updated as needed on Chapman to maintain smooth flow.

## Measure-of-Effectiveness (MOE) Analysis

Iteris drove the corridor in preparation for this proposal and observed the overall performance of the corridor for the AM peak and PM peak periods to determine how best to approach this project. The traffic flow of the corridor was not optimal for both periods as shown by the performance data collected and reported by TruTraffic summarized and shown in **Table 2**.

**Table 2: Euclid Street Boulevard Measure-of-Effectiveness (MOE)**

Direction	Average Travel Time (min-sec)	Average Delay (min-sec)	Number of Stops	Average Speed (MPH)	OCTA CSPI Score	OCTA CSPI Tier
<b>AM PEAK</b>						
Northbound	49:38	13:35	25.7	20.9	54.7	Tier 4
Southbound	52:53	16:49	32.3	19.8	46.6	Tier 5
<b>PM PEAK</b>						
Northbound	60:39	24:36	38	16.8	37.8	Tier 5
Southbound	53:24	17:20	32.3	19	43.8	Tier 5

For this travel time runs, the PM peak performance appears extremely poor with CSPI scores in Tier 5 for both directions. The AM peak period was slightly better for the northbound CSPI score in Tier 4 but southbound was also in Tier 5. **Why is it operating so poorly? How long has it been operating at such a poor level?** As mentioned earlier, it is apparent that the COVID-19 shutdown conditions are now over, and the traffic levels have rebounded to the levels of traffic on major arterials before the shutdown. In some areas of the County, traffic levels appear to be higher than before the shutdown.

## COVID-19 Impacts to Travel Time

The long-term impacts of COVID-19 on our transportation system are far from certain. However, the traffic levels have rebounded from before the pandemic. In fact, in many areas the traffic volumes are completely back to the levels before COVID-19 shutdown. One of the short-term impacts that is noticed by Traffic Engineers is a change in the start times and durations of the peak periods. Essentially the peak periods start earlier and are spread across a longer period. This is prevalent during the PM peak period. With the changes to transportation due to the shutdown, how do we move forward to craft the best approach to develop optimal timing in the post-pandemic world? Iteris is fortunate to leverage the latest technologies and utilize the Iteris Software Systems to answer these questions and develop timing plans with consideration of what the new “Normal” is. Long term effects are still unknown and Iteris possesses the tools to identify if this new “Normal” is still evolving and how to best accommodate these changes. To gain a detailed understanding of traffic variance, Iteris utilizes ClearGuide (provides both real-time and historic 24/7 traffic data) to make travel time comparison for both directions along the Euclid corridor. The ClearGuide

system is extremely enlightening as it presents a truly clear picture of how any corridor is performing between two user defined intersections for any period of time and any length of time where the data is available. For our analysis, the dataset is available from January 2018 through the current date of this proposal.

## Travel Time Comparison

As illustrated in **Figure 2**, green lines represent the average travel time for typical weekdays (Tuesday, Wednesday, and Thursday) in March 2018 (pre-COVID-19 condition), and blue lines for typical weekdays in October 2022 (post-COVID-19 condition) for the Euclid Street corridor from La Habra to the 91 freeway in both directions. The figure clearly depicts the travel times are nearly identical with the PM Peak period showing the 2018 timing experienced longer travel times than in late 2022. As mentioned above, traffic levels are essentially back to pre-COVID-19 levels with all schools back to in-person

**Figure 2: Euclid Street North Section Average Travel Time Comparison 2018 - 2022**

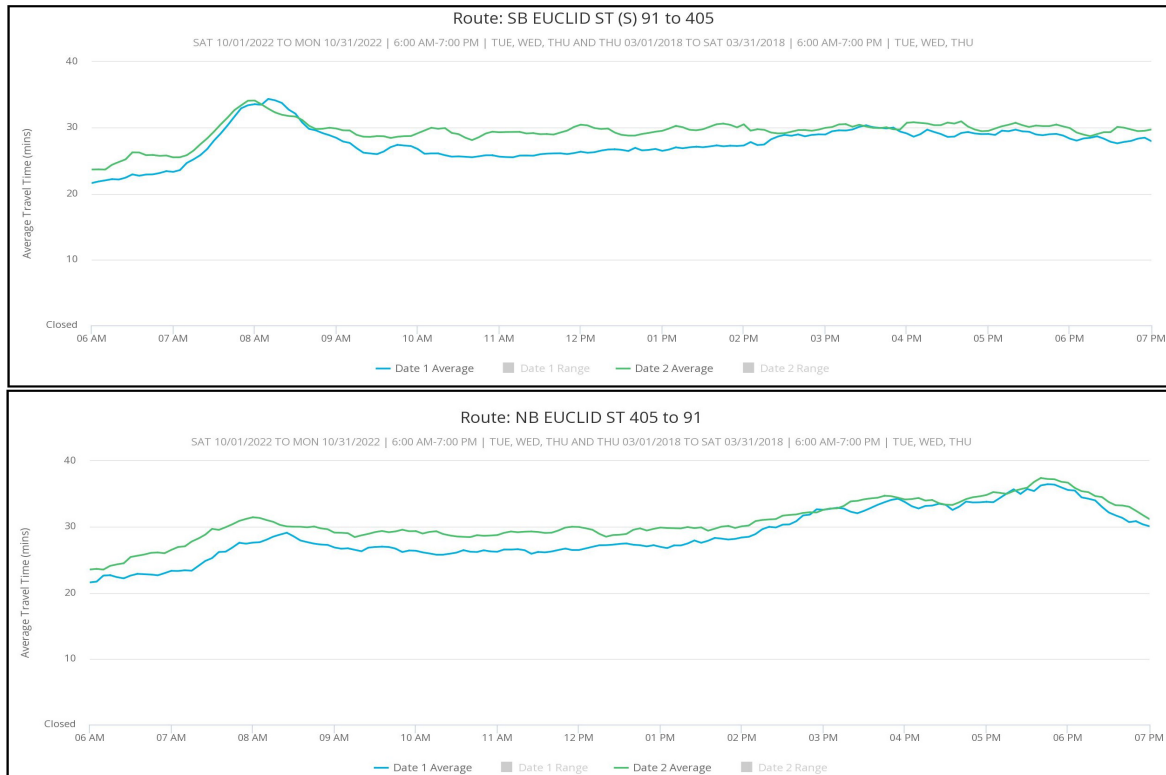


classes and most businesses back to work on-site.

In **Figure 3**, the data depicts similar information with the travel time from the 91 to the 405 freeway along Euclid Street corridor also has very similar travel time performance throughout the day. However, with the afternoon and PM peak period the 2018 indicating slightly lower travel-times in the PM peak for northbound traffic.

The travel time graphs in **Figures 2 & 3** are showing the corridor divided in a northern and southern section because the physical capacity of the corridor and land use varies in these two sections. However, the data in Table 2 represents the entire project corridor from La Habra Bl to 405 ramp/Ellis which was collected December 14-15, 2022. The data depicts the corridor is currently operating “with delays and numbers of stops unacceptable to most drivers” as stated in the OCTA CSPI performance criteria description for Tier 5 corridors.

**Figure 3: Euclid Street South Section Average Travel Time Comparison 2018 - 2022**



The graphs in **Figures 2 & 3** depict that the current operation is nearly identical to March 2018, which is as far back as the 3<sup>rd</sup> party data is available. To verify the data is not skewed due to the travel time data using a divided corridor, the entire corridor was also analyzed using ClearGuide comparing March 2018 entire corridor to the dates when TruTraffic data was collected on December 14-15. This full-length corridor analysis is how a TSS project would typically evaluate the corridor operations. This comparison is depicted in **Figure 4** which again shows that the operation of the corridor on the two days is essentially identical to March 2018 except in the PM peak for Northbound where it currently is operating at about 18% higher delays. From the last time the corridor was optimized to 2018, there has not been significant changes along the corridor where it would cause significant degradation in performance. Perhaps, the last time it was optimized, the final signal timing operation was not optimal, or the operations of the timing were not robust to accommodate minor changes.

Iteris timed the Lincoln Avenue corridor about the same time Euclid Street was updated. So, the same analysis was performed comparing 2018 operations to 2022 operations using ClearGuide and is displayed in **Figure 5**. The performance on the corridor tracks nearly identically but the 2022 data (blue line) is actually displaying slightly better performance of about 10%. This corridor has not been updated since 2013 and since then, several north/south corridors have been updated. The methodology and timing development used by Iteris results in more robust and long-lasting operational improvements as demonstrated in **Figure 5**.

**Thus, we can conclude that in 2018 the entire corridor was also operating at CSPI Tier 5, as it is today based on the analysis performed above.** The corridor may have been operating at this unacceptable level for several years before 2018. This we can't know for sure, but it could have been since it was last retimed.

Figure 4: Full Corridor Travel Time Comparison

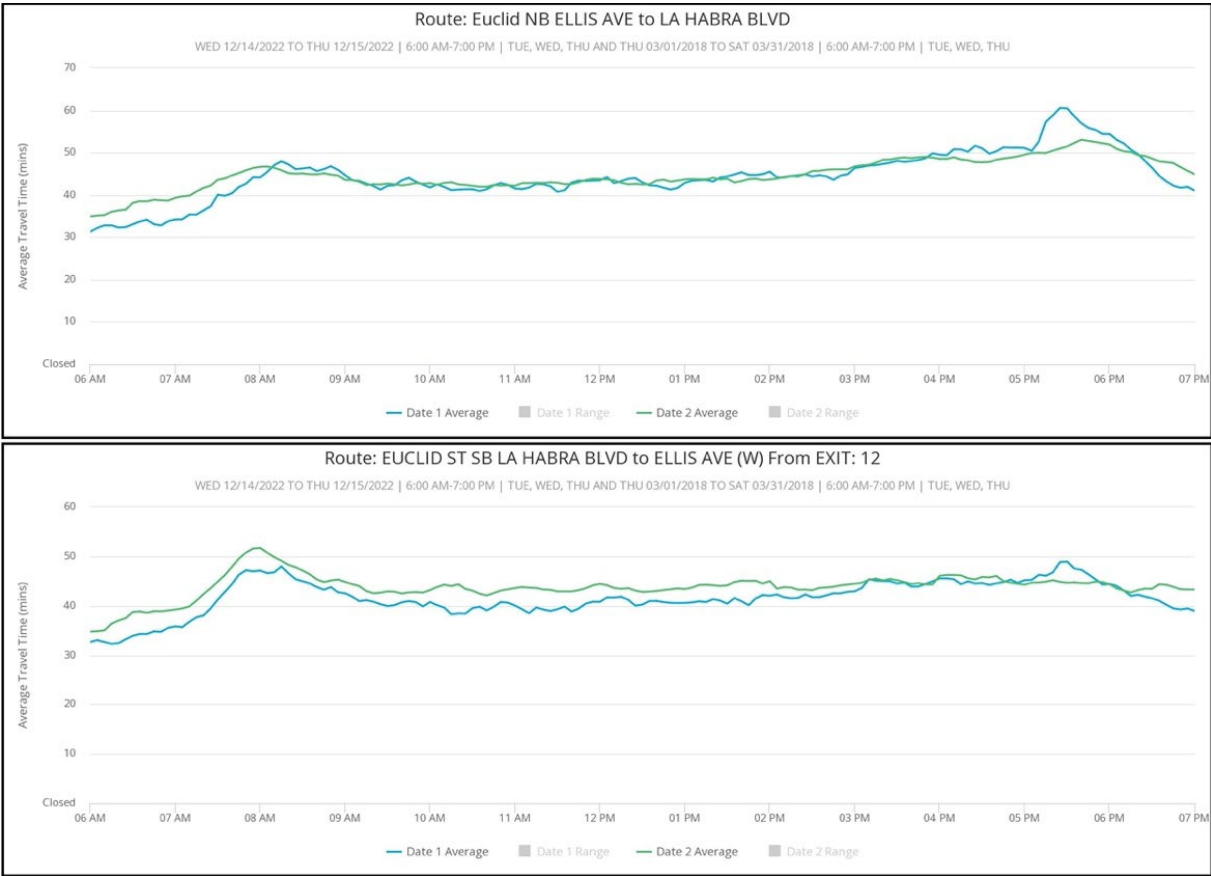
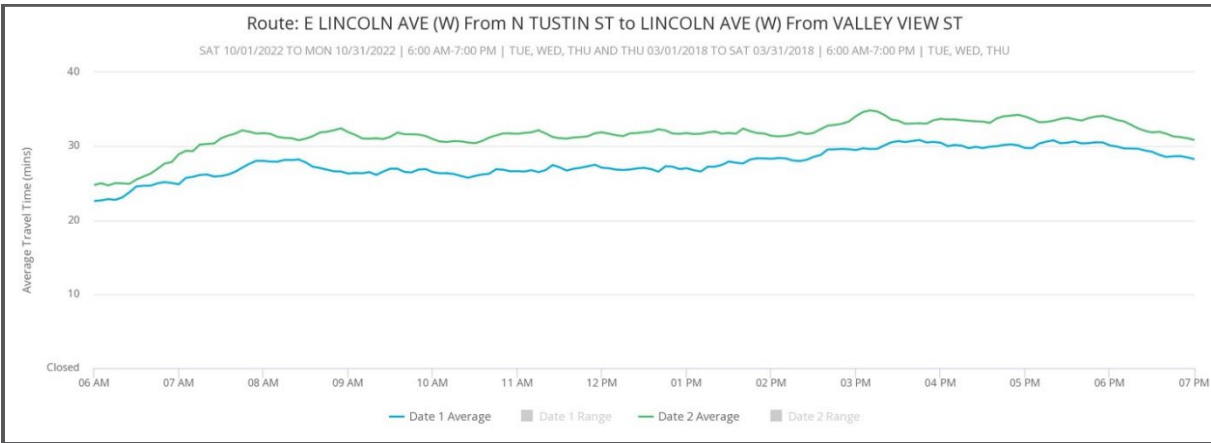


Figure 5: Lincoln Avenue Operation Comparison Corridor Performance



### Congestion Hotspot Analysis

Iteris utilizes an innovative tool in the ClearGuide system that identifies the “hot-spots” along the Euclid corridor. Utilizing this tool as shown in **Figure 6** depicting two days in December 2022 and **Figure 7** depicting two days in March 2018 compares the current “hot-spots” with the historical locations. The data in 2022 has more detail as there are more vehicles reporting data, but the “hot-spots” are the same locations and severity as highlighted by the blue rectangles. Thus, the same conclusions and concerns as mentioned above. The corridor has been operating at an unacceptable level for a long time.

Figure 6: NB Euclid Street Typical Weekday Average Speed Contour Map (December 2022)

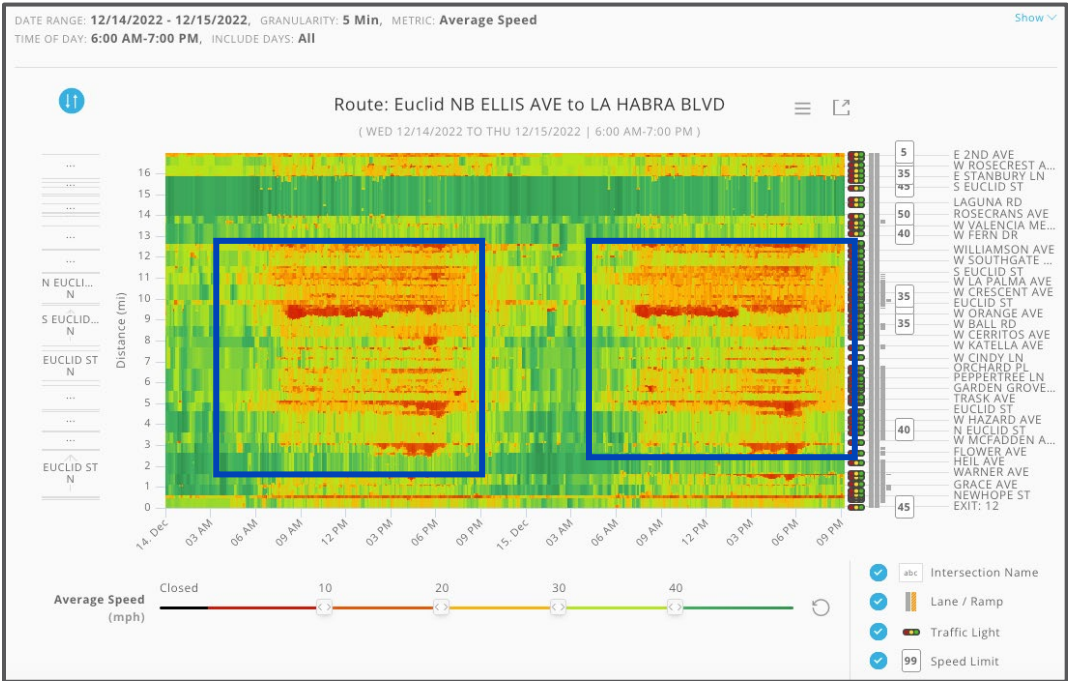
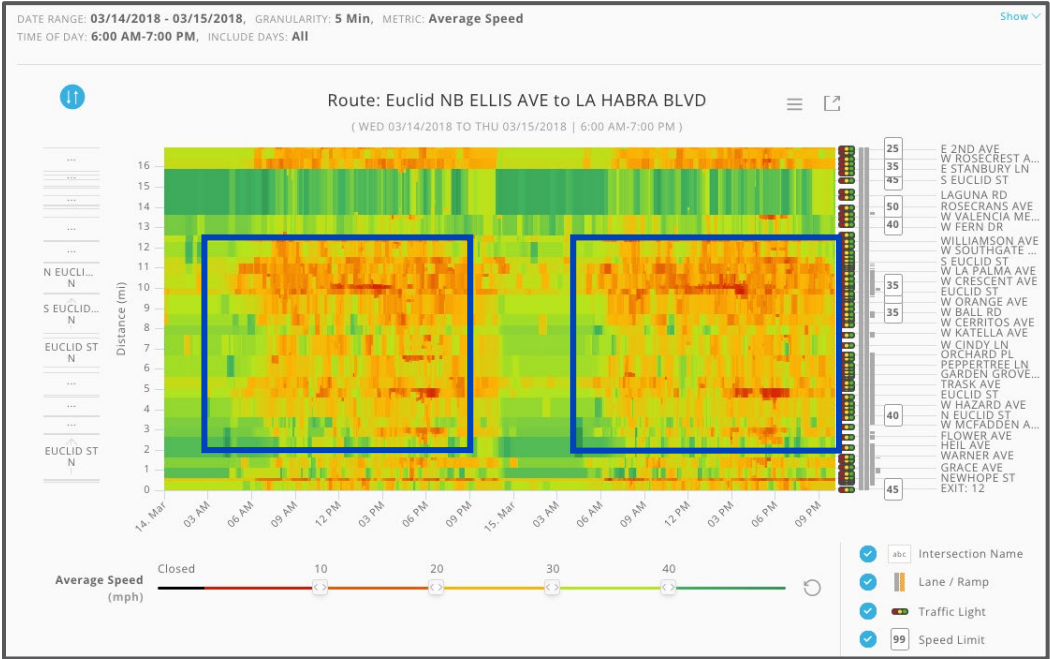


Figure 7: NB Euclid Street Typical Weekday Average Speed Contour Map (March 2018)



In preparation for this proposal, we performed a significant amount of traffic operations analysis to determine the current corridor operations which allows the process of developing strategies for the signal timing optimizations. We know the locations along the corridor where Euclid Street is experiencing excessive delay and has been for several years. This information is captured in the Tru-Traffic travel time data as well as the ClearGuide “Hot Spots” data.

The Iteris approach is to focus on the **primary goal** for the project of improved traffic flow along the entire corridor. This corridor has the capacity to perform at a much better level than the CSPI Tier 5 it currently operates and has been operating for well over 4 years. It is interesting to note that there are freeway ramp locations where the on-ramp queues spill back onto Euclid Street for right-turning vehicles, but the analysis did not identify these locations as problematic that is caused by the queue spillback. This is prevalent at the 22 freeway during the PM peak period. However, because the corridor has the available capacity to move the traffic, even these locations where a lane is removed from through-traffic flow, the corridor is not significantly degraded enough to identify these as the problem locations. There are other locations where the flow is worse and is only due to the timing that is deployed.

There are upgrades along the corridor to provide the ITS tools to better monitor and manage the traffic flow and improve the resiliency of the corridor. Most of the design and construction activities are equipment upgrades with the largest amount of communication and conduit upgrades in the City of Fullerton. We performed field analysis to strategize how to effectively complete the design, begin the construction and deploy timing this year. One option we perform for many TSS projects, including design/bid/build style projects is we procure equipment after the kick-off meeting to reduce the risk of lead times affecting the construction schedule. We have procured fiber optic cable, CCTV, and communication switches to ensure these are received prior to contractor’s deployment schedule. Focusing on the communication and controller upgrades, detection upgrades and the signal rewires with the contractor early in the construction schedule will allow for timing to be deployed while the remaining construction activities continue.

This corridor has been timed more than once; the first being the Pilot corridor for TSS projects and by the same company which means the same procedure and similar output. To get the best results, often it is essential to get a distinct perspective with a unique point of view. It is obvious the corridor is not performing well and has not been for an exceptionally long time. We demonstrated a corridor Iteris timed over 10 years ago is still performing well. The Lincoln corridor is the first time we not only performed travel time data collection, but we utilized the new Bluetooth devices that were deployed on the project to verify optimal operations which most likely contributed to the longevity of the traffic operations. We implemented timing refinements after the corridor was fine-tuned because of the Bluetooth data. What we found is the single vehicle driving the corridor for travel time data collection will have a skew in the actual performance. So, we have a subconsultant perform this data collection to reduce this potential skew; KOA will perform it for this project. But we also focus extensively on the data from the overall traffic on the corridor which is a more accurate reflection of the corridor performance. Ten years ago, it was Bluetooth devices that provided the overall flow data and now it is 3<sup>rd</sup> Party data which can be managed in Iteris ClearGuide system or MoonShadow.

This project corridor really should be given a **fresh review with innovative ideas, a fresh perspective and innovative approach** so that the corridor will be optimized and perform at a much higher level than a CSPI Tier 5 as it currently is operating and as it has been operating for an exceptionally long time. Iteris will create optimum and robust timing providing motorists improved progression and travel speeds, fewer stops which will result in reduction in greenhouse gases and overall improved experience for the motoring public. And more importantly the benefits will have longevity well past the O&M phase.

## B. SCOPE OF SERVICES

The following section describes the tasks that Iteris will execute to successfully complete this project to achieve cross-jurisdictional signal synchronization that the City of La Habra can leverage in traffic operation moving forward, as well as satisfies commitments to the Cities of La Habra, Fullerton, Anaheim, Garden Grove, Santa Ana, and Fountain Valley.



### TASK 0. PROJECT MANAGEMENT & CONTRACT ADMINISTRATION

Iteris strongly believes that excellent project management and continuous project communication are essential in the successful completion of multi-jurisdictional TSS projects. This is not only true during the implementation phase but also for the O&M phase of the project when any degradation of corridor performance is measured, and changes are needed. Thus, at the initiation of the project, **Mr. Jason Xu assisted by Gabriel Murillo** will lead a project kick-off meeting with participating agencies, either in-person at the City or Iteris offices, or virtually, if desired. As part of this meeting, communication channels and protocols will be established, the scope of work, schedule, and budget will be discussed, necessary information will be gathered, and a thorough understanding of the goals of the project will be obtained. These procedures will be summarized in a Project Management Plan. **Iteris will also guarantee that all administrative items that the City is responsible for to update OCTA as it relates to funding as well as project progress will be created and maintained by Iteris throughout the entire project and for project closeout.** Iteris has been providing this for agency led projects since 2012 when Iteris performed these activities for the City of Anaheim for the Lincoln Avenue TSSP.

Iteris utilizes a spreadsheet to track the real project budget for each agency as the project progresses to manage the true agency match required at project completion. The table below is the project performance for the recent Katella project that not only demonstrates the tracking of expenditures for each agency, but also documents the savings achieved for nearly every agency on the project with the exception of the City of Orange which was primarily due to increased pricing due to Covid supply chain issues with GridSmart Video Detection System and Polara APS also due to Covid.

	Original Budget	Budget Variance
Orange	\$ 706,262.08	\$ 21,388.77
Anaheim	\$ 1,280,289.08	\$ (179,725.21)
Los Alamitos	\$ 293,473.09	\$ (106,850.65)
Villa Park	\$ 80,356.70	\$ (2,817.36)
County of Orange	\$ 85,416.15	\$ (462.71)
Garden Grove	\$ 34,980.70	\$ 250.18
Caltrans	\$ -	\$ (5,000.00)
Stanton	\$ 2,500.00	\$ 2,500.00

Iteris takes considerable pride in its proactive methods for staying in contact with project clients. Iteris understands that City staff has other jobs to perform outside of this project and want to be as efficient and effective as possible with their time. Thus, **project management techniques will be modified to meet the City's needs as well as catered towards the requirements of OCTA on these types of projects.** Iteris also strives to ensure that meeting notes are developed after every meeting, which capture the items covered and decisions made.

Project Management and Contract Administration will be ongoing throughout the duration of the project, including the two-year period allocated for monitoring and maintaining the system after construction of improvements and implementation of optimized timing plans. Iteris will assist City in preparation and submittal of responses to OCTA and other stakeholders regarding deployment of this project and signal performance. All meetings and reporting that the City of La Habra is required to make for project updates and project completion to OCTA will be developed by Iteris.

**Mr. Bernard Li**, Principal-in-Charge, will also be responsible for the overall Quality Control/Quality Assurance (QC/QA) aspect of this project. Within this role, he will develop an internal QC/QA team to review the products prior to delivery to the City for review and approval.



### Deliverables

- Project Kick-off Meeting agendas, meeting materials, and minutes
- Draft and Final Detail PMP with updated budget and schedule.
- Monthly invoices and progress reports, including detailed status of the work effort, outlook, issues/ solutions
- Detailed project schedule by work tasks in a Gantt chart, with monthly updates as necessary
- Prepare graphics and presentation aides required for all meetings.
- All reporting and close-out documentation in compliance with OCTA requirements and applicable regulatory agencies



## TASK I. PRIMARY IMPLEMENTATION (PI)

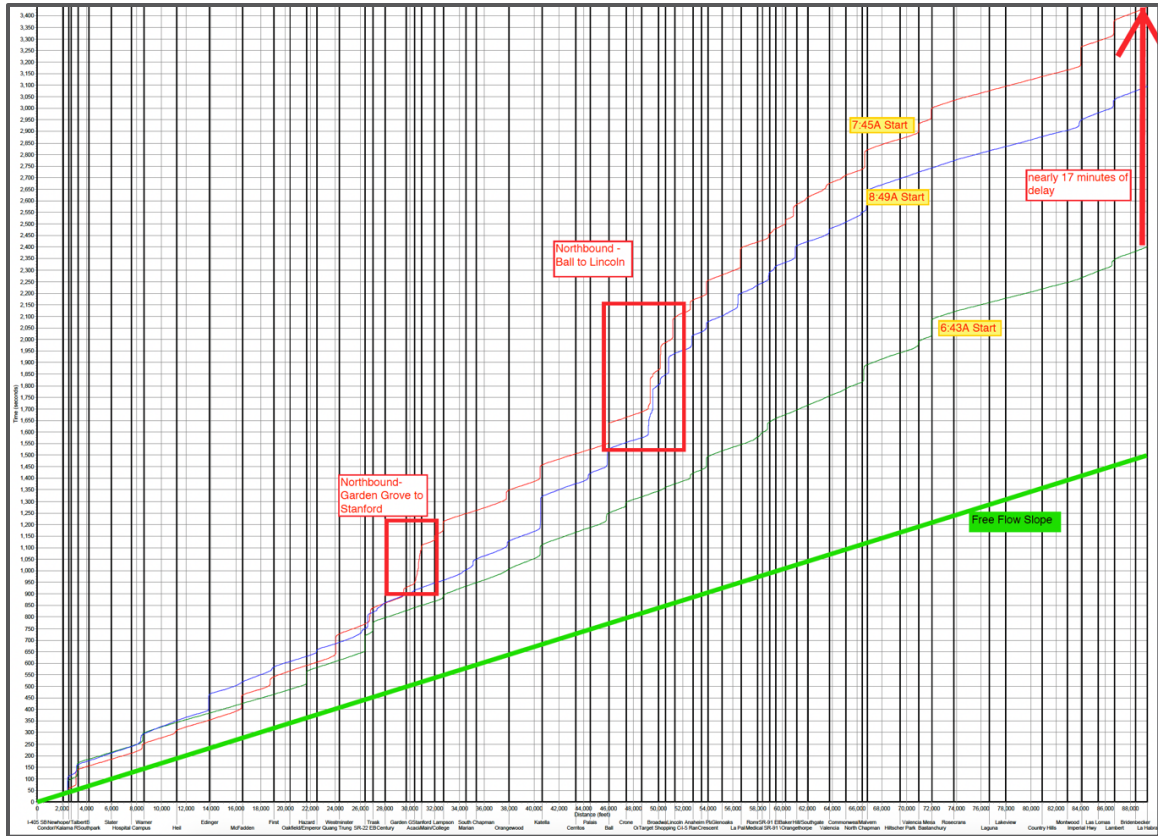
### I.A. Development and Implementation of Optimized Signal Synchronization Timing

Iteris will develop optimized signal timing for the entire corridor from end to end evaluating every intersection, every crossing arterial as well as adjacent intersections on arterial crossings. Iteris evaluated the current operation and identified significant delay issues along segments of the project corridor. With detailed focus on these locations.

Utilizing the Tru-Traffic “Time vs Distance Plot” and ClearGuide we identified the current operations along Euclid where there is a significant delay with traffic flow. Travel time data was collected on December 14-15 for the AM and PM peak periods. The data collected follows the ClearGuide analysis in that there are several locations along the corridor that cause excessive delays that, when corrected, will improve the overall corridor operations by more than 10%. In each figure, there is an approximate “free-flow” speed that is identified with a green line to visually compare the amount of total delay for each peak period and each direction.

**Figure 8** below is for AM Peak period for northbound traffic for the entire corridor. There are two significant segments that cause significant delay and the variance from the early peak period to the peak of the peak is about 17 minutes. At Chapman (south) there is a Starbucks that has a drive through where the queue spills back in the AM onto Euclid Street. The data does not show that this is causing a significant issue, but Iteris has an idea as a solution for this that will be evaluated if it is determined to be beneficial.

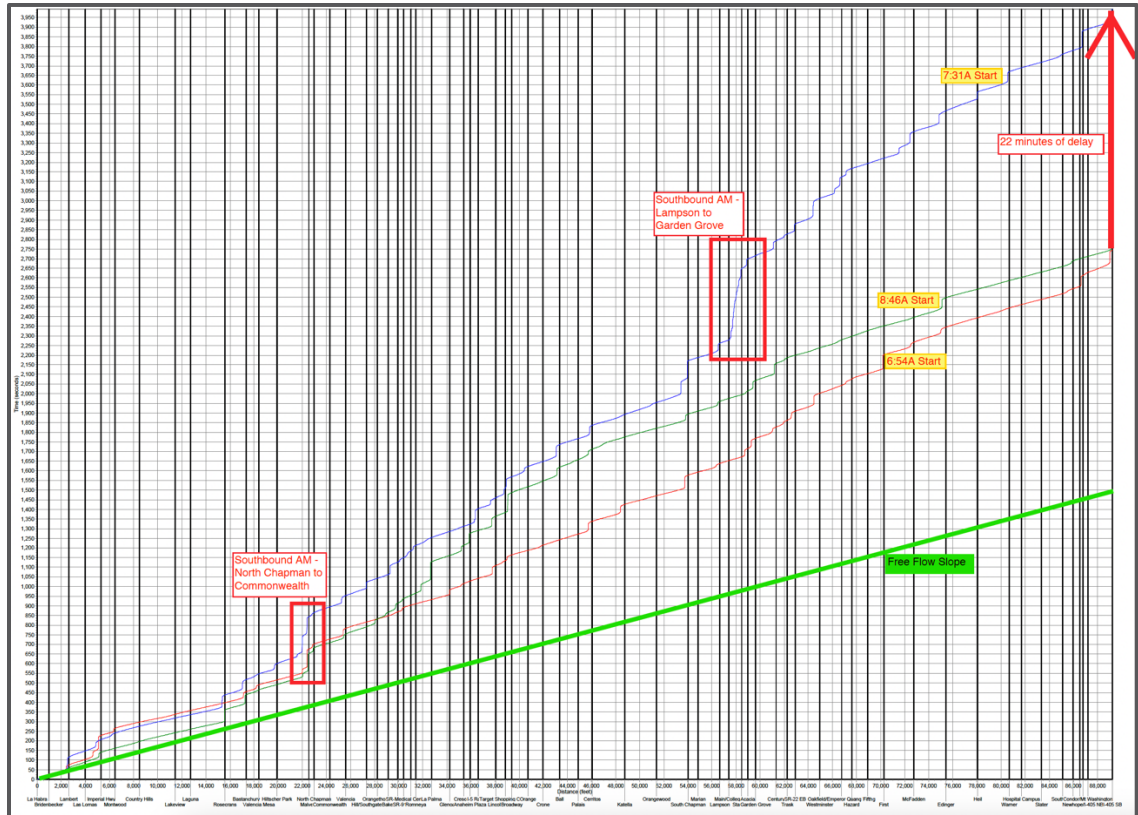
Figure 8: Northbound AM Peak Tru-Traffic Travel Time Data (December 2022)



Often, one direction of a peak period may be sacrificed to benefit the opposite direction. **Figure 9** below is for AM Peak period for southbound traffic for the entire corridor. This direction is actually worse than in the northbound and the southbound is the dominant direction for most of the corridor. As indicated in the figure, there is over 22 minutes of delay variance within the AM peak period.

Both directions of the AM peak periods experience significant delay and with a focus on the identified segments highlighted in the red boxes in **Figures 8 and 9**, there will be more than 10% improvement along the corridor. However, the entire corridor currently operates poorly as presented with the CSPI score and the amount of variance within the AM peak period as identified in the travel time data before 7 AM and the data after 7:30 AM, there is additional improvement that is attainable throughout the corridor.

Figure 9: Southbound AM Peak Tru-Traffic Travel Time Data (December 2022)



The PM peak period, unfortunately, is not much better. In the Northbound direction, the entire corridor operates worse than the AM peak period as shown in **Figure 10**. The PM peak period in the southbound direction is marginally better which could be that the signal timing is configured to favor this direction. It is not significantly better, so it is not obvious if there is a bias in the existing timing. Additionally, there is much less variance in travel time from the first run to the last run in both directions. This is a result of PM peak traffic starting early in the afternoon and does not “spike” in data compared to the AM peak which starts with light traffic in the overnight hours and has a more significant and identifiable surge in traffic. The PM period experiences the highest amount of delay compared to the free-flow travel time with about 40 minutes of traffic delay.

**Figure 11** shows the PM peak southbound Tru-Traffic data. Southbound operates at a more consistent level with less variance from the first run to the last run but the performance is overall poor. The most significant locations of concern are in the red box with the area around Chapman and Commonwealth highlighted for southbound. It is interesting to note that in both directions the segment from Chapman (north) to commonwealth operates poorly for traffic flow. Edinger to McFadden and Westminster to Trask segments have significant delay. Near the 22 freeway, the degradation in performance begins before the on-ramp queue spill back becomes prevalent. Thus, improving the timing of the signals in this segment will allow for improved flow near the 22 freeway. **We will work with Caltrans to test a ramp meter setting to evaluate if this queue can be reduced.** We have had success with other ramps and will try to achieve the same success for this project.

Figure 10: Northbound PM Peak Tru-Traffic Travel Time Data (December 2022)

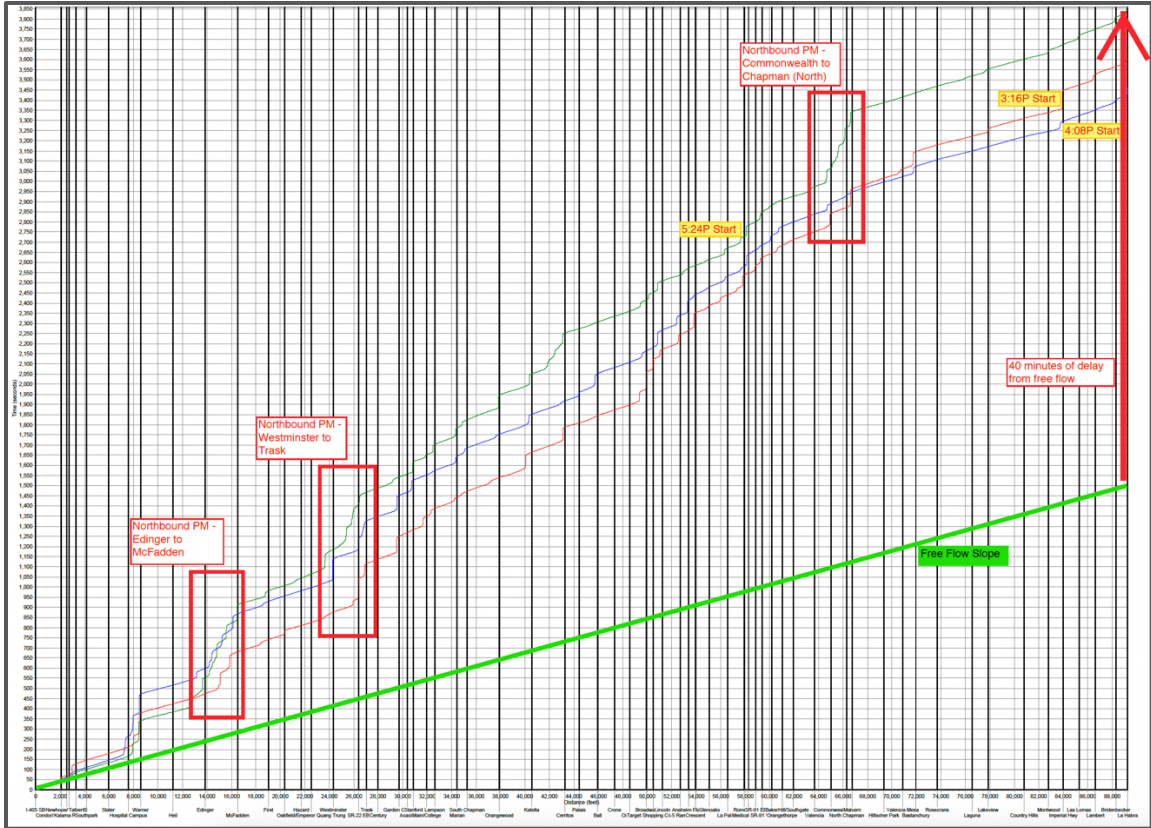
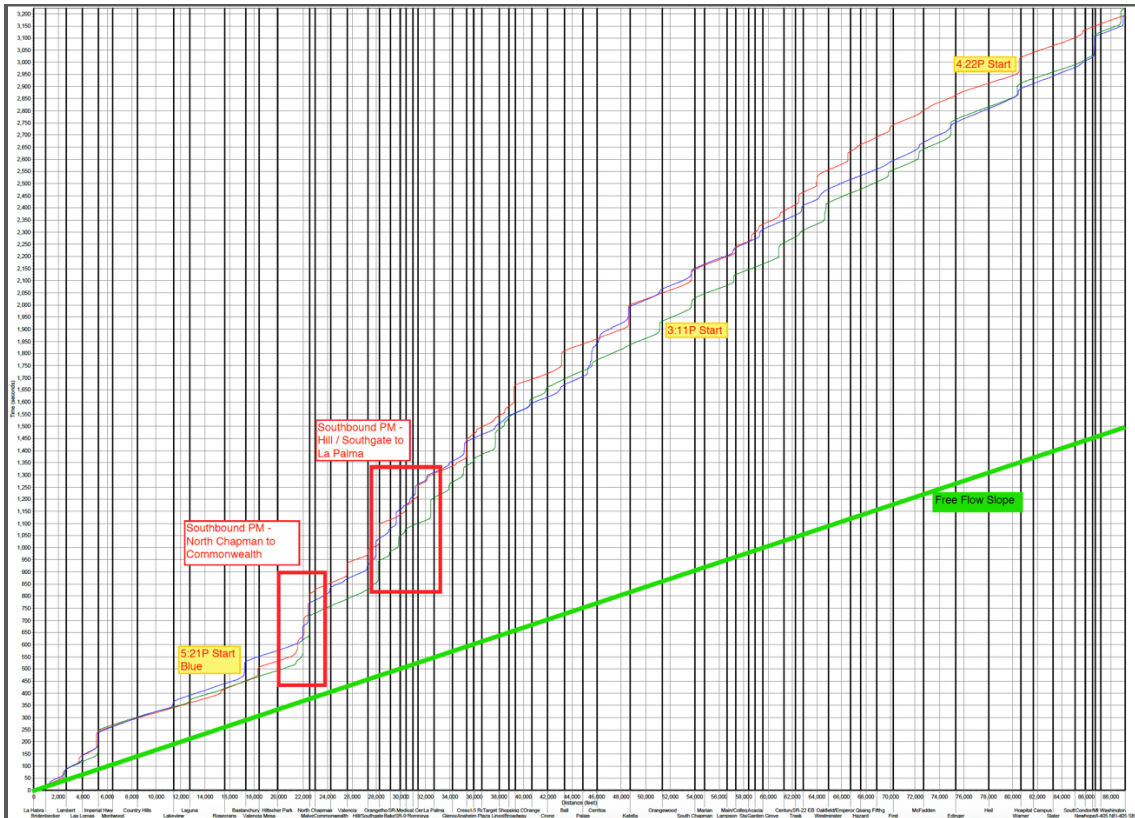
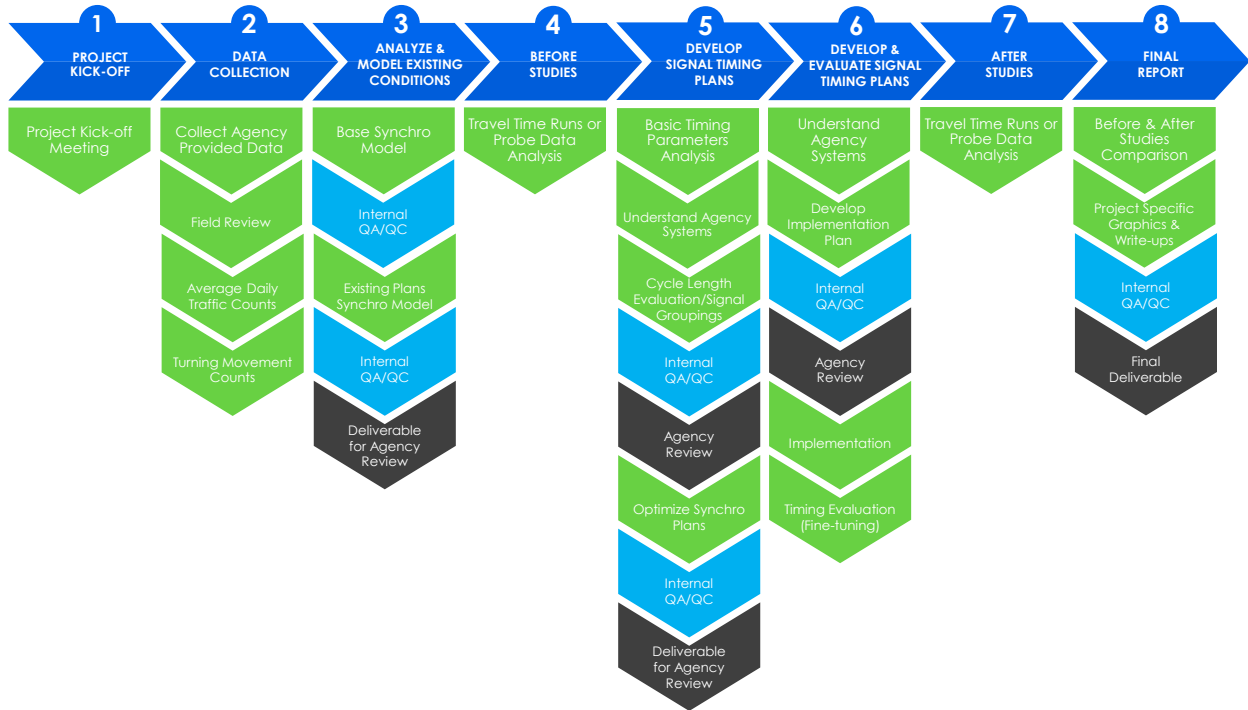


Figure 11: Southbound PM Peak Tru-Traffic Travel Time Data (December 2022)



Coordination signal timing plans will be developed for AM, Midday, and PM Weekday Peak Periods, Weekend Peak Periods, and Off-Peak Periods. **Figure 12** exhibits the critical role that optimization and implementation has in the signal timing synchronization process.

**Figure 12: Iteris Traffic Signal Synchronization Process**



### I.A.1 Data Collection and Field Review

The data collection task includes the gathering of all information needed to deliver the traffic signal improvements for the project and the optimized signal timing and synchronization for the corridor. Iteris has a unique approach to collecting data for both signal timing and PS&E tasks. We are pleased to share some of the innovative tools that we have at our disposal and how we plan to use them. **Prior to conducting traffic counts, Iteris will use ClearGuide to identify and confirm traffic patterns.** Once confirmed and with agencies' concurrence, Iteris' subconsultant, **AimTD** will conduct 7-day 24-hour ADT machine counts at critical locations (at least every 1-mile segment) to identify the peaking characteristics of the corridor and to identify proposed peak periods for the collection of turning movement counts as well as signal synchronization periods. All ADT locations will also include vehicle classification counts to determine heavy vehicle percentage.

AimTD will also conduct weekday and weekend peak period "true demand" turning movement counts at all study intersections along the corridor using video cameras mounted on signal poles. These recordings can be conducted during the same week(s) as the ADT counts with the appropriate set-up to capture queues. Therefore, once the ADT data is analyzed, the turning movement count videos can be processed immediately without having to schedule another field visit and will also ensure turning movement counts will be representative of the ADT data and provide another layer of quality control. The choice to record the intersection turning movement counts during the same week as the ADT counts will be discussed and approved by the stakeholders prior to collecting. **The off-corridor intersections do not need counts as they will have splits proportionally adjusted as needed. We are pricing these counts as optional due to responses to questions.**

Iteris will also conduct detailed field review of the project area. Our field reviews will note any intersection (including cabinet equipment) and corridor issues. Each study intersection and controller cabinet will be visited and inventoried. In addition, we will open the existing pull boxes to verify conduit sizes and evaluate conduit capacity; document existing utilities or markings that can be captured through visual investigation. To facilitate the field review process, Iteris will use **FastField**, a web- and mobile-based application during our field review that will enable us to input data into mobile devices while in the field and produce high-quality customized reports instantly through the cloud-based system without manual data processing.

Our field review documents the existing detection settings and identifies any modification that will be required for deployments of the SPM system or signal responsive/adaptive operations. We will identify critical intersections (those with high pedestrian or bicyclist volumes, over-saturated and/or closely spaced intersections), uneven lane distribution, high volume heavy vehicle intersections, and high volume un-signalized intersections along the study corridor to gauge their impact on signal progression.

Information collected as part of this task will be summarized in a report that will detail the findings of the field review, identify planned and programmed improvements, identify equipment, and develop costs for work to be performed, identify deficiencies, and include, if applicable, simple low-cost solutions. The report will also include a review of the existing signal timing parameters in comparison to the appropriate governing standard timing parameters. Having performed numerous RTSSP projects for OCTA and the local agencies, we have a set format for the collection and presentation of the Field Review information collected as part of this subtask, used successfully on several projects. Our goal is to perform all the field review only one time and collect all the data for signal timing optimization as well as the PS&E field data collection.

Another important data collection task that we will recommend starting early in the project is utility coordination regarding scheduled signal system upgrade and fiber installation, which will be ongoing and consist of the following:

- Submit utility information requests to all utility companies
- Obtain utility plans showing the location and size of all utility lines and appurtenances within the project area to be shown on our design plans
- Prepare a Utility Notification Log to track utility company contacts and responses including contact information and dates of all outgoing and incoming correspondence.

### [I.A.2 Base Timing Review](#)

Corridor optimization requires that the basic timing parameters are first calculated with consideration of all roadway users and are verified with local agencies. The methodology for calculation basic timing will be consistent with the latest version of California Manual of Uniform Traffic Control Devices, developing industry practices, and agencies' best practices. The parameters will be a function of field measurements and speed data collected through City engineering survey or observed posted speed limits. Iteris will coordinate with agencies' staff for special considerations at turning movements in association with the Institute of Transportation Engineers (ITE) latest Guidelines for Determining Traffic Signal Change and Clearance Intervals.

We believe the optimum timing settings require not only the familiarity with timing guidelines but also a thorough understanding of controller firmware and central systems operations. The timing parameters to be reviewed include, at a minimum, the following parameters which are critical to safety for vehicles, pedestrians, and bicyclists:

- Minimum Green
- Bicycle Minimum Green
- Yellow Change Interval
- All Red Interval
- Pedestrian Walk Time
- Flash Don't Walk Interval

We have developed an efficient tool that not only precisely calculates these timing parameters but also automatically reads timing parameters from the output of City TMC central systems and compares with proposed timings to assist the agencies' review. We will also evaluate the controller parameters and capabilities (density features, dynamic maximums, time of day functions, traffic responsive/adaptive, etc.) to provide participating agencies with additional recommendations for optimum performance during coordinated and free operation.

#### I.A.3 Concept of Operations (ConOps)

Iteris will develop a concise ConOps that assesses all feasible operational patterns for each time period. The ConOps documents the strategy and the objectives for how traffic will be managed in all direction, considering special traffic generators and congestion hotspots. Special considerations will be given to the before and after conditions of COVID-related traffic changes. The primary goal will be to maximize the number of successive greens for motorists along the primary coordinate band or between adjacent coordinated bands. Planned stops, when necessary, will be thoroughly vetted with the project stakeholders.

#### I.A.4 Synchro Modeling and Signal Timing Optimization

The intersection features and traffic data collected in Task A.1 will be used to prepare and calibrate a traffic model that encompasses the Euclid Street project limits, led by **Mr. Jose Castellanos**. Jose has led the timing development and deployment of other TSS projects and has the knowledge of all the controllers and traffic systems on this corridor. In fact, he is a TMC operator for Anaheim and can lead the deployment from the TMC as well as in the field directly into the controller.

The traffic models will be developed using Synchro version 11 and Tru-Traffic 10 for multiple time as assessed in the ConOps. The congestion hotspot data and field observations will be used to calibrate and verify the Synchro models, which will serve as the baseline conditions. We will use a GIS shapefile as the background in Synchro to develop the base roadway configuration. The development of the models will be consistent with the Countywide Synchro Network as administered by the OCTA GIS/ROADS database or per City's preference.

Our methodology to optimize a study corridor or grid network is shown in **Figure 13**. Cycle length selection is a critical step in developing signal coordination plans. A longer cycle length may provide better progression along the corridors but could increase side street delay and queuing. Alternatively, decreasing the cycle length to reduce the side street delay may increase the overall delay and number of total stops.

We developed a unique iterative methodology to determine ideal cycle lengths for each study intersection. Extensive project studies show this capacity-based methodology provides more accurate results than purely delay-based methodologies adopted by the Highway Capacity Manual and Synchro software. In selecting each intersection's critical cycle lengths, the following factors and conditions were taken into consideration:

- Intersection "true demand" turning movement counts.
- Each intersection's unique lane geometry and operation.
- A minimum split of 15 seconds for any vehicular movement.
- Amount of pedestrian (Ped) and bike activities at each intersection as collected in data collection task.

During the determination of critical cycle lengths, Iteris will treat each intersection as an isolated signal and evaluate the cycle lengths for the following conditions:

- Cycle lengths required to accommodate vehicle turning movement volumes and all pedestrian clearance times – “With All Ped”.
- Cycle lengths required to accommodate vehicle turning movement volumes only – “With Veh Only”
- Cycle lengths required to accommodate vehicle turning movement volumes and pedestrian crossing demand for the coordinated phases only (i.e., split time was calculated to meet vehicular demand only, which may be lower than the pedestrian clearance times for the side street) – “With Coord Ped”.

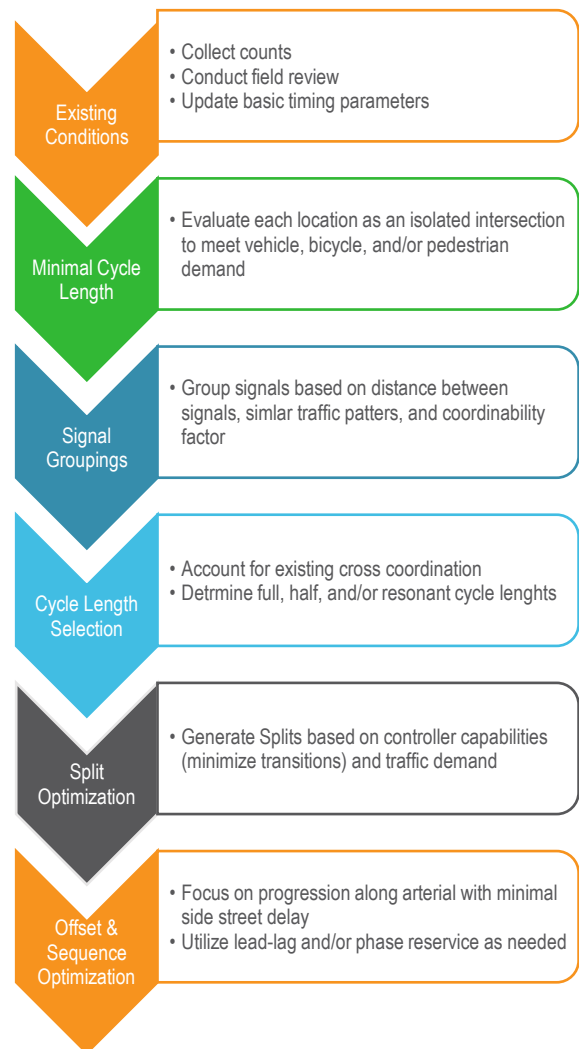
We will use the calculated critical cycle lengths to develop five TSS plans (Weekday AM, Midday, PM, Weekend, and Off-Peak periods) for all project intersections and all the signalized intersections on major crossing arterials that are in close proximity to the project corridor. The SimTraffic simulation will then be carefully observed to identify segments of the corridor needing special operational analysis. We will develop time-space diagrams using Tru-Traffic Version 10.0 and TranSync to augment the Synchro models. Locations noted to have existing cross coordination will be analyzed for split and sequence optimization unless otherwise approved by the respective City to evaluate whether a different cycle length is recommended.

As detailed in Optional Task A, we will also utilize **TranSync software** as supplementary tool to augment the signal coordination plans generated by Synchro and to verify coordination progression in the field without additional cost to the project.

Our vast experience in Orange County and working relationships with nearly all the cities allows us to provide value-added services and additional solutions to assigned project corridors. These include the development of school/holiday season timing plans and traffic operations reviews by in-house traffic responsive/adaptive experts to ensure the optimized plans are completed to serve the project goals and objectives for the project corridor.

Experience has shown that multi-jurisdictional projects require continued communication and coordination with the participating agencies and OCTA. **Our relationship and trust with all the local agencies and Caltrans will allow for that communication.**

**Figure 13– Signal Timing Methodology**



### I.A.5 Signal Timing Implementation & Fine-Tuning

**We consider implementation to be the most critical phase of a signal synchronization project and understands each agency has its own requirements for implementation and fine-tuning.** Through the existing and completed RTSSP projects, both led by OCTA and the local agencies, Iteris has developed numerous implementation ready timings in agency preferred format (Synchro printouts, marked-up timing sheets in PDF, new Excel files, etc.). Iteris has completed new timing implementation through central systems, and at controllers. We separate the act of implementing new signal timing plans from fine-tuning signal patterns/plans to ensure each intersection is operating as planned prior to any fine-tuning efforts. The implementation team is staffed with qualified specialists fully trained in signal retiming projects.

Immediately following implementation, we will conduct fine-tuning in the field to monitor signal cycling at each intersection as well as actual progression along the corridor. The fine-tuning usually takes at least two weeks, which give the field team plenty of time to observe the new timing plans under varying traffic conditions and make changes as appropriate. Timing fine-tuning will be completed using the Synchro/Tru-Traffic as well as TranSync-M software to provide the participating agencies with historical data during the travel runs and to identify reasoning for any modifications conducted during the fine-tuning task.

Iteris will assist City of La Habra to identify opportunities for SPM implementation and will utilize the dimensions provided by such tools when available. **Implementing SPM can be challenging and require proper detector configuration. Iteris staff members are experts in configuring and implementing SPM for agencies.** Any adjustments to controller settings will also be made as necessary and documented in an Iteris implementation log. Upon completion of the field implementation and fine-tuning, the Synchro models will be updated to match the field conditions.



#### Deliverables

- Excel files of pedestrian and vehicle clearance intervals.
- ConOps of Signal Synchronization
- Memorandum documenting the signal timing optimization and implementation.
- All optimized and synchronized traffic signal timing plans, including existing corridor conditions and improved corridor conditions.
- Field implementation of optimized traffic signal timing plans, including all fine-tuning revisions.
- Electronic versions of files from all Traffic Signal Modeling Software programs used.
- Electronic versions of all data files and memorandums.

### I.B. “Before” and “After” Study Analysis

#### I.B.1 ‘Before’ and ‘After’ Travel Time Studies

Iteris’ s subconsultant KOA will conduct a travel time and delay ‘before’ study along the project corridor using the floating car method and a GPS based Tru-Traffic Version 10.0 Software. This study will serve the following purposes:

- Serve as a base point of comparison to quantify the improvements of the Measure of Effectiveness (MOE) and Corridor Synchronization Performance Index (CSPI) with the deployment of the new signal timing plans
- Supplement volume and timing analysis in determining congested corridor segments
- Identify operational deficiencies and queuing conditions (in conjunction with field review)

A minimum of five (5) runs will be conducted in each direction to obtain a statistically valid estimation. More runs can be conducted if required by local agencies. Prior to performing travel time runs, we will review the existing time-based coordination schedule and ADT counts to determine appropriate study hours to cover the true peak hour for each peak period. Not only will the ‘before’ study be conducted during the proposed coordination hours, but it is also important to include the existing coordination plans to provide the most accurate comparison of ‘before’ and ‘after’ the implementation of proposed new timing plans. ‘Before’ studies will be conducted just before new timings are implemented, as preferred by many agencies.

The ‘before’ data collection task as well as the resulting graphical outputs provide a straightforward way to initially identify bottlenecks along the corridor. One draft and one “final version” of the technical memorandum presenting the MOE results, as well as the results of the CSPI quantification for the ‘before’ conditions, will be submitted. In addition to the floating car data, the report will address optimization strategies for improved signal synchronization including, but not limited to, the flow of traffic along the corridor, coordinated subsystems, and zones and segments. The report will be organized in such a manner as to clearly provide a picture of traffic patterns on the corridor during all identified coordination periods.

Like the ‘before’ travel time study, five floating car runs will be conducted four weeks after the fine-tuning and approval of implementation of new timing plans. The ‘after’ travel time study will be done on the same days of the week, and at the same time of day as the ‘before’ travel time study. The same MOE and CSPI will be computed to evaluate the improvements of the synchronization plans and implementation.

In addition, Iteris will load fine-tuned timing plans into TranSync-M mobile app and verify them in field during travel time after study. TranSync files including recorded videos of traffic progression and trajectory of travel time runs will be provided for City’s review and presentation purposes.

Iteris has been using our ClearGuide system to supplement data collected from travel time runs. The limitation of travel time data is it is too small a dataset to reflect the true operation over the entire corridor for the entire peak period for multiple days. Iteris will utilize ClearGuide to supplement the data collected during the travel runs and develop a true performance benefit for all the vehicles on the corridor and not only a single vehicle driving and collecting data that could experience some performance skew.

### I.B.2 Benefit-to-Cost Analysis and “Before” and “After” Study Report

Upon completion of the ‘after’ travel time study, Iteris will submit a memorandum specifying the results of the ‘before’ and ‘after’ travel time studies with reference to the MOE elements. **Table 3** summarizes the

**Table 3 – Signal Timing Improvements on Recently Completed Projects in Orange County**

TSS PROJECT	CITIES/AGENCIES	# SIGNALS	B/C RATIO OVER 3-YEARS
Bristol St	Santa Ana, Costa Mesa and Newport Beach, and Caltrans	45	12:1
Harbor Blvd	Santa Ana, Garden Grove, Fountain Valley, Costa Mesa, Caltrans	46	17:1
Coast Hwy	Newport Beach and Caltrans	27	17:1
Marguerite Pkwy	Mission Viejo	30	18:1
Von Karman Ave	Tustin, Irvine, and Newport Beach	30	20:1
Main Street	Orange, Santa Ana, Irvine, and Caltrans	67	33:1
Katella Avenue	Los Alamitos, Cypress, Stanton, Anaheim, County of Orange, Garden Grove, Orange, and Caltrans	73	31:1

benefits of recently completed RTSSP projects we have performed for OCTA and the local agencies, by

listing the Benefit/Cost (B/C) ratios over a three-year period. **All our projects have resulted in significant improvements in travel times, with B/C ratio as high as 33:1.**

Upon completion of the fine-tuning and ‘after’ studies, a draft timings and evaluation technical report will be developed and provided to the City of La Habra and all participating agencies. The report will include all the elements identified in the RFP. A separate binder will be provided showing the new traffic signal plan sequences, signal timing plans, and pedestrian timings.

In addition to documenting the processes and results of the timing study, recommendations for future improvements including cost and benefit estimates to further alleviate traffic congestion will be provided. These recommendations may include changes in intersection geometry, infrastructure, and traffic management plans. Time-Space Diagrams showing all pertinent data will be generated from Tru-Traffic, TranSync or Synchro. When comments are received from stakeholders, the “final version” of the Project Report will be delivered. An executive summary will identify complete documentation of the project and improvements gained.



### Deliverables

- Draft and Final Project Report
- Documentations for closing the project and release of retention funds.
- Electronic version of all data files for this project

## I.C. Proposed Signal Timing Related System Improvements (PS&E)

The system Design and Construction task will be implemented in two distinct phases. Iteris will develop plans, specifications, and estimates (PS&E) bid packages and support the City during bidding and construction. Based on City-provided data (e.g.; signal plans, street improvement plans, existing signal timing plans, etc.) and a thorough field review of the project corridor, design plans, specifications, cost estimates, and bid and contract documents will be prepared for the installation of new and/or upgraded traffic signal control and communication hardware and software as required.

Iteris will work with the participating agencies at the outset of the project to discuss our approach to provide plans that are both biddable and detailed enough to achieve the agencies’ objectives. More importantly, Iteris focuses the effort on the overall City goals with the upgrades and not only for the current project. For example, communication upgrades can serve not only for the communication needs of the current project signals, but citywide communication needs. For example, Iteris have worked with agencies to leverage fiber communication systems for Fire Department, Citywide IT needs, Utility SCADA systems and many more. Thus, Iteris ensures citywide information is documented and we develop optimum solutions that serve these goals. Therefore, we focus on detailed field work for communication upgrades after meeting with the agencies to ensure the investment made in this project can serve a citywide robust and redundant infrastructure for the current project needs and future Citywide goals.

Euclid RTSSP communication upgrades for the City of Fullerton will include significant upgrades and complete last mile fiber infrastructure. This project will design new fiber in existing conduit and new fiber in new conduit for a separate construction project. The overall goal is to complete a robust and redundant “Ring Network” with high availability while removing legacy wireless/DSL network equipment along the corridor. Euclid St (Northern Group) within the City of Fullerton will mainly route through Euclid St / Malvern and head east towards Malvern / Hyland (Existing communications HUB) then route south to Hyland / Commonwealth (City Hall/TMC). Euclid St (Southern Group) within the City of Fullerton will mainly route through Euclid St / Commonwealth heading east towards City Hall Commonwealth / Hyland. There is no

HUB within this route, the TMC will act as the communication hub at the end point. The goal is to upgrade/utilize existing HUB equipment to a 10GB connection. The TMC has existing 10GB capable switches as does the Hyland/Malvern HUB.

After Iteris has verified design requirements with field review and record documentation, Iteris will provide the agencies with a strategy for final plan production. It is anticipated that traffic signal modification plans will be required for all locations that have installation/upgrades of signal controller/cabinet, smart video detection, signal head upgrades, and fiber installation. These plans will detail the removal and installation of cables in existing conduit as appropriate. For new detection locations, the plans will identify appropriate detection zones and channels in addition to all equipment needs at the traffic signal cabinet.

In addition to these details, the traffic signal modification plans will include all existing equipment including location of all traffic signal elements, pole schedule, conductor schedule, phase diagram, cabinet equipment, and fiber optic cable schematic. For locations where only the controller or GPS clock is being installed, it is anticipated that a full traffic signal modification plan is not necessary. At a minimum, a plan will be provided detailing the work needed to update the controller and the location of the cabinet.

Once the details of the project elements have been identified and agreed upon by the Cities, Iteris will begin the detailed design phase, led by **Mr. Paul Frislie, PE, IMSA**, for the 50%, 90%, and 100% submittals with the assistance of **Mr. Felipe Ortega** for all communication upgrades on this project. All design drawings prepared will be completed using AutoCAD, except Santa Ana plans will be completed using Microstation per their requirement. Plans will be prepared in standard measure units and based on the level of detail required; design drawings will be developed at 1"=20' for traffic signal modification plans and 1"=40' scale for interconnect plans. Communication schematics will also be provided, which will identify the appropriate splicing details to achieve the desired and intended operation.



### Deliverables

- Interconnect and signal modification plans at 50%, 90%, and 100% submittals with specifications and estimates
- Full construction bid documents
- All documentation in hard copies and/or electronic copies

### I.D. System Integration & Construction Support

After the design has been successfully completed and the construction project awarded to a contractor, our highly skilled engineering team led by **Mr. Omid Modagheh, MCSE, IMSA, and Felipe Ortega.**, will provide Construction support services for the traffic signal modifications and communication improvements. The Iteris team will oversee the construction details of the intersection improvements and provide updates and reports to inform the Cities of the construction progress. Fulfilling this task will help ensure that the construction of this project will be completed on time and minimize interruptions to the traffic flow.

#### Construction Phase

The Iteris team will provide construction support led by Felipe Ortega for each City. Before construction begins, Iteris will lead a stakeholder preconstruction meeting to go over the expected construction activities, the recommended phasing of the construction and strategies to minimize delays. Nearly all TSS projects experience delays to the schedule during construction. This is primarily due to contractor scheduling issue, which can be managed, but also procurement lead-times, which can be out of our control. To minimize delays that could be experienced during construction, Iteris can offer procurement services in advance of construction to get ahead of any procurement delays. This has proven effective for the recent Katella TSSP

where Iteris anticipated the fiber delays becoming larger and before construction formally began, Iteris procured all the fiber optic cable for the project. Fiber was experiencing 6-9 months of lead time for Corning fiber and by procuring the fiber before construction began, the fiber was in the Contractor's hands 6 months before it needed to be installed in the field.

When projects are design/bid/build, Iteris typically begins with Utility notification and leading a pre-construction meeting for all project stakeholders to walk through the entire project and review all risks associated to construction. During construction, Iteris will help review request for information (RFI's). This will assist in avoiding defects and deficiencies in the work of the contractor. As necessary, Felipe Ortega can inspect construction activities to evaluate the contractor's compliance with the intent of the construction documents. In support of this task, Iteris will conduct the following activities:

- Bid Support
- Lead a project stakeholder preconstruction meeting
- Attend pre-construction meeting
- Review shop drawings submitted by contractor
- Cost management – assist Cities in monitoring the project with respect to the contract amount by keeping track of change orders if any, claims, control of quantities, and other factors affecting project cost
- Quality management – assist Cities in monitoring the contractor's progress with respect to the quality of work specified in the contract for the contract price
- Schedule adherence – assist Cities in review duration of activities, milestones, submittal lead times

### TMC Construction and Integration Support

Iteris team will provide overall system integration which includes connections to the TMC. Provide technical oversight and integration support for individual improvement with expertise to realize the overall goal of the project. We will work together with the contractor and system vendor in configuring IP devices and TMC integration. We will test and verify the connectivity from a TMC to field equipment for proper bandwidth and latency requirements for the ITS network. This is essential for a robust and reliable of the network to meet the needs of integration of future integration of projects.

Iteris' in-house experts will expand on existing or generate new Virtual Local Area Networks (VLANs) for the communications network, and configure switches, controllers, Internet Protocol (IP) cameras, VDS, etc. for deployment. Iteris networking experts evaluate the communication topology and network schema such that the designs are optimal for not only the current project, but also ideal citywide operation for future projects.

### Construction Documentation

It is imperative to document the condition of all equipment that is accessed or modified through this project prior to construction starting so that the condition of all equipment is documented, and the post construction condition does not negatively impact the existing traffic equipment.

In case equipment stops working or accidentally gets damaged, taking pictures will assist to identify existing conditions of equipment prior to construction. **Equally important is to document the existing condition of all system and communication components prior to shutting down the existing systems, so the status and expectations of the new system is documented, and all operational elements of the new system must be operational when the new system is activated.**

### As-Built Plans

Once the contractor has completed construction, the project will move into the post construction phase. In support of this task, Iteris will conduct the following activities:

- **Punch list** – Iteris will assist City inspectors in the final walk-through ensuring compliance with construction requirements and providing a thorough “punch-list” of items that must be corrected and/or completed to satisfy the project requirements.
- **As-builts** – Iteris and the Cities will verify that the contractor maintains an accurate record of all changes in the plans which include change orders, RFIs, any addendums, and additional details. Iteris will compile and re-submit final as-built to all Cities that have construction activities.



### Deliverables

- Field troubleshooting findings and actions memorandums
- Integration and testing reports.
- Negotiate alternative procurements or substitutions as deemed necessary throughout the Project.
- As-built drawings and photo log of all field implementations.



## TASK II. ON-GOING OPERATIONS AND MAINTENANCE (O&M)

Iteris understands the importance of monitoring and maintaining the corridor performance after the primary implementation phase. Therefore, Iteris will continue to provide ongoing support for the Euclid Street corridor for a period of 24 months during the O&M phase of this project, with a goal not only to maintain but also further enhance the corridor performance.

### II.A. Monitoring & Improvement of Optimized Signal Timing

Iteris will monitor and maintain corridor synchronization by performing monthly travel time floating car surveys during weekday AM, Midday (MD), PM peaks and weekend peak periods. During our Tru-Traffic travel time runs, we will also ensure all side streets and left-turns do not experience long queues or delays. If any roadway segments are observed to be consistently under-performing after several consecutive months of floating car surveys, Iteris will provide recommendations to the affected agencies to improve the performance and progression. Each month, Iteris will provide a report to the agencies involved summarizing the data collected, field observations, and any recommendations.

In addition, Iteris will utilize the advanced tools from ClearGuide and Signal Performance Measures (SPM) to provide continuous monitoring of the traffic system which will result in an improved corridor performance throughout the O&M period as any degradations will be identified and remedied right away instead of on the monthly interval when the corridor is driven. This will relieve City staff of the phone calls that typically arise when timing along a corridor is changed, or when faulty traffic equipment creates operational problems. Iteris utilizes ClearGuide Arterial Performance Measure (APM), which is similar to MoonShadow, and I would say superior as the ClearGuide APM provide continuous monitoring and alerting to any degradation in performance. This is superior to driving the corridor on a single weekday and single weekend day every month which may not capture any recurring issues. **Figure 14** below show an example of an alert on the La Palma corridor which is being monitored by ClearGuide APM.

Figure 14: ClearGuide APM Route Alert

## Route Alert Activated

Alert Name: WB La Palma

Route Name: E LA PALMA AVE (W) to LA PALMA AVE (W)

Congestion exceeds the threshold of 15% longer than historic travel time.

For 15 consecutive minute(s)

Alert Activated: 12/02/22 14:06 PST

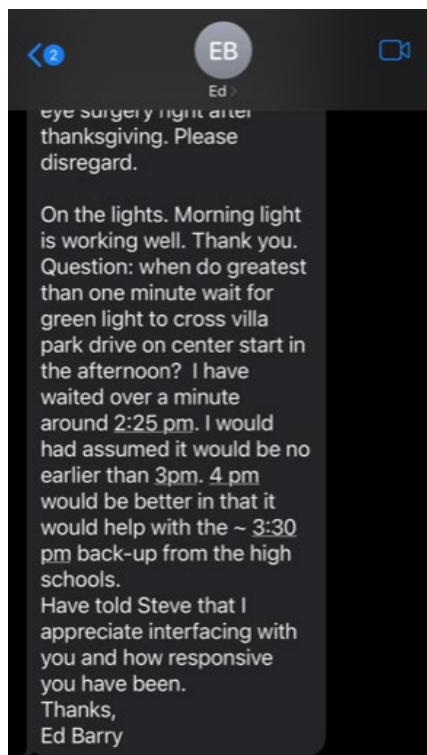
Congestion at  
Activation: 17.7 %

### ALERT QUICKLINKS

[VIEW TIMESERIES](#)  
[\[anaheim.iteris-  
clearguide.com\]](#)
[VIEW ROUTE MAP](#)  
[\[anaheim.iteris-  
clearguide.com\]](#)

Iteris is extremely proactive in monitoring the communication system performance as well as the traffic signal timing performance to ensure the primary corridor and crossings are operating optimally for commuter traffic and the local neighborhood. When an issue is reported, Iteris works aggressively and conscientiously to resolve the issue. In fact, Iteris will reach out to the citizens who are experiencing any issues on the project corridor to ensure all the pertinent information is collected to resolve the issue. **Figure 15** below depicts text messaging from a Villa Park resident with Gabriel Murillo after timing was deployed on the Katella project and to ensure the issue(s) was/were completely resolved to the satisfaction of the constituent.

Figure 15: Text Message with Citizen to Resolve Traffic Signal Timing Operational Issues



## II.B. Communications & Detection Support Timing

Iteris will provide on-call support to the Cities for any issues that may arise due to timing or hardware (e.g., detection or communication) as reported by agencies' staff. This can be initiated either by project agencies (e.g., check intersection timings, troubleshoot equipment, etc.), or proactively by Iteris to ensure intersection operations are well maintained. Iteris will deploy our staff within 48 hours of notification to conduct a field visit for troubleshooting. Upon completion, Iteris will report our findings and any repair work done to the agencies for their records. Iteris is proud to offer this responsive service on all the Project "P" RTSS projects in a timely manner.

As integration lead of LLG, **Mr. Felipe Ortega** will also provide support to troubleshoot the communication and signal system as needed throughout the project corridor. He developed the network infrastructure and integrated most of the network devices and serves in City of La Habra and City of Fullerton for numerous years. This will further enhance the Team's capabilities and team talent for the City of La Habra to ensure the project is completed satisfactorily.

## II.C. On-Going Operations & Maintenance (O&M) Report

Iteris will submit a final report for the O&M phase to document the data collected in comparison to the initial 'after' study. The report will also include a summary of all the modifications made during the two-year period and any additional recommendations for signal system upgrades or low-cost infrastructure improvement along the study corridor. Iteris will also provide the City with any necessary documentation and information and will assist the City to expeditiously close-out the project as per the CTFP guidelines.



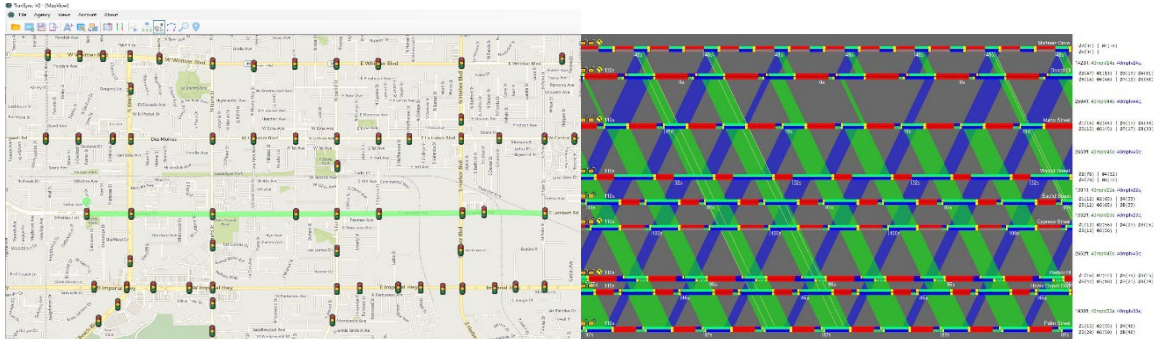
## TASK III. OPTIONAL TASKS

### III.A. Coordination optimization and Monitoring using TranSync Software (OPTIONAL)

Iteris will utilize TranSync software as a supplementary tool to augment the signal coordination plans generated by Synchro and to verify coordination progression in the field **without additional cost to this project**. TranSync is a software with similar functions to Synchro or TruTraffic software to optimize signal timing (desktop version) and can be used on mobile devices to collect evaluation measures such as travel time, average speed, as well as travel time video (mobile version). A study reported that TranSync offset optimization outperformed Synchro in terms of arterial coordination and fine-tuning efforts required in the field. With signal timings loaded into the mobile app and clocks synchronized with the controllers, TranSync provides the driver in the study car a graphic of the designed time-space diagram with recorded trajectory of travel time runs and a recorded video that can be used to identify out-of-sync signals, unexpected stops, fine-tuning needs of offsets, and other information that can be used to confirm implementation of new timing plans and perform before-after evaluation.

The TranSync mobile module is developed by Dr. Tian, a professor at the University of Nevada, Reno, where Mr. Jason Xu received his 2nd Master's degree. Mr. Xu has been following up with Dr. Tian during the migration of TranSync by sharing local timing practices and CSPI applications. **Iteris staff are expertly familiar with TranSync software and can utilize the software on day one without any learning curve. As shown in Figure 16, we have already loaded La Habra signals in TranSync.**

Figure 16: TranSync Software Example



### III.B. Traffic Responsive Operation (OPTIONAL)

Variable and unpredictable traffic volume changes can pose major challenges for traffic signal operation and traffic control systems, especially with the uncertainties of post-COVID conditions. In addition to standard practice in time-based signal coordination, Iteris will assist each stakeholder to evaluate the capacities of City's existing system to operate Traffic Responsive plan selection through the data it collects from the existing detection system in the field. **This will enable the system to highlight its potential for selecting desired plan/cycle to respond to changing traffic conditions.** Iteris will utilize the responsive operation experience in other agencies to provide the following services:

- **Develop one (1) shoulder plan for each of peak periods (weekday AM and PM peaks)**
- Identify system detections and recommend minor detection adjustments if needed
- Recommend a K-Value (a factor used to weight the occupancy values within a system detector group), system polling period, and Reference Value (RV) that are calculated using average volume and occupancy from each detector group
- Develop and activate traffic responsive functions
- Evaluate its performance both in the field and directly in each City TMC.
- Evaluate how to operate Caltrans intersections with Traffic Responsive if possible

### III.C. Corridor Performance Measures using ClearGuide or MoonShadow (OPTIONAL)

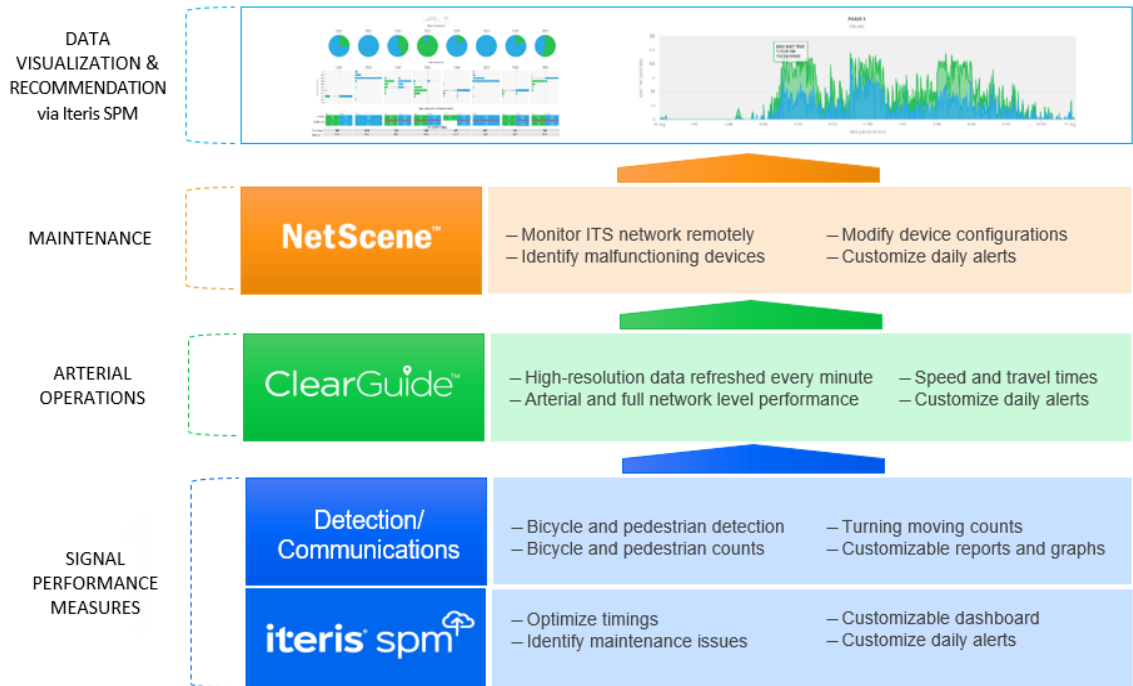
Signal timing at its core, however, can be labor intensive, limited due to manual counts for specific time-periods, and not necessarily proactive. Further, agency budgets only allow for retiming every 3 – 5 years, but timing can be disrupted much more frequently. To combat this issue, Iteris develops solutions that leverage data and technology, with our staff of computer programmers, data scientists, and traffic engineers. The key is the traffic engineers who review our solutions with the idea of making their job easier to do and more effective in their deployment.

**The results are in our smart mobility platform that starts at the intersection with Iteris SPM and continues through visualization of the connected arterials with ClearGuide as depicted in Figure 17 on the next page.**

The solutions are cloud-based and accessible from any computer, allowing users to quickly see the status of their network to quickly adjust, monitor, or report on their network's level of service. More simply, Iteris SPM provides intersection level monitoring and insights, while ClearGuide provides corridor level insights.

Iteris' ClearGuide service ingests, analyzes, and visualizes commercial speed data, as well as other safety and sensor data sets, and provides actionable information on real-time problem areas, corridors where performance is degrading, and intersections with the most severe congestion. These analytics provide instant access to corridor before and after studies with much more comprehensive coverage than is possible with floating car runs. They also enable agencies to take a data-driven approach to prioritizing signal synchronization corridors and determining when a particular corridor should be retimed.

Figure 17: Iteris' ClearGuide System Suite

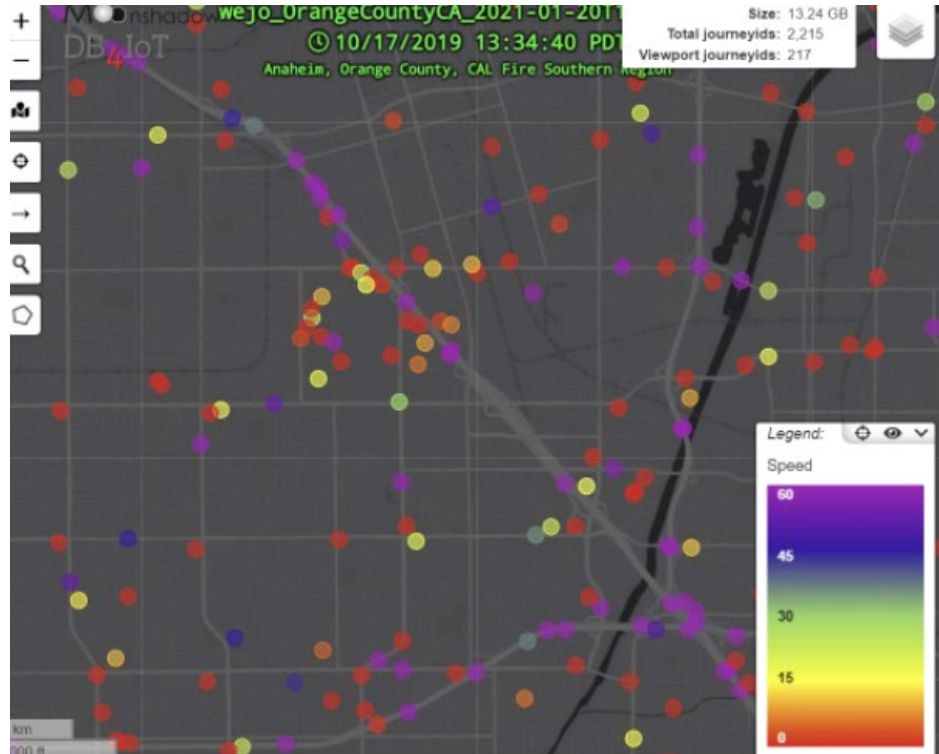


ClearGuide and SPM are both web-based, cloud-hosted services that are used by agencies across the country to prioritize TSS corridors, perform before and after studies, and identify, diagnose, and fix operational issues at intersections. Examples within southern California include:

- Iteris utilized ClearGuide to monitor PCH TSSP and developed a method for the automated development of CSPI.
- Iteris is using ClearGuide for monitoring traffic and MOT on the I-405 Improvement Project with significant benefits to arterial traffic
- SBCTA has used ClearGuide for 5 years for LOS Monitoring on arterial roadways
- LA Metro selected ClearGuide to support its Measure Up Arterial Performance Measure Pilot
- Iteris SPM was deployed as part of the Main Street RTSSP Project for the Cities of Santa Ana, Orange, and Irvine

Iteris is familiar with MoonShadow and the ability to develop the CSPI. The only way to develop CSPI scores is to estimate when traffic is stopped, and this requires Wejo data. Wejo data with 3 second update time is very costly. The Iteris ClearGuide system provides a superior tool to monitor the corridor and we have developed a manual method for the development of the CSPI scores as well. **Figure 18** shows the MoonShadow interface with Wejo Data for Orange County. Iteris can utilize both systems to compare and contrast for the first 3 months of the O&M. Then a decision can be made how to move forward. The costs for the MoonShadow system with Wejo Data is much higher than the ClearGuide alternative.

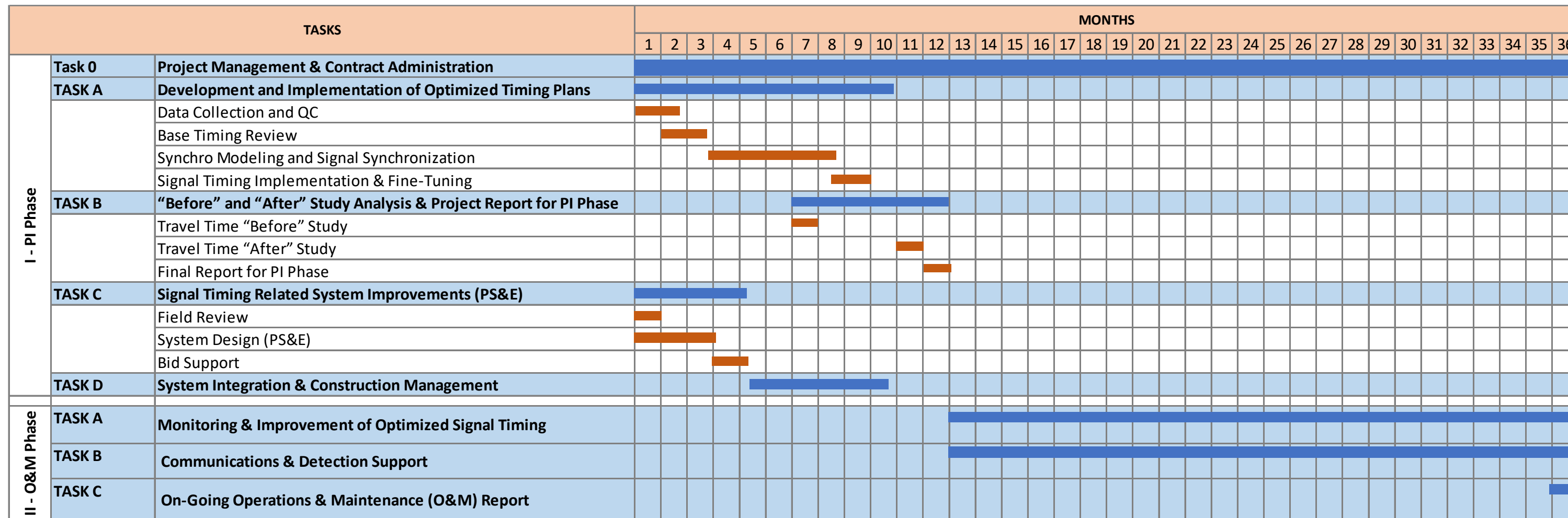
Figure 18: MoonShadow with Wejo Data Example



## Project Schedule

Iteris has provided the following proposed 36-month project schedule as shown in Figure 18.

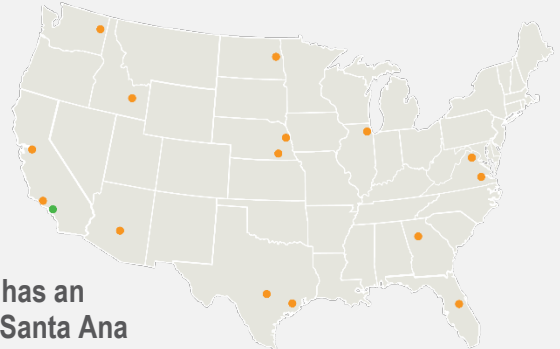
Figure 19 – Detailed Project Schedule



## C. PREVIOUS PROJECTS AND EXPERIENCE

### Firm Profile

Iteris, Inc. (Iteris) a publicly traded corporation (NASDAQ: ITI), is the market leader in smart mobility infrastructure management for **36 years**. Iteris' 425+ staff have decades of expertise in traffic management, along with superior services and patented products that help detect, measure, and manage traffic and vehicular performance, minimize traffic congestion, enhance safety, and empower Iteris clients with solutions to better manage their transportation networks. **Iteris has an office in the City of Los Angeles and another in the City of Santa Ana conveniently located near the different cities involved in this project.**



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

#### Firm Representative:

Scott E. Carlson  
 General Manager  
**Address:** 1700 Carnegie Ave,  
 Santa Ana, CA 92705  
**Telephone:** (949) 270-9578

### Experience With Similar Work

We have completed more than 3,000 traffic signal timing, coordination, or synchronization projects, covering over 27,000 intersections across 20 states that are used to control traffic flow for 7,500+ road miles.

Iteris has built its transportation engineering experience with engineers who exemplify both traditional and unconventional engineering methods to provide innovative traffic engineering solutions. Iteris' local knowledge and vast experience on similar projects, as shown in **Table 4**, provide the resources and background needed to tackle any technical requests that arise. Iteris will deliver precise answers to meet City and Stakeholder needs and expectations for the following competencies relevant to this Project:

- Traffic Engineering and Design
- Traffic Operations and Analysis
- Traffic Management Center (TMC)
- Traffic Signal Systems
- Advanced Traffic Signal Performance Measures (ATSPM)
- Corridor Performance
- Measurement/Traffic Monitoring
- Intelligent Transportation Systems (ITS)
- Fiber-Optic Communications
- Traffic Signal Synchronization (TSS)
- Pedestrian and Bicycle Access
- Safety Analysis
- Smart Cities

Iteris' staff bring a balanced combination of skill and practical experience ideally suited to the requirements for this project. They have participated in numerous related projects and have demonstrated expertise in traffic engineering, ITS, communications, traffic operations, and signal synchronization. Iteris is confident that the staff proposed for this project will fulfill the required services to the City's complete satisfaction. A summary of regional TSS projects that Iteris key staff have been involved with in Orange County is provided in **Table 4**.

**Table 4 – Iteris' Regional RTSSP Project Experience**

PROJECT PROGRAM	CORRIDOR(S)	LEAD AGENCY	DETAILS	BENEFIT/COST RATIO
Call 1 FY11/12	Warner Ave RTSSP	OCTA	43 signals; 13 miles; 4 agencies	14:1
	Jamboree Rd RTSSP	Irvine	27 signals; 9 miles; 4 agencies	21:1
	Lincoln Ave RTSSP	Anaheim	53 signals; 13 miles; 3 agencies	16:1
	Valley View Rd RTSSP	Buena Park	20 signals; 3 miles; 3 agencies	14:1
Call 2 FY12/13	Pacific Park/Oso RTSSP	OCTA	32 signals; 9 miles; 5 agencies	20:1
	Knott Ave RTSSP	Buena Park	28 signals; 7 miles; 5 agencies	18:1
	17 <sup>th</sup> St RTSSP	Costa Mesa	9 signals; 3 miles; 3 agencies	34:1
	Victoria St RTSSP		11 signals; 3 miles; 3 agencies	34:1
	Newport Coast Drive RTSSP	Newport Beach	13 signals; 5 miles; 3 agencies	11:1
	San Joaquin Hills Rd RTSSP		11 signals; 4 miles; 2 agencies	11:1
	Culver/Bonita Canyon/Ford RTSSP	Irvine	39 signals; 11 miles; 3 agencies	22:1
Call 3 FY13/14	Trabuco Rd RTSSP	OCTA	14 signals; 5 miles; 2 agencies	13:1
	Newport Blvd South RTSSP		34 signals; 8 miles; 3 agencies	12:1
	Barranca/Muirlands RTSSP	Irvine	44 signals; 13 miles; 4 agencies	18:1
	Harbor Blvd RTSSP	Anaheim	22 signals; 4 miles; 2 agencies	11:1
Call 4 FY14/15	Orangewood Ave RTSSP	Anaheim	18 signals; 3 miles; 2 agencies	●
	Artesia Blvd RTSSP	Buena Park	11 signals; 3 miles; 4 agencies	23:1
	Bristol St RTSSP	OCTA	45 signals; 8 miles; 4 agencies	12:1
	El Toro Rd RTSSP	Laguna Woods	15 signals; 3 miles; 4 agencies	6:1

PROJECT P PROGRAM	CORRIDOR(S)	LEAD AGENCY	DETAILS	BENEFIT/COST RATIO
			agencies	
	Moulton Pkwy RTSSP		37 signals; 11 miles; 4 agencies	8:1
	Harbor Blvd RTSSP	Santa Ana	46 signals; 10 miles; 5 agencies	17:1
Call 5 FY15/16	Coast Highway RTSSP	OCTA	27 signals; 9 miles; 2 agencies	17:1
	La Palma Ave RTSSP	Anaheim	39 signals; 12 miles; 2 agencies	23:1
Call 6 FY16/17	Marguerite Parkway RTSSP	Mission Viejo	30 signals; 9 miles; 1 agency	18:1
	Brookhurst RTSSP	OCTA	59 signals; 17 miles; 6 agencies	●
	Von Karman/Tustin Ranch RTSSP	Irvine	30 signals; 8 miles; 3 agencies	20:1
Call 8 FY18/19	Katella/Villa Park/Santiago Cyn RTSSP	OCTA	73 signals; 20 miles; 9 agencies	31:1
	Main St RTSSP		67 signals; 12 miles; 4 agencies	33:1
	Culver/Bonita Canyon/Ford RTSSP	Irvine	39 signals; 11 miles; 3 agencies	●
Call 9 FY19/20	MacArthur Blvd RTSSP	Irvine	22 signals; 7 miles; 3 agencies	●
Call 10 FY20/21	Tustin / Rose RTSSP	Orange	54 signals, 11.4 miles, 6 agencies	●
	Warner RTSSP	OCTA	42 signals; 13 miles; 3 agencies	●
Call 11 FY21/22	First St / Bolsa Ave RTSSP	OCTA	55 signals; 13.1 miles, 6 agencies	●

● Project in progress    ● Iteris Performed System integration only

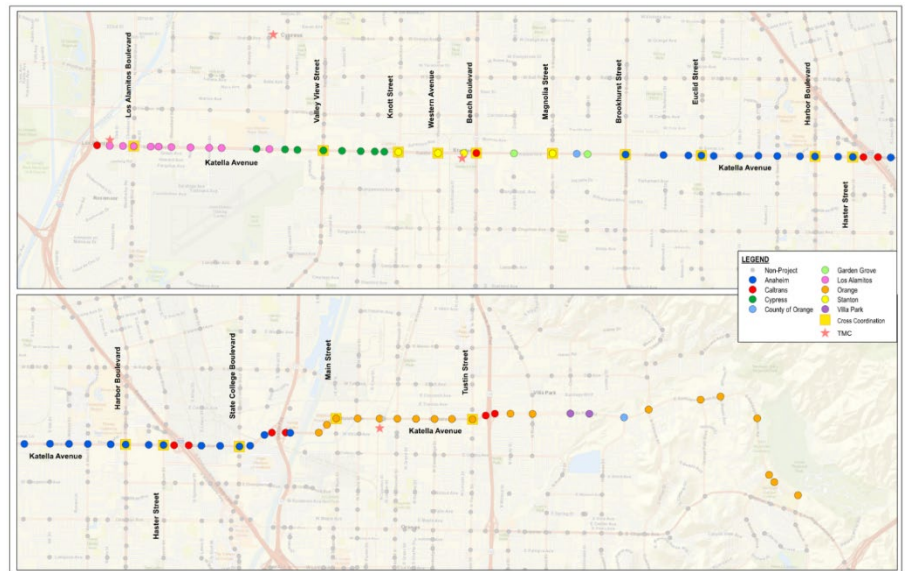
## Project Qualifications

As requested per the City's RFP, the following section contains a collection of relevant and applicable projects that Iteris has either completed or is currently working on within the last 3 years. These project profiles include a compressive scope of work, including project start/end dates, staff assigned who are proposed for this Euclid Street RTSSP, and final project outcomes.

### Traffic and Intelligent Transportation Systems Engineering Services, Katella Avenue, Orange County Transportation Authority (OCTA) – Orange County, CA

**Staff:** Jason Xu, Gabriel Murillo, Paul Frislie

Iteris was selected by OCTA for a \$4.7 million regional traffic signal synchronization project along approximately 20 miles of the Katella Avenue corridor extending through the Cities of Anaheim, Cypress, Garden Grove, Los Alamitos, Orange, Stanton, Villa Park and the County of Orange jurisdictions in Orange County, California. The three-year project includes signal coordination and timing improvements, with the aim of improving traffic flow, enhancing public safety, and decreasing stops. Under the project agreement, Iteris will provide services that will upgrade traffic signal hardware and communications equipment and optimize signal timing along Katella Avenue / Villa Park Road / Santiago Canyon Road, a major east-west corridor that comprises 73 major signalized intersections.

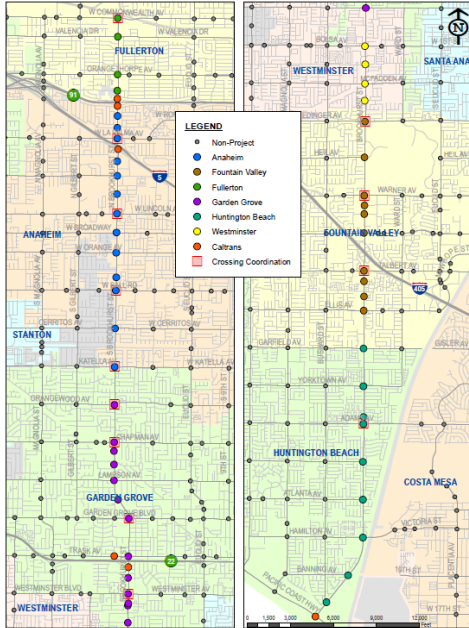


As part of the project, Iteris' Intersection-as-a-Service™ end-to-end solution offering will deliver proactive monitoring of traffic signal operations at all project intersections. The primary goal of this project is to deploy new Intelligent Transportation System (ITS) equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles, and pedestrians.

Iteris is proud to support OCTA's goal of improving the safety and mobility of road users by embarking on this traffic signal synchronization project. This initiative will ultimately help increase the value and effectiveness of the region's existing transportation infrastructure, while improving air quality and reducing fuel consumption.

## OCTA Brookhurst Street Regional Traffic Signal Synchronization Corridor – Huntington Beach, Fountain Valley, Westminster, Garden Grove, Anaheim, and Fullerton (06/2018 – 06/2021, O&M Phase)

**Staff:** Jason Xu, Paul Frislie, Jose Castellanos



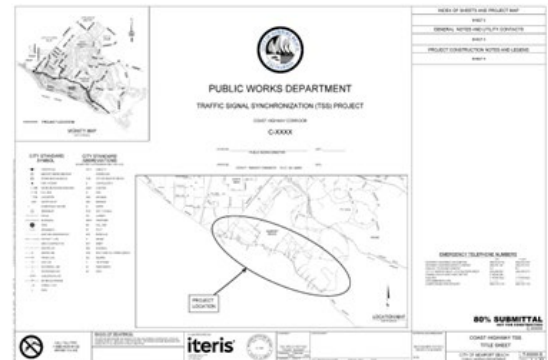
Iteris designed and implemented infrastructure updates and signal timing plans along the Brookhurst corridor which includes 59 traffic signals along 16.5 miles and within six jurisdictions. Tasks completed for all agencies included: Designing and constructing project improvements (ITS devices, fiber communication, and TMC upgrades); system integration; collecting traffic counts (ADT and turning movements); developing, implementing, and fine-tuning four traffic signal synchronization plans (weekday AM, midday, PM, and weekend); Conduct “Before” and “After” travel time studies to identify project benefits; and Provide O&M support for 24 months for equipment upgrades and signal operations. Iteris’ approach to both infrastructure and TSS improvements is focused on each agency’s overall network. The communication design includes redundancy and plans for future expansion; TMC improvements, such as McCain Transparency ATMS software for Huntington Beach; and signal optimization evaluates all previous and current crossing arterial coordination plans to ensure appropriate progression for all approaches. Upon completion of all improvements and gathering

of the performance measures, Iteris provided 24 months of O&M support. This includes making any necessary timing adjustments or equipment troubleshooting to maintain the performance achieved throughout the life of the project.

## OCTA - Pacific Coast Hwy Traffic Signal Synchronization (TSS) – Orange County and City of Newport Beach, CA (05/2016 – 12/2021)

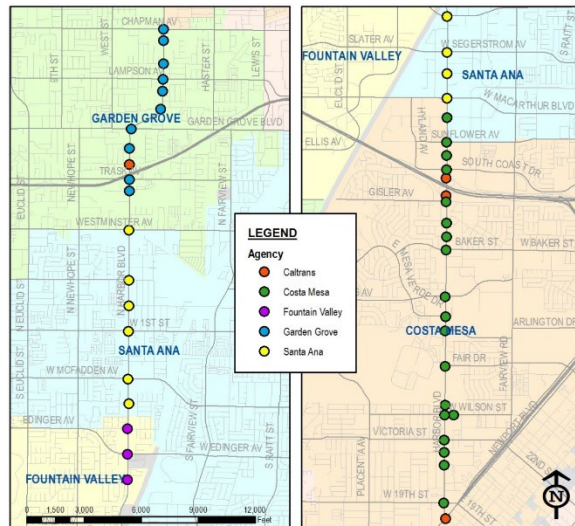
**Staff:** Gabe Murillo, Jason Xu, Paul Frislie

This project is being led by the OCTA but is primarily a City of Newport Beach and Caltrans project. This project is essentially a design / build project with the design, construction and integration of an upgraded communication system that services both Caltrans and the City of Newport Beach. This project will develop a PS&E package for approximately 11 miles of fiber optic cable, integration of three new HD CCTV surveillance cameras, a new DMS sign and system. This project will also upgrade 15 controllers to 2070 controllers for Caltrans and provide fiber optic communication connection to City Hall and Caltrans TMC. This project will develop new timing plans for the entire corridor which include 4 timing plans, 3 weekday peak period timing plans and a weekend timing plan. This project will also provide 24 months of O&M services to maintain the communication system as well the signal timing operations of the corridor.



## Harbor Boulevard Corridor Traffic Signal Synchronization (TSS) Project, City of Santa Ana, CA (6/2015 - 6/2020)

**Staff:** Jason Xu, Gabe Murillo, Bernard Li, Paul Frislie, Jose Castellanos, Evan Shipley



This multi-jurisdictional project involved signal synchronization and equipment upgrade along Harbor Boulevard from Chapman Avenue to Newport Boulevard, spanning across the Cities of Garden Grove, Santa Ana, Fountain Valley, and Costa Mesa, as well as freeway on/off ramps at SR-22 and I-405 within Caltrans jurisdiction. The project was funded by the Renewed Measure M from OCTA, with the City of Santa Ana serving as the lead agency.

In addition to generating PS&E packages for equipment upgrades, such as ADA-compliant upgrades, Bluetooth travel time devices, controller cabinet, emergency vehicle preemption and new fiber optic communication, the project also included the

development, implementation and fine-tuning of the AM, PM, mid-day, off-peak and weekend traffic signal coordination timing plans for all 46 intersections along the corridor. Iteris also provided TMC upgrades to the cities of Costa Mesa and Santa Ana, which spans from CCTV licenses and workstations to designing and replacing the City's existing video wall system with newer and more advanced capabilities. Iteris staff were present during construction and also performed all necessary integration, implementation, and fine-tuning tasks. As per the requirements of the M2 guidelines, Iteris also provided Operations and Maintenance (O&M) support for two years.

## Traffic Signal Retiming of 113 Intersections, HSIP Funding, City of Chula Vista, CA (2/2020 – ongoing)

**Staff:** Jason Xu, Gabe Murillo, John Albeck, Evan Shipley, Jose Castellanos

Iteris serves as Prime Consultant to conduct area-wide signal timing study and develop optimized coordination plans that balance the progression between competing movements at 113 signals. Iteris has been reviewing and optimizing the signal timing along major corridors throughout Western Chula Vista to maintain mobility throughout the region, improving traffic throughput, operational reliability, and safety of all roadway users. This project performed a thorough review of the basic timing parameters to ensure they are in compliance with the latest California Manual on Uniform Traffic Control Devices (CA MUTCD), City timing preferences, and industry practices. Coordination optimization also considered the potential deployment of leading pedestrian interval (LPI) that will be implemented through a separate project.

## ConOps, Permitting, and Installation Support for Signal Adaptive System, City of Brea, CA (12/2019 – Ongoing)

**Staff:** Jason Xu, Gabe Murillo, Jose Castellanos

Iteris provided ConOps, system installation and configuration, and continual monitoring services for the deployment of SynchroGreen Adaptive Signal Control Technology (ASCT) system in the City of Brea. As

### City of La Habra

Euclid Street Corridor Project Regional TSS Program

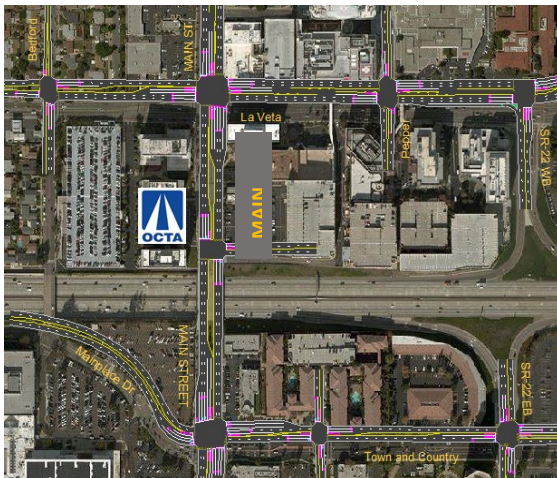
part of a mixed-use development project, the ASCT system was installed at 11 traffic signals along two major crossing arterials to accommodate the forecasted traffic increase and fluctuation of seasonal traffic attracted by Brea Mall. In addition to the ASCT system, TrafficCast BlueTOAD Spectra Roadside Units (RSU) have been installed to provide real-time traffic data via Bluetooth/Wi-Fi detection and connected vehicle capability via Dedicated Short-Range Communication (DSRC, 5.9 GHz). This project integrated BlueTOAD RSUs to the new central ASCT system and utilize BlueTOAD data to conduct signal operation monitoring during the construction and the following operation monitoring & maintenance (O&M) phase. This project also completed the following to comply with traffic related permitting conditions for this mixed-use development project:

- Development of a ConOps to document implementation strategies of adaptive signal control and critical technical steps. The ConOps is used to support public hearing and review and more importantly to document how the corridor is designed to operate.
- Programming and testing the Naztec 980 ATC controller settings for 11 locations
- Controller video detection assignment upgrade
- Installation of Naztec 980 ATC controllers at the existing NEMA signal cabinets and integration with the Trafficware ASCT system
- Configuration and fine-tuning of SynchroGreen ASCT system
- Quarterly traffic monitoring reports and system maintenance support through the course of construction and continual operation monitoring and maintenance (O&M)

The project began in December 2019 and is currently in monitoring phase.

### Main Street RTSSP Project, OCTA & Cities of Orange, Santa Ana, Irvine, and Caltrans, CA (12/2019 – 6/2023)

*Staff: Bernard Li, Jose Castellanos*



OCTA selected Iteris for a \$3.6 million RTSSP project along 12 miles of the Main Street corridor that comprises 67 traffic signals within the Cities of Orange, Santa Ana, Irvine and Caltrans District 12. This three-year project includes a primary implementation (PI) phase for signal coordination and ITS equipment upgrades, and a 2-year O&M phase, with a goal to support the management of the agencies' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, enhance safety for all road users, while improving air quality and reducing fuel consumption. **The signal coordination effort conducted by Iteris has resulted in a project benefit-to-cost (B/C) ratio of 34:1 over a 3-year period.**

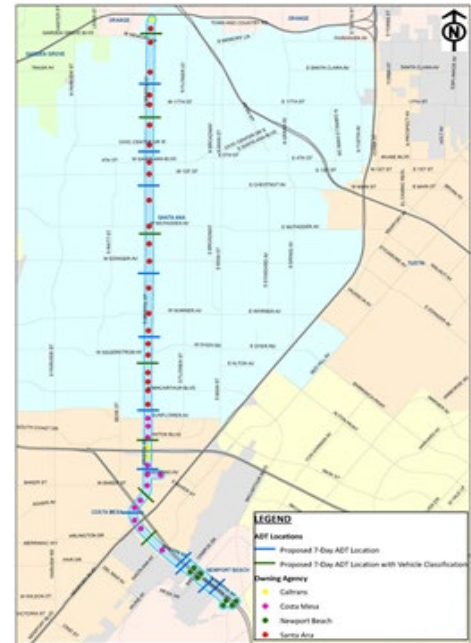
As part of the project, Iteris' Signal Performance Measures (SPM) was implemented to deliver proactive monitoring of traffic signal operations at all project intersections. This **SPM offering is first of its kind for OCTA and local agencies and will revolutionize how traffic operations are managed.** The PI phase of this project was completed in June 2021 and the project is currently in its final year of the O&M phase.

## Bristol Street RTSSP Project, OCTA & Cities of Santa Ana, Costa Mesa, Newport Beach, and Caltrans, CA (6/2016 – 5/2020)

*Staff:* Bernard Li, Paul Frislie

OCTA retained Iteris through the 2014-2019 on-call traffic engineering contract, in which Iteris was once again the top-ranked firm, to provide operations and infrastructure improvements at 45 intersections along an 8-mile segment for Bristol Street, spanning across the Cities of Santa Ana, Costa Mesa and Newport Beach. Bristol Street is a major north-south arterial used by travelers and commuters and serves as the main access road to South Coast Plaza, the largest shopping mall by size on the West Coast. The primary goal of the project is to improve traffic flow and safety for all users including vehicles, buses, bicycles, and pedestrians.

Iteris designed and constructed traffic signal equipment and infrastructure upgrades, including Ethernet-over-copper and fiber optic communications, traffic signal controllers, traffic signal cabinets, signal modification, CCTV cameras, EVP equipment, Bluetooth, loop detection, TMC upgrades for Santa Ana and Costa Mesa and GPS unit at I-405 ramp for time-based coordination. All 45 intersections, including Caltrans ramp signals, were retimed with AM, PM, mid-day and weekend traffic signal coordination timing plans. Iteris worked closely with OCTA and participating agencies to ensure all involved Cities received the necessary traffic signal upgrades, communication infrastructure upgrades, optimized plans, and 2-year ongoing O&M support. The before/after studies computed the **project benefits to be \$12.6 million over three years with a benefit-to-cost (B/C) ratio of 12:1.**



## Regional Traffic Signal Synchronization Program (RTSSP) Project for Tustin Avenue - Rose Drive – City of Orange, CA (09/2021 – On-going)

*Staff:* Gabe Murillo, John Albeck, Evan Shipley, Jason Xu

Under the project agreement, Iteris will make infrastructure upgrades, signal coordination and timing improvements, develop signal timing plans for key signalized intersections, provide vehicle turn movement counts and perform before-and-after corridor analysis along the Tustin Avenue/Rose Drive corridor from First Street in the City of Tustin to Wabash Avenue in the City of Yorba Linda. The project area comprises 54 signalized intersections spanning six cities – Tustin, Santa Ana, Anaheim, Orange, Placentia, and Yorba Linda – as well as key highway on/off ramps under Caltrans, in Orange County, California. The PS&E phase of this project is near completion. Iteris will provide construction oversight and support during the construction of infrastructure and ITS upgrades. Upon completion of construction, Iteris will implement and finetune improved signal coordination timing plans for the entire corridor.

## References

Table 5 includes references for individuals most familiar with our team's past performance.

Table 5 – Team References

REFERENCE	ADDRESS	PHONE AND EMAIL	PROJECT
<b>ITERIS</b>			
Paul Oberbauer, Senior Civil Engineer, City of Chula Vista	1800 Maxwell Road Chula Vista, CA 91911	(619) 409-5804 poberbauer@chulavistaca.gov	Traffic Signal Retiming of 113 Intersections, HSIP Funding
Tran Tran, PE, Traffic Engineering Manager, City of Lake Forest	100 Civic Center Dr. Lake Forest, CA 92630	(949) 461-3485 ttran@lakeforestca.gov	Traffic Signal Management On-Call Services
Jaimee Bourgeois, City Traffic Engineer, City of Irvine	1 Civic Center Plaza Irvine, CA, 92606	(949) 724-6369 jbourgeois@cityofirvine.org	On-Call Consulting Services – Traffic Signal And Its Design & Modeling
<b>LLG</b>			
Matthew Sinacori, P.E., Director of Public Works/City Engineer, City of Dana Point Department of Public Works	33282 Street of the Golden Lantern Dana Point, CA, 92629	(949) 248-3574 msinacori@danapoint.org	City-wide timing update project and Systems integration.
Luis Pimental, E.I.T, Assistant Engineer, City of Irwindale, Public Works Engineering	5050 North Irwindale Irwindale, CA 91706	(626) 430-2259 lpimental@IrwindaleCA.gov	On-Call Services
Michael Plotnik, Traffic Manager, City of La Habra Department of Public Works	110 E. La Habra Boulevard La Habra, CA 90631	(562) 383-4162 mplotnik@lahabraca.org	Lambert Road Corridor RTSSP
<b>KOA</b>			
Ted Gerber, Director PW, City of South Pasadena	1414 Mission Street South Pasadena, CA 91030	(626) 460-6392 tgerber@southpasadenaca.gov	North-South Corridor ITS Improvements
Alicia Yang, Project Manager, OCTA	550 S. Main Street Orange, CA 92868	(714) 560-5362 ayang@octa.net	OCTA Traffic Signal Synchronization Master Plan Update
Martin Amundson, PM, LACDPW	900 S. Fremont Ave. Alhambra, CA 91803	(626) 300-4774 mamund@dpw.lacounty.gov	Multiple Traffic Signal Synchronization

## D. RESUMES OF PROJECT TEAM

The following section will provide information about project management, personnel staffing levels, staff experience and methods Iteris will use to ensure budget and schedule control. **Resumes for all staff are included in the Appendix.**

### Project Manager (PM)



**Mr. Jason Xu, PE, PTOE, PMP**, will serve as the PM for this project and will be the principal contact with the City for the duration of the project. Jason has over 14 years of experience working in various fields of traffic engineering and design, transportation planning, ITS design, signal system upgrade and integration, TMC operation, active transportation planning and design, freeway and arterial performance analysis, transportation system simulation, and a variety of engineering studies. Mr. Xu is an expert with traffic signal operation and synchronization. He served as project manager or task lead on numerous development/ implementation of regional-based signal synchronization master plans, city-wide signal coordination, multi-jurisdictional signal synchronization, transit signal priority, and special signal operation logic. Mr. Xu is also skilled in

the technologies of signal system interconnect, traffic detection, SPM and Emergency Vehicle Preemption (EVP).PM for this project.

### Principal-In-Charge & QA/QC Manager

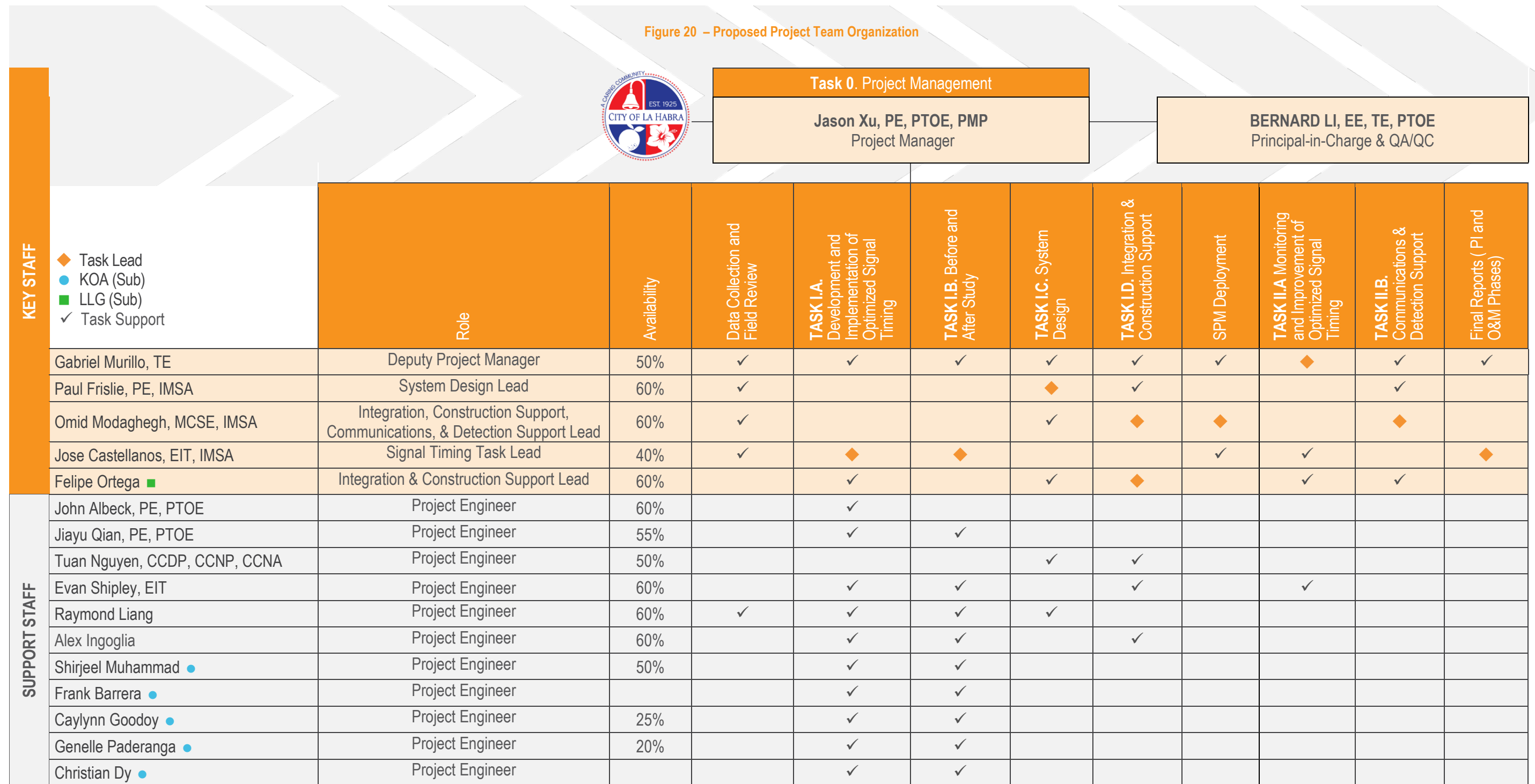


Iteris' ability to implement high-quality deliverables is a direct result of Iteris' adherence to a QA/QC program that ensures accuracy, product usability, and an overall commitment to product excellence and user satisfaction. **Mr. Bernard Li, EE, TE, PTOE** will ensure commitment to project objectives by identifying goals at the outset of the project and monitoring product implementation and delivery process. The Iteris QA/QC Plan covers every aspect of the project production including evaluation process, project documentation, and presentations.

Mr. Li serves as a Vice President of Iteris' Mobility Consulting Solutions and has been with the firm since 2010. He has 34 years of experience in providing professional services in planning, design and implementation of traffic engineering and Intelligent Transportation Systems (ITS). Mr. Li has served as Project Manager or Principal-in-Charge on numerous traffic and ITS design/construction, traffic signal timing and synchronization projects, including many Orange County RTSSP projects. His traffic engineering design expertise includes traffic signal installation, signal modification, roadway signage/stripping, street lighting, and worksite traffic control and neighborhood traffic management. Mr. Li's ITS experience comprises fiber optic communications, wireless communications, Closed-Circuit Television (CCTV), Video-Detection System (VDS) and Dynamic Message Signs (DMS). He is also highly experienced in traffic signal operations, having assisted numerous agencies in the analysis, retiming, and synchronization of traffic signals, both corridor and network wide.

## Project Organization

Figure 19 illustrates Iteris' proposed team organization. Resumes for proposed staff are in the Appendix.



## Methods to Ensure Quality, Budget, & Schedule Control

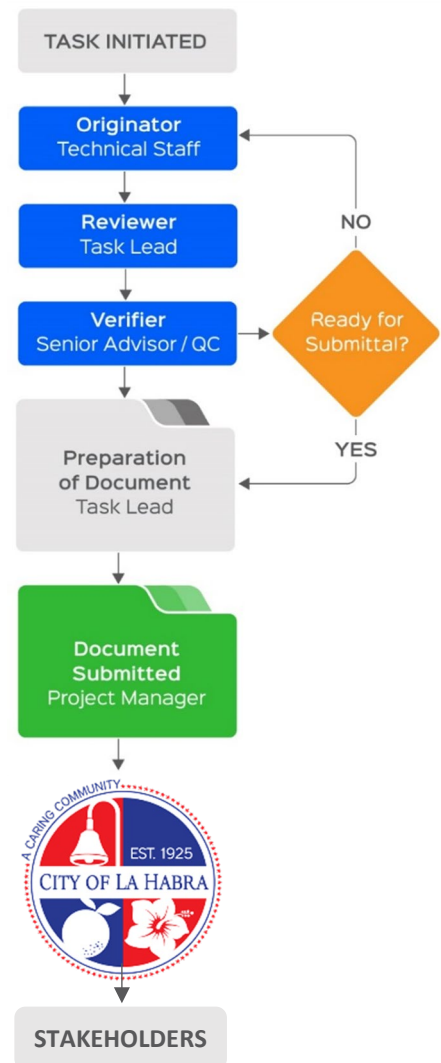
Iteris' ability to implement high-quality deliverables is a direct result of Iteris' adherence to a QA/QC program that ensures accuracy, product usability, and a commitment to product excellence and user satisfaction. As QA/QC Manager, **Mr. Bernard, Le, EE, TE, PTOE**, will ensure the team's commitment to these objectives by identifying goals at the outset of the project and monitoring the product implementation and delivery process. Iteris' QA/QC Plan covers every aspect of the project production including the evaluation process, project documentation, design plans, graphics, and presentations. QA/QC is a major factor in reducing project issues and errors and will assist with identifying conflicts or inconsistencies within project documentation.

**Figure 20** illustrates Iteris' QA/QC flowchart. In addition to the project budget, ample time to complete reviews must be accommodated in the project schedule, as well as provide sufficient time to address comments and incorporate into the final delivery to the City of La Habra and project stakeholders.

Delivery of top-quality and error-free product(s) to the City of La Habra and Stakeholders will be the Iteris Team's number one project goal. All documents produced by Iteris associates and team members, whether for transmittal to a client, prospective client, another consulting firm, or for public distribution, are reviewed by someone with expertise in the relevant area other than the author to ensure that they are comprehensible and professionally written. It is difficult for the author to always catch obvious mistakes or to realize when something may be confusing to the reader, particularly when developing technical reports geared toward a lay audience. A second opinion is also invaluable in identifying alternative approaches to the analysis. Interdisciplinary review is invaluable on a multidisciplinary project like this one, as it helps ensure that recommendations are consistent between team members.

After the project team develops the deliverables, Mr. Li, and each Task Lead, will identify specific senior staff qualified to perform the reviews. At each level of document review, the originator will also review their work relative to the underlying analysis, calculations, and graphics, and does not assume that someone else will be reviewing it to catch any mistakes. This same diligence is applied to graphics incorporated into documents and presentations. Graphics and presentation materials are critical elements of a project as they are what the public and policy makers' focus on, and they must be accurate and concise. Thus, Iteris will create this presentation material with the understanding that they are likely to be incorporated into presentations to the City of La Habra's Board and OCTA's Board.

**Figure 21 – QA/QC Process**



## E. FIRM REPRESENTATIVE

### Project Manager & Designated Proposal Contact

**Jason Xu, PE, PTOE, PMP**

Associate Vice President  
1700 Carnegie Ave., Ste. 100  
Santa Ana, CA 92705  
(949) 270-9504  
jxu@iteris.com

### Principal-in-Charge

**Bernard K. Li, EE, TE, PTOE**

Vice President  
1700 Carnegie Ave., Ste. 100  
Santa Ana, CA 92705  
(949) 270-9582  
bkl@iteris.com

## F. SUB-CONSULTANTS

### Linscott, Law & Greenspan Engineers (LLG)

**Role: Construction Management, Design & Integration**



LLG, a certified Small Business Enterprise (SBE), provides transportation planning, traffic engineering and parking consultation services. Since their founding in 1966, projects have been completed involving a wide variety of assignments throughout the United States and overseas, with the core of their practice in Southern California. LLG maintains offices in Pasadena, Irvine, San Diego, and Woodland Hills.

LLG is a well-respected firm of over 60 employees, comprised of dedicated professionals who serve their clients on a wide variety of traffic and transportation issues. LLG Principals and Senior Staff are recognized experts in these practice areas and possess professional registration in Traffic Engineering, Civil Engineering, or both. LLGs diverse experience and expertise enable them to provide services to public agencies and the private sector.

LLG staff have extensive experience in completing RTSSP, TSSP, ITS, and Signal Systems projects along the same lines as the Euclid Street RTSSP Project. These projects included installing and upgrading ITS elements such as signal control systems at the respective Traffic Management Centers. Other upgrades/tasks included signal design and signal timing updates, signal controller, and assembly upgrades. Operating and maintaining traffic signal systems are a key business expertise of LLG staff.

Key LLG Staff has worked on the following RTSSP Projects within the Cities of La Habra and Fullerton

#### **City of La Habra**

- On-Call ITS Support Services
- La Habra Blvd-Central Ave-State College Blvd RTSSP
- Lambert RTSSP
- Gilbert-Idaho RTSSP

- Imperial Hwy RTSSP
- Harbor RTSSP

#### **City of Fullerton**

- Harbor RTSSP

#### **Relevant project experience includes:**

#### **Costa Mesa RTSSP - Costa Mesa, CA (06/2022 – On-going)**

*Staff:* Felipe Ortega & Kim Preap

Provide TMC upgrades and integration. Provide operational improvements of local signal intersections. Provide complete systems training to Costa Mesa staff members.

Implement and fine tune traffic signal local timing, develop traffic signal design modification plans, specifications and estimates for the improvements, provide system integration services and related technical assistance.

## Lambert Road Corridor RTSSP – Brea/La Habra, CA (09/2021 – On-going)

*Staff:* Felipe Ortega & Kim Preap

Provide TMC upgrades and integration. Provide operational improvements of local signal intersections. Provide complete systems training to Brea staff members.

Implement and fine tune traffic signal local timing, develop traffic signal design modification plans, specifications and estimates for the improvements, provide system integration services and related technical assistance.

## Harbor Boulevard Corridor RTSSP – Fullerton, CA (02/2022 – On-going)

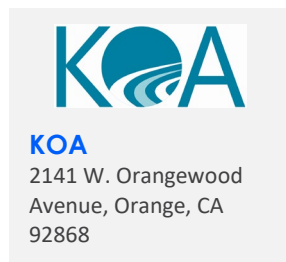
*Staff:* Felipe Ortega & Kim Preap, Corinna Gutierrez

Provide TMC upgrades and integration. Provide operational improvements of local signal intersections. Provide complete systems training to Fullerton staff members.

Implement and fine tune traffic signal local timing, develop traffic signal design modification plans, specifications and estimates for the improvements, provide system integration services and related technical assistance.

## KOA

### Role: Signal Timing & Performance Evaluation



Founded in 1987, KOA Corporation (KOA) is a leading provider in professional services in transportation engineering, mobility planning, and construction management for public agencies and private sector clients. KOA offers its clients technical knowledge, innovative solutions, and responsive services. The firm's focus on safety for all travelers is the foundation of its professional practice. KOA engineers, planners, construction field specialists, and project managers all take pride in their well-established reputation as Transportation Safety Experts. The hallmark of KOA's success is their dedication to each and every project and

desire to leave a legacy of extraordinary contribution to all communities. KOA's staff includes registered civil and traffic professional engineers, certified transportation planners, certified road safety professionals, project/construction managers, and construction inspectors. With five offices located in Southern California, KOA provides professional consulting services for some of the largest public works and planning projects for all modes of transportation throughout California. KOA has been in doing business in Orange County since 1994 for 28 years. In the City of La Habra, 15 years, City of Fullerton 8 years, City of Garden Grove 16 years, City of Santa Ana 28 years and in the City of Fountain Valley 11 years.

Key KOA Staff has worked on the following RTSSP Projects within the Cities of La Habra, Anaheim, Garden Grove, and Santa Ana.

### City of La Habra

- 6292 La Habra Street Improvement
- Idaho Street Rehab
- 20/21 Road Rehab & Slurry
- La Habra Alley Area 4 Rehab
- La Habra Alley Area 5 Rehab
- La Habra Alley Area 6 Rehab
- La Habra Alley Area 7 Rehab

- Oeste Park Parking Lot Improvement
- La Habra Parking Lot Rehab
- Residential Street Waterline & CM
- On-Call Services for Ball/Walnut TS
- Traffic Calming Support Services

#### **City of Anaheim**

- HSIP Cycle 9 Grant Application
- Citywide SRTS Sidewalk GAP Closure
- NTMP Schools & Parks Prioritize
- La Palma Parkway on St Park Stalls
- Parking Lot Safety Assessment
- Traffic Engineering & NTMP Services

#### **City of Garden Grove**

- Active Downtown Plan
- Main St Lighting Improvement

#### **City of Santa Ana**

- Metro East PS Overlay Expansion  
Santa Ana Bush Street Bike Blvd PSE

#### **Relevant project experience includes:**

#### **North-South Corridor ITS Improvements – South Pasadena, CA (10/2021 – On-going)**

*Staff:* Min Zhou, Shirjeel Muhammad, Walter Okitsu

The City of South Pasadena obtained \$10 million FHWA Rogan Funds (Bill No. HR 5394) to improve traffic flow and along Fair Oaks Avenue between Huntington Drive and Columbia Street (North City Limits). The funding from this grant will provide necessary traffic congestion relief on the City's surface transportation network because of not extending the I-710 freeway segment to the North to connect to SR-60 and I-10. The project proposes to install ITS Upgrades along Fair Oaks Corridor from its southern terminus at Huntington Drive to Columbia Avenue just north of I-110 freeway. The upgrades include video detections, CCTV monitoring, passive pedestrian detection, emergency vehicle preemption, signal synchronization, changeable message signs, ADA upgrades, bulb-out treatments, median nose modifications, and fiber optic communication. There will be some traffic signal modifications to introduce flashing yellow arrow operation in the city. KOA is in charge of coordinating all aspects of the project including public outreach and environmental clearance due to the historical nature of the project area.

#### **OCTA Traffic Signal Synchronization Master Plan Update – Orange, CA (4/2021 – Ongoing)**

*Staff:* Shirjeel Muhammad, Gregory Garces, Walter Okitsu, Anastasia Canzonieri

As part of the RTSSP Program, KOA assisted OCTA to provide the components necessary to improve and enhance signal timing, synchronization, and coordinated operations for all signalized intersections on the Aliso Creek Road Corridor. OCTA is the lead agency for the project, which has three participating cities (Laguna Woods, Aliso Viejo, and Laguna Niguel). The project corridor is approximately 5 miles long and contains 23 signalized intersections. It includes data collection, system design, and construction/ integration of communication infrastructure and equipment throughout the corridor. The project also includes traffic signal timing, implementation, and fine tuning. "Before" and "after" studies are conducted to measure the implemented improvements to the corridor's performance. The team is to monitor and provide additional fine-tuning over a 2-year period after initial implantation. This project is financed through state funds.

## Intelligent Transportation System (ITS) and Traffic Management System (TMS) Project – Azusa, CA (05/2017 – 06/2022)

*Staff:* Walter Okitsu

This project is the City of Azusa's first Intelligent Transportation System (ITS) and Traffic Management System (TMS) Project. The funding sources for this project are mainly through a Los Angeles County Metropolitan Transportation Authority (LACMTA) Proposition C Grant and other City available funds. The City of Azusa hired KOA to provide ITS assessment study and recommendation, traffic, traffic signal design, centralized traffic control system, fiber and wireless communication, and monitoring upgrade monitoring system design, construction management, and inspection services for their the- new ATMS. The project budget was approximately \$6.8 million to provide traffic improvements at total of fifty-two project intersections that includes installation of intersection signal equipment, detection systems, a centralized traffic control and monitoring system, signal timing, improved street layout at Foothill Boulevard and Alosta Avenue, and upgrade curb ramps at project intersections.

## G. PROFESSIONAL SERVICES AGREEMENT

Iteris can enter into the City's Standard Professional Services Agreement.

## APPENDIX A - RESUMES

Resumes for the following proposed staff are included in the pages that follow:

### **Iteris**

- Gabriel Murillo, TE
- Bernard Li, EE, TE, PTOE
- Jason Xu, PE, PTOE, PMP
- Paul Frislie, PE, IMSA
- Omid Modaghegh, MCSE, IMSA
- Jose Castellanos, EIT
- Evan Shipley, EIT
- John Albeck, PE, PTOE
- Jiayu Qian, PE, PTOE
- Tuan Nguyen, CCDP, CCNP, CCNA
- Raymond Liang
- Alex Ingoglia

### **LLG**

- Felipe Ortega

### **KOA**

- Shirjeel Muhammad
- Frank Barrera
- Caylynn Goodoy
- Genelle Paderanga
- Christian Dy

# JASON XU, PE, PTOE, PMP

PROJECT MANAGER



## EDUCATION

MS, Civil Engineering, University of Nevada, Reno, NV, 2007

MS, Transportation, Beijing Jiaotong University, Beijing, China, 2004

BS, Transportation Engineering, Beijing Jiaotong University, Beijing, China, 2001

## YEARS OF EXPERIENCE

With Iteris: 4 Total: 17

## REGISTRATIONS

**Civil Engineer (PE)**

ST #80744, 2011

**Professional Traffic Operations Engineer (PTOE)**

PTOE #3480, 2013

**Project Management Professional (PMP)**

PMP #2815124, 2020

## CORE DISCIPLINES

Traffic Engineering & Operations  
O&M

## AFFILIATIONS

Institute of Transportation Engineers  
(ITE)

Mr. Xu serves as Associate Vice President for Iteris' Mobility Consulting Solutions division and has been with the firm since January 2018. He has 17 years of experience working in various fields of traffic engineering and design, transportation planning, ITS design, signal system upgrade and integration, Transportation Management Center (TMC) operation, active transportation planning and design, freeway and arterial performance analysis, transportation system simulation, and a variety of engineering studies. Mr. Xu is an expert with traffic signal operation and synchronization. He served as project manager or task lead on numerous development/implementation of regional-based signal synchronization master plans, city-wide signal coordination, multi-jurisdictional signal synchronization, transit signal priority, and special signal operation logic. Mr. Xu is also skilled in the technologies of signal system interconnect, traffic detection, Signal Performance Measures (SPM) and Emergency Vehicle Preemption (EVP).

## PROJECT EXPERIENCE

### [Traffic and Intelligent Transportation Systems Engineering Services, Katella Avenue, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Xu served/serves as Signal Timing Lead on this Project to perform basic timing study and develop optimized coordination plans that balance the progression between competing movements at 73 signals. He will also lead the timing implementation and finetuning in the field or through TMC central program for each city. As part of the project, Iteris' Intersection-as-a-Service™ end-to-end solution offering will deliver proactive monitoring of traffic signal operations at all project intersections. The primary goal of this project is to deploy new Intelligent Transportation System (ITS) equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles, and pedestrians.

# JASON XU, PE, PTOE, PMP

## PROJECT MANAGER

### [Regional Traffic Signal Synchronization \(TSS\) Program, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Xu served as Project Manager under an on-call project with OCTA. The projects included traffic signal system upgrade and signal retiming/ synchronization for three corridors (MacArthur Boulevard, Santa Margarita Parkway, and Bake Parkway) including 65 intersections. The project required cooperative efforts between seven cities, OCTA, and Caltrans. With this turn-key type project, signal systems on project corridors have been upgraded to meet the latest guidelines and requirements with safety features, efficient signal coordination operations, considerations of pedestrian and bicyclist, and “responsive” operation features. The system upgrades include fiber design and installation, cabinet and controller replacement, communication switch, customized cabinet cables, video detection, battery backup system, radio wireless communication, and deployment of TMC central program and integration.

### [Brookhurst Street/Road Traffic Signal Synchronization \(TSS\) Corridor – Orange County, CA, OCTA – Orange County, CA](#)

Mr. Xu serves as Task Leader to optimize traffic signal synchronization timing plans at 59 intersections along the 16.5-mile Brookhurst Street corridor. Development and implementation of this optimized cross-jurisdictional signal optimization involves OCTA, six local cities, and Caltrans.

### [Construction and Implementation of the Orangewood Avenue Traffic Signal Synchronization \(TSS\) Project – Anaheim, CA](#)

Mr. Xu served as Project manager to synchronize 15 signals to achieve the traffic operation and safety feature improvements through optimized timing/ phasing parameters, optimized coordination progressions, signal controller and cabinet upgrade, installation of bicycle detection, emergency vehicle pre-emption and Ethernet switches, expanding the City’s traffic flow Bluetooth monitoring system, and integration with central traffic management system to provide unique time sources and efficient central operation to all the controllers in the field. He also conducted implementation and fine-tuning of proposed timing plans. The project is nearing completion of Primary Implementation and will continue for two-year monitoring period.

### [Pacific Coast Highway Traffic Signal Synchronization \(TSS\), Orange County Transportation Authority \(OCTA\) – Orange County and City of Newport Beach, CA](#)

Mr. Xu is providing engineering support on this regional traffic signal synchronization project for OCTA. This project will: 1) develop a Plans, Specifications and Estimates (PS&E) package for approximately 11 miles of fiber optic cable, integration of three new High-Definition (HD) Closed-Circuit Television (CCTV) surveillance cameras, a new Dynamic Message Signs (DMS) sign and system; 2) upgrade 15 controllers to 2070 controllers for Caltrans and provide fiber optic communication connection to City Hall and Caltrans Traffic Management Center (TMC); 3) develop new timing plans for the entire corridor which include 4 timing plans; 3 weekday peak period timing plans and a weekend timing plan; and 4) provide 24 months of Operations and Maintenance (O&M) services to maintain the communication system as well the signal timing operations of the corridor.

### [San Bernardino Valley Coordinated Traffic Signal System \(SBVCTSS\), San Bernardino County Transportation Authority \(SBCTA\) – San Bernardino County, CA](#)

Mr. Xu is providing engineering support on this regional TSS project to assist 16 local agencies within the San Bernardino Valley area to improve traffic progressions along many key regional corridors. Mr. Xu assists in the assessment of the existing signal operation and development traffic signal coordination master plans for five different sub-regions within the Valley. The Master Plan will serve as a roadmap for all future signal coordination in the Valley. Second, update signal coordination timings for over 500 traffic signals with a goal of reducing travel times, delays and GHG emissions.

### [Main Street Signal Synchronization - City of Ventura, CA](#)

Mr. Xu served as Project Manager on this signal synchronization project to develop and implement optimized coordination timing plans for 24 signals along Main Street, Mills Road, Telephone Road, and Telegraph Road in City of Ventura. The four project corridors formed a grid network within the core business area in the City. Iteris also expanded the Synchro network to include additional intersections within original awarded budget to ensure that project corridors are well synchronized with crossing arterials.

# BERNARD K. LI, EE, TE, PTOE

PRINCIPAL IN CHARGE & QA/QC



## EDUCATION

BS, Electrical Engineering, University of Southern California, Los Angeles, 1988

## YEARS OF EXPERIENCE

With Iteris: **12** Total: **35**

## REGISTRATIONS

**Electrical Engineer (EE)**

CA # 14842, 1995

AZ # 37241, 2002

**Traffic Engineer (TE)**

CA # 1763, 1994

**Professional Traffic Operations (PTOE)**

PTOE # 214, 2000

## CORE DISCIPLINES

Traffic Engineering & Design

Signal Timing & Coordination

Traffic Signal Operations

Signal System Selection & Deployment

ITS Planning & Design

ITS Systems Engineering

Traffic Simulation & Transportation

Planning

Municipal Traffic Engineering

## AFFILIATIONS

Institute of Transportation Engineers (ITE)

ITS California

Orange County Traffic Engineering Council (OCTEC)

Mr. Li serves as a Vice President of Iteris' Mobility Consulting Solutions and has been with the firm since 2010. He has 35 years of experience in providing professional services in planning, design and implementation of traffic engineering and Intelligent Transportation Systems (ITS). Mr. Li has served as Project Manager or Principal-in-Charge on numerous traffic and ITS design/construction, traffic signal timing and synchronization, operational analysis, feasibility studies and municipal traffic engineering projects. His traffic engineering design expertise includes traffic signal installation, signal modification, roadway signage/stripping, street lighting, and worksite traffic control and neighborhood traffic management. Mr. Li's ITS experience comprises fiber optic communications, wireless communications, Closed-Circuit Television (CCTV), Video-Detection System (VDS) and Dynamic Message Signs (DMS). He is also highly experienced in traffic signal operations, having assisted numerous agencies in the analysis, retiming, and synchronization of traffic signals, both corridor and network wide. Mr. Li's transportation planning expertise includes traffic impact studies, parking studies, transportation master plans, signal warrant analysis and stop warrant analysis. He has served as City Traffic Engineering Consultant for many agencies, helping to resolve numerous day-to-day traffic engineering issues, including resident inquiries, plan checking, and safety evaluations.

## PROJECT EXPERIENCE

### [Main Street Regional Traffic Signal Synchronization Projects \(RTSP\), Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Li serves as the Project Manager of a \$3.6 million regional traffic signal synchronization project extending through the Cities of Orange, Santa Ana, and Irvine in Orange County, California. The project includes signal coordination and timing improvements, with the aim of improving traffic flow, enhancing public safety and decreasing stops along 12 miles of the Main Street corridor upgrading 67 intersections. The primary goal of this project is to deploy new ITS equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles and pedestrians.

# BERNARD K. LI, EE, TE, PTOE

PRINCIPAL IN CHARGE & QA/QC

## [Bristol Street Traffic Signal Synchronization \(TSS\) Project, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Li served as the Project Manager to OCTA to provide traffic signal/ITS equipment upgrade and signal synchronization along the Bristol Street corridor. This project consists of 45 study intersections along a 10-mile stretch in the cities of Santa Ana, Costa Mesa, Newport Beach, and Caltrans. Fiber-optic cables were installed at various segments of the corridor to close the communication gap. Many intersections were also upgraded with new controllers, cabinets, service, emergency vehicle preemptions and Closed-Circuit Television (CCTV). AM, mid-day, PM and weekend coordination timing plans were implemented. Based on the before/after studies results, the project has a Benefit-to-Cost (B/C) ratio of 11:1.

## [San Bernardino Valley Coordinated Traffic Signal System \(SBVCTSS\), San Bernardino County Transportation Authority \(SBCTA\) – San Bernardino County, CA](#)

Mr. Li serves as the Project Manager of a \$4 million project to assist 16 local agencies within the San Bernardino Valley (SBV) to improve traffic progressions along many key regional corridors. The project consists of four main components: First, develop traffic signal coordination master plans for five different sub-regions within the Valley. The Master Plan served as a roadmap for all future signal coordination in the Valley. Second, update signal coordination timings for over 400 traffic signals to reduce travel times, delays and greenhouse gas emissions. Third, conduct assessments of all the signal synchronization corridors and traffic signals to ensure they are all performing well and as planned on a semi-annual basis. Fourth, provide system support services to assist any SBV agencies in resolving technical issues, e.g. troubleshooting communications and bring signals back online at the agencies' traffic signal systems. As part of the system support task, Bernard and his team is currently designing and implementing technological and ITS improvements along the Haven Avenue corridor within Ontario and Rancho Cucamonga, which includes Iteris' ClearGuide Signal Performance Measure (SPM) and ClearAsset Asset Management System (AMS) software, as well as center-to-center communications between both cities and between

the cities and Caltrans. This project was initially a 5-year contract that began in January 2017, but SBCTA is very pleased with the services provided by Bernard and his team that a one-year contract extension was executed, with a new project end date of January 2023.

## [Newport/Balboa Boulevard Regional Traffic Signal Synchronization \(TSS\) Project, Orange County Transportation Authority \(OCTA\) – Cities of Costa Mesa & Newport Beach, CA](#)

Mr. Li served as the Project Manager to OCTA to provide turn-key traffic/ITS improvements and traffic signal synchronization for 33 intersections along Newport/Balboa Boulevard corridor from Bristol Street in Costa Mesa to Main Street in Newport Beach. Iteris was responsible for the design, procurement and construction of all the infrastructure improvements, including Closed-Circuit Television (CCTV) installation, new fiber-optic cables, controller, cabinet and service upgrades, EVP systems, detections and miscellaneous Ethernet switches. In addition to the traffic signal infrastructure improvements, Iteris also develops signal coordination plans for AM, noon, off-peak, PM, "after-hours" and weekend for all project traffic signals along the corridor. The project has a B/C ratio of nearly 12:1.

## [Barranca Parkway/Muirlands Boulevard Regional Traffic Signal Synchronization Project – Cities of Irvine, Lake Forest and Mission Viejo, CA](#)

Mr. Li served as the Project Manager to provide traffic/ITS design improvements and traffic signal synchronization for 44 intersections along a 13-mile segment of Barranca Parkway/Muirlands Boulevard. The project involves design of new fiber optic cables (multi and single mode), conduits, pull boxes, cabinets and controller upgrade in City of Irvine; New conduits, pull boxes, twisted pair interconnect, and wireless radio in City of Lake Forest; New cabinets, pedestrian signals and loop detection in City of Mission Viejo. In addition to the traffic signal infrastructure improvements, Iteris also developed signal coordination plans for AM, noon, off-peak, PM, "after-hours" and weekend for all project traffic signals along the corridor.

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**iteris**<sup>®</sup>

# GABRIEL MURILLO, TE

DEPUTY PROJECT MANAGER



## EDUCATION

MBA, University of California, Irvine, 2001

BS, Electrical Engineering, Loyola Marymount University, Los Angeles, 1991

## YEARS OF EXPERIENCE

With Iteris: 15 Total: 32

## REGISTRATIONS

Traffic Engineer (TE)

CA #1843, 1995

## CORE DISCIPLINES

Integrated Corridor Management

Traffic Engineering & Operations

Adaptive Traffic Systems

Transit Signal Priority Systems

Communication Systems

Systems Integration

## AFFILIATIONS

Institute of Transportation Engineers (ITE)

Orange County Traffic Engineering Council (OCTEC)

Mr. Gabriel Murillo, TE, will serve as the PM for this project and will be the principal contact with the City for the duration of the project. Gabriel has over 32 years of experience in Traffic Signal timing optimization, transportation systems design and analysis; Intelligent Transportation Systems (ITS) planning and design; traffic engineering; systems engineering, development and integration of real-time traffic systems utilizing system engineering practices. Mr. Murillo is an expert with all traffic signal technologies, ITS design and integration, traffic operations and has hands-on experience having worked in Traffic Management Centers (TMC) for over 17 years. He has experience actively managing over 2,500 intersections, designing and implementing safety and operational improvements. Mr. Murillo is an expert with Adaptive Traffic Control Systems (ATCS) having managed traffic control systems with over 1,000 traffic signal intersections operating with “Adaptive” functions. He is highly experienced in the design, development and integration of coordinated Advanced Traffic Management Systems (ATMS) and Transit Signal Priority (TSP) systems, and the design and implementation of systems for arterial, highway, and transit and highway-railroad grade crossings.

## PROJECT EXPERIENCE

### [Traffic and Intelligent Transportation Systems Engineering Services, Katella Avenue, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Murillo served as Project Manager for OCTA \$4.7 million regional traffic signal synchronization project along approximately 20 miles of the Katella Avenue corridor extending through the Cities of Anaheim, Cypress, Garden Grove, Los Alamitos, Orange, Stanton, Villa Park and the County of Orange jurisdictions in Orange County, California. The three-year project includes signal coordination and timing improvements, with the aim of improving traffic flow, enhancing public safety and decreasing stops. Under the project agreement, Iteris will provide services that will upgrade traffic signal electronics and communications equipment, and optimize signal timing along Katella Avenue / Villa Park Road / Santiago Canyon Road, a major east-west corridor that comprises 73 major signalized intersections. The project began in 2020 and is expected to be completed by December 2023.

# GABRIEL MURILLO, TE

DEPUTY PROJECT MANAGER

## [Pacific Coast Highway \(PCH\) Traffic Signal Synchronization \(TSS\) Project – City of Newport Beach, CA](#)

Mr. Murillo served as Project Manager for the PCH corridor in the City of Newport Beach and Caltrans jurisdiction. This project was a Design-Build project that provided operational improvements along the 12-mile corridor within Caltrans right of way and in the City of Newport Beach. These improvements are multimodal which included Bicycle Detection to provide better operations for cyclists; new fiber optic cable throughout the project corridor and two Gigabit backbone; separate networks for the City and the State. The project also provided 5 new HD Closed-Circuit Television (CCTV) surveillance cameras, all intersections with upgraded ATC traffic controllers and optimized traffic signal timing for the entire project. This corridor is unique in that there is also a summer peak period due to the beach access along the corridor. To provide better motorist communication, a Dynamic Message Signs (DMS) was designed at the north end of the corridor. The project began in June 2016 and was completed in July 2019.

## [Santa Monica Light Rail Train \(LRT\) Operations Project – City of Santa Monica, CA](#)

Mr. Murillo served as Project Manager and Technical Manager the Exposition LRT line from Los Angeles to Santa Monica where the line ends. This project was extremely complex due to the City wanting to utilize their existing McCain 2033 controller for the LRT operations and the design of the LRT system was not consistent with this requirement. Mr. Murillo first modified the design during construction to ensure the detection of the LRT vehicle was executed in advance of the traffic signal so clear out pedestrians and allow the street-running LRT vehicle to go through all the traffic signals without stopping. Mr. Murillo then programmed the traffic signal controller utilizing complex soft-logic configuration for each intersection to manage the operation of the LRT vehicle through the traffic signals utilizing LRT signal indications. This proved extremely successful where the LRT never stopped other than the stations within the City of Santa Monica. Mr. Murillo converted this timing to the MaxTime controller after the LRT system was. This project began in June 2016 through November 2017.

## [La Palma Traffic Signal Synchronization \(TSS\) Project – City of Anaheim, CA](#)

Mr. Murillo served as Deputy Project Manager for the La Palma corridor in the City of Anaheim. This project was a Design-Build project that will provide operational improvements along the 12-mile corridor in the City. These improvements are multimodal which include Bicycle Detection to provide better operations for cyclists; new fiber optic cable throughout the project corridor and a redundant Gigabit backbone. The project also provided eight new HD Closed-Circuit Television (CCTV) surveillance cameras, all intersections with upgraded ATC traffic controllers and optimized traffic signal timing for the entire project corridor including a segment of the corridor that will receive adaptive traffic operations. The project began in August 2016 and was completed in July 2020.

## [Traffic Signal Synchronization \(TSS\), Orange County Transit Authority \(OCTA\) – Orange County, CA](#)

Mr. Murillo served as Project Manager for the OCTA TSS project which included traffic signalized intersections for eleven jurisdictions across three major arterial corridors with 252 signalized intersections. This project involved existing signal timing parameter analysis and final analysis and implementation of three weekday timing plans and one weekend timing plan for all 252 intersections. The implementation and fine-tuning was analyzed using travel time studies and visually presented using an effective tool that depicts the before and after data using animation and actual video recorded during the before study and the after study. This project involved over \$600,000 in traffic signal equipment and communication upgrades throughout the corridors. These upgrades included traffic signal controllers, communication equipment, Plans, Specifications and Estimates (PS&E) development, construction and integration of fiber optic cable and hardware, central traffic management systems upgrades and integration and phasing improvements. The project began December 2010 and completed in December 2012.

# PAUL FRISLIE, PE, IMSA

SYSTEM DESIGN LEAD



## EDUCATION

MBA, University of Phoenix, 2011

BS, Civil Engineering, University of California, Irvine, 2000

## YEARS OF EXPERIENCE

With Iteris: **22** Total: **23**

## REGISTRATIONS

### Civil Engineer (PE)

CA #72982, 2008

### International Municipal Signal Association (IMSA)

FOA Fiber Optic Technician,  
#CFOT\_97189, 2019

Traffic Signal Level III, #CE\_97189, 2022

Traffic Signal Level II, #BB97189, 2012

Traffic Signal Level I, #AA97189, 2012

FOA Fiber Optic Technician,  
#CFOT\_97189, 2019

Signal Inspector Level II, #AT\_97189,  
2018

Signal Inspector Level I, #SI97189, 2014

Work Zone Safety, #ZZ97189, 2010

## CORE DISCIPLINES

Traffic Engineering & Operations

ITS Planning/Design/Integration

Traffic Signal Design

Construction Management

Transit

## AFFILIATIONS

Orange County Traffic Engineering  
Council (OCTEC)

Mr. Frislie serves as a Principal Engineer of Iteris' Mobility Consulting Solutions and has been with firm since January 2001. For over 23 years, Mr. Frislie has been involved in several transportation and traffic engineering projects that include both planning as well as design and deployment of ITS, systems integration, and traffic signal design. Recently, he has served as the Project Manager for the Rosecrans Avenue Arterial Improvement Project, Cypress Phase 1 through 3 ITS Projects, the Newport Beach ITS Phase 5 through 8 Projects, the Santa Monica ATMS Phase 4c project. He has also been the Lead Design Engineer for the development of design plans for the Oxnard ITS Master Plan Design Project, Vermont Avenue Arterial Improvement project, the Santa Monica ATMS 4a/4b Project, SR-710 ITS Design Project, Newport Beach ITS Phase 1, 2, 3, 4 and 7 Projects and the Fountain Valley Phase IV project, as well as the Signal Construction Inspector for completion of the Oxnard ITS Master Plan and the Rosecrans and Vermont Arterial Improvements.

## PROJECT EXPERIENCE

### [Von Karman Avenue/Tustin Ranch Road Regional Traffic Signal Synchronization \(RTSSP\) Project – City of Irvine, CA](#)

Mr. Frislie serves as QA/QC Lead for this project in which Iteris is assisting the City with multi-jurisdictional improvements of the 7.9-mile stretch of Von Karman Avenue and Tustin Ranch Road in the cities of Irvine and Tustin. The project requires retiming of 30 signalized intersections, which includes the two Caltrans crossings at the I-5 interchange. Iteris will assist the agencies with the design and construction management of the new signal improvements which include new Video Detection Systems (VDS), controller cabinets, pedestrian heads, first fiber communication to Tustin signals and a new Advanced Traffic Management System (ATMS) to remotely monitor the signals. Iteris also assisted with conversion of new configuration modules to transition existing signals online in their Actra system to their newer Centrac system.

# PAUL FRISLIE, PE, IMSA

## SYSTEM DESIGN LEAD

### [Moulton Parkway Traffic Signal Synchronization \(TSS\) and Operations and Maintenance \(O&M\) Project – City of Laguna Woods, CA](#)

Mr. Frislie served as QA/QC Lead and Construction Manager as part of a multidisciplinary team for the Laguna Woods TSS project which will provide signal synchronization and equipment upgrades along Moulton parkway from Lake Forest Dive and Camino del Avion in collaboration with the Cities of Laguna Hills, Laguna Niguel, and Caltrans. The project includes the development, implementation and fine-tuning of the AM, PM, mid-day, and Saturday peak periods traffic signal coordination timing plans for all 37 intersections along the corridor. The traffic signal upgrades include the installation of new video detection system at 3 project intersections, Uninterruptible Power Supply (UPS) to IP at 7 project intersections, wireless communication upgrade form Moulton Parkway at El Toro Road to City of Laguna woods City Hall, new Type P cabinet at Moulton Parkway at Glenwood Drive, and new 12-pair #19 solid copper interconnect cable along Golden lantern from paseo Escuela to Paseo de la Colinas.

### [Harbor Boulevard Traffic Signal Synchronization \(TSS\) Project – Orange County Transportation Authority \(OCTA\) and City of Santa Ana, CA](#)

Mr. Frislie served as QA/QC lead and Construction Manager to provide construction support and perform all necessary integration, implementation, and fine-tuning tasks for the Harbor Blvd TSS project. This project involved signal synchronization and equipment upgrade along Harbor Blvd from Chapman Ave to Newport Blvd, spanning across the Cities of Garden Grove, Santa Ana, Fountain Valley and Costa Mesa, as well as freeway on/off ramps at SR-22 and I-405 within Caltrans jurisdiction. In addition to generating PS&E packages for equipment upgrades, the project also included the development, implementation and fine-tuning of the AM, PM, midday, off-peak and weekend traffic signal coordination timing plans for all 46 intersections along the corridor. Iteris will also provide Traffic Management Center (TMC) upgrades to the cities of Costa Mesa and Santa Ana, which spans from Closed-Circuit Television (CCTV) licenses and workstations to designing and replacing the City's existing video wall system with newer and more advanced capabilities.

### [Bristol Street Traffic Signal Synchronization \(TSS\) Project – Orange County Transportation Authority \(OCTA\) and Cities of Costa Mesa, Newport Beach, and Santa Ana, CA](#)

Mr. Frislie served as System Construction Task Lead for the Bristol TSS project to provide operations and infrastructure improvements at 45 intersections along an 8-mile segment for Bristol Street. The primary goal of the project is to improve traffic flow and safety for all users including vehicles, buses, bicycles, and pedestrians. Iteris designed and constructed traffic signal equipment and infrastructure upgrades, including Ethernet-over-copper and fiber optic communications, traffic signal controllers, traffic signal cabinets, signal modification, Closed-Circuit Television (CCTV) cameras, EVP equipment, Bluetooth, loop detection, and additional TMC upgrades for Santa Ana and Costa Mesa. All 45 intersections will be retimed with AM, PM, mid-day and weekend traffic signal coordination timing plans.

### [Newport/Balboa Boulevard Regional Traffic Signal Synchronization Project – Cities of Costa Mesa and Newport Beach, CA](#)

Mr. Frislie serves as the QA/QC leader and Engineer of Record to OCTA to provide turn-key traffic/ITS improvements and traffic signal synchronization for 33 intersections along Newport/Balboa Boulevard corridor from Bristol Street in Costa Mesa to Main Street in Newport Beach. Iteris was responsible for the design, procurement and construction of all the infrastructure improvements, including Closed-Circuit Television (CCTV) camera installation, new fiber optic cables, controller, cabinet and service upgrades, EVP systems, detections and miscellaneous Ethernet switches. In addition to the traffic signal infrastructure improvements, Iteris also develops signal coordination plans for AM, noon, off-peak, PM, "after-hours" and weekend for all project traffic signals along the corridor.

# OMID

# MODAGHEGH, IMSA, MCSE

INTEGRATION, CONSTRUCTION SUPPORT,  
COMMUNICATIONS, & DETECTION SUPPORT LEAD



## EDUCATION

MS, Transportation Engineering,  
California Polytechnic University,  
Pomona, 2013

BS, Civil Engineering, California  
Polytechnic University, Pomona, 2013

## YEARS OF EXPERIENCE

With Iteris: 7 Total: 9

## REGISTRATIONS

**International Municipal Signal  
Association (IMSA)**

Traffic Signal Level I, #AA111996, 2015  
Work Zone Safety, #ZZ111996, 2015

**Microsoft Certified Systems Engineer  
(MCSE)**

#20022939, 2001

## CORE DISCIPLINES

ITS Planning & Design

ITS Systems Engineering & Architecture

Systems Integration

Traffic Engineering

## AFFILIATIONS

Orange County Traffic Engineering  
Council (OCTEC)

Institute of Transportation Engineers  
(ITE)

American Society of Civil Engineers  
(ASCE)

Mr. Modaghegh serves as a Senior Engineer for Iteris' Mobility Consulting Solutions and was previously with the firm from 2014 to 2018. He returned in December 2019. Mr. Modaghegh has nine years of experience with ITS, communications systems, traffic design, and traffic signal timing. He establishes HIL (Hardware in the Loop Simulation) using VISSIM, ASC/3 and 2070 Controller, 332 Hybrid cabinet including all interface configuration for his master's thesis. He also has six years of experience in the IT field with establishing network specifications, designing router administration, including interface configuration and routing protocols. Mr. Modaghegh's software knowledge includes i2, CENTRACS, TACTICS, MaxView, and various traffic controllers such as ASC/3, 2070, and McCain/BiTran 170. He is also proficient in VISSIM, Synchro, Tru-Traffic, and PC-Travel software.

## PROJECT EXPERIENCE

### **District Department of Transportation (DDOT) Adaptive Traffic Control System (ATCS) Deployment – Washington, DC**

Mr. Modaghegh serves as Project Engineer responsible for programming the 54 new 2070 controllers and implementation of the ATCS. The project task involved with traffic controllers and the adaptive system from McCain for the implementation of an Adaptive Traffic Control System (ATCS) in the district along three corridors.

### **San Bernardino Valley Coordinated Traffic Signal System (SBVCTSS), San Bernardino County Transportation Authority (SBCTA) – San Bernardino County, CA**

Mr. Modaghegh serves as Project Engineer responsible for support services to assist local agencies within the San Bernardino Valley area in resolving communications-related technical issues. Iteris will be reviewing the communication infrastructure and diagnose and correct communication failures for those agencies that request assistance; deploying software that will continually monitor and alert appropriate personnel to any ITS equipment failure; and developing a Signal Operations Master Plan that will govern the

# OMID MODAGHEGH, IMSA, MCSE

INTEGRATION, CONSTRUCTION SUPPORT, COMMUNICATIONS, & DETECTION  
SUPPORT LEAD

development of signal timing coordination plans throughout the San Bernardino Valley.

## [Orangetown Traffic Signal Synchronization Project – City of Anaheim, CA](#)

Mr. Modaghegh served as Project Engineer for the Orangetown corridor in the City of Anaheim. This project is a Design-Build project that will provide operational improvements along the four-mile corridor in the City of Anaheim and City of Orange and includes two Caltrans ramp intersections. These improvements are multimodal which include Bicycle Detection to provide better operations for cyclists; new fiber optic cable throughout the project corridor and a wireless network in the City of Orange. The project will also provide eight new HD Closed-Circuit Television (CCTV) surveillance cameras, all intersections with upgraded ATC traffic controllers and optimized traffic signal timing for the entire project corridor including a segment of the corridor that will receive adaptive traffic operations. Mr. Modaghegh support integration support, programming switches, Bluetooth and MMUs and implementing.

## [Santa Ana Harbor Boulevard Corridor Traffic Signal Synchronization \(TSS\) – City of Santa Ana, CA](#)

As part of the Operations and Maintenance (O&M) for two additional years, Mr. Modaghegh was responsible for programming and installation all ITS signal equipment.

## [Pacific Coast Highway Traffic Signal Synchronization \(TSS\), Orange County Transportation Authority \(OCTA\) – Orange County and City of Newport Beach, CA](#)

Mr. Modaghegh served as Project Engineer to provide design and integration of an upgraded communication system that services both Caltrans and the City of Newport Beach. This project will develop a Plans, Specifications and Estimates (PS&E) package for approximately 11 miles of fiber optic cable, integration of three new HD Closed-Circuit Television (CCTV) surveillance cameras, new Dynamic Message Signs (DMS) and system; upgrade 15 controllers to 2070 controllers for Caltrans and provide fiber optic communication connection to City Hall and Caltrans Traffic Management Center

(TMC); develop new timing plans for the entire corridor which include four timing plans; three weekday peak period timing plans and a weekend timing plan; and provide 24 months of Operations and Maintenance (O&M) services to maintain the communication system as well the signal timing operations of the corridor. Mr. Modaghegh provided integration support, programming, testing, implementing and integration of the signal equipment.

## [Newport Boulevard Traffic Signal Synchronization \(TSS\) – Cities of Costa Mesa & Newport Beach, CA](#)

Mr. Modaghegh served as Project Engineer responsible for the design of over seven miles of fiber optic cable, five Closed-Circuit Television (CCTV) cameras and integrates more than 10 Etherwan Switches, as well as the upgrade of 16 intersections from 820A controllers to Model ASC/3 controllers.

## [On-Call Transportation Engineering Services, City of Buena Park Department of Public Works – Buena Park, CA](#)

Mr. Modaghegh supports the City Staff in the completion of all transportation engineering functions within the City's Public Works Department. He is present at City Hall one day per week, providing as-needed services to support City services in the Public Works, Planning, and Police Departments. Mr. Modaghegh supports in the review of new development plans, the completion of new traffic signal installations or signal upgrades and the response to citizen inquiries regarding traffic safety conditions.

## [Buena Park On-Site Transportation Services – City of Buena Park, CA](#)

As part of the On-Call Transportation Engineering services, Mr. Modaghegh served as a Traffic Engineer assisting in the on-site transportation services to support City services in the Public Works, Planning, and Police Departments. He is providing ITS integration, signal timing implementation, programming controller and ITS equipment support. Tasks also includes monitoring the City's Traffic Management Center (TMC) using the central control system, TACTICS.

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# JOSE CASTELLANOS, EIT, IMSA

SIGNAL TIMING TASK LEAD



## EDUCATION

MS, Civil Engineering, California State Polytechnic University, Pomona (in progress)

BS, Civil Engineering, California State University, Long Beach, 2016

## YEARS OF EXPERIENCE

With Iteris: 4 Total: 5

## REGISTRATIONS

Engineer In Training (EIT)

CA #158541, 2016

International Municipal Signal Association (IMSA)

Traffic Signal Level I, #AA111608, 2017

## CORE DISCIPLINES

Traffic Engineering & Operations

ITS Planning/Design/Integration

## AFFILIATIONS

Orange County Traffic Engineers Council (OCTEC)

International Municipal Signals Association

Mr. Castellanos serves as an Engineer for Iteris' Mobility Consulting Solutions division and has been with the firm since November 2017. He has over five years of experience working in the field of transportation engineering. His expertise includes traffic operations analyses, traffic simulation, and signal timing. Mr. Castellanos' engineering software experience includes Synchro, SimTraffic, TruTraffic, HCS, VISSIM, AutoCAD. His experience with traffic systems include MAXVIEW, QUICNET, TRANSPARITY, ARIES, CENTRACS, ACTRA, and TACTICS central systems and he has experience with ASC-2, ASC-3, Sepac, C8, TSCP, LACO-4E, 233, 2033, and Omni controller firmware.

## PROJECT EXPERIENCE

[Pacific Coast Highway Traffic Signal Synchronization \(TSS\), Orange County Transportation Authority \(OCTA\) – Orange County and City of Newport Beach, CA](#)

Mr. Castellanos provided support for this Traffic Signal Synchronization project led by OCTA. This project will: 1) develop a PS&E package for approximately 11 miles of fiber optic cable, integration of three new HD CCTV surveillance cameras, a new DMS sign and system; 2) upgrade 15 controllers to 2070 controllers for Caltrans and provide fiber optic communication connection to City Hall and Caltrans TMC; 3) develop new timing plans for the entire corridor which include 4 timing plans; 3 weekday peak period timing plans and a weekend timing plan; and 4) provide 24 months of O&M services to maintain the communication system as well the signal timing operations of the corridor. Mr. Castellanos conducted before travel time runs, and generated the before study report with OCTA.

[Brookhurst Street/Road Traffic Signal Synchronization \(TSS\) Corridor – Orange County, CA, OCTA – Orange County, CA](#)

Mr. Castellanos serves as Task Leader to optimize traffic signal synchronization timing plans at 59 intersections along the 16.5-mile Brookhurst Street corridor. Development and implementation of this optimized cross-jurisdictional signal optimization involves OCTA, six local cities, and Caltrans.

# JOSE CASTELLANOS, EIT, IMSA

## SIGNAL TIMING TASK LEAD

### [San Bernardino Valley Coordinated Traffic Signal System Project \(SBVCTSS\), San Bernardino County Transportation Authority \(SBCTA\) – San Bernardino County, CA](#)

Iteris was selected by San Bernardino County Transportation Authority (SBCTA) to improve traffic operations in the San Bernardino Valley. This starts with good traffic system communications as well as excellent traffic signal timing operations followed by regular review of the communication system as well as the traffic signal timing operations. Iteris provides expertise with all three of these project elements. As a part of a task order to develop a Traffic Signal Coordination Master Plan for priority areas, Mr. Castellanos assisted on the cycle length development. Iteris also provided traffic signal timing services for the I-10/Pepper Avenue Interchange Project and assists Caltrans and SBCTA in implementing and fine-tuning new timings. Working with Caltrans, Mr. Castellanos was responsible for signal Synchronization tasks for three intersections.

### [On-Call Traffic Engineering Services for Trabuco Road Traffic Signal Synchronization – Cities of Lake Forest & Mission Viejo, CA](#)

OCTA selected Iteris to implement traffic signal corridor optimization and traffic communication upgrades. This project will provide operations and infrastructure improvements at 14 intersections along a 4.5 mile segment of Trabuco Road. Two municipalities are involved with this project, including the City of Lake Forest and the City of Mission Viejo. The project will perform upgrades for traffic signal equipment and infrastructure, design and construct system improvements, develop and implement optimized traffic signal synchronization timing plans, as well as provide 24 months of maintenance for the traffic signal timing implemented through this project. The project goals include reducing stops, delays, travel times, vehicular emissions, Greenhouse Gases (GHG), and overall traffic congestion along the corridor. Mr. Castellanos assisted with travel time runs for the O&M phase.

### [On-Call ITS Operations and Maintenance – City of Fountain Valley, CA](#)

Iteris is awarded annual contracts from the City of Fountain Valley to assist in the on-going operation and maintenance of the ITS infrastructure. Iteris, through this contract, maintains the operation of all the ITS components which include the fiber optic

communication system, the Ethernet communication hardware, the CCTV hardware and controller communication failures. Mr. Castellanos assisted in integration of fiber communications and switch installations.

## PREVIOUS PROJECT EXPERIENCE

### [Chapman TSSP, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Castellanos provided traffic engineering services for various transportation engineering functions for this OCTA funded project. The project required traffic signal synchronization of 55 intersections under the jurisdiction of City of Orange, Garden Grove, Caltrans, and County of Orange. As part of this assignment, his duties included preliminary field review of intersection configuration and cabinet inventory, creation of base Synchro models, generating spreadsheets for existing and proposed basic timing intervals, cycle length analysis, and optimization plans for AM, MD, PM and weekend periods

# JOHN ALBECK, PE, PTOE

PROJECT ENGINEER



## EDUCATION

MS, Civil Engineering, University of Nebraska, Lincoln, NE, 1995

BS, Civil Engineering, Iowa State University, IA, 1991

## YEARS OF EXPERIENCE

With Iteris: **22** Total: **27**

## REGISTRATIONS

**Civil Engineer (PE)**

NE #E-8292, 1995

MN #48962

OH #81605

**Professional Traffic Engineer (PTOE)**

#040, 1999

## CORE DISCIPLINES

Traffic Systems Management & Operations

Signal Synchronization

Advanced Traffic Management Systems

## AFFILIATIONS

Institute of Transportation Engineers (ITE)

ITE Intelligent Traffic Signal Operations Committee

Mr. Albeck serves as Associate Vice President for Iteris' Mobility Consulting Solutions division. He has over 27 years of experience working in the fields of traffic engineering, traffic signal timing and optimization, traffic system design, traffic training course development, traffic modeling, traffic software (Synchro, SimTraffic, Warrants) research and development, traffic software technical support, traffic software user guide development, safety investigation, and preliminary roadway design. Mr. Albeck has developed and/or co-authored numerous technical manuals and revisions and instructed traffic classes attended by an estimated 3,000 individuals since 1996. These classes have been well received, soliciting very high remarks from the attendees.

## PROJECT EXPERIENCE

### Course Instruction and Development, Minnesota Department of Transportation (MnDOT)

Mr. Albeck serves as Lead Instructor and Principal Developer of 12 MnDOT manuals and courses. These courses include Traffic Signal Optimization and Timing, Traffic Signal Design, Traffic Signals 101, Intersection Capacity Evaluation (ICE), ITS Design, Pavement Marking Applications and Design, Traffic Control Plan Development, Roadway Lighting Design, At-Grade Sign Plan Design, Freeway Sign Plan Design, Guide Sign Design, Signs 101. The Traffic Signal Timing and Optimization Manual is often cited in a variety of sources.

### Flashing Yellow Arrow (FYA) Position Paper Project, Pennsylvania Department of Transportation (PennDOT)

Mr. Albeck served as Lead Researcher and Technical Editor for PennDOT's FYA Position Paper. The purpose of this project was to present the results of an investigation regarding the deployment and implementation of the FYA left-turn treatment in the Commonwealth of Pennsylvania. The elements of the project included; research on the background and history of the flashing yellow arrow; investigation of current national practices, including a summary of several spotlight state practices; documentation of the advantages and disadvantages of the FYA; summary of the design and operation considerations for implementation in the Commonwealth, including a discussion of retro-fit installations;

# JOHN ALBECK, PE, PTOE

## PROJECT ENGINEER

discussion of the field steps (cabinet, wiring, etc.) required to implement the FYA, including NEMA standards; and, development of preliminary technical and public education, including online animations.

### [Traffic Signal Publication Consolidation Program, Pennsylvania Department of Transportation \(PennDOT\)](#)

Mr. Albeck is the Lead Technical Editor for PennDOT's Traffic Signal Publication Consolidation Program. The intent of the project was to combine various PennDOT traffic signal publications into one, electronic combined document to serve as a single source of information. The new publications (Publication 191) are streamlined to eliminate redundant information. The tasks included a review of existing publications, reconfiguring into a combined format, updating and consolidating various sections, and developing the consolidated PennDOT Publication 191 as directed by the Bureau of Maintenance and Operations (BOMO).

In addition, the new publication will feature interactive examples and/or tutorials in an effort to make the publication user friendly. The final task will be to perform an online presentation of the consolidated publication.

### [Traffic Engineering Projects and Studies involving Signal Operations, Safety and Design – Nationwide](#)

Mr. Albeck has been involved in numerous traffic engineering projects and studies involving signal operations, safety, and design. A highlight project is the Trunk Highway 65 Corridor Study for a 26 mile section of road north of Minneapolis, MN. Tasks included, but were not limited to, analysis of the existing operating conditions, future year traffic development, future year traffic operations analysis, and simulation of traffic operations using TRAF-NETSIM (existing and future).

# JIAYU QIAN, PE, PTOE

PROJECT ENGINEER



## EDUCATION

MS, Civil Engineering, Transportation,  
Texas A&M University, TX, 2013

BS, Civil Engineering, Huazhong  
University of Science & Technology, 2011

## YEARS OF EXPERIENCE

With Iteris: 3 Total: 8

## REGISTRATIONS

**Civil Engineer (PE)**

TX #130955, 2018

**Professional Traffic Operations Engineer  
(PTOE)**

PTOE #4529, 2018

## CORE DISCIPLINES

Traffic Engineering & Operations

Traffic Signal Design & Timing  
Optimization

Transportation Planning & Travel  
Demand Modeling

## AFFILIATIONS

Institute of Transportation Engineers  
(ITE), Member

ITS America, Member

Mr. Qian serves as a Systems Engineer for Iteris' Mobility Consulting Solutions and has been with the firm since March 2019. He has over 8 years of experience working in the fields of Traffic Operations and Simulation, ITS Design, Traffic Safety Analysis and Impact Studies, Travel Demand Modeling, and Traffic Signal Synchronization.

## PROJECT EXPERIENCE

### TRAFFIC ENGINEERING & OPERATIONS

[Von Karman Avenue/Tustin Ranch Road Traffic Signal Synchronization \(RTSSP\), Operations and Maintenance \(O&M\) – City of Irvine, CA](#)

Mr. Qian serves as Project Manager providing traffic signal operations and maintenance support for the City of Irvine and City of Tustin. The project consists of monitoring, improving signal timing, addressing resident concerns, providing communications and detection support and preparing a final project report.

[Traffic Signal Retiming Project of 113 Intersections - City of Chula Vista, CA](#)

Mr. Qian served as project engineer on this project. The purpose of this project is to deploy optimized signal timing plans within a project network of 113 signalized intersections located in Western Chula Vista. Jiayu implemented proposed timing parameters for both online and offline signals. Jiayu also conducted field visits to fine-tune the implemented timing parameters.

[Citywide Signal Synchronization Master Plan – Irvine, CA](#)

Mr. Qian served as project engineer on this project type project for the City of Irvine. The purpose of the master plan is to develop a high-level guideline and optimum synchronization strategy which the city can utilize to optimize individual corridors from a network perspective. Jiayu first reviewed and verified timing parameters, traffic patterns, pedestrian and bicycle crossing requirement at critical intersections in Synchro. Then he conducted critical cycle length analyses based on which recommended cycle lengths for individual intersections were tested and determined. Zoning with common cycle length were also proposed.

# JIAYU QIAN, PE, PTOE

## PROJECT ENGINEER

### [San Bernardino Valley Coordinated Traffic Signal System \(SBVCTSS\), San Bernardino County Transportation Authority \(SBCTA\) – San Bernardino County, CA](#)

Mr. Qian served as project engineer on this signal timing optimization project type project for SBCTA. This project aims to develop high-level strategies for signal timing and cross jurisdictional coordination for the study area. Jiayu evaluated existing traffic patterns and signal operation at key intersections to identify critical corridors and determine optimum timing parameters. He then developed zoning with recommended common cycle length to maximize operational efficiency as well as provide guidance for cross-jurisdictional signal coordination.

### [Katella Avenue Regional Traffic Signal Synchronization Project \(RTSSP\) – Orange County, CA](#)

Mr. Qian served as project engineer on this project which extends through Cities of Anaheim, Cypress, Garden Grove, Los Alamitos, Orange, Stanton, Villa Park in Orange County. This project includes signal coordination and timing improvements as well as ITS equipment upgrades. Jiayu reviewed and updated basic timing parameters for all 78 intersections. He also developing draft proposed timing parameters for this corridor.

### [Brookhurst Street/Road Traffic Signal Synchronization \(TSS\) Corridor, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Qian serves as project engineer to support optimizing traffic signal synchronization timing plans at 59 intersections along the 16.5-mile Brookhurst Street corridor. Development and implementation of this cross-jurisdictional signal optimization involves OCTA, six local cities, and Caltrans. After implementation he conducted after study along this corridor including travel time data collection and corridor performance measures analyses.

### [Citywide Signal Synchronization On-Call – Yucaipa & San Bernardino County, CA](#)

Mr. Qian served as project engineer on this project. Jiayu first reviewed basic timing parameters and then implemented and fine-tuned optimized signal timing plans for Alabama St in San Bernardino County and Yucaipa Blvd & Oak Glen Rd in Yucaipa County.

# TUAN NGUYEN, CCDP, CCNP, CCNA

PROJECT ENGINEER



## EDUCATION

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

## YEARS OF EXPERIENCE

With Iteris: 3 Total: 18

## REGISTRATIONS

**Cisco Certified Design Professional (CCDP)**

#CSCO12212819, exp. 2021

**Cisco Certified Network Professional (CCNP)**

#CSCO12212819, exp. 2021

**Cisco Certified Network Associate (CCNA) Security**

#CSCO12212819, exp. 2021

## CORE DISCIPLINES

Network Design Engineering

Network Operation Management  
Planning/Design/Integration

Systems Engineering  
ITS Architecture

Connected Vehicle Systems

Mr. Nguyen serves as a Principal Engineer Integrations for Iteris' Mobility Consulting Solutions. He has been with the firm since August 2019. He has over 18 years of experience working in the fields of ITS Network Systems Design, Integration, Operations, and Maintenance. He has extensive expertise with multi-vendor networking technology, video management systems, network operation management, and project management.

## PROJECT EXPERIENCE

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

## PREVIOUS PROJECT EXPERIENCE

### NETWORK DESIGN, INTEGRATION, OPERATIONS & MAINTENANCE

#### Network Optimization – City of West Des Moines, IA

Mr. Nguyen served as Project Manager and Network Engineer on this network optimization for City of West Des Moines. Assisted with the design and implementation plan to upgrade the client's legacy fiber optic network communication infrastructure and enhance overall network performance. The current network architecture was brought up to date with a high-speed, reliable, and scalable network system to support CCTV cameras, traffic signals, traffic signal adaptive systems, and many other ITS components.

# TUAN NGUYEN, CCDP, CCNP, CCNA

## PROJECT ENGINEER

### Network Design and Integration – St. Charles County, MO

Mr. Nguyen served as Senior Systems Integration on this multi-agency network design and integration for St. Charles County – Gateway Green Light fiber optic network communication project. Mr. Nguyen assisted with the design and implementation of Cisco and other vendors' network communication Ethernet switches. This was a multi-year, on-call support, maintenance and troubleshooting complex network communication project. Integrated core and access layer switches to provide high-speed network communication for ITS network components were also implemented.

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

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

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

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

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

Mr. Nguyen served as the Network Integration Engineer on this Omaha Systems Engineering for City of Omaha. Assisted Iteris' Traffic Systems Engineering with network design layout, evaluation, bench test, and troubleshooting network issues during the construction phases.

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

Mr. Nguyen served as the Network Design Engineer on this Fiber Optic Network Communication Master Plan for City of Waterloo. Mr. Nguyen assisted with network infrastructure and ITS architecture plan and design.

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

Mr. Nguyen served as the Project Manager and the Network Engineer on this Fiber Optic Network Communication Design and Integration Services project. He assisted with the network infrastructure and ITS architecture design and implementation.

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

Mr. Nguyen served as the Project Manager and the Network Engineer on this Fiber Optic Network Communication Design and Integration Services project. Mr. Nguyen assisted with network infrastructure and ITS architecture design and implementation.

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

Mr. Nguyen served as the Network Design Engineer on this Fiber Optic Network Communication Master Plan. He assisted with network infrastructure and the ITS architecture master plan and network design.

# EVAN SHIPLEY

PROJECT ENGINEER



## EDUCATION

BS, Civil Engineering, University of California, Irvine, 2017

## YEARS OF EXPERIENCE

With Iteris: 4 Total: 4

## CORE DISCIPLINES

Traffic Engineering & Operations  
ITS Planning/Design/Integration  
O&M

## AFFILIATIONS

American Society of Civil Engineers (ASCE)  
International Chinese Transportation Professionals Association (ICTPA)

Mr. Shipley serves as an Associate Engineer for Iteris' Mobility Consulting Solutions division and has been with the firm since April 2017. His four years of experience includes working in the fields of Traffic Engineering and Operations and ITS Systems Engineering. Mr. Shipley has also been involved in a yearlong research project with Dr. Wilfred Recker, a Professor of Transportation Engineering at University of California, Irvine. Mr. Shipley's software knowledge includes AutoCAD, MicroStation, Synchro, TransModeler, HCS 2010 and TransCAD.

## PROJECT EXPERIENCE

### [Marguerite Parkway Traffic Signal Synchronization Project \(TSSP\) - City of Mission Viejo, CA](#)

Mr. Shipley serves as Project Engineer on this Traffic Signal Synchronization project for the City of Mission Viejo. Iteris was selected to provide final design Plans, Specifications, and Estimates (PS&E) and Traffic Signal Timing upgrades for Marguerite Parkway in the City of Mission Viejo. Iteris staff evaluated different models of push buttons and made recommendations based on the city's needs and available technology. Other improvements include new UPS, CCTV, EVP, traffic signal cabinet, and fiber optic cable. Shipley was involved in the implementation and fine-tuning process of the timing project. He generated solutions and feedback that the residents provided about the corridor performance. He also wrote the before and after study comparison report along with the final project report.

### [Tweedy Blvd Signal Synchronization Project, LAMTA ID F7309, City Project 514-TRF – City of South Gate, CA](#)

Mr. Shipley serves as Project Engineer on this project type project for the City of South Gate. Iteris was selected by the City of South Gate to complete the Tweedy Boulevard Traffic Signal Synchronization Project to improve the operation, safety and management of the corridor. The project consists of analyzing improvements of Tweedy Boulevard between Atlantic Avenue and Alameda Street, including the design of fiber optic cable for Ethernet communication, five (5) CCTV cameras, traffic signal

# EVAN SHIPLEY

## PROJECT ENGINEER

cabinet and controller upgrades, and upgrades to the traffic signal equipment. Mr. Shipley was involved in the traffic signal timing field work and the generation of synchronized timing plans for the corridor.

### [Von Karman Ave/Tustin Ranch Rd Traffic Signal Synchronization Project \(RTSSP\) – City of Irvine, CA](#)

Mr. Shipley serves as Project Engineer on this Traffic Signal Synchronization project for the City of Irvine. Iteris was selected by the City of Irvine to assist with the multi-jurisdictional improvements of the 7.9-mile stretch of Von Karman Avenue and Tustin Ranch Road in the cities of Irvine and Tustin. The project will retime 30 signalized intersections, which includes the two Caltrans crossings at the I-5 interchange. Mr. Shipley was involved in generating the bike distances to use in the bike min green calculations and the generation of the coordinated timing plans.

### [Hawthorne Boulevard Traffic Signal Synchronization \(TSS\) Project – City of Rancho Palos Verdes, CA](#)

Mr. Shipley served as a Project Engineer to synchronize 7 intersections along Hawthorne Blvd after the city installed fiber optic communications. He determined the peak hours of travel, critical lane volumes, critical cycle length, basic timing parameters, and appropriate offsets to maximize bandwidth. He also implemented the timing in the field on controllers running LACO 1R firmware.

### [Barranca/Muirlands Regional Traffic Signal Synchronization Project, Caltrans – Irvine \(Lead\), Mission Viejo, Lake Forest, CA](#)

Mr. Shipley serves as Project Engineer on this project Traffic Signal Synchronization project. Iteris was selected by the City of Irvine to develop and implement traffic signal infrastructure and coordination improvements for the Barranca/Muirlands Corridor within the Cities of Irvine, Mission Viejo, Lake Forest and Caltrans. The project involved design of a new fiber optic cables (multi and single mode), conduits, pull boxes, cabinets and controller upgrade in City of Irvine; conduit, pull boxes, twisted pair interconnect, and wireless radio in City of Lake Forest; cabinets, pedestrian signals and loop detection in City of Mission Viejo. Mr. Shipley was involved in the O&M

phase of the project, coordinated with the City to see which days we could drive the corridor without any impact from other projects, provided timing updates to address resident complaints or requests made by the City.

### [On Call Traffic Engineering Services for Trabuco Road Traffic Signal Synchronization, OCTA – Cities of Lake Forest & Mission Viejo, CA](#)

Mr. Shipley serves as Project Engineer on this Traffic Signal Synchronization project. OCTA selected Iteris to implement traffic signal corridor optimization and traffic communication upgrades. This project will provide operations and infrastructure improvements at fourteen (14) intersections along a four and one-half (4.5) mile segment of Trabuco Road. Mr. Shipley was involved in monthly O&M to assess the performance of the corridor. He submitted a completed O&M report of observations each month, contributing to the final report including the O&M phase of the project.

### [San Bernardino Valley Coordinated Traffic Signal System \(SBVCTSS\), San Bernardino County Transportation Authority \(SBCTA\) – San Bernardino County, CA](#)

Mr. Shipley serves as a Project Engineer on this project to assist 16 local agencies within the San Bernardino Valley area to help improve congestion along several major corridors. He has performed a traffic signal cabinet inventory to document the existing communication equipment. Mr. Shipley assisted with the generation of basic timing parameters for 85 intersections within San Bernardino project area as well as creating the base Synchro file to use in analysis.

### [Burbank Traffic Responsive Signal System Project– City of Burbank, CA](#)

Mr. Shipley served as a Project Engineer for this project, which aims to synchronize and improve operation of 63 signalized intersections in the city of Burbank. These intersections will be retimed in an effort to reduce delay and improve travel times for all modes of travel. He is responsible for developing the Synchro base map and the basic timing parameters. He has also been involved in the data collection process for the existing field conditions.

# RAYMOND LIANG, EIT

PROJECT ENGINEER



## EDUCATION

BS, Civil Engineering, University of Irvine,  
CA, 2019

## YEARS OF EXPERIENCE

With Iteris: 2 Total: 2

## REGISTRATIONS

Engineer-In-Training (EIT)  
CA #169619, 2019

## CORE DISCIPLINES

Traffic Engineering & Operations  
ITS Planning/Design/Integration  
Traffic Signal Design  
Operations and Maintenance

## AFFILIATIONS

American Society of Civil Engineers  
(ASCE)

Mr. Liang serves as Associate Engineer for Iteris' Mobility Consulting Solutions and has been with the firm since 2019. He has over 2 years of experience working in the fields of Traffic Engineering and Operations. Mr. Liang's software knowledge includes AutoCAD, Revit, Microsoft Word, Excel, SketchUp, MATLAB, SAP2000, MicroStation, EPANet, Synchro and ArcGIS.

## PROJECT EXPERIENCE

### [Brookhurst Regional Traffic Signal Synchronization Project \(RTSSP\), Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Liang serves as the assistant engineer to provide traffic signal/ITS equipment upgrade and signal synchronization along Brookhurst Street. His responsibilities includes drafting communication plans and addressing comments and updates. This project consists of 45 study intersections along a 10-mile stretch in the cities of Santa Ana, Costa Mesa, Newport Beach and Caltrans. Fiber-optic cables will be installed at various segments of the corridor to close the communication gap. Many intersections will be upgraded with new controllers, cabinets, service, Emergency Vehicle Preemptions (EVP) and Closed-Circuit Television (CCTV).

### [Professional Design and Construction Support for the TSS for ATMS – Rancho Cucamonga, CA](#)

Mr. Liang serves as the assistant engineer to deploy new ITS communication infrastructure and implement optimized coordination timing plans to achieve optimal traffic flow for City of Rancho Cucamonga along the main corridors of Haven Avenue and Foothill Boulevard. CCTV, VDS, and fiber optic interconnect upgrades will be implemented throughout the main corridors. His responsibilities includes drafting the fiber communication plans and signal modification plans.

# RAYMOND LIANG, EIT

## PROJECT ENGINEER

### Traffic and Intelligent Transportation Systems Engineering Services, Katella Avenue, Orange County Transportation Authority (OCTA) – Orange County, CA

Mr. Liang served as Assistant Designer on this Project. As part of the project, Iteris' Intersection-as-a-Service™ end-to-end solution offering will deliver proactive monitoring of traffic signal operations at all project intersections. The primary goal of this project is to deploy new Intelligent Transportation System (ITS) equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles, and pedestrians. The project began in February 2020 and is ongoing.

### Traffic and Intelligent Transportation Systems Engineering Services, Main Street Regional Traffic Signal Synchronization Projects (RTSSP), Orange County Transportation Authority (OCTA) – Orange County, CA

Mrs. Kim serves as Project Engineer under this project agreement, which will provide services that will upgrade traffic signal electronics and communications equipment, and optimize signal timing along Main Street, a major north-south corridor that comprises 67 major signalized intersections. As part of the project, Iteris' Intersection-as-a-Service™ end-to-end solution offering will deliver proactive monitoring of traffic signal operations at all project intersections. The primary goal of this project is to deploy new Intelligent Transportation System (ITS) equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles, and pedestrians. The project began in December 2019 and is ongoing.

### A&E On-Call Roadway Design and Project Development and Construction Services (Caltrans D12) – Orange County, CA

Mr. Bradley is serving as a senior technical advisor and professional in charge for Iteris as part of the TranSystems team on the Caltrans District 12 On-Call contract to provide consultation, research, professional and technical services required for

Roadway Design and related Project Development and Construction Services, including, but not limited to, field sampling, construction materials testing, analysis, reports, plant inspection and work related to testing equipment calibration, on an "as-needed" basis to support the Caltrans D12, from Project Report phase to construction phase completion of three State Route (SR) 91 Multi-Asset Projects, EA 12-OR312, EA 12-OR313 and EA 12-OR314 in Orange County between Los Angeles County Line to Riverside County Line. Iteris' task focuses on performing design service for Traffic Management Systems (TMS) and electrical elements through PA&ED, PS&E and construction phase. The TMS/electrical elements improvement includes, but not limited to, CCTV, CMS, loop detectors, census station, RMS, FOC and conduit. The project began in January 2021 and is ongoing.

### 5th Street Communication Upgrades – San Bernardino, CA

Mr. Liang serves as assistant engineer on this communication infrastructure upgrades project for the City of San Bernardino. Wireless and twisted wire pair interconnect upgrades will be installed to bring traffic signal connectivity between the TMC and intersections along 5th Street between H Street and Sierra Way. Iteris is preparing the design plans, procuring and configuring the equipment, and will be providing integration and construction support services during construction. His responsibilities include drafting the communication plans and addressing comments and updates. The project began in January 2019 and was completed in June 2019.

# ALEX INGOGLIA, EIT

PROJECT ENGINEER



## EDUCATION

BS, Civil Engineering, , California State Polytechnic University, Pomona, 2017

## YEARS OF EXPERIENCE

With Iteris: 2 Total: 5

## REGISTRATIONS & CERTIFICATIONS

Engineering-in-Training (EIT)  
CA #160812, 2017

## CORE DISCIPLINES

ITS Planning, Design, & Integration  
Traffic Engineering & Operations  
Systems Integration

## AFFILIATIONS

Institute of Transportation Engineers (ITE)

Mr. Ingoglia serves as Engineer of Iteris' Mobility Consulting Solutions division and has been with the firm since April 2017. Mr. Ingoglia has over 2 years of experience in the fields of Traffic Engineering and Operations, Systems Integration and Intelligent Transportation Systems (ITS) planning, design, and integration. His project experience includes preparing transportation and traffic engineering design projects of traffic calming projects and electrical plans as well as reviewing traffic studies and traffic control plans. Mr. Ingoglia has knowledge in signal timing, Intelligent Transportation Systems (ITS), electrical systems, and integration. Mr. Ingoglia is proficient in the use of design and traffic analysis software such as AutoCAD, MicroStation, and Synchro.

## PROJECT EXPERIENCE

### [Tustin-Rose Regional Traffic Signal Synchronization Project \(RTSSP\), Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Ingoglia is serving as Project Engineer on this traffic signal synchronization project and is developing the synchro model and proposed timing updates to the Tustin-Rose corridor.

### [Traffic and Intelligent Transportation Systems Engineering Services, Katella Avenue, Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Ingoglia serves as Project Engineer on this Project and installed edge switches at project intersections to provide communication to the traffic controllers. As part of the project, Iteris' Intersection-as-a-Service™ end-to-end solution offering will deliver proactive monitoring of traffic signal operations at all project intersections. The primary goal of this project is to deploy new Intelligent Transportation System (ITS) equipment and communication infrastructure to support the management of the cities' transportation network, implement optimized coordination timing plans to achieve optimal traffic flow, and improve safety for all road users, including vehicles, buses, bicycles, and pedestrians.

# ALEX INGOGLIA, EIT

## PROJECT ENGINEER

### [Irvine Center Drive – Edinger Ave Regional Traffic Signal Synchronization Project O&M \(RTSSP\), Orange County Transportation Authority \(OCTA\) – Orange County, CA](#)

Mr. Ingoglia is serving as Project Manager on the O&M of the Irvine Center Dr — Edinger corridor through the Cities of Irvine and Tustin.

### [Lake Forest Traffic Engineering Services – City of Lake Forest, CA](#)

Mr. Ingoglia is serving as Project Engineer and monitors the operations and communication of all traffic signals within the City of Lake Forest. Additionally, Mr. Ingoglia investigates City Staff and resident concerns about signal timing and can make timing adjustments due to construction activities.

### [Orangewood Traffic Signal Synchronization \(TSS\), ITS Design and Integration– City of Anaheim, CA](#)

Mr. Ingoglia is serving as Project Engineer for the Orangewood corridor in the City of Anaheim. This project is a Design-Build project that will provide operational improvements along the 4 mile corridor in the City of Anaheim and City of Orange and includes two Caltrans ramp intersections. These improvements are multi-modal which include Bicycle Detection to provide better operations for cyclists; new fiber optic cable throughout the project corridor and a wireless network in the City of Orange. The project will also provide 8 new HD CCTV surveillance cameras, all intersections with upgraded ATC traffic controllers and optimized traffic signal timing for the entire project corridor including a segment of the corridor that will receive adaptive traffic operations.

### [Artesia Boulevard Regional Traffic Signal Synchronization Project \(TSSP\) – City of Buena Park, CA](#)

Mr. Ingoglia is serving as Project Engineer for the Artesia corridor in the City of Buena Park. The Artesia Boulevard TSS project (Project) will provide traffic operations and hardware improvements for 11 intersections along a 2.43 mile segment of Artesia Boulevard. The project will update signal timing to reduce delays, decrease stops, and improve travel times to provide benefits for vehicles, buses, bicycles, and pedestrians.

### [Laguna Woods Traffic Engineering Services \(2015-2018\) – City of Laguna Woods, CA](#)

Mr. Ingoglia is serving as Project Engineer monitoring City's central traffic system. Iteris has been providing traffic engineering services to the City of Laguna Woods since 2012 to operate and maintain all the traffic signals within the City. Services provided include:

- Monitor and operate all traffic signals within the City via the Econolite Centracs traffic signal system
- Design golf-cart push buttons at 3 intersections
- Recommend operational improvements for two signalized intersections with split-phase operations
- Coordinate with OCTA for the recently implemented El Toro Road TLSP and Moulton Parkway TLSP projects
- Attend OCTA ITS Roundtable meetings
- Address resident complaints on various traffic engineering and roadway lighting matters

### [On-Call Traffic Signal Operations and Intelligent Transportation System \(ITS\) Engineering Services \(Design\) – City of San Marcos, CA](#)

Mr. Ingoglia is serving as Project Engineer diagnosing communication issues throughout city. Iteris was contracted by the City of San Marcos to provide support for all their Traffic Engineering and ITS operation needs. The primary focus was to keep their existing system fully functioning, including the traffic signal timing operations, ITS hardware functionality such as CCTV cameras, Bluetooth performance management, and Traffic Management Center (TMC) hardware and communication infrastructure. Through this contract, Iteris has repaired several CCTV cameras, restored full functionality of the TMC and restored communication to several traffic signal controllers throughout the City.

# Felipe Ortega

## Integration & Construction Support Lead

Years of Experience:  
26 years

Years with LLG Engineers:  
2 years

### Registration:

IMSA Transportation Center System  
Specialist - Level I – CE\_102877  
IMSA Traffic Signal Senior Field  
Technician - Level III – CE\_102877

Professional Memberships:  
ITE | IMSA | OCTEC



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## Biography

Mr. Ortega is a Senior Signal Systems Specialist at Linscott, Law & Greenspan, Engineers (LLG). Mr. Ortega is an essential member of our team, not only because of his expertise in systems integration, but he is a valuable link to City and Agency staff. He trains engineering and maintenance staff in the use of system hardware and software (including newly installed traffic systems and TMC equipment). He also provides essential support for LLG clients, both onsite and remotely, in design implementation, purchasing consultation, and last-mile integration of signal systems, controllers and TMC hardware.

Mr. Ortega's expertise in all facets of communications infrastructure, as well as his background in the installation and configuration of software and hardware for nearly every type of communications system in use throughout Southern California means LLG clients have a reliable asset when it comes to installation, configuration, advising and training staff in the use of these systems.

## Areas of Expertise

- Communications Design Signal Modification Design Review
- Proficient in Traffic Management Systems (Centracs, QuicNet, Tactics, Intelight, Transuite)
- Coordination Timing Implementation
- TMC Network Management & Ops.
- Troubleshooting Traffic-Related Equipment (Network, Controllers, and Timing)
- Interagency Communications

## Relevant Project Experience

**On-Call ITS Support Services** – Mr. Ortega provides and manages ITS support services to Cities throughout Southern California: **Costa Mesa, Fullerton, La Habra, Brea, Dana Point, Laguna Niguel, Huntington Beach, Westminster, Rancho Cucamonga, Montclair, Chino, Highland, Rialto, Colton, Grand Terrace, Fontana, Ontario, Redlands, and Loma Linda.** Mr. Ortega has worked extensively with City engineers and technical staff to maintain, expand, troubleshoot, and repair traffic signal communications and control systems. Mr. Ortega is trained to identify traffic control system issues and flow problems and recommend improvements and adjustments accordingly. Typically, Mr. Ortega is engaged to integrate and repair systems when other consultants and contractors cannot make things work. Mr. Ortega has worked hand-in-hand with Caltrans engineering and operations staff and developed master plans where Caltrans-controlled intersections were key components in the development of multi-jurisdictional coordination timing within these Cities. Mr. Ortega has also designed and installed various Intelligent Transportation System (ITS) elements including CCTV cameras, fiber optic communication systems, wireless interconnect systems, and serial or Ethernet based systems, as well as upgraded multiple central systems in the past, present and future.

**Orange County RTSSP Projects:** For the following RTSSP projects, Mr. Ortega was instrumental in providing system integration, design and signal timing support, and implementation. Signal hardware and software components installed by various RTSSP tasks included: upgraded signal controllers & Integration with the respective agency central systems to improve the infrastructure and signal timing and Ethernet network. Tasks included on-going support and maintenance of traffic signal communications along the project corridor and to central systems in the member cities.

**City of Costa Mesa:** Adams Avenue, Sunflower Avenue, Placentia-Baker Street, Bear Street

**City of Fullerton:** Malvern-Chapman, Gilbert-Idaho, Orangethorpe Avenue, Brea Boulevard, Commonwealth Avenue, Lemon Street, Placentia Avenue, currently working on Harbor Boulevard

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Irvine  
San Diego

**City of La Habra:** La Habra Blvd-Central Ave-State College Blvd, Lambert Road, Imperial Highway

**City of Brea:** Birch Street

**Orange County Transportation Authority:** La Paz Road, Alicia Parkway and Antonio Parkway/Orange County Traffic Management Center.

**Antonio Parkway Project:** The project was a collaborative effort between Caltrans, County of Orange, City of Rancho Santa Margarita, and OCTA, to construct a multi-agency shared advanced technological communications system along Antonio Parkway in south Orange County. Mr. Ortega led the system integration efforts and provided design and signal timing support; completed timing implementation; and conducted timing monitoring and system support. The project interconnected twenty-six traffic signals from City, County, and State along the ten-mile corridor and provided a remote connection to a newly constructed County of Orange state-of-the-art TMC in Santa Ana some twenty miles away utilizing shared communications systems. New traffic signal synchronization resulted in 16% travel time savings, 23% reduction in stops, and 33% reduction in delay. Based on the reduced travel time, vehicle maintenance, fuel consumption and emissions, a \$3.5 million estimated cost savings was calculated. This \$1.5 million project resulted in \$10 million advanced shared communication system.

**San Bernardino County Transportation Authority (SBCTA) Tier 1 & 2 Traffic Signal Synchronization Project:** This project was awarded the 2011 California Transportation Foundation (CTF) Local Street Project of the Year Award. Multijurisdictional (cities, county, and Caltrans) signal interconnect design and timing plan development, implementation, fine-tuning, and monitoring for 652 intersections. Mr. Ortega was a signal systems specialist and system integrator on this project and assisted in the interconnect design (conceptual plans and PS&E) utilizing hardwire, fiberoptic, and wireless technologies. He provided timing plan implementation for the peak and off-peak time periods and provided construction management assistance and signal monitoring. Mr. Ortega installed central traffic systems throughout San Bernardino County as part of a multijurisdictional project, using QuicNet, CTNET, Actra and Aries software. He also designed and created network schematics for Tier 1 & 2 agencies.

**City of Indio Signal Interconnect Improvements and Coordination Timing Projects for Jackson Street (Avenue 42 to Avenue 48) and Monroe Street (Oleander Avenue to Comet lane):** assisted in managing the preparation of communication plans, and led the efforts for system integration and implementation of coordination timing plans.

**City of Irwindale - Traffic Signal & Street Improvements at Azusa Canyon Road & Nubia Street**  
Mr. Ortega will be preparing the signal timing sheet for this intersection, reviewing the coordination timing plan and providing signal turn -on support, and assist the City with coordination timing implementation, as well as provide monitoring and fine-tuning of the implemented coordination timing.



## SHIRJEEL MUHAMMAD, MS, PE

### PROJECT ENGINEER

Shirjeel Muhammad has more than 20 years of traffic engineering, traffic safety, transportation planning, and infrastructure project management experience with supervisory responsibilities, both in the private and public sectors. His portfolio involves traffic impact studies, travel demand modeling, traffic operations, corridor studies, simulations, parking demand, internal/external circulation, site access, accident studies, warrant studies, traffic signal synchronization, preparation/review of signing/markings plans, traffic management plans, and traffic signal plans. Shirjeel has managed contracts from the preliminary engineering stage to the notice of completion. This includes ITS projects, which include the establishment of a citywide GIS system, a city traffic management center (TMC), and developing a statewide ITS infrastructure procurement strategy. He oversaw the design and operations of traffic signal systems and ITS as a senior traffic engineer for Ashghal (public works authority) in the State of Qatar. More recently, he was in the City of Costa Mesa's Transportation Services Division.

### RELEVANT EXPERIENCE

#### **Highway Safety Improvement Program (HSIP) Cycle 9 Traffic Signal Improvements, Lake Elsinore, CA**

Project Manager. The City applied for the Highway Safety Improvement Program Cycle 9 grant in 2018 to upgrade ten (10) existing traffic signals throughout the City. The locations were chosen based on historical collision data. The application was approved in late 2018 by Caltrans for full funding for environmental, PS&E, and construction phases. The City has obtained authorization from Caltrans to conduct the PE phase which includes environmental clearance and PS&E. KOA is providing the City with environmental and final design phase services related to Traffic Signal Improvements, Environmental, Final Engineering Plans, Specifications and Cost Estimate Services (PS&E), and Construction Support. The intent of the project is to construct traffic signal safety improvements. Highlights of these improvements include: installation of protected left-turn phase, advanced dilemma detection zone, and pedestrian countdown heads.

#### **Randolph Avenue Traffic Calming Improvements PS&E, Costa Mesa, CA**

Traffic Engineer. KOA is developing complete plans, specifications, and estimates (PS&E) for traffic calming improvements on Randolph Avenue and St. Clair Street, between Bristol Street and Baker Street. Our design work includes parallel and angled/diagonal on-street parking, a single-lane roundabout with a central island and raised splitter islands, crosswalks, ADA/pedestrian curb ramps, a street lighting plan, rectangular rapid-flashing beacons (RRFB), speed humps/cushions, and minor traffic signal modifications.

### EDUCATION

MSCE, Transportation Engineering, California State University, Long Beach, CA (2001)

BS, Engineering, NED University of Engineering and Technology, Karachi, Pakistan (1998)

### REGISTRATIONS

Professional Engineer (PE), Traffic CA #2274 (2004)

### YEAR ENTERED PROFESSION

1999

### YEAR STARTED WITH FIRM

2020

### PROFESSIONAL AFFILIATIONS

Institute of Transportation Engineers, Member

### SOFTWARE KNOWLEDGE

AutoCAD, AutoTURN, Terramodel, RoadCalc, QRSII, HCS, ArcGIS, Traffix, ICU, Synchro, SimTraffic, CORSIM, MINUTP, Viper, Quicnet/QuicPro, ARIES, Centracs, Crossroads, MS Project, VISSIM (Coursework)



**Moreno Beach Dr./Pigeon Pass ITS, City of Moreno Valley, CA**

Construction Manager/Inspector. As part of upgrading the Traffic Signal infrastructure along Moreno Beach Drive and Pigeon Pass Avenue corridors, Shirjeel was in charge of both Construction Management and Inspection tasks for the replacement of the SIC with Fiber lines along with upgradation of existing detection systems with Advanced Video and Radar detection systems. The project also included installation of necessary switches, Fiber Distribution Units to provide a fully functioning fiber optic communication system complete, including modifications to existing conduit to allow for installation of new fiber optic cable; installation of new conduit by drilling, removal of existing pull boxes and joining of conduit; removal of existing signal interconnect cable; removal of existing cabinets; construction of cabinet foundations; removal, extension, and installation of service pedestals; installation of #6E pull boxes and P48 splice vaults; Coil extra length of cable; fusion splicing; installation of City-furnished switches; installation of City-furnished Type 333 cabinet and controller; installation of City-furnished 2070 LX traffic signal controller; furnish and install rack-mounted fiber distribution; traffic signal intersection rewiring; installation of Closed Circuit Television (CCTV)PTZ camera systems;; installation of missing or replacement sidewalk; modification of landscaping/irrigation.

**Traffic Signal Installation Project, City of Orange, CA**

Construction Inspector. Mr. Muhammad made sure that the project is closely overseen and inspected from the ground breaking to the final punch-list check-out. The City provided PS&E to construct new traffic signal at the intersection of Lemon Street and Palm Avenue. The intersection had a 4-way STOP control. The project installed a new traffic signal system including poles, hardware, footings, conduit, controller, service, video detection, lighting, ADA ramps, striping, signing, and utility adjustments. The entire northeast corner was reconstructed including a new ADA curb ramp. In addition, the work required compliance with the City of Orange Old Towne Historic District design standards.

**OCTA Traffic Signal Synchronization Master Plan, Orange County, CA**

Traffic Engineer. KOA is collecting data from OCTA and local agencies to update OCTA's GIS database for ITS infrastructure and provide a complete County Synchro network with updated TSSP data. Using GIS, we are developing maps and surveys for each agency, to obtain feedback on their ITS network. We then update each of these maps to determine a baseline for the Master Plan Update. KOA is compiling and integrating all completed TSSP projects into the Countywide Synchro network. We are reviewing critical intersections and spot-checking the network on a mile-to-mile basis to update it. This would be used to develop the next wave of TSSP projects. The Master Plan Update will guide program requirements for local agencies for the next 10 years.

**Traffic Signal Synchronization Project, City of Costa Mesa, CA\***

Project Manager. Shirjeel oversaw the City of Costa Mesa's Traffic Signal Synchronization Program, primarily funded by OCTA. His duties included the successful submission of grants, program management, and the review and approval of work submitted by on-board consultants for traffic signal equipment and ITS-related upgrades. Some of the upgrades consisted of choosing a signal communication medium, determining the on-route communication option to backhaul, and establishing strategic locations for CCTV and Smart detection cameras capable of discriminating between bike and vehicle actuation. Shirjeel also was responsible for reviewing and suggesting signal retiming, phasing sequence improvements, and synchronization.



## FRANK BARRERA, RSP1

PROJECT ENGINEER

Mr. Barrera has 16 years of experience in the transportation planning and engineering field. He specializes in transportation planning, traffic engineering, data analysis, and feasibility studies, including Safe Routes to School (SRTS) and Active Transportation Program (ATP) studies. Mr. Barerra has successfully managed multiple SRTS and ATP projects, various sign inventory and database management projects, and SSAR projects. He has extensive experience in traffic calming and safety improvement projects and conducts traffic control device audits for SRTS and ATP projects.

### RELEVANT EXPERIENCE

#### **SCAG San Bernardino Active Transportation Plan, San Bernardino, CA**

Project Manager. KOA prepared an ATP for City of San Bernardino that supplemented and enhanced the regional ATP by providing a detailed localized plan. It specifically identifies ways to improve mobility for people walking and biking by providing a comprehensive plan for active transportation that includes bicycle elements, pedestrian elements, SRTS elements, and connections to transit and major destinations in the area. The final plan identifies ways to provide open and easy access to walking and bicycling for recreation or commuting. It also identifies ways to improve infrastructure for non-motorized transportation connecting our communities, schools, and parks, making the City of San Bernardino a destination with a sense of purpose for visitors who frequent the local communities.

#### **Continental Crosswalk Implementation Plan, Pasadena, CA**

Project Manager. The City has collected, compiled, and developed various data sets and resources which provide various attributes for evaluating pedestrian crossings through collision history data, existing crosswalk visibility, surrounding attraction areas, transit stop locations and accessibility, and various others. KOA is reviewing and investigating the possible criteria that can be developed using these existing attributes and identify those that are missing, but crucial for the prioritization process. The Plan is to create an opportunity to comprehensively evaluate pedestrian crossings and identify the priority locations for the implementation of a continental crosswalk based on a ranked system. The implementation plan is to identify potential funding opportunities for future grant pursuits.

#### **SCAG/Costa Mesa Pedestrian Master, SCAG and Costa Mesa, CA**

Project Manager. KOA is leading the effort to develop a pedestrian master plan for the City of Costa Mesa that will establish a pedestrian-friendly environment throughout the city while also maintaining connectivity with the region. The Plan is focused on addressing specific issues related to pedestrian elements and regional connections. The plan has a number of key elements, including

### EDUCATION

MSCE Transportation

Engineering, California State Polytechnic University, Pomona, CA

BS, Urban & Regional Planning, California State Polytechnic University, Pomona, CA

### CERTIFICATIONS

Road Safety Professional 1

(RSP1), Transportation

Professional Certification Board (TPCB)

### PROFESSIONAL AFFILIATIONS

Institute of Transportation Engineers (ITE) Member



facilitating at least six (6) half-day mobility audits within the Pedestrian Opportunity Zones in the downtown area, engaging with the Bikeway and Walkability Committee members on mobility audits, and conducting a collision data analysis for pedestrians to identify deficiencies in the existing pedestrian facilities. The KOA Team will utilize its "hot spot" analysis to identify locations with high rates of pedestrian collisions exist, perform an in-depth analysis of collision data using SWITRS and identify collision factors and the appropriate countermeasures. The KOA Team is also establishing processes for the City to prioritize projects for implementation by utilizing metrics required in grant applications, to establish a framework.

#### **Garden Grove Downtown Active Transportation Plan, Garden Grove, CA**

Project Manager. KOA was retained by the City of Garden Grove to create an active downtown plan identifying needs and opportunities to create a vibrant and walkable downtown. KOA worked with the City to identify the project vision and goals addressing mobility, access, arts, culture, community health, and safety. The project area included several major destinations that draw people from local neighborhoods and adjacent cities. The KOA team evaluated and analyzed existing conditions, conducted various types of data collection, including several public outreach and engagement events to obtain public feedback on the plan as it developed. KOA developed an e-learning project webpage to inform and educate the community on the proposed improvement recommendations and to obtain additional feedback. Additionally, GHG reduction analysis was conducted to evaluate the potential impacts of the project to the area, proposed infrastructure improvements were identified, and conceptual plans were developed to prepare the City for future grant opportunities. A proposed artistic crosswalk protected bike lanes, a roundabout, and a protected intersection were proposed along Acacia Parkway, the backbone of the Downtown area.

#### **Corridor Enhancement for Avenue I, Hesperia, CA**

Project Manager. The City of Hesperia has received a Caltrans Sustainable Communities Grant to develop a Corridor Enhancement Plan for I Avenue from Rancho Road to Bear Valley Road. The goal of the project is to develop a plan that would address infrastructure deficiencies, increase capacity, and improve safety and accessibility for all users of the corridor. KOA is currently preparing the base map and conducting community outreach to seek public input on the issues the users are experiencing and the improvements they desire to see. Up to three concept designs were prepared and presented at the community workshops. KOA refined the concepts based on the feedback from the public and prepared

#### **Traffic Sign Inventory, Assessments and Cost Estimates, Rancho Palos Verdes, CA**

Project Manager. This citywide inventory effort was an opportunity for the City to create and maintain a comprehensive GIS inventory database of all City regulatory, warning, guide, recreational, general information, and street name signs along all City-maintained roadways, parks, and open space. It provided the appropriate measures to maintain, repair, or upgrade any traffic control devices which did not meet the existing design standards or provide the appropriate safety measures. In accordance with the latest California Manual on Uniform Traffic Control Devices (CA MUTCD), KOA obtained benchmark retro-reflectivity readings on the existing signs to assist the City in projecting sign replacement and maintenance costs.



## CAYLYNN GODOY

### PROJECT ENGINEER

Caylynn Godoy is an enthusiastic Associate Engineer at KOA focused on traffic engineering projects. She has experience in traffic and transportation engineering which includes, but not limited to traffic control, signing and striping, roadway design, and traffic signal modification. Before joining KOA, Caylynn was a lead assistant engineer at ADVANTEC Consulting Engineers where she worked on a variety of traffic and transportation projects for various southern California agencies including the City of Anaheim, Los Angeles County Public Works, and Caltrans. Her specific work experience includes intersection design, safety analyses, geometric and electrical design, field review, and cost estimates. Caylynn embodies the KOA core values of teamwork and growth, which she demonstrates with her positive attitude and dedication to learning the ever-changing industry standards.

### RELEVANT EXPERIENCE

#### **Claremont McKenna College Science TES, Claremont, CA**

Associate Engineer. Caylynn assisted with the preparation of traffic signal modifications and signing and striping plans for the intersection along Ninth Street and Claremont Boulevard to provide adequate engineering services for the Claremont McKenna College Science Center Project. The project plans demonstrated installation of traffic signal equipment and related signing and striping, including high visibility pedestrian crosswalks and proposed bicycle facilities.

#### **Market Street Pedestrian & Streetscape Enhancements, Long Beach, CA**

Associate Engineer. The Market Street Pedestrian and Streetscape Enhancements project implements corridor-wide improvements along Market Street (between the LA River and Deeboyar Avenue) utilizing a hybrid Class II and Class IV bikeway. Caylynn assisted KOA in provided traffic engineering services to design modifications to the traffic signals, street lighting, and signing/striping throughout the project limits.

#### **Newport Boulevard Widening Improvement Project, Costa Mesa, CA\***

Assistant Engineer. Caylynn assisted with the traffic signal modification plan and signing and striping plan at three signalized intersections along a corridor on Newport Boulevard in the City of Costa Mesa, CA. The signing and striping improvement plans demonstrated the removal of existing signing and striping features, and the installation of striping, pavement markings, and signs for the street widening. The traffic signal modifications included the removal, relocated, and installation of traffic signal equipment affected by the widening

### EDUCATION

BS, Civil Engineering,  
California State Polytechnic  
University, Pomona, 2022

### PROFESSIONAL AFFILIATIONS

Institute of Transportation  
Engineers

OCTEC

*\* Experience from previous firm*



**La Palma Ave And Anna Dr/Acacia St Traffic Signal Improvements, Anaheim, CA\***

Assistant Engineer. Caylynn assisted with the preparation of traffic signal modifications and signing and striping plans for one intersection in the City of Anaheim. The modifications included installation of new traffic signal poles, vehicle heads, pull boxes, conduits, single mode fiber optic, pedestrian push buttons, and relocation/reprogramming of vehicle detection, GPS EVP unit, and CCTV. The signing and striping improvement plans demonstrated the removal of existing signing and striping features, and the installation of striping, pavement markings, and signs in accordance to the traffic signal modifications.

**Avalon Boulevard Traffic Signal Synchronization Project, Los Angeles, CA\***

Assistant Engineer. Caylynn assisted with the preparation of traffic signal modifications for thirty-four intersections along Avalon Boulevard for Los Angeles County Public Works. The modifications included installation of new traffic signal poles, vehicle heads, pedestrian heads, pedestrian push buttons, service cabinets, vehicle detection, conduit, and curb access ramps. Caylynn also assisted with the preparation of utility plans for the traffic signal improvement plans. The utility plans involved collaboration and communication with utility companies to prepare accurate maps.

**Village Center Development Project, Mission Viejo, CA**

Associate Engineer. KOA was retained by the City of Mission Viejo to assist the City with transportation planning and traffic engineering services related to the Village Center Development project. Caylynn assisted KOA in providing these services which include review of existing bicycle and pedestrian safety and access along Oso Creek Trail, planning documents and data related to the project, conducting project site access and circulation studies, traffic and parking studies, and delivery truck turning template analysis.

**Stewart & Pennsylvania Improvement Project, Santa Monica, CA**

Associate Engineer. The project goal is to improve linkage to the station, increase use of active modes of transportation, and support a safer and barrier free network by resolving deficiencies, enhancing mobility, providing first-last mile access, and improving traffic patterns. The improvements consist of protected Class IV bikeways, bike signal phasing, intersection realignment, improving ADA accessibility, pedestrian and bicycle amenities, and pedestrian lighting. Caylynn assisted in preparing and submitting the signing and striping plans and estimates for this project.

**Menifee Road Street Improvement, Menifee, CA**

Associate Engineer. KOA is providing engineering design services to improve pavement condition, ADA-compliance, and bikeway facilities for corridors in Menifee, CA. Caylynn prepared signing and striping plans for a 1-mile segment along Menifee Road. This included a comprehensive field review to determine different lane configuration alternatives to allow an addition of striped bike lanes without lane reductions bike lanes without lane reductions along Menifee Road.

**Carson Bike Lane PS&E, Carson, CA**

Associate Engineer. KOA provided the City of Carson with professional traffic engineering services to design nearly 17 miles of bike lanes along various routes within the City. The project includes preparation of plans, specifications, and estimates (PS&E) for Class II bike lane and Class IV bikeway improvements. Caylynn assisted in drafting and submitting the signing and striping plans and estimates for this project.

**SCAG Local Demonstration Initiative, CA**

Associate Engineer. Caylynn assisted with traffic engineering design services for pedestrian and bicycle safety improvements projects for two out of six project locations within the Southern California Association of Governments Local Demonstration Initiative. The improvements include recommending alternatives and implementing final design of bikeway linkage between arterials and improved pedestrian facilities.



## GENELLE PADERANGA, EIT

PROJECT ENGINEER

Genelle Paderanga is a motivated Associate Engineer with KOA. She has worked on various projects for both public and private developments throughout Southern California. While working at KOA, Genelle has experience working with traffic signal design, signing and striping design, and traffic control design. Before joining KOA, she was a Public Works Technical Aide for the Traffic Division at the City of Newport Beach for over two years. No matter what project she is involved in, Genelle constantly strives to exceed expectations and further her knowledge in the transportation field.

### RELEVANT EXPERIENCE

#### **Beverly Blvd Traffic Signal Synchronization Project, Whittier, Pico Rivera, Montebello, CA**

Associate Engineer. KOA has provided Traffic Engineering On-Call Services to LA County since 2002, which has included work on several LACDPW Traffic Signal Synchronization Projects. The Los Angeles County Department of Public Works is administering a LACMTA grant-funded program to improve traffic flow and reduce congestion on numerous arterial streets throughout the County of Los Angeles, as part of their Countywide Traffic Improvement Program. Genelle has helped KOA prepared signal improvement recommendation reports and traffic signal modification plans to upgrade and synchronize 35 traffic signals on Beverly Boulevard between Pomona Boulevard and Pickering Avenue, a project length of approximately 7.5 miles involving multiple jurisdictions, including the Cities of Whittier, Pico Rivera, and Montebello, in the County of Los Angeles. KOA's reports were prepared to utilize the limited funding resources with effective improvements on signal synchronization and pedestrian safety. Preparation of the plans involved extensive and thorough field reviews, preparation of accurate base drawings, and designs to satisfy the synchronization program guidelines and the County's and Cities' design standards. Improvements included controller and cabinet upgrades, traffic signal equipment upgrades, vehicle detection, GPS time-based units, median nose modifications, pedestrian access ramps, crosswalks, striping, and roadway signage.

#### **Pico Rivera HSIP Cycle 8 Traffic Signal Improvements Project, Pico Rivera, CA**

Associate Engineer. KOA provided the City of Pico Rivera with traffic engineering design services for the HSIP Cycle 8 Traffic Signal Improvements Project. Genelle assisted KOA with the project that included preparation of plans, specifications and estimates (PS&E) for five traffic signal modifications, funding administration and construction support. Typical improvements included upgrading various signal equipment including, but not limited to: controller, controller cabinet, signal poles, vehicle and pedestrian signal heads, pedestrian push buttons, luminaires, battery back-up systems, internally illuminated street name signs, new conductors, conduit and ADA compliant curb ramps.

### EDUCATION

BS, Civil Engineering, California State Polytechnic University, Pomona, CA

### PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

### REGISTRATIONS

Engineer in Training (EIT)  
CA, #168216



**Garfield Avenue and Graves Avenue Street Improvement Project, Monterey Park, CA**

Associate Engineer. Genelle worked with KOA team to provide engineering services to the City of Monterey Park for the intersection improvement project at Garfield Avenue and Graves Avenue. KOA had previously performed a safety analysis study at the project intersection which included analysis of existing roadway characteristics, collision patterns, and sight distances to identify safety concerns and provide improvement recommendations. A protected left turn warrant analysis based on CA MUTCD guidelines as a part of the study. The intersection improvements for the project were based on the safety study recommendations. The improvements included modification to the existing traffic signal to accommodate protected-left turn phasing and to comply with current City standards, signing and striping modifications to enhance safety, and street improvements to meet ADA standards.

**Beverly Boulevard Traffic Signal Synchronization, City of Alhambra, CA**

Associate Engineer. KOA has provided Traffic Engineering On-Call Services to LA County since 2002, which has included work on several LACDPW Traffic Signal Synchronization Projects. The Los Angeles County Department of Public Works is administering a LACMTA grant-funded program to improve traffic flow and reduce congestion on numerous arterial streets throughout the County of Los Angeles, as part of their Countywide Traffic Improvement Program KOA prepared signal improvement recommendation reports and traffic signal modification plans to upgrade and synchronize 35 traffic signals on Beverly Boulevard between Pomona Boulevard and Pickering Avenue, a project length of approximately 7.5 miles involving multiple jurisdictions, including the Cities of Whittier, Pico Rivera, and Montebello, in the County of Los Angeles. KOA's reports were prepared to utilize the limited funding resources with effective improvements on signal synchronization and pedestrian safety. Preparation of the plans involved extensive and thorough field reviews, preparation of accurate base drawings, and designs to satisfy the synchronization program guidelines and the County's and Cities' design standards. Improvements included controller and cabinet upgrades, traffic signal equipment upgrades, vehicle detection, GPS time-based units, median nose modifications, pedestrian access ramps, crosswalks, striping, and roadway signage.

**Wilmington Avenue ATP Improvement Project, Compton, CA**

Associate Engineer. KOA provided engineering services to the City of Compton for the Wilmington Avenue Safe Streets Pedestrian/Bicycle Improvements project. The project involved street, signing and striping, and traffic signal improvements to meet the Active Transportation Program goals. Our scope of work included preparation of plans, specifications, and estimates for pavement rehabilitation, installation of bike lanes, high visibility crosswalks, street lighting, countdown pedestrian heads, and accessible pedestrian long a 1.5 mile stretch of Wilmington Avenue.

**Garfield Ave and Graves Avenue Street Improvement Project, Monterey Park, CA**

Associate Engineer. KOA provided engineering services to the City of Monterey Park for the intersection improvement project at Garfield Avenue and Graves Avenue. KOA had previously performed a safety analysis study at the project intersection which included analysis of existing roadway characteristics, collision patterns, and sight distances to identify safety concerns and provide improvement recommendations. A protected left turn warrant analysis based on CA MUTCD guidelines as a part of the study. The intersection improvements for the project were based on the safety study recommendations. The improvements included modification to the existing traffic signal to accommodate protected-left turn phasing and to comply with current City standards, signing and striping modifications to enhance safety, and street improvements to meet ADA standards.

**100 Walnut Street Improvements, City of Pasadena, CA**

Associate Engineer. KOA Corporation was retained to provide engineering services during construction at the Parsons Parking Complex for the City of Pasadena. KOA prepared a traffic signal plan for the intersection of the I-210 Freeway Off Ramp & Maple Street. The engineering services also included providing responses to the contractor's requests for information (RFI), reviewing and analyzing change orders and prepared independent estimates, prepared plan revisions (Interim Change Authorization), and prepared "as-built" record drawings for plans.



## CHRISTIAN DY, EIT

### PROJECT ENGINEER

Christian Dy is an Associate Engineer at KOA. He has six years of experience in civil engineering and traffic engineering. He has collaborated with City Engineers during inspections on land development projects. For the City of Anaheim, Christian analyzed and implemented signal timing to manage traffic congestion for 331 intersections using traffic management software Centrac and Actra. His project experience includes: assisting with traffic engineering studies such as warrant studies, field surveys, and traffic counts; troubleshooting for CCTV/IP cameras and signal controllers; programming CMS for the Anaheim Convention Center and the Disneyland Resort area using Siemens i2; and working closely with signal technicians to investigate and resolve citizen complaints about Anaheim traffic signals.

### RELEVANT EXPERIENCE

#### **City of Pasadena Citywide Traffic Signal Asset Master Plan (TSAMP), Pasadena, CA**

Associate Engineer. Christian Dy conducted inventory for traffic signal assets in the city and also prepared a technical report highlighting existing operating conditions

#### **City of Victorville Local Roadway Safety Plan, Victorville, CA**

Associate Engineer. Christian Dy conducted analysis of collision data to create set of collision countermeasures. Prepared technical report consisting of data analyses, concept plans, cost estimates, and BCR analyses.

#### **City of Rancho Mirage Local Roadway Safety Plan, Rancho Mirage, CA**

Associate Engineer. Christian Dy conducted analysis of collision data to create set of collision countermeasures. Prepared technical report consisting of data analyses, concept plans, cost estimates, and BCR analyses.

#### **City of Colton Local Roadway Safety Plan, Colton, CA**

Associate Engineer. Christian Dy conducted analysis of collision data to create set of collision countermeasures. Prepared technical report consisting of data analyses, concept plans, cost estimates, and BCR analyses.

#### **City of Pomona Local Roadway Safety Plan, Pomona, CA**

Associate Engineer. Christian Dy conducted analysis of collision data to create set of collision countermeasures. Prepared technical report consisting of data analyses, concept plans, cost estimates, and BCR analyses.

### EDUCATION

BS, Civil Engineering, California State Polytechnic University, Pomona

### REGISTRATIONS

Engineer-in-Training (2018), CA #164705

### PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

Structural Engineers Association

### SKILLS/TRAINING

AutoCAD, Microstation InRoads, Centrac, Actra

*\*Experience with previous firm*



**City of Rancho Cucamonga Local Roadway Safety Plan, Rancho Cucamonga, CA**

Associate Engineer. Christian Dy conducted analysis of collision data to create set of collision countermeasures. Prepared technical report consisting of data analyses, concept plans, cost estimates, and BCR analyses.

Associate Planner. David assisted in the preparation of a Safe Routes to School (SRTS) Plan for the City of Lynwood. He also assisted senior staff prepare project management plans, client presentations, and regular meeting agendas and minutes.

**Foothill Gold Line Extension 2B, Utilities Design\***

**Road & Highway\***

Conducted field surveys for over 1,000 pedestrian facilities throughout Caltrans District 7.

**Civil Engineering Intern\***

Conducted preliminary studies on hazard elimination for rail projects.

**City of Anaheim | Traffic Engineering Intern\***

**City of Santa Clarita | Development Services Intern\***

## **APPENDIX B – Q&A ACKNOWLEDGMENT**

Iteris acknowledges the receipt of RFP Question No. 1.

Iteris Euclid TSSP Total Fee

TASK	ITERIS											KOA						LLG						TOTAL				
	Project Manager	PIC - QA/QC	Deputy Project Manager	Task Lead - Design	Task Lead - Signal Timing	Associate Engineer	Assistant Engineer	Admin Staff	TOTAL HOURS	TOTAL LABOR	ODC	Senior Engineer	Senior Associate Engineer	Associate Engineer	TOTAL HOURS	TOTAL LABOR	ODC	Senior Trans Engineer	Senior Signal System Specialist	Senior Trans Planner	Traffic Engineer II	TOTAL HOURS	TOTAL LABOR		ODC			
Hourly Rates		\$270	\$365	\$351	\$280	\$197	\$162	\$145	\$170			\$ 261	\$ 170	\$ 140				\$ 189	\$ 189	\$ 184	\$ 155							
I - PI Phase	Task 0	Project Management & Contract Administration	74	4	54	14	14	0	0	40	200	\$ 53,855	\$ 700					0	22	0	0	22	\$ 4,158	\$ 200	\$ 58,913			
		Kick-Off Meeting	4	2	4	2	2				14	\$ 4,166	\$ 200									2	\$ 378	\$ 100	\$ 4,844			
		PMP Plan & Project Coordination & Meetings	70	2	50	12	12			40	186	\$ 49,689	\$ 500									20	\$ 3,780	\$ 100	\$ 54,069			
	TASK A	Development and Implementation of Optimized Timing Plans	158	4	202	0	370	470	500	0	1,704	\$ 336,846	\$ 2,200	36	110	130	296	\$ 46,296	\$ 200	0	30	0	0	30	\$ 5,670	\$ 200	\$ 391,412	
		Data Collection and QC	8	2	4		20	60	60		154	\$ 26,699	\$ 400	8	20	20	52	\$ 8,288	\$ 200							\$ 35,587		
		Base Timing Review	10		8		10	30	40		98	\$ 18,162		8	20	20	56	\$ 8,288								\$ 26,450		
		Synchro Modeling and Signal Synchronization	70	2	95		140	200	200		707	\$ 142,072		20	70	90	188	\$ 29,720									\$ 171,792	
		Signal Timing Implementation & Fine-Tuning	70		95		200	180	200		745	\$ 149,912	\$ 1,800				0	\$ -				30		30	\$ 5,670	\$ 200	\$ 157,582	
	TASK B	"Before" and "After" Study Analysis & Project Report for PI Phase	16	2	16	40	104	120	0	0	298	\$ 61,815	\$ 500	24	48	128	216	\$ 32,344	\$ 1,000								\$ 95,659	
		Travel Time "Before" Study	2		4		12	20			38	\$ 7,553	\$ 250	8	16	60	88	\$ 13,208	\$ 500								\$ 21,511	
		Travel Time "After" Study	2		4		12	20			38	\$ 7,553	\$ 250	8	16	60	88	\$ 13,208	\$ 500								\$ 21,511	
		Final Report for PI Phase	12	2	8	40	80	80			222	\$ 46,708		8	16	8	40	\$ 5,928									\$ 52,636	
	TASK C	Proposed Signal Timing Related System Improvements	68	12	0	210	220	500	500	0	1,510	\$ 278,706	\$ 600	0	0	0	0	\$ -				20	80	20	20	140	\$ 25,680	\$ 304,986
		Field Review	8			10	20	100	100		238	\$ 39,675	\$ 300					\$ -				40			40	\$ 7,560	\$ 47,535	
		System Design (PS&E)	60	12		200	200	400	400		1,272	\$ 239,031	\$ 300					\$ -				20	40	20	20	100	\$ 18,120	\$ 257,451
TASK D	System Integration & Construction Support	80	0	20	140	220	0	0	0	460	\$ 111,094	\$ 300	0	0	0	0	\$ -				5	170	20	40	235	\$ 42,955	\$ 800	\$ 155,149
	System Integration	40		5	40	160				245	\$ 55,250	\$ 300					\$ -				5	80	20	20	125	\$ 22,845	\$ 400	\$ 78,795
	Construction Support & Technical Support	40		15	100	60				215	\$ 55,845						\$ -					90		20	110	\$ 20,110	\$ 400	\$ 76,355
II - O&M Phase	TASK A	Monitoring & Improvement of Optimized Signal Timing	40	0	40	0	80	160	350	2	672	\$ 117,803	\$ 56,000								0			0	\$ -	\$ 400	\$ 174,203	
		Timing monitoring & Fine-tuning	40		40		80	160	350	2	672	\$ 117,803	\$ 6,000										0	\$ -	\$ 400	\$ 124,203		
		ClearGuide License - 2 years											\$ 50,000														\$ 50,000	
	TASK B	Communications & Detection Support	50	0	0	30	48	0	0	0	128	\$ 31,338	\$ -	0	0	0	0	\$ -				100			100	\$ 18,900	\$ 400	\$ 50,638
		Communications & Detection Troubleshoot & Support	50			30	48				128	\$ 31,338						\$ -				100			100	\$ 18,900	\$ 400	\$ 50,638
	TASK C	On-Going Operations & Maintenance (O&M) Report	10	0	10	8	20	20	0	0	68	\$ 15,630	\$ 300									14				\$ 2,646		\$ 18,576
		Final Report for O&M Phase	10		10	8	20	20			68	\$ 15,630	\$ 300									14				\$ 2,646		\$ 18,576
Subtotal		496	22	342	442	1,076	1,270	1,350	42	5,040	\$ 1,007,087	\$60,600	60	158	258	512	\$ 78,640	\$ 1,200	25	416	40	60	527	\$ 100,009	\$ 2,000			
																							ITERIS SUBTOTAL	\$	1,067,687			
																							LLG SUBTOTAL	\$	102,009			
																							KOA SUBTOTAL	\$	79,840			
																							TRAFFIC COUNT (AimTD) - Primary 67 Intersections + 25 offset intersections	\$	50,438			
																							PROJECT TOTAL WITHOUT OPTIONAL TASKS	\$	1,299,974			



**EXHIBIT B**  
**CERTIFICATES OF INSURANCE**