CITY COUNCIL AGENDA REPORT

MEETING DATE: MAY 1, 2012 **ITEM NUMBER:**

SUBJECT: FAIRVIEW TRAFFIC SIGNAL SYNCHRONIZATION PROJECT

DATE: APRIL 19, 2012

FROM: PUBLIC SERVICES DEPARTMENT/TRANSPORTATION SERVICES DIVISION

PRESENTATION BY: ERNESTO MUNOZ, PUBLIC SERVICES DIRECTOR

FOR FURTHER INFORMATION CONTACT: RAJA SETHURAMAN, TRANSPORTATION SERVICES MANAGER, (714) 754-5343

RECOMMENDATION:

1. Approve the Cooperative Agreement between the City of Costa Mesa and the City of Santa Ana for the Fairview Traffic Signal Synchronization Project (Attachment 1).
2. Authorize the Chief Executive Officer and City Attorney to accept minor revisions to the Cooperative Agreement as proposed by the City of Santa Ana and execute the document.
3. Award a Professional Services Agreement for the Design and Implementation of the Fairview Traffic Signal Synchronization Project to Advantec Consulting Engineers, 19200 Von Karman Avenue, Suite 600, Irvine, CA 92612, in the amount of $658,440 (Attachment 2).
4. Approve Budget Adjustment 12-018 in the amount of $658,440 (Attachment 3).
5. Authorize the Mayor and City Clerk to execute the Professional Services Agreement.

BACKGROUND:

The Orange County Transportation Authority (OCTA) Measure M2 Program, half-cent sales tax for transportation improvements, included money for cooperative Traffic Signal Synchronization (TSS) projects spanning multiple jurisdictions within Orange County. OCTA issued a "call for projects" under the TSS Program soliciting projects for potential grant funding in March 2011.

The City of Costa Mesa partnered with the City of Santa Ana in applying for the Fairview TSS Project. The City of Costa Mesa will administer the Fairview TSS project and the participating agencies include the City of Santa Ana and Caltrans. A total of 31 intersections along the Fairview Corridor in the Cities of Costa Mesa and Santa Ana will be improved and coordinated as part of this project.

The scope of work for the TSS Project includes:

- Development of optimized traffic signal synchronization timing plans;
- Installation of traffic signal upgrades;
- Communication upgrades;
- Implementation of timing plans;
- Conduct "before and after" studies; and
- Three years of signal timing maintenance.

In July 2011, OCTA approved the City's grant funding request for the Fairview TSS project. The City was awarded $620,000 in grant funds for the engineering and implementation of traffic signal equipment and timing improvements on the Fairview Corridor with a match share requirement of $155,000 resulting in a total project cost of $775,000. The project costs, including grant award and match share, are split between the Cities of Santa Ana and Costa Mesa in proportional amounts based on the number of signals in each jurisdiction.

ANALYSIS:

The Fairview TSS project will result in a comprehensive review of traffic signal coordination spanning the Cities of Santa Ana and Costa Mesa on the Fairview Corridor. The City of Costa Mesa will have the final approval authority for implementation of any timing plans developed as part of the project within the City's jurisdiction. The project will replace out-dated traffic signal controllers at all signalized intersections along Fairview Road, in addition to installing traffic signal communication upgrades. The value of the upgrades made to the City of Costa Mesa as a result of this project is estimated to be $400,000. The TSS project includes the preparation of detailed "before and after" studies to document efficiencies achieved with any proposed timing changes.

In January 2012, a total of eight Requests for Proposals (RFP) were sent to the consulting firms specializing in traffic signal synchronization. A total of four firms responded to the RFP. The proposals were reviewed for compliance with the City's RFP, and consultants were evaluated based on project understanding, depth of experience, technical expertise, and associated factors. Firms were then ranked and the top two firms interviewed by a panel consisting of staff from the Cities of Costa Mesa and Santa Ana. After careful review of all the proposals and interview responses, Advantec Consulting Engineers was selected to design and implement the project. Advantec is currently on-call for Traffic Signal Synchronization services for OCTA in both the Measure M1 and Measure M2 traffic signal projects. They have completed projects of similar scope and size including Beach Boulevard, and signal coordination for the City of Irvine and County of San Bernardino. Advantec's proposal was also ten percent lower in cost and offered a wider range of services than the other proposing firms.

As the Fairview TSS project is a joint project between the Cities of Costa Mesa and Santa Ana, there is a need for a Cooperative Agreement to define the roles and responsibilities. The City of Santa Ana will provide the required match share of the project cost for the improvements and implement the timing plans in their jurisdiction. Costa Mesa will manage the project, provide a match share for the improvements, and implement the timing plans in the City's jurisdiction. Each agency is responsible for maintenance of the improvements within their jurisdiction. OCTA as a grantor agency, will fund, monitor, and audit the project in accordance with previously approved funding agreements.

Staff recommends City Council approval of the Cooperative Agreement to enable the implementation of the TSS project along the Fairview Corridor and requests authorization for the Chief Executive Officer and City Attorney to accept minor revisions to the agreement as proposed by the City of Santa Ana and execute the document. Staff also requests approval and execution of the Professional Services Agreement to Advantec Consulting Engineers.

ALTERNATIVES CONSIDERED:

One alternative would be not to approve the Cooperative Agreement and Professional Services Agreement. However, this alternative would result in the elimination of Costa Mesa intersections for consideration of traffic signal synchronization improvements. This would also result in the loss of approximately $400,000 in traffic signal equipment and timing upgrades within the City.

FISCAL REVIEW:

If approved, funding for this project is available from an OCTA Measure M2 grant in the amount of $620,000 towards the design and implementation of the Traffic Signal Synchronization Project along the Fairview Corridor in the jurisdictions of Costa Mesa and Santa Ana. The OCTA grant requires a 20% matching by the City. The City will commit $38,440 in Air Quality Management District (AQMD) funds and approximately $40,981 in staff time to implement its share of the project. It is estimated that the City of Santa Ana will contribute approximately $75,600 towards the project. City of Costa Mesa staff will maintain the traffic signal timing and equipment as part of routine maintenance. The attached Budget Adjustment No. 12-018 allocates the grant funding and the AQMD funds from available fund balance towards the construction of the project.

LEGAL REVIEW:

The City Attorney's office has reviewed the attached Cooperative Agreement and Professional Services Agreement and has approved them as to form.

CONCLUSION:

Staff recommends that the City Council approve the attached Cooperative Agreement between the City of Costa Mesa and the City of Santa Ana for the implementation of the Traffic Signal Synchronization Project on the Fairview Corridor, and requests the City Council's authorization for the Chief Executive Officer and City Clerk to execute the agreement.

Staff also recommends that the City Council award the attached Professional Services Agreement to Advantec Consulting Engineers for the design and implementation of the Traffic Signal Synchronization on the Fairview Corridor, in the amount of $658,440 and approve Budget Adjustment 12-018 to recognize and appropriate funding for the project.

ERNESTO MUNOZ
Public Services Director

RAJA SETHURAMAN
Manager, Transportation Services Division

BOBBY YOUNG
Finance & I.T. Director

ATTACHMENTS:
1. Cooperative Agreement
2. Professional Services Agreement
3. Budget Adjustment 12-018

DISTRIBUTION:
Chief Executive Officer
Assistant Chief Executive Officer
City Attorney
City Clerk
Staff

COOPERATIVE AGREEMENT BY AND BETWEEN THE CITY OF COSTA MESA AND THE CITY OF SANTA ANA FOR THE FAIRVIEW TRAFFIC SIGNAL SYNCHRONIZATION PROJECT

This Cooperative Agreement ("Agreement") is made and entered into this _____ day of _____, 2012, by and between the CITY OF COSTA MESA, a municipal corporation ("COSTA MESA"), and the CITY OF SANTA ANA, a charter city ("SANTA ANA").

RECITALS:

A. WHEREAS, COSTA MESA applied for a grant from the Orange County Transportation Authority (OCTA) as part of the Renewed Measure M (M2), Regional Traffic Signal Synchronization Program RTSSP (Project P), aimed to coordinate traffic signals across multiple jurisdictions to enhance countywide traffic flow and reduce congestion; and

B. WHEREAS, the Fairview Traffic Signal Synchronization Project (hereinafter referred to as the PROJECT) was selected by OCTA as one of the RTSSP Projects to be funded in Fiscal Year 2011-2012, based on an application submitted by COSTA MESA on behalf of both COSTA MESA and SANTA ANA (jointly referred to as CITIES); and

C. WHEREAS, OCTA and COSTA MESA have entered into a Master Funding Agreement "Cooperative Agreement No. C-1-2757" defining the terms and conditions for approved Measure M2 projects; and

D. WHEREAS, the CITIES agree to initiate and implement the PROJECT, with COSTA MESA as the lead agency; and

E. WHEREAS, the PROJECT will include improvement at thirty-one (31) traffic signals along Fairview as listed in the Project Proposal, Exhibit A; and

F. WHEREAS, the PROJECT will include hardware and software upgrades to traffic controllers, traffic telecommunications, master controllers and associated systems (hereinafter collectively referred to as "Traffic Control Elements"), and these Traffic Control Elements will be constructed and/or installed and implemented as part of the PROJECT as identified in the Project Proposal, Exhibit A and the Project Price Proposal attached as Exhibit B; and

G. WHEREAS, the CITIES agree to coordinate the inclusion of other Traffic Control Elements and in-kind services to be integrated during the construction of the PROJECT that are not included in the Project Application and that the owning City will have the responsibility for verifying and coordinating during the course of the PROJECT; and

H. WHEREAS, the CITIES agree to implement the PROJECT based on Exhibits A and B, including a combined cash and in-kind match of one hundred fifty-five thousand dollars, equivalent to twenty percent (20%) of the PROJECT cost split with the following cost contribution of cash and in-kind service, SANTA ANA, $75,579 and COSTA MESA, $79,421.

I. WHEREAS, the CITIES desire to enter into this Cooperative Agreement to demonstrate their commitment to improving traffic signal synchronization opportunities for Orange County and to develop and implement the Fairview Project; and

J. WHEREAS, this Agreement defines the specific terms, conditions and funding responsibilities between the CITIES for the implementation of the PROJECT;

NOW, THEREFORE, it is mutually understood and agreed to by the CITIES to enter into this cooperative agreement with respect to the matters as follows:

1. RESPONSIBILITIES OF THE CITY OF SANTA ANA:

The City of Santa Ana agrees to the following responsibilities for implementation and funding of the PROJECT:

a. To authorize the CITY OF COSTA MESA to be the Administering Agency for the PROJECT.

b. To authorize OCTA to distribute its grant allocation ($300,000) to COSTA MESA in order to pool the partner Cities' grant funds in order to complete a more thorough project on Fairview between SR-55 and SR-22 Freeways than could be accomplished by each city individually. SANTA ANA will contribute $75,579 in cash and in-kind services.

c. SANTA ANA shall help develop the project scope, provide input into the consultant selection, attend team meetings, and review all consultant and administrative reports pertaining to the SANTA ANA scope of work.

d. SANTA ANA shall provide required updates as requested by OCTA as part of the semi-annual review process until the completion of the three-year grant period. Documents to be provided include but are not limited to payroll records, contracts, and purchase orders related to the PROJECT.

2. COSTA MESA AGENCY RESPONSIBILITIES:

a. COSTA MESA shall manage the Project for the Cities of COSTA MESA and SANTA ANA. COSTA MESA shall act as the "Administering Agency" for the work for both COSTA MESA and SANTA ANA. A copy of this Agreement

shall be mailed to OCTA within ten (10) days after this Agreement has been executed, pursuant to the terms and conditions set forth herein.

b. COSTA MESA will contribute a minimum of $38,438 in cash and $40,983 cash and/or in-kind services, for a total match share of $79,421.

c. COSTA MESA shall work cooperatively with SANTA ANA and ensure that SANTA ANA has the opportunity to provide meaningful input into all phases of the project, and that staff has adequate time to review all draft reports, contracts, the proposed Scope of Work, and any other pertinent information. COSTA MESA shall convene regular meetings of staff representatives from all partnering agencies to provide a regular process of input from all partner cities to the consultant team.

d. COSTA MESA shall enter into an agreement with a qualified consultant team to assist in the completion and monitoring of the Fairview Corridor. Selection of the consultant team shall be with the concurrence of the partner cities.

e. COSTA MESA shall coordinate the work effort of this PROJECT, provide the day-to-day management of the consultant and manage all consultant administration and contracting. COSTA MESA shall review the consultant's invoices and pay them accordingly after ensuring that the work has been adequately performed by the consultant.

f. COSTA MESA shall comply with all of the terms and conditions of the Cooperative Agreement with OCTA including the Project Reporting and Audit Requirements contained therein.

3. SHARED RESPONSIBILITIES. Each City agrees to:

a. Designate a technical lead person to act as the liaison for the PROJECT. The liaison and any other required personnel shall attend meetings and participate in all related project meetings as well as participate on the OCTA Intelligent Transportation Systems (ITS) roundtable.

b. Participate, cooperate and coordinate with contractors, consultants, vendors and staff in good faith using reasonable efforts to resolve any unforeseen issues and disputes arising out of the PROJECT to the extent practicable with respect to the performance of the PROJECT.

c. Identify and verify the upgrades to Traffic Control Elements to be constructed and installed as part of the PROJECT and as identified in the Project Application for each City.

d. Coordinate the inclusion of other Traffic Control Elements and in-kind services, where necessary, that the owning agency requires for the

implementation of the PROJECT but are not included in the project Application. The owning agency shall be responsible for the inclusion of such elements within reason.

e. Maintain project related signals and telecommunications equipment with high priority during the project and be responsible for repair of their own signal control systems in each of their respective jurisdictions.

f. Provide on-site support for signal control systems, timing plans, detection systems and related equipment during construction, installation and integration and be available to change or make adjustments to timing plans at a central or field location when necessitated by the PROJECT.

g. Document in-kind match or dollar match funding as identified in the project application and provide verification of such expenditures as part of any required review or audit process which may include payroll records, contracts and purchase orders.

h. Monitor and operate the traffic signals and improvements for a period of 3 years after the completion of the PROJECT improvements and provide verification of such activities.

i. Modify this Agreement only by amendment upon written mutual consent of both Cities. All modifications, amendments, changes and revisions of this agreement in whole or in part, and from time to time, shall be binding upon the CITIES so long as the same shall be in writing and executed by each agency.

4. COMPLETE AGREEMENT

a. This Agreement, including any attachments incorporated herein and made applicable by reference, constitutes the complete and exclusive statement of the terms and conditions of this Agreement between COSTA MESA and SANTA ANA and it supersedes all prior representations, understandings and communications between the parties. The invalidity in whole or in part of any term or condition of this Agreement shall not affect the validity of other term(s) or conditions(s) of this Agreement. The above referenced Recitals are true and correct and are incorporated by reference herein.

b. COSTA MESA's failure to insist on any instance(s) of SANTA ANA's performance of any term(s) or condition(s) of this Agreement shall not be construed as a waiver or relinquishment of COSTA MESA's right to such performance or to future performance of such term(s) or condition(s), and SANTA ANA's obligation in respect thereto shall continue in full force and effect. Changes to any portion of this Agreement shall not be binding upon COSTA MESA except when specifically confirmed in writing by an authorized

representative of COSTA MESA by way of a written amendment to this Agreement and issued in accordance with the provisions of this Agreement.

5. INSURANCE AND INDEMNIFICATION

a. SANTA ANA shall jointly and severally indemnify, defend and hold harmless COSTA MESA, it's officers, directors, employees and agents from and against any and all claims (including attorney's fees and reasonable expenses for litigation and settlement) for any loss or damages, bodily injuries, damage to, or loss of property caused by the negligent acts, omissions or willful misconduct by SANTA ANA, its officers, directors, employees or agents in connection with or arising out of the performance of this Agreement.
b. SANTA ANA shall maintain adequate levels of insurance, or self-insurance to assure full indemnification of COSTA MESA.
c. COSTA MESA shall indemnify, defend and hold harmless SANTA ANA, its officers, directors, employees or agents, and/or its officers, directors, employees or agents from and against any and all claims (including attorney's fees and reasonable expenses for litigation and settlement) for any loss or damages, bodily injuries, damage to, or loss of property caused by the negligent acts, omissions or willful misconduct by COSTA MESA, its officers, directors, employees or agents in connection with or arising out of the performance of this Agreement.
d. COSTA MESA shall maintain adequate levels of insurance, or self-insurance to assure full indemnification of SANTA ANA.

6. ADDITIONAL PROVISIONS

a. Term of Agreement: This Agreement shall continue in full force and effect until June 30, 2016. This Agreement may be extended at the mutual consent of both parties.
b. Legal COSTA MESA: COSTA MESA and the SANTA ANA hereto consent that they are authorized to execute this Agreement on behalf of said parties and that, by executing this Agreement, the parties hereto are formally bound to its provisions.
c. Severability: If any term, provision, covenant or condition of this Agreement is held to be invalid, void or otherwise unenforceable, to any extent, by any court of competent jurisdiction, the remainder of this Agreement shall not be affected thereby, and each term, provision, covenant or condition of this Agreement shall be valid and enforceable to the fullest extent permitted by law.
d. Counterparts of Agreement: This Agreement may be executed and delivered in any number of counterparts, each of which, when executed and delivered shall be deemed an original and all of which together shall constitute the same agreement. Facsimile signatures will be permitted.
e. In the event that the PROJECT costs exceed the estimates as submitted in the APPLICATION as prepared, all parties agree to meet and determine

PROJECT revisions to meet the budget or a revised funding proposal by the CITIES which shall be documented and submitted in writing as a revision to the agreement.

f. COSTA MESA and SANTA ANA shall comply with all applicable federal, state and local laws, statutes, ordinances and regulations of any governmental agency having jurisdiction over the PROJECT.

g. Force Majeure: Either Party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by an unforeseeable cause beyond its control, including but not limited to; any incidence of fire, flood; acts of God; commandeering of material, products, plants or facilities by the federal, state or local government; national fuel shortage; or a material act or omission by the other party; when satisfactory evidence of such cause is presented to the other Party, and provided further that such nonperformance is unforeseeable, beyond the control and is not due to the fault or negligence of the Party not performing.

h. Assignment: Neither this Agreement, nor any of the Parties rights, obligations, duties, hereunder may be assigned in whole or in part by either Party without the prior written consent of the other Party in its sole and absolute discretion. Any such attempt of assignment shall be deemed void and of no force and effect. Consent to one assignment shall not be deemed consent to any subsequent assignment, nor the waiver of any right to consent to such subsequent assignment.

i. Obligations To Comply with Law: Nothing herein shall be deemed nor construed to authorize or require any Party to issue bonds, notes or other evidences of indebtedness under the terms, in amounts, or for purposes other than as authorized by local, state or federal law.

j. Governing Law: The laws of the State of California and applicable local and federal laws, regulations and guidelines shall govern this Agreement.

k. Litigation fees: Should litigation arise out of this Agreement for the performance thereof, the court shall award costs and expenses, including attorney's fees, to the prevailing party.

l. Notices: Any notices, requests, or demands made between the parties pursuant to this Agreement are to be directed as follows:

If to Costa Mesa:

City Clerk
City of Costa Mesa
77 Fair Drive
Costa Mesa, CA 92626

If to Santa Ana:

7. DISPUTE RESOLUTION:

COSTA MESA and SANTA ANA hereby acknowledge that OCTA will not resolve any disagreements which may arise among the two parties, including scope, financing and deliverables.

8. DELEGATED AUTHORITY

The actions required to be taken by the CITIES in the implementation of this Agreement are delegated to its Chief Executive Officer, City Manager or equivalent designee.

IN WITNESS WHEREOF, SANTA ANA has caused this Agreement to be executed by its City Manager and attested by its Clerk, and COSTA MESA has caused this Agreement to be executed by its Chief Executive Officer and attested by its Clerk, as duly authorized by the SANTA ANA City Council and the COSTA MESA City Council, respectively.

CITY OF SANTA ANA, a municipal corporation of the State of California

By: _____
Paul Walters
City Manager

ATTEST:

_____
Maria Huizar
Clerk of the Council

APPROVED AS TO FORM:

_____
Joseph W. Fletcher
City Attorney

CITY OF COSTA MESA a municipal corporation of the State of California

By: _____
Tom Hatch
Chief Executive Officer

ATTEST:

_____
Julie Folcik
Clerk of the Council

APPROVED AS TO FORM:

_____
Thomas Duarte
City Attorney

RECOMMENDED FOR APPROVAL:

Raul Godinez, II
Public Works Director

RECOMMENDED FOR APPROVAL:

Ernesto Munoz
Public Services Director

Attachments: Exhibit A - Project Proposal
Exhibit B - Price Proposal

EXHIBIT A

ADVANTEC Consulting Engineers

February 17, 2012

City of Costa Mesa
Transportation Services Division
4th Floor City Hall
77 Fair Drive
Costa Mesa, CA 92628
(ATTN: Ms Debra Bieber)

Subject: Request for Proposal for the Costa Mesa/Santa Ana Fairview Traffic Signal Coordination Project

Dear Ms. Bieber and members of the selection committee,

ADVANTEC Consulting Engineers (ADVANTEC) is pleased to submit the accompanying proposal in response to the Request for Proposal (RFP) for the Costa Mesa/Santa Ana Fairview Traffic Signal Coordination Project issued by the City of Costa Mesa. This proposal is prepared in accordance with the RFP requirements.

ADVANTEC is a traffic and transportation engineering firm that specializes in traffic signal synchronization, traffic engineering design, and Intelligent Transportation Systems (ITS). Our commitment to provide our clients with quality services has earned us a reputation for excellence in southern California. Our professional staff comprises of high-caliber, multi-disciplined personnel, with a tremendous amount of traffic signal synchronization experience.

For this project, we brought on board four highly qualified subconsultants as follows:

- **Pacific Traffic Data Services** – responsible for traffic counts and data collection.
  Mr. Douglas Bowen
  8502 E. Chapman Ave, Ste 625, Orange, CA 92869
  Ph: (866) 281-4302 Fax: (949) 882-7369 fax

- **Econolite Control Products** – responsible for providing ASC/3 controllers, Type P Cabinets, and D Panels. Potentially responsible for BlueTOAD Travel Time Monitoring system. A copy of Econolite's proposal is included in **Appendix D**.
  Ms. Gina Prohaska
  3360 E. La Palma, Anaheim, CA 92806
  Ph: (714) 630-3700 Fax: (714) 630-6349

- **Crosstown Electrical & Data, Inc.** – responsible for procurement and installation of all communication elements and CCTV, including broadband systems and switches. A copy of Crosstown's quotation is in **Appendix E.**

  Mr. Dave Heermance
  5463 Diaz Street, Irwindale, CA 91706
  Ph: (626) 813-6693 Fax: (626) 813-6604

- **Traffax Inc** – Potentially responsible for furnishing and installation of BluFax Bluetooth Travel Time Monitoring system. Traffax's quotation is in **Appendix F.**

  Mr. Mike Juha, Juha Distributing
  PO Box 1024, Wildomar, CA 92595
  Ph: (951)600-9499 Fax: (949)310-5106

Our team for this project includes professionals with many years of signal synchronization and implementation experience - with extensive experience involving multi-jurisdictional projects.

The key strengths of the ADVANTEC team are:

1. Substantial recent experience with similar projects, such as:
   a. Beach Boulevard Ethernet-over-copper Implementation & TLSP (70 intersections);
   b. Irvine 19 corridors signal system upgrade & TLSP (over 170 intersections);
   c. San Bernardino County Tier 3 & 4 wireless communications design & TLSP (over 690 intersections);
   d. Inglewood Signal System upgrade & Citywide TLSP (140 intersections); and so on.

   All of these projects included implementation and fine-tuning of the signal timing on site. **ADVANTEC is also one the first consultants to implement traffic signal timing on-site for our clients starting in 1998;**
2. ADVANTEC has a 100% track record of completing projects on-time and within-budget. This track record applies towards over 400 projects for over 80 clients in the past 12 years;
3. Highly experienced Project Director and Project Managers with demonstrable track records for on-time and within budget performance;
4. Good working relationship with many of the local cities, County and Caltrans in Orange County;
5. Successful implementation of signal synchronization leading to perceptible improvements, as demonstrated by compliments from clients and residents.

To better serve our Orange County clients, ADVANTEC has established an office in Irvine. All work will be performed in our offices located in Irvine and Diamond Bar. As President of the company, I am fully authorized to make representations on behalf of ADVANTEC and certify that the

information contained in this proposal is truthful, accurate, and complete at the time of submission of this proposal. The following proposal shall remain valid for a period of not less than 180 days of its submittal. I can be reached at the address, telephone/fax numbers in this letterhead, and the following email address: LeoLee@advantec-usa.com

ADVANTEC commits to comply with the Professional Services Agreement and Insurance requirements for the City of Costa Mesa.

We are very excited about this opportunity to assist the City of Costa Mesa and Santa Ana on this project, and looking forward to establishing a mutually rewarding working relationship with both agencies.

In closing, we thank you for the opportunity to offer our proposal for this effort to further enhance the quality of life in the Cities of Costa Mesa and Santa Ana.

Sincerely,
ADVANTEC Consulting Engineers, Inc.

Leo Lee, P.E.
President

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1
   1.1 Overview of TLSP Services 1
   1.2 Value-Added Services 1
2 QUALIFICATIONS, RELATED EXPERIENCE & REFERENCES 2
   2.1 ADVANTEC Consulting Engineers – Prime Consultant 2
   2.2 Subcontractors 2
   2.3 Relevant Experience 2
   2.4 References 7
3. PROJECT STAFF 8
   3.1 Team Organization 8
   3.2 Key Staff 8
4. WORK PLAN 9
   4.1 Project Understanding 9
   4.2 Existing Hardware 10
   4.3 Corridor Characteristics and Technical Considerations 11
   4.4 Scope of Work 14
5. PROJECT ENHANCEMENTS AND TECHNICAL INNOVATIONS 19
6. PROJECT SCHEDULE 20

APPENDIX A – MAP OF THE PROJECT CORRIDOR AND KEY CHARACTERISTICS
APPENDIX B – MAP OF LOCATIONS WITHIN ¼ MILE OF FAIRVIEW CORRIDOR
APPENDIX C – MAP OF CROSSING TLSP CORRIDORS
APPENDIX D – ECONOLITE'S PROPOSAL
APPENDIX E– CROSSTOWN'S PROPOSAL
APPENDIX F – TRAFFAX BLUFAX PROPOSAL
APPENDIX G – DETAILED PROJECT SCHEDULE
APPENDIX H – CALTRANS LETTER OF COMMENDATION FOR BEACH BLVD TLSP
APPENDIX I – RESUMES

1. EXECUTIVE SUMMARY

1.1 Overview of TLSP Services

ADVANTEC Consulting Engineers is pleased to submit this proposal to Cities of Costa Mesa and Santa Ana for synchronization of the Fairview Road corridor. This proposal provides our technical approach and key innovations to ensure success for this project. ADVANTEC has been on-call TLSP consultant for OCTA since 2008, and we have just been awarded their on-call consultant for the next 3 years, from 2012-2015. In the past 3 years, we have completed the Beach Blvd TLSP project, which is one of the first 3 TLSP that was initiated by OCTA in 2009, and the project was well received by Caltrans, as evidenced by their letter of commendation in **Appendix H**, and we are currently working on the Yorba Linda TLSP project. We are; therefore, very familiar with the requirements of the TLSP. The following is an overview of our technical approaches and services:-

- Design and implementation of various equipment upgrades for the Cities of Costa Mesa, Santa Ana, and Caltrans;
- Design, implement and fine-tune traffic signal timings for AM, MD, PM peak periods, and weekend peak for Fairview Rd. corridor;
- Build consensus among all jurisdictions relating to the traffic signal operation parameters, such as cycle lengths;
- Address and resolve local traffic operational issues such as special attractions, schools, construction activities, closely spaced intersections, heavily travelled intersections, pedestrian activities, need for bicycle clearance timing, and so on;
- Present the benefits of this project to City Council Study Sessions and ITS Roundtable meeting at OCTA.

1.2 Value-Added Services

ADVANTEC has identified a number of technical innovations to be provided as value-added services to OCTA and the local jurisdictions:-

- Addition of intersections along major (heavily travelled) east/west cross streets within ¼ mile to the corridor into the SYNCHRO network for optimization, and the optimized timing plans will be provided to the cities for implementation. A total of 11 intersections are added, making a total of 42 traffic signals to be synchronized for this project.
- Review traffic responsive operation at intersections adjacent to special land uses.
- Development of school timing plans for intersections adjacent to schools.
- Develop timing plans for any planned construction activities during fine tuning or monitoring periods to facilitate signal synchronization during and after construction.
- Calculate new minimum greens for all intersections per the new CA-MUTCD bicycle directive. Evaluate use of new Caltrans directive for bike minimum greens for application in this corridor.
- Calculate greenhouse gas emissions before and after synchronization, and also estimate greenhouse gas emissions if the new CA-MUTCD bicycle directive were applied.
- Guaranteed at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service at no additional cost.

2 QUALIFICATIONS, RELATED EXPERIENCE & REFERENCES

2.1 ADVANTEC Consulting Engineers – Prime Consultant

ADVANTEC Consulting Engineers, Inc. (ADVANTEC), a California corporation founded in 1998, is a consulting engineering firm specializing in Traffic Signal Synchronization, amongst other disciplines. The company was founded based on the principle of providing professional services with the best value and quality, on time and within budget.

We have earned a reputation for responsiveness and providing traffic signal synchronization that makes a perceptible difference to the travelers. In the past 13 years, we have a 100% on-time within-budget record on over 400 projects, serving over 80 satisfied clients, most of which are cities and public agencies. We maintain our reputation by upholding our firm's high standards of quality, client service, and professional integrity.

Offices:	Los Angeles Office (Headquarters)	Orange County
	21700 Copley Drive, Suite 350	19200 Von Karman Ave., Suite 600
	Diamond Bar, CA 91765	Irvine, CA 92612
	Ph: 909-860-6222	Ph: 949-622-5551
	Fax: 909-860-6722	Fax: 949-622-5554

2.2 Subcontractors

For this project, we have brought on-board specialty subcontractors to provide a 'turnkey' solution to the cities of Costa Mesa and Santa Ana. These subcontractors have been working with ADVANTEC on all our TLSP projects for OCTA, they are:-

Pacific Traffic Data Services (PTDS) has over 20 years experience in the traffic and transit data collection industry. In 2009, PTDS introduced its proprietary camera system for collecting traffic volumes and data. The camera system is capable of 4 days of continuous recording, and collect turning movement counts data at over 30 intersections in one day. A video record will be available for review for up to one year if the client has any questions concerning project data.

Crosstown Electrical and Data, Inc. (Crosstown) is a California based electrical contractor specializing in the installation of fiber optic and wireless communication systems, and closed circuit television cameras. Crosstown is licensed to contract for all types of electrical work (C-10 License Number 756309). They are signatory with the local electrical union (IBEW Local 11), and have the resources to gear up rapidly should a contract require such action.

Econolite Control Products, Inc. (Econolite) has been an innovator of transportation management solutions for over 75 years. They offer a wide range of traffic control equipment which include advanced traffic controllers (NEMA & ATC/2070); Aries, Centracs, and PYRAMIDS traffic management systems. Econolite may also supply the BlueTOAD Bluetooth detection system (see scope of work Section 4.4)

Traffax Inc. is a supplier of BluFax Bluetooth speed detection system. We have included them in the team to potentially supply the BluFax system for Santa Ana. See scope of work Section 4.5.

2.3 Relevant Experience

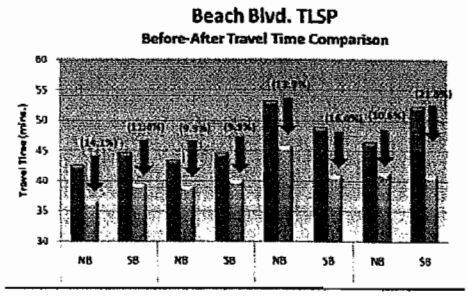
ADVANTEC has performed numerous projects involving traffic signal synchronization and other related traffic engineering services for over 80 cities in Southern California, covering all five counties of Orange, Los Angeles, Riverside, San Bernardino, and San Diego. Many of these projects include development of signal synchronization timing plans and equipment upgrades

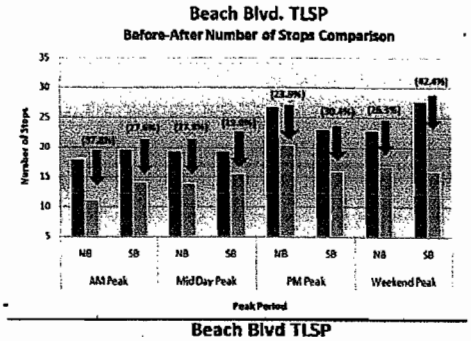
involving multiple jurisdictions. ADVANTEC was also one of the **first consulting firms to implement and fine tune traffic signal timings in the field for cities.** Table 2.1 below summarizes our recent signal synchronization experience locally, followed by description of selected TLSP projects performed by ADVANTEC within the past 5 years.

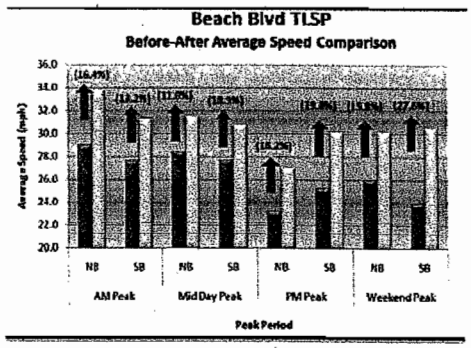
Table 2.1 Recent Signal Synchronization Experience in southern California

Lead Agency	No. of Int.	No. of Jurisdictions	Controller Type	Firmware	Signal System	Other Design Services provided
OCTA Yorba Linda Blvd TLSP (on-going)	46	5	ASC/2/3, M-50, 2070	ASC, Sepac	Tactics, Centracs, ACTRA	• Interconnect Conduit • Adaptive Control ACS Lite
OCTA Beach Blvd TLSP	70	8	2070	TSCP	CT-NET	• Ethernet-over-copper comm. • CCTV • GPS units
SANBAG-Tier 3 and 4 Traffic Signal Synchronization	691	15	Various (Econolite ASC; 170, 2070)	various	Various (Econolite ARIES, BiTran, ICONS)	• Wireless comm. • GPS units • Cell modem • Signal system procurement
Irvine	170	2	Multisonics 820A and Type 2070	820A/ Sepac	Multisonics VMS and Siemens ACTRA	• Fiber optic comm. • Cabinet upgrade • CCTV • GPS units
Anaheim	48	2	2070	Sepac	ACTRA	• CCTV • Interconnect • Fiber optic comm.
Santa Clarita	50	2	170	BiTran 233	QuicNet 2006	• Fiber optic comm. • CCTV • Signal mod.
Diamond Bar	71	2	170	LACO-1R, LACO-3, LACO-4E	Transuite	• Ethernet-over-copper • Signal system procurement • Daily operations
Inglewood	140	3	170	BiTran 200 & 233	QuicNet Pro	• Signal system upgrade • Fiber optic comm.
Lancaster	158	2	170	BiTran 200 & 233	QuicNet 4	• Comm. Master Plan
Rancho Cucamonga	10	2	Econolite ASC 2	ASC	Econolite ARIES	• Fiber optic comm. • Signal Mod.
Rialto	10	2	Econolite ASC 2	ASC	Econolite ARIES	• Signal Mod. • Interconnect
Riverside	39	1	170	BiTran 200 & 233	QuicNet 2006	

OCTA Beach Blvd Traffic Light Synchronization Project







Features:

- Signal Timing for 71 Intersections
- Replaced controllers with 2070 and 170 Master
- Implemented 14 CCTV cameras
- Implemented Ethernet over Copper
- Troubleshot and repaired Existing communications system
- Continual monitoring and finetuning for 9 months

Project Description:

ADVANTEC was commissioned by OCTA to lead a TLSP project to implement synchronized traffic signal system at 71 intersections along Beach Boulevard with a goal of reducing travel times and stops, improving average travel speeds, and reduction in fuel consumption, emissions and accidents. ADVANTEC's innovative design include leveraging the existing 12 pair#19 Copper Interconnect cable for connecting all 70 intersections along Beach Boulevard and transmitting the data & video to Caltrans District 12 TMC via **Ethernet-over-Copper communications.** At the inception of this project, ADVANTEC tested the entire corridor to check for continuity and conductivity drops along the I/C cables/conduits, allowing most of the existing copper infrastructure to be reused, thereby **saving over $1 million in costs.** We also designed and implemented 14 CCTV cameras, GPS modems, replaced the controllers with 2070 and the field masters, and then synchronizing corridor's traffic signal timing for all peak periods.

ADVANTEC developed new synchronized timing plans and implemented them in the field together with Caltrans crew. We have also troubleshot problems due to communications protocol and Caltrans firmware issues and resolved them.
The results of the Traffic Signal Synchronization effort led to significant improvements of 15% reduction in travel time, 30% reduction in number of stops, and 15% improvement in travel speed on average. The overall benefit/cost ratio is over 23:1 in the first year alone.

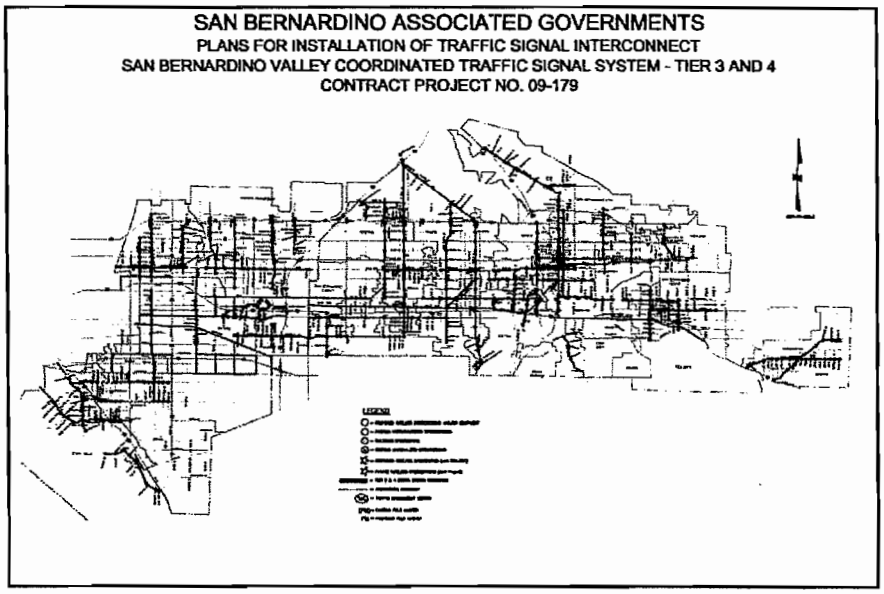
Caltrans was pleased with the results of this project, and the Ethernet-over-copper design was adopted as the **statewide prototype.** See the two Commendation letters from Caltrans (Henry Pham & Kelvin Kguyen respectively) in **Appendix H.**

Contract Info:
Year completed = 2010
Cost = $1,300,000 ($50,000 under budget)
Agency Name and Contact = OCTA, Ron Keith, RKeith@octa.net
Caltrans, Kelvin Nguyen, Kelvin_Nguyen@dot.ca.gov

SANBAG Coordinated Traffic Signal Timing System Program Tier 3 and 4

Features:

- Signal Timing for 691 Intersections
- 15 local jurisdictions
- Implemented wireless communications
- Replaced controllers
- Developed SYNCHRO model of San Bernardino Valley
- Implemented optimized signal timing plans
- Finetuning and monitoring



Project Description:

Since 1999, SANBAG (San Bernardino Associated Governments), in association with local agencies as stakeholders, developed a San Bernardino Valley Coordinated Traffic Signal System (SBVCTSS) Plan. The primary objectives of this program are to enable traffic signal coordination across jurisdictional boundaries to reduce vehicle stops, delays, travel time, emissions and fuel consumption. In 2009, ADVANTEC was retained to design and implement the Tier 3 and 4 of this program involving 691 intersections across 15 different jurisdictions in the valley of San Bernardino County. The work also included intersections that fell under State's jurisdiction and the purview of Caltrans.

Tier 3 and 4 implements traffic signal communications and synchronization along the corridors by successfully delivering two key elements:

1. Design of wireless radio communications system along the corridors to facilitate traffic signal synchronization
2. Development, implementation and finetuning of optimum traffic signal synchronization (TSS) along the corridors

During the design phase, ADVANTEC evaluated the communications infrastructure of the 15 jurisdictions, and designed for **wireless radio communications at over 250 intersections** to allow cost-effective transmission of data to each of the City's Traffic Signal System. Through our cost-effective design, the total cost is under $4M, or about $15,000 per intersection.

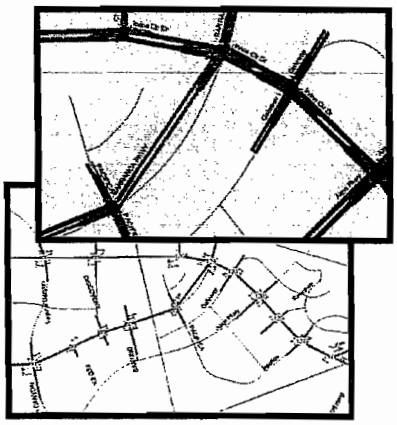
ADVANTEC is currently working on the TSS phase implementing and fine tuning synchronized traffic signal timing plans for all 691 intersections across 15 jurisdictions. This is due to be completed by April 2012.

Contract Info:
Year completed = April 2012
Cost = $2,587,878
Agency Name and Contact = SANBAG, Tim Kirkley, TKirkley@sanbag.gov

Irvine Signal Synchronization and System Upgrade Project

Features:

- Nineteen corridors of over 170 intersections
- CCTV camera design
- Fiber optic communications design
- Advanced loop detectors
- WWV / GPS system at Caltrans ramps
- Controller cabinet upgrade
- SYNCHRO
- Cycle length evaluation
- Network subdivision optimization
- Split, offset, and cycle length optimization
- Caltrans coordination for ramps signals
- Fine-tuning of Signal Timing in the field
- Before and After Studies



Project Description:

ADVANTEC was retained by the City of Irvine to provide traffic signal system upgrade design and signal coordination along 19 major arterials within the City. Some of the corridors include Barranca Parkway, Irvine Center Drive, Von Karman Avenue, Jeffrey Road, Alton Parkway, University Drive, Campus Drive, Irvine Boulevard, Harvard Avenue, Bonita Canyon Road, Main Street, Bake Parkway, and Michelson Drive. Traffic signal system upgrade includes the design of CCTV camera systems, fiber optics communications that tied into the City's Gigabit Ethernet network, loop detectors, WWV / GPS system at Caltrans intersections, and controller cabinets upgrade. ADVANTEC also retimed all the arterials to provide better coordination between intersections along each corridor. Signal coordination scope includes data collection, signal timing optimization using SYNCHRO software, implementation of improved timings at the City's ITRAC Center, fine-tuning of new timings in the field, as well as before and after studies.

Major tasks include:

- Collect 24-hour tube counts at all intersections;
- Identify peak hours based on 24-hour counts data;
- Collect turning movement counts;
- Develop *Synchro n*etwork;
- Investigate subnetwork division;
- Evaluate different cycle lengths and signal timing plans;
- Test different signal phasings;
- Develop time-space diagrams & signal timing charts;
- Implement signal timing: VMS 330and ACTRA signal system in City's ITRAC Center;
- Fine-tune signal timing plans in the field by observing its operations;
- Perform five before and after study runs using GPS and special software;
- Prepare final report with cost/benefit evaluation.

Contract Info:

Year completed = 2011

Cost = over $900,000 (19 corridors total)

Agency Name and Contact = City of Irvine, Toan Nguyen, TNuguen@ci.irvine.ca.us

To exemplify the success of our signal synchronization projects, Table 2.2 shows the CSPI scores and percentage improvements on some of the corridors that ADVANTEC has synchronized within the last few years.

Table 2.2 - CSPI values on ADVANTEC previously synchronized corridors in Orange County

Corridor	CSPI Before Synchronization		CSPI After Synchronization		Percentage Improvement
Beach Blvd – PM NB	54	F	74	C	147%
Beach Blvd – PM SB	69	D	88	B	128%
Beach Blvd – AM NB	70	D	88	B	126%
Beach Blvd – AM SB	60	D	91	A	152%
Harvard Avenue	58	F	95	A	164%
Irvine Boulevard	53	F	91	A	172%
Alton Parkway	67	D	109	A	163%
Sand Canyon Avenue	42	F	100	A	238%

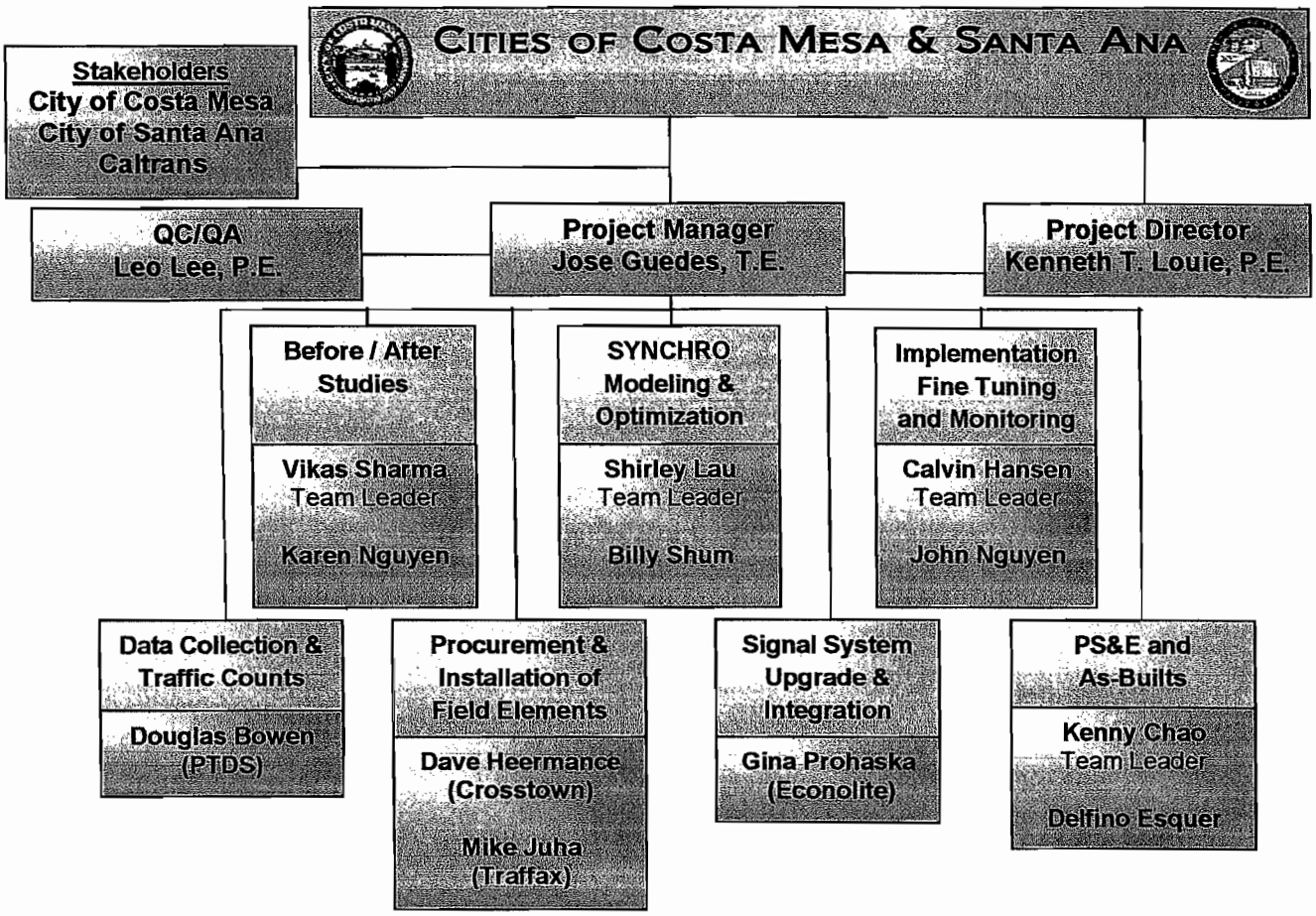
ADVANTEC has received complimentary remarks from Caltrans for the Beach Blvd TLSP project, as shown in their letter in **Appendix H.**

2.4 References

San Bernardino Associated Governments – SANBAG San Bernardino Valley Coordinated traffic Signal System – Tier 3 & 4 Project	**Tim Kirkley, Project Manager** (909) 884-8276 TKirkley@sanbag.ca.gov
Caltrans District 12 Beach Blvd TLSP Project	**Mr. Kelvin Nguyen, P.E., Electrical Engineer** (949) 936-3510 Kelvin_nguyen@dot.ca.gov
City of Irvine 19 Corridors Signal Synchronization & Design Projects On-call traffic engineering	**Mr. Toan Nguyen, Senior Engineer** (949) 724-7550 TNguyen@ci.irvine.ca.us
City of Anaheim 6 Corridor ITS Design On-call traffic engineering	**Mr. Taher Jalai, P.E., Principal Traffic Engineer** (714) 765- 5066 TJalai@anaheim.net

3. PROJECT STAFF

3.1 Team Organization



The organization chart above illustrates the organizational structure of our project team clearly delineating communication and reporting relationship among the project staff. All project staff do not have other major commitments that would interfere with the timely completion of this project. Both, the Project Director, Ken Louie, and Project Manager, Jose Guedes, will not be removed or replaced without prior written concurrence of Cities of Costa Mesa and Santa Ana. All key personnel will be available to the extent proposed for the duration of this project.

3.2 Key Staff

Our project team includes staff members who are very familiar with every aspect of this project, including:-

- **Familiar with the operations of the MIST & VMS system** – John Nugyen has worked in Santa Ana for 2½ years and he is intimately familiar with the MIST and VMS systems;
- **Familiar with wireless and fiber-optic Ethernet communications** – Kenny Chao has designed wireless radio communications at 312 intersections in San Bernardino County, as well as fiber-optic communications in Downey, Irvine, Anaheim, Inglewood, Rancho

Cucamonga, and over 15 other cities; Our subconsultant, Crosstown, is renowned in constructing wireless and fiber-optic installation for cities;

- **Familiar with hardware troubleshooting and maintenance** – Calvin Hansen has 17 years of experience with implementing and maintaining traffic signal and ITS hardware for cities. He is well qualified to assist with any hardware issues.

Due to the page limitations, the resumes of our staff are provided in **Appendix I.**

Table 3.1 below illustrates relevant key staff availability for this project and their relevant experience.

Table 3.1 – Staff Availability and Relevant Experience

Key Staff	Project Role	Availability for this Project	Relevant Experience
Kenneth T. Louie, P.E.	Project Director	80%	Managed City of Irvine's ITS and traffic signal infrastructure, and performed TLSP along all 332 intersections
Jose Guedes, T.E.	Project Manager	60%	Hands on signal synchronization experience for past 20 years in OC; PM of TLSP for 691 ints in SB County
Shirley Lau	SYNCHRO Modeling Team Leader	90%	SYNCHRO and TSPP modeling expert; developed optimized timing of 691 ints in SB County
John Nguyen	Timing Implementation	80%	Signal operations experience on MIST and VMS , having worked in Santa Ana's MIST and VMS systems for 2½ years
Kenny Chao	Systems Integration	50%	ITS Design, construction management and system integration expert, designed radio comm. at 312 ints in SB County; designed over 200 miles of fiber-optic comm.
Calvin Hansen	Implementation & Integration	90%	17 years of field hardware installation, maintenance and timing implementation

4. WORK PLAN

4.1 Project Understanding

The primary purpose of this project is to prepare optimized signal synchronization plans for 31 signalized intersections along Fairview Rd from Newport Blvd, in the City of Costa Mesa, to SR-22 On-ramp, in the City of Santa Ana. The corridor traverses the Cities of Costa Mesa and Santa Ana, and Caltrans freeway ramps at I-405 and SR-22. The involved agencies desire to upgrade the hardware and communications infrastructure through this project, including:

- Upgrade signal controllers for City of Costa Mesa and Caltrans;
- Upgrade controller cabinets for City of Costa Mesa;
- Install 7,000 feet of Fiber Optic Cable for the City of Costa Mesa;
- Install CCTV units for City of Costa Mesa and Santa Ana;
- Design and install right turn overlap for City of Costa Mesa;
- Install Bluetooth Travel Time System for City of Santa Ana;
- Install fiber optic switches, enclosures, and distribution units for City of Costa Mesa;

- Install GPS time-source units for Caltrans;
- Install Ethernet switches, Wireless Broadband systems, Ethernet extenders over copper for City of Santa Ana.

Our ultimate goals in this project are to work hand in hand with the Cities of Costa Mesa and Santa Ana, and Caltrans to:

- Reduce the travel time and delay with perceptible improvements, to reduce vehicle stops, and also to reduce vehicle emissions thereby improving the air quality along the Fairview Rd. corridor; and
- Provide Cities the ability to monitor and observe traffic conditions, and adjust signal timings in real-time from their local traffic control centers.

To accomplish these goals, ADVANTEC will develop and implement traffic signal timing and coordination plans for AM, mid-day, PM and weekend peak periods, and assist all local agencies and Caltrans in constructing all the necessary hardware and communications equipment to fulfill their needs to the fullest extent possible.

4.2 Existing Hardware

The Fairview Rd corridor traverses the Cities of Costa Mesa and Santa Ana, with freeway ramps operated by Caltrans District 12. Table 4.1 shows the existing traffic control systems that are being deployed along this corridor.

Table 4.1 – Existing Traffic Control Hardware

Agency	Traffic Signal System	Controller Type	Comm Network	Desired Upgrades
Costa Mesa	MIST/VMS	820A	Twisted Pair (TwP)	ASC/3 , Fiber Optics
Santa Ana	MIST	2070	Twp+Fiber	Wireless Broadband
Caltrans	CT-NET	170	Twp	2070, 170E + GPS time source

The City of Costa Mesa currently has two central systems operating side-by-side citywide. The City is in the process of migrating all its signal controllers from VMS to the MIST Central System, and convert communication from copper interconnect to Fiber Optics. The City has already installed 24-strand Fiber Optic cable along a segment of Fairview Rd, from Fair Dr to I-405 ramp, however, controllers are still connected by copper interconnect back to City Hall TMC. As part of this project, the City of Costa Mesa wants to upgrade all controllers from Multisonics 820A to Econolite ASC/3, install Fiber Optic Cable on the remaining segments, to establish Ethernet communication over fiber optics, install CCTV cameras, and replace controller cabinets at two locations.

The City of Santa Ana has deployed the MIST Central System citywide, coupled with Type 2070 controllers running Econolite ASC/3 software. The City has a communication system composed of a mix of copper interconnect, fiber optic links, and wireless Broadband. There are two Fiber Optic Hubs along Fairview Rd: at 5th St, connecting easterly to Bristol's Gigabit Trunk; and at MacArthur, also connecting easterly to the Bristol Trunk, but at south end of the system. These two hubs will be connected, as part of this project, by a combination of Wireless Broadband, and Ethernet over copper. In this manner, the City will complete a redundant communication network ring between Fairview Rd and Bristol ST.

4.3 Corridor Characteristics and Technical Considerations

Fairview Rd is a north-south, 4 to 6-lane corridor that extends approximately 8.3 miles, from Newport Blvd in Costa Mesa to SR-22 freeway in Santa Ana. The corridor serves a mix of land uses: residential, office complexes, industrial, middle schools, high schools, Orange Coast College, O.C. Fair, and sports complex. High traffic generators such as the Orange Coast College, the O.C. Fairgounds and Costa Mesa High School can be found at very close proximity, south of Interstate 405. Many high schools and middle schools are found adjacent to Fairview Rd throughout the corridor.

Fairview Rd carries daily traffic volumes of over 37,000 vehicles in most segments, reaching 48,000 between Baker St. and Adams Ave, and exceeding 60,000 near the I-405 freeway. Morning and afternoon peak traffic flow more predominantly northbound. South of I-405, morning peak shows a significant amount of traffic flowing southbound from the I-405 freeway off-ramps towards Orange Coast College and Costa Mesa High school. PM peak traffic is very heavy in the northbound direction, with increasing congestion as Fairview Rd approaches freeway ramps at I-405 and SR-22.

To help Costa Mesa and Santa Ana evaluate the current traffic operations along this corridor, we have conducted travel time runs in each direction during the AM and PM peak periods on 02/02/2011, using GPS and TS/PP software to record travel times, delays, average speed, stops, etc. Table 4.2 shows the results in terms of Corridor Synchronization Performance Index (CSPI) for this corridor.

Table 4.2 – CSPI for Fairview St – Existing Conditions on 02/02/2012

SANTA ANA					
AM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	1.89	1.74	20	53.2	F
Fairview SB	2.21	1.49	24.2	63.6	D
PM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	1.38	2.38	16.1	43	F
Fairview SB	3.21	1.03	25	78.1	C
COSTA MESA					
AM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	2.80	1.60	17.1	57.2	F
Fairview SB	3.11	1.44	23.8	71.8	C
PM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	2.09	2.15	19.4	54.4	F
Fairview SB	2.46	1.83	21.8	60	D

CSPI grading scale:
90-109 = A
80-89 = B
70-79 = C
60-69 = D
<59 = F

From Table 4.2, it can be seen that Fairview Street operates at the CSPI grades "C" to "F" during AM and PM peaks. If ADVANTEC is awarded this project, we will conduct the official 'before' study by performing at least 5 floating car runs in each direction. **We are confident that, upon implementation and fine-tuning of improved signal timings, the CSPI along this corridor will be improved to mostly "A" in both directions and all time periods, as demonstrated by all our other TLSP projects (see Table 2.2 in Section 2).**

Appendix A shows the project corridor and its key traffic characteristics.

Based on our observations of the corridor and discussions with the local agencies, the following are some technical considerations and resolutions that will lead to success of this project:

Freeway interchange influence: – Fairview Rd. provides access to three freeways: SR-55, I-405 and SR-22. Special consideration should be given to areas close to freeway access to avoid congestion that would block the arterial through lanes or back-up onto the freeway. The heavy directional flow of traffic during the peak hours can cause excessive queuing on or off the freeway ramps resulting in backup on the surface street. For these segments, ADVANTEC will use SimTraffic micro-simulation to analyze and ensure smooth synchronization in both directions, and to simulate the impact of ramp metering operations on queue spillback.

Congested Locations:– ADVANTEC identified a congested or heavily traveled segment of Fairview Rd between Civic Center Dr. and Westminster/17th St. in Santa Ana. During afternoon peak traffic, northbound drivers trying to reach SR-22 freeway have to merge from three to two lanes after passing Civic Center Dr. In addition, traffic signal timing at Westminster/17th St gives preference to east/west direction. This combination of reduced lanes and lower timing causes traffic to back up, making drivers experience a two to three signal cycles delay . ADVANTEC will analyze critical locations and recommend special signal coordination programs, such as higher cycles for over-saturated conditions.

Including intersections within ¼ mile:– While synchronizing the traffic signals along Fairview Rd, it is important to maintain cross street traffic coordination, especially for those heavily travelled intersections within ¼ mile from Fairview Rd. **In this project, ADVANTEC will include, as a value-added service, heavily travelled intersections within ¼ mile from Fairview Rd. into the SYNCHRO model, and develop optimized signal timings for them as well.** This will ensure that the cities maintain east-west coordination of major arterials crossing Fairview Rd, an added benefit to the travelers. A total of 11 intersections will be added, as follows:-

Fair Dr	&	Vanguard Way	Edinger Ave	&	Sullivan St
Baker St	&	Coolidge Ave	McFadden Ave	&	Sullivan St
Sunflower Ave	&	Greenville St	McFadden Ave	&	Mohawk Dr
MacArthur Blvd	&	Greenville St	1st St	&	Sullivan St
Segerstrom Ave	&	Greenville St	Garden Grove Blvd	&	Haster St
Warner Ave	&	Greenville St			

APPENDIX B shows the location of major (and heavily travelled) signalized intersections within a ¼ of a mile from Fairview Rd.

Need to maintain cross-street coordination: – The project has an expressed objective to maintain network wide coordination. The City of Santa Ana has indicated to us that they have implemented synchronization plans along seven of the cross-arterials, and that they would like to maintain these plans. ADVANTEC will consult all agencies involved, and build a consensus on how the existing coordination plans will be preserved or modified to achieve a mutually beneficial solution. Table 4.3 shows current cycle lengths along Fairview Rd.

Table 4.3 Current Cycle Lengths Along Fairview Rd

Agency	AM	MD	PM
Costa Mesa (north)	130	110	110
Costa Mesa (south)	95	95	95
Santa Ana	130	120	130
Caltrans (SR-22)	80	80	80
Caltrans (I-405)	60	60	60

Crossing TLSP/BRT corridors:– Fairview Rd crosses the Westminster/17th St BRT corridor. It also crosses two upcoming OCTA Project P corridors: Warner Ave and MacArthur Blvd. The existing E/W coordination for these corridors needs to be taken into consideration while developing new synchronized timing parameters for Fairview Rd. Any changes to the offsets and splits at the intersections of these corridors with Fairview Rd would upset E/W coordination. However, slight changes could be necessary to maintain even traffic flow in all directions. ADVANTEC will work with other TLSP Project Teams to achieve a mutually acceptable solution. **APPENDIX C** shows Fairview Rd and crossing TLSP/BRT corridors.

Pedestrian Activity:– Pedestrian traffic is an important factor on Fairview Street, due to the many schools located near the corridor. ADVANTEC identified significant pedestrian activity at 12 of the 31 intersection along Fairview Rd. Overall, in the development of signal coordination, we have to manage the competing interests of providing continuous flow of traffic on the main street, providing adequate time for pedestrians to cross the street, and minimizing the wait time for side street traffic. ADVANTEC will analyze pedestrian counts at these intersections, and our timing plans will ensure that the pedestrian splits (walk + flashing don't walk time) are completely covered within the vehicle splits time so that coordination can still be maintained along the corridor.

Need for Special Plans and Traffic Responsive Operations: – Land uses that can cause off-peak traffic surges include schools, churches, and shopping centers. This results in inadequate amounts of green time for side streets during these periods and associated cycle failures. ADVANTEC has developed and successfully implemented special timing plans pinpointing the effects of traffic surge associated with special events, e.g. Knott's Berry Farm's Halloween period as part of the OCTA TLSP Beach Boulevard project. ADVANTEC will evaluate the use of Traffic Responsive Operations for traffic signals adjacent to these special land uses. Traffic Responsive can better manage sudden peaks in traffic caused by incidents or special events.

Green-house gases (GHG) Emissions Calculation – GHG emissions has become a major concern of our society, and in particular to OCTA. In this project, ADVANTEC will provide an analysis of the impact of the optimized signal timing on GHG emissions. ADVANTEC has recently conducted a GHG emission analysis comparing synchronization of Beach Blvd with and without the newly adopted bicycle minimum times, which showed an increase of 40,000 lbs of emission per year when the bicycle clearance timing is used.

New CA-MUTCD Bicycle Directive - With the new California Manual on Uniform Traffic Control Devices (CA-MUTCD), Section 4D.105 (CA), some agencies are implementing the new minimum

green times based on the new guidelines. it is a "standard" and is mandatory when more than 50% of the detection is replaced, it is worthwhile to understand the impacts to the existing timing parameters (e.g. minimum green). As a ***value-added service***, ADVANTEC will calculate and summarize in a table showing the potential increase in minimum greens for all 42 intersections (including ints within ¼ mile) within this project for each agencies' reference at no additional cost. With this information, local agencies may choose to implement these changes now or at any time in the future.

4.4 Scope of Work

The following scope of work expands upon the tasks outlined in the Request for Proposal (RFP). It illustrates our familiarity with this type of projects.

Task 1 – Project Management

ADVANTEC will prepare a detailed project management plan that provides specific project milestones for review and approval by the City of Costa Mesa, and all stakeholders. We will conduct a Project Kick-Off Meeting with Costa Mesa and Santa Ana, as well as monthly progress meetings with the Cities' Project Managers. In addition, we will also establish periodic meetings with project stakeholders to keep them apprised of the project's progress and to address key issues. ADVANTEC will prepare all meeting materials, including agendas, action items, graphics, presentation aides, and notes.

ADVANTEC's PM and/or Project Director will attend and be an active presenter at OCTA's ITS Roundtable, Costa Mesa and Santa Ana City Council meetings, or other inter-governmental meetings.

Task 2 - Data Collection

ADVANTEC will gather the following information from each of the local agencies:- Existing timing sheets, including coordination plans; As-built drawings, Aerial photos and maps; All planned or programmed roadway improvements; Signal timing and priority parameters, including pedestrian and bicycle timing, leading and lagging left-turn phasing, and conditional service, as well as the timing optimization software preference; Identification of critical intersections and intersections with heavy pedestrian crossings.

For the required traffic counts, our preliminary recommendations for number of locations are summarized as follows:

- 7-day 24-hour counts: 15 locations
- 7-day 24-hour vehicle classification: 4 locations
- Weekday peak periods turning movement counts: 31 locations + 11 locations at ¼ mile
- Weekend peak periods turning movement counts: 42 locations

ADVANTEC will also assist City's PM and local agencies to determine 6 locations for video recording of bicycle and pedestrian activity. Video and summary data will be provided to OCTA in DVD format.

Task 3 – Field Review

ADVANTEC will, at the beginning of the project, conduct field review of all the signalized intersections within the project limits. During the field review, we will gather pertinent data/information, such as:

- Roadway geometry and lane configurations.
- Lengths of turn pockets
- Existing signal phasing and timing
- Speed limits
- Major sources/sinks of traffic generators
- Condition of existing traffic signal equipment

ADVANTEC will identify deficiencies of the existing traffic signal control and telemetry infrastructure, and will provide recommendations to correct such deficiencies. A report will be prepared containing all data collected during field review, including photos, summary of all planned and programmed improvements, and summary of existing deficiencies and recommended solutions.

Task 4 – Corridor 'Before' Study

ADVANTEC will conduct a 'before' field study, using a "floating car" survey. ADVANTEC will use a GPS receiver and Tru-Traffic software (version 9) to collect the data. Five floating car runs in each direction along the entire corridor will be performed during the AM, Midday, PM and weekend peak periods. Results of the survey will be used to evaluate travel time, delay, and number of stops (measures of effectiveness). ADVANTEC will prepare a memorandum that documents the results of the "Before Study" and the MOEs.

Task 5 – Signal Timing Optimization and Implementation (including hardware implementation)

Using SYNCHRO, the following parameters will be used to develop a model of the network:

- Existing geometry of network, including distance between intersections, number of lanes and positive or negative grade percentages for each approach at each intersection, turn prohibitions, etc.
- AM, Mid-day, PM, and weekend peak turning movements at every intersection;
- Existing phasing at each intersection, including any special treatment such as lead-lag phasing;
- Existing green splits, offsets, and cycle lengths;
- Synchro node numbering will comply with OCTA's ROADS database.

After the existing conditions model is set up and approved by all agencies involved, ADVANTEC will optimize the signal timings parameters, such as cycle lengths, splits, offsets. Special attention will be given to intersections that operate at poor levels of service (LOS D or worse) to identify possible improvements. Special techniques may be adopted such as:

- Lead-lead versus lead-lag phasing
- Half-cycle or other realistic harmonic cycle lengths for lightly traveled intersections, or double cycle lengths for heavily traveled intersections
- System breaks with different cycle lengths

Once developed, the SYNCHRO model results and database will be provided to the Cities, and Caltrans for review. Upon review of the optimized signal timing by the agencies, a meeting will be conducted to discuss any comments. We will incorporate such comments into the signal timing plans, and resubmit to the all agencies.

Upon final approval of the optimized signal timing parameters, ADVANTEC will prepare signal timing plans in the local cities' and Caltrans' format. These timing sheets or plans will be forwarded to the respective agencies for approval. Upon receipt of any necessary corrections,

the final timing sheet or plans will be prepared and delivered to each respective agency. They will bear the stamp and signature of our Project Manager, a Registered Professional Traffic Engineer. The formats of the signal timing sheets for the different agencies are:

- City of Costa Mesa – Econolite ASC/3 format
- City of Santa Ana - Econolite ASC/3 format for Model 2070 controllers
- Caltrans – TSCP firmware format for Model 2070 controllers

ADVANTEC will implement, or assist the Cities staff to implement the new signal timings. In addition, ADVANTEC will thoroughly check the results of the timing plans in the field during implementation to ensure that the signals are operating properly, and as intended, and ADVANTEC will provide extensive field monitoring and fine-tuning of the signal timing.

It is our understanding that Caltrans' staff will install the new 2070 controller units and implement the new timings. ADVANTEC will prepare all the final timing sheets in the approved TSCP firmware format for Caltrans to implement..

The following are our scope for the procurement and installation of all field elements for this project:

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION IN CITY OF COSTA MESA

Controller and Cabinet upgrades – City of Costa Mesa has requested the upgrade of 12 traffic signal controllers to new ASC/3, and replacement of two Controller Cabinets. Econolite will supply and install the new controllers and two TS2 Type 2 Type P38 cabinets.

Fiber Optic System

City of Costa Mesa has requested the installation of Fiber Switches, Fiber Splice enclosures, Fiber Distribution Units, Drop Cables, 6E Pullboxes at 12 intersections. The City also requested the installation of 7,000 feet of Single Mode Fiber Optic cable. Crosstown will furnish and install all Fiber system equipment, cable, and pull boxes.

CCTV cameras and transmission

City of Costa Mesa has requested the installation of three CCTV units, and required video encoder/decoder systems. Crosstown will furnish and install the CCTV units and video transmission

Signal Modification

City of Costa Mesa has requested the design and installation of a right turn overlap for northbound right turn traffic at Fairview Rd & Baker. ADVANTEC has done a preliminary estimate of equipment needed for the overlap:

- 600 feet of 5-conductor traffic signal cable
- One SV-1-T with bronze mount, with 5-section 12 inch LED indications, with back plate and full circle visors, for the Main pole,
- One TV-2-T with bronze mount, with a 3-section 12 inch Arrow LED indications, and a 5-section 12 inch LED indications, with back plate and full circle visors for the 10 foot 1-A pole.

ADVANTEC will perform the design of any necessary elements, such as traffic signal modification for addition of right turn overlap, and design of plans for installation of controllers, pull-boxes and Fiber-Optic equipment. Crosstown will install the right turn overlap equipment. ADVANTEC will also supervise the installation of all equipment.

ADVANTEC will prepare plans for installation of all hardware upgrades, and will also prepare a traffic signal modification plan for the installation of Northbound Right Turn Overlap at Baker St. For that purpose, a field review of existing equipment will be performed at all intersections.

To accurately depict the new signal and communication equipment on the Project Records Drawings, we will ensure that the following fundamental design-base items are shown on our plans: conduit runs, pull boxes locations, and other traffic signal equipment locations. For each design plan, a separate detail showing the interior conditions of the signal cabinet will be included for use to evaluate the capacity of the cabinet to receive the new equipment. For instance, we will evaluate the need for installing new shelves and/or racks.

ADVANTEC will use the services of Crosstown to verify the conditions of all existing Fiber Optic Cable strands to identify any breakages or loss of signal.

After verifying existing field conditions, installation plans and traffic signal modification plans will be developed and submitted to Costa Mesa at 'draft' and 'final' submittals. Plans will be modified to reflect City comments.

If the Field Review analysis does not uncover any issues or deficiencies, then ADVANTEC will start hardware procurement at same time as plan design, helping to expedite the project.

ADVANTEC will prepare traffic control plans, as necessary to accommodate the installation of signal hardware upgrade. ADVANTEC will also advise the City on how to maintain traffic flow during cabinet replacement and Fiber installation.

The work on the Synchronization tasks of the project will start at the same time as the hardware design, and run in parallel to it. Preliminary tasks, such as field review, traffic counts, Before Study, and Base Synchro Model development can start soon after project kick-off.

ADVANTEC will use Econolite and Crosstown to furnish and install hardware items. Fiber Optics cable and equipment installation will be scheduled to occur first. ADVANTEC will make sure that existing signal controllers are maintained on-line during Fiber Optics system installation. Fiber Optics system will be configured and tested prior to acceptance by City.

New Controllers will be programmed in the field and at MIST System, prior to installation. ADVANTEC will make sure that new controllers are programmed with existing basic timing, at time of turn-on.

Installation of Right Turn Overlap at Baker St. may require the traffic signal to be turned-off, and STOP signs put at all approaches. Field review will determine if conduits have enough space to allow slipping of new conductor cables. If existing conductors need to be removed, ADVANTEC will recommend best strategy to accomplish work with the least amount of disruption to traffic.

ADVANTEC will inspect all field installation work on a daily basis.

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION IN CITY OF SANTA ANA

Wireless Broadband System

City of Santa Ana has requested the installation of wireless Broadband Antenna and radio units at eight locations, as well as six Ethernet switches. Crosstown will furnish and install this equipment.

Ethernet over Copper

City of Santa Ana has requested the installation of Ethernet extenders for IP over Copper, single and 4-port units, at six locations. Crosstown will furnish and install Ethernet extenders.

CCTV cameras and video transmission

City of Santa Ana has requested the installation of two CCTV units, and video encoding/decoding units at three locations. Crosstown will furnish and install the CCTV equipment.

Bluetooth Travel Time Monitoring System

City of Santa Ana has requested the installation of a Bluetooth Travel Time/Speed monitoring system at 4 locations. ADVANTEC has identified two potential Bluetooth speed monitoring system for City of Santa Ana's consideration – Econolite's BlueTOAD and Traffax BluFax. Since this project is the first of 3 projects to implement Bluetooth speed monitoring for City of Santa Ana, the vendor selected for this project is likely to be retained for the other two projects. Therefore, **ADVANTEC wants to allow the City of Santa Ana the flexibility of picking the Bluetooth vendor after this project is awarded to us** – we have kept both of their proposals into this proposal. Upon award of project, ADVANTEC will schedule demos from each of these vendors, and discuss with City staff to arrive at the best Bluetooth system for Santa Ana. The selected vendor will furnish and install the bluetooth system, including development of graphical display for Santa Ana to place on city's website.

Prior to start the procurement of hardware for the City of Santa Ana, ADVANTEC will perform a field review of existing communication infrastructure at all intersections. ADVANTEC will use the services of Crosstown to perform line-of-sight evaluations for all wireless Broadband antenna locations, and also to verify the conditions of all existing Fiber Optic strands, and Copper Cable pairs to identify any breakages or loss of signal.

ADVANTEC will conduct a feasibility evaluation study to verify that the existing infrastructure is compatible and has the capability to interface with the new communication equipment and deliver the desired communication performance. The purpose of conducting both the testing and feasibility evaluation steps is not only to validate the agencies' original equipment upgrade wish-list, but to ensure that the right equipment is ultimately ordered for deployment.

If the Field Review analysis and Feasibility Evaluation do not uncover any issues or deficiencies, then ADVANTEC will start hardware procurement. Crosstown will be responsible for furnishing and installing all wireless broadband devices, Ethernet switches and extenders, and CCTV equipment. ADVANTEC will inspect all field installation work.

Installation of communication devices will be schedule in such a manner as to maintain signals online, or reduce downtime to just a few hours, instead of days. CCTV and Bluetooth devices will be installed after communication is set up at their respective deployment locations.

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION FOR CALTRANS

Controller upgrade

Caltrans has requested the upgrade to new Type 2070E controllers, upgrade to Type 170E Master controller for the I-405 ramps, as well as for SR-22 ramps. Caltrans will install Type 2070E and Type 170E controllers, with respective Model 6A Comm Modem, and Model 400 Comm Modem, and C2 Connector Cable.

GPS Time-Source Unit

Caltrans would also like GPS time-source units installed at the Master controller of both I-405 and SR-22 freeways, in order to maintain time-based coordination with the adjacent signals owned by the local agencies. Crosstown will install the GPS units.

Caltrans Permit Processing

To expedite the procurement process, ADVANTEC will apply for Caltrans encroachment permit at the onset of the project, eliminating any issues with Caltrans schedules and deadlines. For any work within Caltrans' right-of-way (e.g. GPS installations), ADVANTEC will obtain Caltrans' encroachment permit. We will fill out the encroachment permit application form and submit the application to Caltrans District 12 permit section. Any comments received from Caltrans will be properly addressed, until the encroachment permit is approved and issued.

Task 6 – Corridor 'After' Study

ADVANTEC will conduct an 'after' field study following the same procedures as described in the Before Study, and the requirements set forth in the RFP. ADVANTEC will provide a synchronized video with the 'before' and 'after' travel time runs to augment the study, and will use the video for presentation to Cities' officials. The synchronized video is taken inside the car during the 'After Runs', and is played concurrently with an animation on the time-space diagram that represents the position of the car. This will facilitate ease of understanding of the time-space diagram by elected officials and lay-persons.

Task 7 – Project Report

ADVANTEC will prepare a Final Timings and Evaluation Technical Report with an executive summary following the requirements set forth in the RFP.

Task 8 – Continuing Signal Timing Support

ADVANTEC will provide continuing signal timing support and monitoring for a period of three (3) years after completion of the signal timing implementation, following the requirements set forth in the RFP.

Besides, we guarantee at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service to Cities at no additional cost.

5. PROJECT ENHANCEMENTS AND TECHNICAL INNOVATIONS

Throughout this proposal, we have identified a number of innovative ideas and value-added services to help ensure success for this project, as follows:

- Addition of intersections along major (heavily travelled) cross streets within ¼ mile to the corridor be added into the SYNCHRO network for optimization, and the optimized timing plans will be provided to the cities for implementation. This will provide some level of cross street platoon arrival for accurate signal synchronization. For many cities, major cross street traffic is as important as the corridor itself. A total of 11 intersections are added, making a total of 42 intersections to be synchronized for this project.
- Review traffic responsive operation at intersections adjacent to special land uses to respond to non-peak period traffic surges.
- Development of school timing plans for intersections adjacent to schools.
- Apply special timing techniques, such as left-turn re-servicing within a cycle, wherever deemed appropriate.

- Develop timing plans for any planned construction activities during fine tuning or monitoring periods to facilitate signal synchronization during and after construction.
- Calculate new minimum greens for all intersections per the new CA-MUTCD bicycle directive. Evaluate use of new Caltrans directive for bike minimum greens for application in this corridor.
- Calculate greenhouse gas emissions before and after synchronization, and also estimate greenhouse gas emissions if the new CA-MUTCD bicycle directive were applied.
- Guaranteed at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service at no additional cost.

6. PROJECT SCHEDULE

Our project schedule is presented below. This schedule is shortened to 9 months, assuming a start date of mid-March, we would complete this project by mid-December, before the holidays. This will allow the cities to have improved signal synchronization for holiday traffic. The following is a brief schedule of the overall project, a detailed task by task schedule is provided in **Appendix G.**

PROPOSED SCHEDULE

Costa Mesa / Santa Ana	2012										
Fairview Traffic Signal Coordination	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**til Oct 2015**
Project Kick-off meeting	▼	12-Mar									
Task 1 - Project Management											
Task 2 - Data Collection				15-Apr							
Task 3 - Field Review				15-Apr							
Task 4 - Corridor ' Before' Study				15-Apr							
Task 5 - Timing Optimization and Implementation									23-Oct		
Task 6 - Corridor ' After' Study										20-Nov	
Task 7 - Project Report										▼	4-Dec
Task 8 - 3 yrs Continuing Signal Timing Support											

City of Costa Mesa
Fairview Rd Coordination Project
PRICING FORM FOR FAIRVIEW RD COORDINATION PROJECT TLSP

Consultant: ADVANTEC CONSULTING ENGINEERS

Prime/ Sub (Initials)	Staffing (Position)	UNIT OF MEASURE	1. Project Management	2. Data Collection	3. Field Review	4. Corridor "Before" Study	5. Signal Timing Optimization Implementation	5b. Design+Plans Costa Mesa	5c. Hardware+ Const.Mgmt Costa Mesa	5d. Hardware+ Const.Mgmt Santa Ana	6. Corridor "After" Study	7. Project Report	8. 3 Year Monitoring	TOTAL HOURS	Hourly Rate	TOTAL PRICE
			TASK													
ACE	Project Director	Hour	36				20					10		66	$ 235.35	$ 15,533
ACE	Project Manager	Hour	150	10	10	10	80	10	10	10	10	20	75	395	$ 211.82	$ 83,669
ACE	Engineer	Hour		30	40	20	240	150	80	40	20	60	150	830	$ 115.32	$ 95,716
ACE	Senior Technician	Hour		30	40		120		180	72			120	562	$ 90.98	$ 51,131
ACE	Technician	Hour				40		180	210		40			470	$ 58.74	$ 27,608
ACE	Administrative Support	Hour	80									20		100	$ 52.21	$ 5,221
	STAFFING SUB-TOTAL		266	70	90	70	460	340	480	122	70	110	345	2423		$ 278,877
			$ 44,422	$ 8,307	$ 10,370	$ 6,774	$ 60,247	$ 29,989	$ 40,056	$ 13,282	$ 6,774	$ 14,553	$ 44,102			
	Non-Staffing Resources	Unit of Measure	UNITS BY TASK											TOTAL UNITS	UNIT RATE	
	Traffic Counts															
PTDS	7-day 24-hour Average Daily Traffic (ADT) counts	# of Locs.		$ 5,985										30	$ 199.50	$ 5,985.00
PTDS	24-hr Vehicle Classification counts	# of Locs.		$ 456										4	$ 114.00	$ 456.00
PTDS	4 hour video recording	# of Locs.		$ 1,719										6	$ 286.50	$ 1,719.00
	City of Costa Mesa															
Econolite	Furnish and Install Controllers ASC/3	each							$ 36,900					10	$ 3,690.00	$ 36,900.00
Crosstown	Furnish and install Fiber Switch	each							$ 23,018					12	$ 1,918.15	$ 23,017.80
Econolite	Furnish and Install D-Panel	each							$ 4,950					10	$ 495.00	$ 4,950.00
Crosstown	Furnish and Install 6E Pullbox and concrete work	each							$ 17,993					12	$ 1,499.45	$ 17,993.40
Crosstown	Furnish and Install Splice enclosure	each							$ 14,532					12	$ 1,211.00	$ 14,532.00
Crosstown	Furnish and Install Fiber Distribution Unit	each							$ 13,239					12	$ 1,103.25	$ 13,239.00
Crosstown	Furnish and install Drop Cable	each							$ 3,047					12	$ 253.88	$ 3,046.50
Crosstown	Furnish and installCCTV hardware(at Sunflower,at South Coast, at Wilson)	each							$ 33,355					3	$ 11,118.25	$ 33,354.75
Crosstown	Furnish and install SMFO cable	Linear Ft.							$ 13,517					7000	$ 1.93	$ 13,517.00
Econolite	Furnish and install complete Type P cabinet	each							$ 40,464					2	$ 20,232.00	$ 40,464.00
Crosstown	Design and Install NB right turn overlap	LS							$ 9,749					1	$ 9,749.25	$ 9,749.25
Caltrans	Furnish and Install 2070 Controller	each							$ 3,034					2	$ 1,516.96	$ 3,033.92
Caltrans	Furnish and Install 170E-Field Master controller	each							$ 1,028					1	$ 1,027.86	$ 1,027.86
Caltrans	Furnish and Install Model 6A Comm Modem (2070 controller)	each							$ 735					2	$ 367.54	$ 735.08
Caltrans	Furnish and Install C2 Connector Cable	each							$ 156					3	$ 52.02	$ 156.06
Caltrans	Furnish and Install Model 400 Comm Modem (170E controller)	each							$ 107					1	$ 107.31	$ 107.31
Crosstown	Furnish and Install GPS unit (I-405 and SR-22)	each							$ 1,645					1	$ 1,645.25	$ 1,645.25
ADVANTEC	Synchro 8.0 Studio	each							$ 5,000					1	$ 5,000.00	$ 5,000.00
	City of Santa Ana															
Crosstown	Furnish and Install Wireless Broadband Antenna and 4.9 GHz radio unit	each								$ 38,216				8	$ 4,777.00	$ 38,216.00
Crosstown	Furnish and Install Ethernet switch - hardened managed switch	each								$ 8,535				6	$ 1,422.50	$ 8,535.00
Crosstown	Furnish and Install Ethernet extenders for IP over Copper (sets of 2)	each								$ 4,613				6	$ 768.75	$ 4,612.50
Crosstown	Furnish and Install Ethernet extender for IP over Copper - 4 port	each								$ 1,423				1	$ 1,422.50	$ 1,422.50
Crosstown	Furnish and Install Outdoor CAT-5 cable, from cabinet to CCTV splice cabinet	each								$ 338				1	$ 337.75	$ 337.75
Crosstown	Furnish and Install CCTV cameras - Cohu Helios 3920 HD	each								$ 17,172				2	$ 8,586.13	$ 17,172.25
Crosstown	Furnish and Install Cohu Encoder	each								$ 6,509				3	$ 2,169.50	$ 6,508.50
Crosstown	Furnish and Install Cohu Decoder Rack Slot Card	each								$ 6,024				3	$ 2,007.88	$ 6,023.63
Econolite	Furnish and Install Bluetooth Travel Time System (Central + 4 units)	LS								$ 54,400				1	$ 54,400.00	$ 54,400.00
Caltrans	Furnish and Install 2070 Controller	each								$ 3,034				2	$ 1,516.96	$ 3,033.92
Caltrans	Furnish and Install 170E-Field Master controller	each								$ 1,028				1	$ 1,027.86	$ 1,027.86
Caltrans	Furnish and Install Model 6A Comm Modem (2070 controller)	each								$ 735				2	$ 367.54	$ 735.08
Caltrans	Furnish and Install C2 Connector Cable	each								$ 156				3	$ 52.02	$ 156.06
Caltrans	Furnish and Install Model 400 Comm Modem (170E controller)	each								$ 107				1	$ 107.31	$ 107.31
Crosstown	Furnish and Install GPS unit (I-405 and SR-22)	each								$ 1,645				1	$ 1,645.25	$ 1,645.25
ADVANTEC	Synchro 8.0 Studio	each								$ 5,000				1	$ 5,000.00	$ 5,000.00
																$ -
	NON-STAFFING SUB-TOTAL															$ 379,563
			$ 44,422	$ 16,487	$ 10,370	$ 6,774	$ 60,247	$ 29,989	$ 262,525	$ 162,215	$ 6,774	$ 14,553	$ 44,102		TOTAL	$ 658,440
	L.S. = Lump Sum		Task 1	Task 2	Task 3	Task 4	Task 5 Total $ 514,978				Task 6	Task 7	Task 8			

ADDITIVE WORK

	Non-Staffing Resources	Unit of Measure	UNITS BY TASK											TOTAL UNITS	UNIT RATE	
	Traffic Counts at Intersections															$ -
PTDS	Turn Movement Counts - Weekday w/ peds+bike (AM+MD+PM, 6 hrs)	# of I/S						$ 8,882						31	$ 286.50	$ 8,882
PTDS	Turn Movement Counts - Weekend w/ peds+bike (Saturday MD, 2hr)	# of I/S						$ 3,922						31	$ 126.50	$ 3,922
	Total -Combined Weekday + Weekend	# of I/S												31	$ 413.00	$ 12,803
	Install 3" Conduit															
Crosstown	Furnish and install 3" conduit (Wilson to Newport, to Victoria)	Linear Ft.						$ 36,000						1200	$ 30.00	$ 36,000.00
																$ -
																$ -
																$ -
																$ -
	NON-STAFFING SUB-TOTAL															

EXHIBIT B

PROFESSIONAL SERVICES AGREEMENT
CITY OF COSTA MESA

THIS AGREEMENT is made and entered into this __ day of _____, 20__ ("Effective Date"), by and between the CITY OF COSTA MESA, a municipal corporation ("City"), and _____, a California _____("Consultant").

W I T N E S S E T H :

A. WHEREAS, City proposes to utilize the services of Consultant as an independent contractor to provide services as more fully described in Consultant's Proposal attached as Exhibit "A"; 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 California Government Code, Sections 1090-1092, 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 Consultant's Proposal, a copy of which is 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. It is understood that in the exercise of every aspect of its role, within the scope of work, consultant will be representing the City of Costa Mesa, and all of its actions, communications, or other work, during its employment, under this contract is under the direction of the department. 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 be solely and completely responsible for conditions of the job-site, including safety of all persons and property during performance of the work, and the Consultant shall fully comply with all State, Federal and other laws, rules, regulations, and orders relating to the safety of the public and workers.

The right of the Engineer or the City's Representative to conduct construction review or observation of the Consultant's performance shall not include review or observation of the adequacy of the Consultant's safety measures in, on, or near the construction site.

Construction materials and equipment may only be stored in streets, roads, or sidewalk areas if approved by the Engineer.

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 City Clerk 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.

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. As compensation for the provision of services outlined in Exhibit "A" and in accordance with this agreement, Consultant shall be paid in accordance with the fee schedule set forth in Exhibit "B," attached hereto and incorporated by reference. Consultant's total compensation shall not exceed Six Hundred Fifty Eight Thousand Four Hundred Forty dollars, ($658,440.00). Consultant shall devote staff time as detailed in Exhibit B to complete the Project.

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 in an amount exceeding $658,440.00 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.

2.3. Method of Billing. Consultant may submit invoices to City supervisor 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 as of the date the invoice is created. 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 C, attached hereto and incorporated herein by this reference. The Project Schedule may be amended by mutual agreement of the parties.

Failure to commence work in a timely manner and/or diligently pursue work to completion may be grounds for termination of this Agreement.

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.

3.3 Liquidated Damages. In the event of inexcusable delays, for each consecutive calendar day after the time specified in Section 4.1, Consultant shall pay to the City or have withheld from moneys due it, the daily sum of $100.00.

4.0. TERM AND TERMINATION

4.1. Term. This Agreement shall commence on the Effective Date and continue for a period of 40 months ending on December, 2015, 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 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.

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. Compensation for work in progress shall be prorated as to 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.

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) Commercial general liability, 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. 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 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.

(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. Architects' and engineers' coverage shall be endorsed to include contractual liability. 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.

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 of Costa Mesa 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: "Said policy shall not terminate, be suspended, or voided, nor shall it be cancelled, nor the coverage or limits reduced, until thirty (30)

days after written notice is given to City.

(c) Other insurance: "The Consultant's insurance coverage shall be primary insurance as respects the City of Costa Mesa, its officers, officials, agents, employees, and volunteers. Any other insurance maintained by the City of Costa Mesa 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 the City of Costa Mesa, 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 the 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.

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 City Manager 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 the 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.

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. 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 mail and shall be addressed as set forth below. 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) 48 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:	IF TO CITY:
Advantec Consulting Engineers	City of Costa Mesa
21700 Copley Drive, Suite 350	77 Fair Drive
Diamond Bar, Ca 91765	Costa Mesa, CA 92626
Tel: 909 860-6222	Tel: 714 754-5183
Fax: 909 860-6722	Fax: 714 754-5028
Attn: Leo Lee, P.E., President	Attn: Debra Bieber, P.E.

6.5. Drug-free Workplace Policy. Consultant shall provide a drug-free workplace by complying with all provisions set forth in City's Council Policy 100-5, attached hereto as Exhibit "D" and incorporated herein by reference. Consultant's failure to conform to the requirements set forth in Council Policy 100-5 shall constitute a material breach of this Agreement and shall be cause for immediate termination of this Agreement by City.

6.6. 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.

6.7. 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 Orange County, California.

6.8. 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.

6.9. Indemnification and Hold Harmless Consultant agrees to defend, indemnify, hold free and harmless the City, its elected officials, officers, agents and employees, at Consultant's sole expense, from and against any and all claims, actions, suits or other legal proceedings brought against the City, its elected officials, officers, agents and employees arising out of the performance of the Consultant, its employees, and/or authorized subcontractors, of the work undertaken pursuant to this Agreement. The defense obligation provided for hereunder shall apply without any advance showing of negligence or wrongdoing by 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, errors, omissions or misconduct of the Consultant, its employees, and/or authorized subcontractors, and/or whenever any claim, action, complaint or suit asserts liability against the City, its elected officials, officers, agents and employees based upon the work performed by the Consultant, its employees, and/or authorized subcontractors under this Agreement, 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 active negligence or willful misconduct of the City. 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.

6.10. Independent Contractor. Consultant is and shall be acting at all times as an independent contractor and not as an employee of City. Consultant shall have no power to incur any debt, obligation, or liability on behalf of City or otherwise act on behalf of City as an agent. Neither 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, and interest asserted against City by reason of 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.

6.11. 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.

6.12. 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.

6.13. 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.

6.14. Public Records Act Disclosure: Consultant has been advised and is aware that 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, 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. The 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.

6.15. 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.

6.16. 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.

6.17. Prohibited Employment. Consultant will not employ any regular employee of City while this Agreement is in effect.

6.18. 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.

6.19. 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.

6.20. 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.

6.21. 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.

6.22. 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.

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

6.24. 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.

6.25. 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.

6.26. 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.

6.27. 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 COSTA MESA,
A municipal corporation

_____ Date: _____
Chief Executive Officer

CONSULTANT

_____ Date: _____
Signature

_____
Name and Title

_____

Social Security or Taxpayer ID Number

APPROVED AS TO FORM:

_____ Date: _____

City Attorney

APPROVED AS TO INSURANCE:

_____ Date: _____

Risk Management

APPROVED AS TO CONTENT:

_____ Date: _____

Project Manager

EXHIBIT A

CONSULTANT'S PROPOSAL

February 17, 2012

City of Costa Mesa
Transportation Services Division
4th Floor City Hall
77 Fair Drive
Costa Mesa, CA 92628
(ATTN: Ms Debra Bieber)

Subject: Request for Proposal for the Costa Mesa/Santa Ana Fairview Traffic Signal Coordination Project

Dear Ms. Bieber and members of the selection committee,

ADVANTEC Consulting Engineers (ADVANTEC) is pleased to submit the accompanying proposal in response to the Request for Proposal (RFP) for the Costa Mesa/Santa Ana Fairview Traffic Signal Coordination Project issued by the City of Costa Mesa. This proposal is prepared in accordance with the RFP requirements.

ADVANTEC is a traffic and transportation engineering firm that specializes in traffic signal synchronization, traffic engineering design, and Intelligent Transportation Systems (ITS). Our commitment to provide our clients with quality services has earned us a reputation for excellence in southern California. Our professional staff comprises of high-caliber, multi-disciplined personnel, with a tremendous amount of traffic signal synchronization experience.

For this project, we brought on board four highly qualified subconsultants as follows:

- **Pacific Traffic Data Services** – responsible for traffic counts and data collection.
  Mr. Douglas Bowen
  8502 E. Chapman Ave, Ste 625, Orange, CA 92869
  Ph: (866) 281-4302 Fax: (949) 882-7369 fax

- **Econolite Control Products** – responsible for providing ASC/3 controllers, Type P Cabinets, and D Panels. Potentially responsible for BlueTOAD Travel Time Monitoring system. A copy of Econolite's proposal is included in **Appendix D.**
  Ms. Gina Prohaska
  3360 E. La Palma, Anaheim, CA 92806
  Ph: (714) 630-3700 Fax: (714) 630-6349

- **Crosstown Electrical & Data, Inc.** – responsible for procurement and installation of all communication elements and CCTV, including broadband systems and switches. A copy of Crosstown's quotation is in **Appendix E.**

  Mr. Dave Heermance
  5463 Diaz Street, Irwindale, CA 91706
  Ph: (626) 813-6693 Fax: (626) 813-6604

- **Traffax Inc** – Potentially responsible for furnishing and installation of BluFax Bluetooth Travel Time Monitoring system. Traffax's quotation is in **Appendix F.**

  Mr. Mike Juha, Juha Distributing
  PO Box 1024, Wildomar, CA 92595
  Ph: (951)600-9499 Fax: (949)310-5106

Our team for this project includes professionals with many years of signal synchronization and implementation experience - with extensive experience involving multi-jurisdictional projects.

The key strengths of the ADVANTEC team are:

1. Substantial recent experience with similar projects, such as:
   a. Beach Boulevard Ethernet-over-copper Implementation & TLSP (70 intersections);
   b. Irvine 19 corridors signal system upgrade & TLSP (over 170 intersections);
   c. San Bernardino County Tier 3 & 4 wireless communications design & TLSP (over 690 intersections);
   d. Inglewood Signal System upgrade & Citywide TLSP (140 intersections); and so on.

   All of these projects included implementation and fine-tuning of the signal timing on site. **ADVANTEC is also one the first consultants to implement traffic signal timing on-site for our clients starting in 1998;**
2. ADVANTEC has a 100% track record of completing projects on-time and within-budget. This track record applies towards over 400 projects for over 80 clients in the past 12 years;
3. Highly experienced Project Director and Project Managers with demonstrable track records for on-time and within budget performance;
4. Good working relationship with many of the local cities, County and Caltrans in Orange County;
5. Successful implementation of signal synchronization leading to perceptible improvements, as demonstrated by compliments from clients and residents.

To better serve our Orange County clients, ADVANTEC has established an office in Irvine. All work will be performed in our offices located in Irvine and Diamond Bar. As President of the company, I am fully authorized to make representations on behalf of ADVANTEC and certify that the

information contained in this proposal is truthful, accurate, and complete at the time of submission of this proposal. The following proposal shall remain valid for a period of not less than 180 days of its submittal. I can be reached at the address, telephone/fax numbers in this letterhead, and the following email address: LeoLee@advantec-usa.com

ADVANTEC commits to comply with the Professional Services Agreement and Insurance requirements for the City of Costa Mesa.

We are very excited about this opportunity to assist the City of Costa Mesa and Santa Ana on this project, and looking forward to establishing a mutually rewarding working relationship with both agencies.

In closing, we thank you for the opportunity to offer our proposal for this effort to further enhance the quality of life in the Cities of Costa Mesa and Santa Ana.

Sincerely,
ADVANTEC Consulting Engineers, Inc.

Leo Lee, P.E.
President

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1
   1.1 Overview of TLSP Services 1
   1.2 Value-Added Services 1
2 QUALIFICATIONS, RELATED EXPERIENCE & REFERENCES 2
   2.1 ADVANTEC Consulting Engineers – Prime Consultant 2
   2.2 Subcontractors 2
   2.3 Relevant Experience 2
   2.4 References 7
3. PROJECT STAFF 8
   3.1 Team Organization 8
   3.2 Key Staff 8
4. WORK PLAN 9
   4.1 Project Understanding 9
   4.2 Existing Hardware 10
   4.3 Corridor Characteristics and Technical Considerations 11
   4.4 Scope of Work 14
5. PROJECT ENHANCEMENTS AND TECHNICAL INNOVATIONS 19
6. PROJECT SCHEDULE 20

APPENDIX A – MAP OF THE PROJECT CORRIDOR AND KEY CHARACTERISTICS
APPENDIX B – MAP OF LOCATIONS WITHIN ¼ MILE OF FAIRVIEW CORRIDOR
APPENDIX C – MAP OF CROSSING TLSP CORRIDORS
APPENDIX D – ECONOLITE'S PROPOSAL
APPENDIX E– CROSSTOWN'S PROPOSAL
APPENDIX F – TRAFFAX BLUFAX PROPOSAL
APPENDIX G – DETAILED PROJECT SCHEDULE
APPENDIX H – CALTRANS LETTER OF COMMENDATION FOR BEACH BLVD TLSP
APPENDIX I – RESUMES

1. EXECUTIVE SUMMARY

1.1 Overview of TLSP Services

ADVANTEC Consulting Engineers is pleased to submit this proposal to Cities of Costa Mesa and Santa Ana for synchronization of the Fairview Road corridor. This proposal provides our technical approach and key innovations to ensure success for this project. ADVANTEC has been on-call TLSP consultant for OCTA since 2008, and we have just been awarded their on-call consultant for the next 3 years, from 2012-2015. In the past 3 years, we have completed the Beach Blvd TLSP project, which is one of the first 3 TLSP that was initiated by OCTA in 2009, and the project was well received by Caltrans, as evidenced by their letter of commendation in **Appendix H**, and we are currently working on the Yorba Linda TLSP project. We are; therefore, very familiar with the requirements of the TLSP. The following is an overview of our technical approaches and services:-

- Design and implementation of various equipment upgrades for the Cities of Costa Mesa, Santa Ana, and Caltrans;
- Design, implement and fine-tune traffic signal timings for AM, MD, PM peak periods, and weekend peak for Fairview Rd. corridor;
- Build consensus among all jurisdictions relating to the traffic signal operation parameters, such as cycle lengths;
- Address and resolve local traffic operational issues such as special attractions, schools, construction activities, closely spaced intersections, heavily travelled intersections, pedestrian activities, need for bicycle clearance timing, and so on;
- Present the benefits of this project to City Council Study Sessions and ITS Roundtable meeting at OCTA.

1.2 Value-Added Services

ADVANTEC has identified a number of technical innovations to be provided as value-added services to OCTA and the local jurisdictions:-

- Addition of intersections along major (heavily travelled) east/west cross streets within ¼ mile to the corridor into the SYNCHRO network for optimization, and the optimized timing plans will be provided to the cities for implementation. A total of 11 intersections are added, making a total of 42 traffic signals to be synchronized for this project.
- Review traffic responsive operation at intersections adjacent to special land uses.
- Development of school timing plans for intersections adjacent to schools.
- Develop timing plans for any planned construction activities during fine tuning or monitoring periods to facilitate signal synchronization during and after construction.
- Calculate new minimum greens for all intersections per the new CA-MUTCD bicycle directive. Evaluate use of new Caltrans directive for bike minimum greens for application in this corridor.
- Calculate greenhouse gas emissions before and after synchronization, and also estimate greenhouse gas emissions if the new CA-MUTCD bicycle directive were applied.
- Guaranteed at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service at no additional cost.

2 QUALIFICATIONS, RELATED EXPERIENCE & REFERENCES

2.1 ADVANTEC Consulting Engineers – Prime Consultant

ADVANTEC Consulting Engineers, Inc. (ADVANTEC), a California corporation founded in 1998, is a consulting engineering firm specializing in Traffic Signal Synchronization, amongst other disciplines. The company was founded based on the principle of providing professional services with the best value and quality, on time and within budget.

We have earned a reputation for responsiveness and providing traffic signal synchronization that makes a perceptible difference to the travelers. In the past 13 years, we have a 100% on-time within-budget record on over 400 projects, serving over 80 satisfied clients, most of which are cities and public agencies. We maintain our reputation by upholding our firm's high standards of quality, client service, and professional integrity.

Offices:	Los Angeles Office (Headquarters)	Orange County
	21700 Copley Drive, Suite 350	19200 Von Karman Ave., Suite 600
	Diamond Bar, CA 91765	Irvine, CA 92612
	Ph: 909-860-6222	Ph: 949-622-5551
	Fax: 909-860-6722	Fax: 949-622-5554

2.2 Subcontractors

For this project, we have brought on-board specialty subcontractors to provide a 'turnkey' solution to the cities of Costa Mesa and Santa Ana. These subcontractors have been working with ADVANTEC on all our TLSP projects for OCTA, they are:-

Pacific Traffic Data Services (PTDS) has over 20 years experience in the traffic and transit data collection industry. In 2009, PTDS introduced its proprietary camera system for collecting traffic volumes and data. The camera system is capable of 4 days of continuous recording, and collect turning movement counts data at over 30 intersections in one day. A video record will be available for review for up to one year if the client has any questions concerning project data.

Crosstown Electrical and Data, Inc. (Crosstown) is a California based electrical contractor specializing in the installation of fiber optic and wireless communication systems, and closed circuit television cameras. Crosstown is licensed to contract for all types of electrical work (C-10 License Number 756309). They are signatory with the local electrical union (IBEW Local 11), and have the resources to gear up rapidly should a contract require such action.

Econolite Control Products, Inc. (Econolite) has been an innovator of transportation management solutions for over 75 years. They offer a wide range of traffic control equipment which include advanced traffic controllers (NEMA & ATC/2070); Aries, Centracs, and PYRAMIDS traffic management systems. Econolite may also supply the BlueTOAD Bluetooth detection system (see scope of work Section 4.4)

Traffax Inc. is a supplier of BluFax Bluetooth speed detection system. We have included them in the team to potentially supply the BluFax system for Santa Ana. See scope of work Section 4.5.

2.3 Relevant Experience

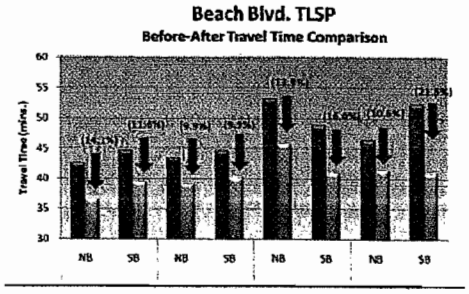
ADVANTEC has performed numerous projects involving traffic signal synchronization and other related traffic engineering services for over 80 cities in Southern California, covering all five counties of Orange, Los Angeles, Riverside, San Bernardino, and San Diego. Many of these projects include development of signal synchronization timing plans and equipment upgrades

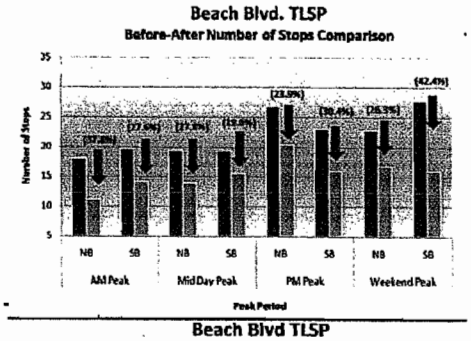
involving multiple jurisdictions. ADVANTEC was also one of the **first consulting firms to implement and fine tune traffic signal timings in the field for cities.** Table 2.1 below summarizes our recent signal synchronization experience locally, followed by description of selected TLSP projects performed by ADVANTEC within the past 5 years.

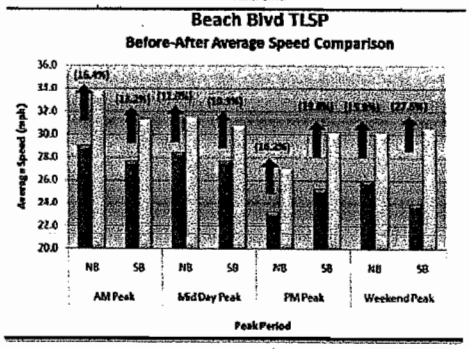
Table 2.1 Recent Signal Synchronization Experience in southern California

Lead Agency	No. of Int.	No. of Jurisdictions	Controller Type	Firmware	Signal System	Other Design Services provided
OCTA Yorba Linda Blvd TLSP (on-going)	46	5	ASC/2/3, M-50, 2070	ASC, Sepac	Tactics, Centracs, ACTRA	• Interconnect Conduit • Adaptive Control ACS Lite
OCTA Beach Blvd TLSP	70	8	2070	TSCP	CT-NET	• Ethernet-over-copper comm. • CCTV • GPS units
SANBAG-Tier 3 and 4 Traffic Signal Synchronization	691	15	Various (Econolite ASC; 170, 2070)	various	Various (Econolite ARIES, BiTran, ICONS)	• Wireless comm. • GPS units • Cell modem • Signal system procurement
Irvine	170	2	Multisonics 820A and Type 2070	820A/ Sepac	Multisonics VMS and Siemens ACTRA	• Fiber optic comm. • Cabinet upgrade • CCTV • GPS units
Anaheim	48	2	2070	Sepac	ACTRA	• CCTV • Interconnect • Fiber optic comm.
Santa Clarita	50	2	170	BiTran 233	QuicNet 2006	• Fiber optic comm. • CCTV • Signal mod.
Diamond Bar	71	2	170	LACO-1R, LACO-3, LACO-4E	Transuite	• Ethernet-over-copper • Signal system procurement • Daily operations
Inglewood	140	3	170	BiTran 200 & 233	QuicNet Pro	• Signal system upgrade • Fiber optic comm.
Lancaster	158	2	170	BiTran 200 & 233	QuicNet 4	• Comm. Master Plan
Rancho Cucamonga	10	2	Econolite ASC 2	ASC	Econolite ARIES	• Fiber optic comm. • Signal Mod.
Rialto	10	2	Econolite ASC 2	ASC	Econolite ARIES	• Signal Mod. • Interconnect
Riverside	39	1	170	BiTran 200 & 233	QuicNet 2006	

OCTA Beach Blvd Traffic Light Synchronization Project







Features:

- Signal Timing for 71 Intersections
- Replaced controllers with 2070 and 170 Master
- Implemented 14 CCTV cameras
- Implemented Ethernet over Copper
- Troubleshot and repaired Existing communications system
- Continual monitoring and finetuning for 9 months

Project Description:

ADVANTEC was commissioned by OCTA to lead a TLSP project to implement synchronized traffic signal system at 71 intersections along Beach Boulevard with a goal of reducing travel times and stops, improving average travel speeds, and reduction in fuel consumption, emissions and accidents. ADVANTEC's innovative design include leveraging the existing 12 pair#19 Copper Interconnect cable for connecting all 70 intersections along Beach Boulevard and transmitting the data & video to Caltrans District 12 TMC via **Ethernet-over-Copper communications.** At the inception of this project, ADVANTEC tested the entire corridor to check for continuity and conductivity drops along the I/C cables/conduits, allowing most of the existing copper infrastructure to be reused, thereby **saving over $1 million in costs.** We also designed and implemented 14 CCTV cameras, GPS modems, replaced the controllers with 2070 and the field masters, and then synchronizing corridor's traffic signal timing for all peak periods.

ADVANTEC developed new synchronized timing plans and implemented them in the field together with Caltrans crew. We have also troubleshot problems due to communications protocol and Caltrans firmware issues and resolved them.
The results of the Traffic Signal Synchronization effort led to significant improvements of 15% reduction in travel time, 30% reduction in number of stops, and 15% improvement in travel speed on average. The overall benefit/cost ratio is over 23:1 in the first year alone.

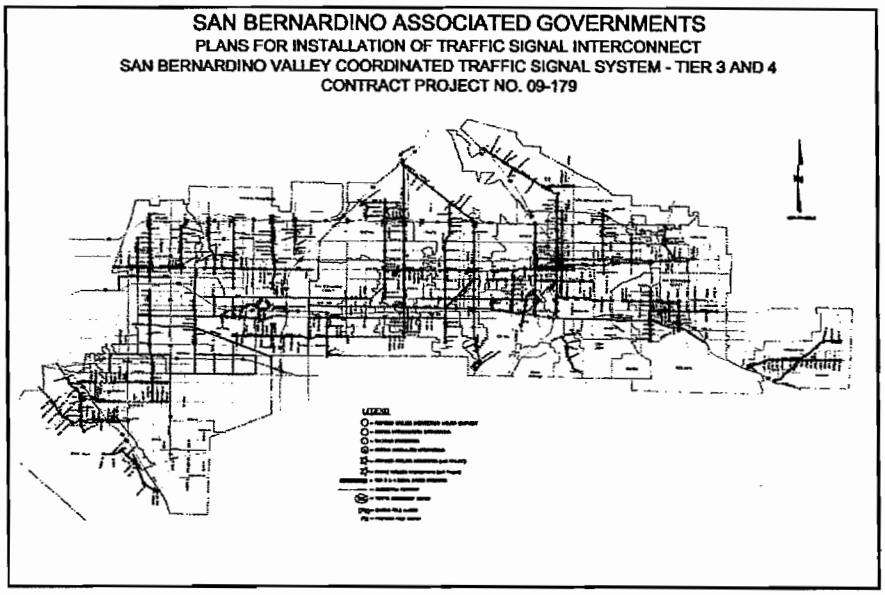
Caltrans was pleased with the results of this project, and the Ethernet-over-copper design was adopted as the **statewide prototype.** See the two Commendation letters from Caltrans (Henry Pham & Kelvin Kguyen respectively) in **Appendix H.**

Contract Info:
Year completed = 2010
Cost = $1,300,000 ($50,000 under budget)
Agency Name and Contact = OCTA, Ron Keith, RKeith@octa.net
Caltrans, Kelvin Nguyen, Kelvin_Nguyen@dot.ca.gov

SANBAG Coordinated Traffic Signal Timing System Program Tier 3 and 4

Features:

- Signal Timing for 691 Intersections
- 15 local jurisdictions
- Implemented wireless communications
- Replaced controllers
- Developed SYNCHRO model of San Bernardino Valley
- Implemented optimized signal timing plans
- Finetuning and monitoring



Project Description:

Since 1999, SANBAG (San Bernardino Associated Governments), in association with local agencies as stakeholders, developed a San Bernardino Valley Coordinated Traffic Signal System (SBVCTSS) Plan. The primary objectives of this program are to enable traffic signal coordination across jurisdictional boundaries to reduce vehicle stops, delays, travel time, emissions and fuel consumption. In 2009, ADVANTEC was retained to design and implement the Tier 3 and 4 of this program involving 691 intersections across 15 different jurisdictions in the valley of San Bernardino County. The work also included intersections that fell under State's jurisdiction and the purview of Caltrans.

Tier 3 and 4 implements traffic signal communications and synchronization along the corridors by successfully delivering two key elements:

1. Design of wireless radio communications system along the corridors to facilitate traffic signal synchronization
2. Development, implementation and finetuning of optimum traffic signal synchronization (TSS) along the corridors

During the design phase, ADVANTEC evaluated the communications infrastructure of the 15 jurisdictions, and designed for **wireless radio communications at over 250 intersections** to allow cost-effective transmission of data to each of the City's Traffic Signal System. Through our cost-effective design, the total cost is under $4M, or about $15,000 per intersection.

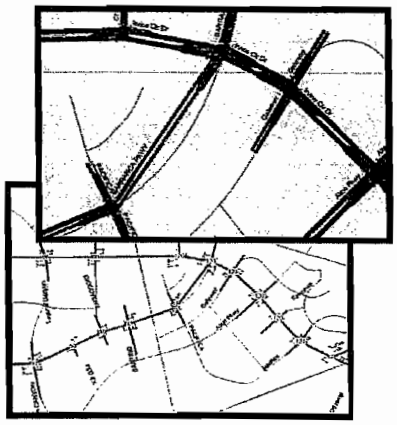
ADVANTEC is currently working on the TSS phase implementing and fine tuning synchronized traffic signal timing plans for all 691 intersections across 15 jurisdictions. This is due to be completed by April 2012.

Contract Info:
Year completed = April 2012
Cost = $2,587,878
Agency Name and Contact = SANBAG, Tim Kirkley, TKirkley@sanbag.gov

Irvine Signal Synchronization and System Upgrade Project

Features:

- Nineteen corridors of over 170 intersections
- CCTV camera design
- Fiber optic communications design
- Advanced loop detectors
- WWV / GPS system at Caltrans ramps
- Controller cabinet upgrade
- SYNCHRO
- Cycle length evaluation
- Network subdivision optimization
- Split, offset, and cycle length optimization
- Caltrans coordination for ramps signals
- Fine-tuning of Signal Timing in the field
- Before and After Studies



Project Description:

ADVANTEC was retained by the City of Irvine to provide traffic signal system upgrade design and signal coordination along 19 major arterials within the City. Some of the corridors include Barranca Parkway, Irvine Center Drive, Von Karman Avenue, Jeffrey Road, Alton Parkway, University Drive, Campus Drive, Irvine Boulevard, Harvard Avenue, Bonita Canyon Road, Main Street, Bake Parkway, and Michelson Drive. Traffic signal system upgrade includes the design of CCTV camera systems, fiber optics communications that tied into the City's Gigabit Ethernet network, loop detectors, WWV / GPS system at Caltrans intersections, and controller cabinets upgrade. ADVANTEC also retimed all the arterials to provide better coordination between intersections along each corridor. Signal coordination scope includes data collection, signal timing optimization using SYNCHRO software, implementation of improved timings at the City's ITRAC Center, fine-tuning of new timings in the field, as well as before and after studies.

Major tasks include:

- Collect 24-hour tube counts at all intersections;
- Identify peak hours based on 24-hour counts data;
- Collect turning movement counts;
- Develop *Synchro n*etwork;
- Investigate subnetwork division;
- Evaluate different cycle lengths and signal timing plans;
- Test different signal phasings;
- Develop time-space diagrams & signal timing charts;
- Implement signal timing: VMS 330and ACTRA signal system in City's ITRAC Center;
- Fine-tune signal timing plans in the field by observing its operations;
- Perform five before and after study runs using GPS and special software;
- Prepare final report with cost/benefit evaluation.

Contract Info:

Year completed = 2011

Cost = over $900,000 (19 corridors total)

Agency Name and Contact = City of Irvine, Toan Nguyen, TNuguen@ci.irvine.ca.us

To exemplify the success of our signal synchronization projects, Table 2.2 shows the CSPI scores and percentage improvements on some of the corridors that ADVANTEC has synchronized within the last few years.

Table 2.2 - CSPI values on ADVANTEC previously synchronized corridors in Orange County

Corridor	CSPI Before Synchronization		CSPI After Synchronization		Percentage Improvement
Beach Blvd – PM NB	54	F	74	C	147%
Beach Blvd – PM SB	69	D	88	B	128%
Beach Blvd – AM NB	70	D	88	B	126%
Beach Blvd – AM SB	60	D	91	A	152%
Harvard Avenue	58	F	95	A	164%
Irvine Boulevard	53	F	91	A	172%
Alton Parkway	67	D	109	A	163%
Sand Canyon Avenue	42	F	100	A	238%

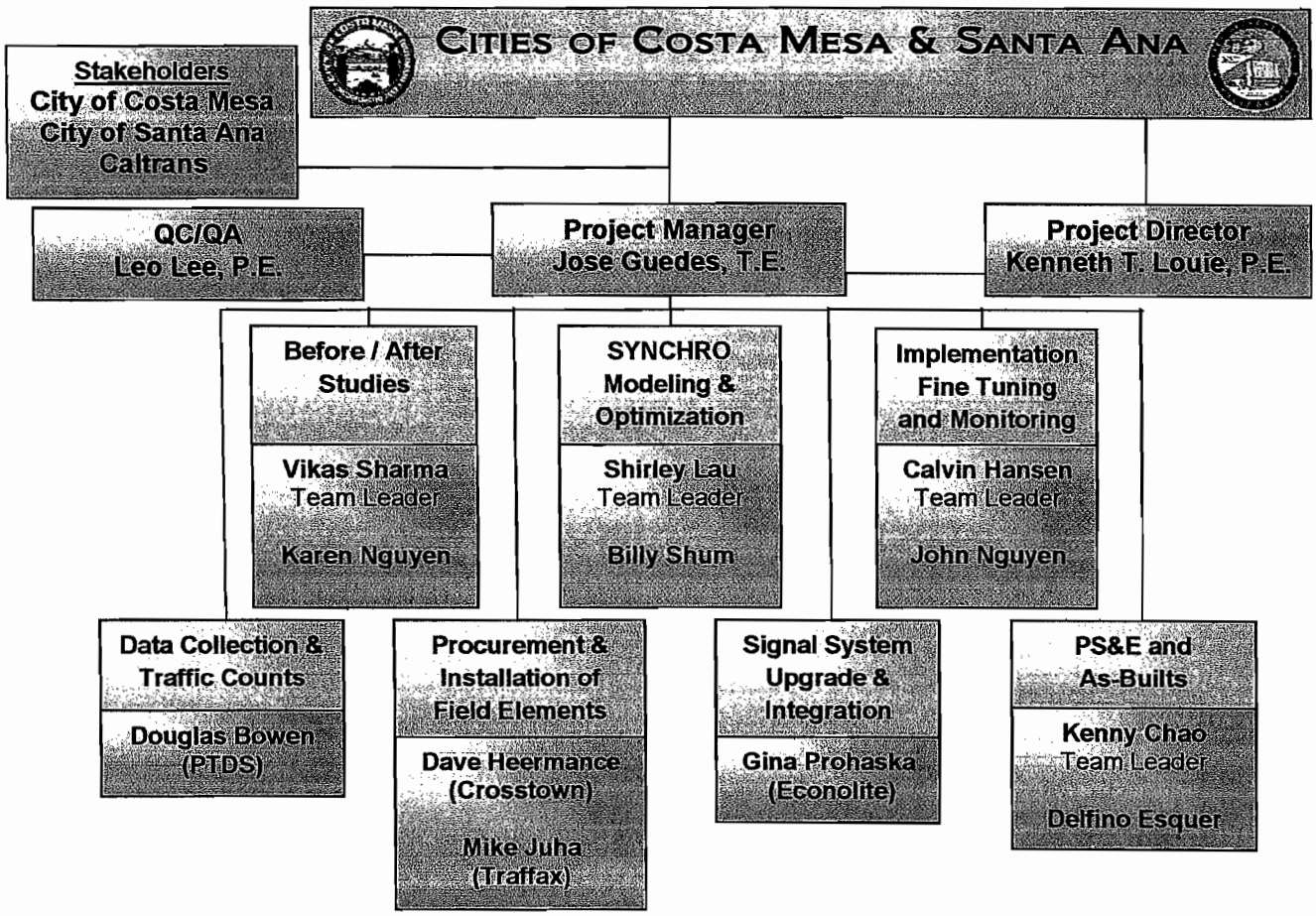
ADVANTEC has received complimentary remarks from Caltrans for the Beach Blvd TLSP project, as shown in their letter in **Appendix H.**

2.4 References

San Bernardino Associated Governments – SANBAG San Bernardino Valley Coordinated traffic Signal System – Tier 3 & 4 Project	**Tim Kirkley, Project Manager** (909) 884-8276 TKirkley@sanbag.ca.gov
Caltrans District 12 Beach Blvd TLSP Project	**Mr. Kelvin Nguyen, P.E., Electrical Engineer** (949) 936-3510 Kelvin_nguyen@dot.ca.gov
City of Irvine 19 Corridors Signal Synchronization & Design Projects On-call traffic engineering	**Mr. Toan Nguyen, Senior Engineer** (949) 724-7550 TNguyen@ci.irvine.ca.us
City of Anaheim 6 Corridor ITS Design On-call traffic engineering	**Mr. Taher Jalai, P.E., Principal Traffic Engineer** (714) 765- 5066 TJalai@anaheim.net

3. PROJECT STAFF

3.1 Team Organization



The organization chart above illustrates the organizational structure of our project team clearly delineating communication and reporting relationship among the project staff. All project staff do not have other major commitments that would interfere with the timely completion of this project. Both, the Project Director, Ken Louie, and Project Manager, Jose Guedes, will not be removed or replaced without prior written concurrence of Cities of Costa Mesa and Santa Ana. All key personnel will be available to the extent proposed for the duration of this project.

3.2 Key Staff

Our project team includes staff members who are very familiar with every aspect of this project, including:-

- **Familiar with the operations of the MIST & VMS system** – John Nugyen has worked in Santa Ana for 2½ years and he is intimately familiar with the MIST and VMS systems;
- **Familiar with wireless and fiber-optic Ethernet communications** – Kenny Chao has designed wireless radio communications at 312 intersections in San Bernardino County, as well as fiber-optic communications in Downey, Irvine, Anaheim, Inglewood, Rancho

Cucamonga, and over 15 other cities; Our subconsultant, Crosstown, is renowned in constructing wireless and fiber-optic installation for cities;

- **Familiar with hardware troubleshooting and maintenance** – Calvin Hansen has 17 years of experience with implementing and maintaining traffic signal and ITS hardware for cities. He is well qualified to assist with any hardware issues.

Due to the page limitations, the resumes of our staff are provided in **Appendix I.**

Table 3.1 below illustrates relevant key staff availability for this project and their relevant experience.

Table 3.1 – Staff Availability and Relevant Experience

Key Staff	Project Role	Availability for this Project	Relevant Experience
Kenneth T. Louie, P.E.	Project Director	80%	Managed City of Irvine's ITS and traffic signal infrastructure, and performed TLSP along all 332 intersections
Jose Guedes, T.E.	Project Manager	60%	Hands on signal synchronization experience for past 20 years in OC; PM of TLSP for 691 ints in SB County
Shirley Lau	SYNCHRO Modeling Team Leader	90%	SYNCHRO and TSPP modeling expert; developed optimized timing of 691 ints in SB County
John Nguyen	Timing Implementation	80%	Signal operations experience on MIST and VMS , having worked in Santa Ana's MIST and VMS systems for 2½ years
Kenny Chao	Systems Integration	50%	ITS Design, construction management and system integration expert, designed radio comm. at 312 ints in SB County; designed over 200 miles of fiber-optic comm.
Calvin Hansen	Implementation & Integration	90%	17 years of field hardware installation, maintenance and timing implementation

4. WORK PLAN

4.1 Project Understanding

The primary purpose of this project is to prepare optimized signal synchronization plans for 31 signalized intersections along Fairview Rd from Newport Blvd, in the City of Costa Mesa, to SR-22 On-ramp, in the City of Santa Ana. The corridor traverses the Cities of Costa Mesa and Santa Ana, and Caltrans freeway ramps at I-405 and SR-22. The involved agencies desire to upgrade the hardware and communications infrastructure through this project, including:

- Upgrade signal controllers for City of Costa Mesa and Caltrans;
- Upgrade controller cabinets for City of Costa Mesa;
- Install 7,000 feet of Fiber Optic Cable for the City of Costa Mesa;
- Install CCTV units for City of Costa Mesa and Santa Ana;
- Design and install right turn overlap for City of Costa Mesa;
- Install Bluetooth Travel Time System for City of Santa Ana;
- Install fiber optic switches, enclosures, and distribution units for City of Costa Mesa;

- Install GPS time-source units for Caltrans;
- Install Ethernet switches, Wireless Broadband systems, Ethernet extenders over copper for City of Santa Ana.

Our ultimate goals in this project are to work hand in hand with the Cities of Costa Mesa and Santa Ana, and Caltrans to:

- Reduce the travel time and delay with perceptible improvements, to reduce vehicle stops, and also to reduce vehicle emissions thereby improving the air quality along the Fairview Rd. corridor; and
- Provide Cities the ability to monitor and observe traffic conditions, and adjust signal timings in real-time from their local traffic control centers.

To accomplish these goals, ADVANTEC will develop and implement traffic signal timing and coordination plans for AM, mid-day, PM and weekend peak periods, and assist all local agencies and Caltrans in constructing all the necessary hardware and communications equipment to fulfill their needs to the fullest extent possible.

4.2 Existing Hardware

The Fairview Rd corridor traverses the Cities of Costa Mesa and Santa Ana, with freeway ramps operated by Caltrans District 12. Table 4.1 shows the existing traffic control systems that are being deployed along this corridor.

Table 4.1 – Existing Traffic Control Hardware

Agency	Traffic Signal System	Controller Type	Comm Network	Desired Upgrades
Costa Mesa	MIST/VMS	820A	Twisted Pair (TwP)	ASC/3 , Fiber Optics
Santa Ana	MIST	2070	Twp+Fiber	Wireless Broadband
Caltrans	CT-NET	170	Twp	2070, 170E + GPS time source

The City of Costa Mesa currently has two central systems operating side-by-side citywide. The City is in the process of migrating all its signal controllers from VMS to the MIST Central System, and convert communication from copper interconnect to Fiber Optics. The City has already installed 24-strand Fiber Optic cable along a segment of Fairview Rd, from Fair Dr to I-405 ramp, however, controllers are still connected by copper interconnect back to City Hall TMC. As part of this project, the City of Costa Mesa wants to upgrade all controllers from Multisonics 820A to Econolite ASC/3, install Fiber Optic Cable on the remaining segments, to establish Ethernet communication over fiber optics, install CCTV cameras, and replace controller cabinets at two locations.

The City of Santa Ana has deployed the MIST Central System citywide, coupled with Type 2070 controllers running Econolite ASC/3 software. The City has a communication system composed of a mix of copper interconnect, fiber optic links, and wireless Broadband. There are two Fiber Optic Hubs along Fairview Rd: at 5th St, connecting easterly to Bristol's Gigabit Trunk; and at MacArthur, also connecting easterly to the Bristol Trunk, but at south end of the system. These two hubs will be connected, as part of this project, by a combination of Wireless Broadband, and Ethernet over copper. In this manner, the City will complete a redundant communication network ring between Fairview Rd and Bristol ST.

4.3 Corridor Characteristics and Technical Considerations

Fairview Rd is a north-south, 4 to 6-lane corridor that extends approximately 8.3 miles, from Newport Blvd in Costa Mesa to SR-22 freeway in Santa Ana. The corridor serves a mix of land uses: residential, office complexes, industrial, middle schools, high schools, Orange Coast College, O.C. Fair, and sports complex. High traffic generators such as the Orange Coast College, the O.C. Fairgounds and Costa Mesa High School can be found at very close proximity, south of Interstate 405. Many high schools and middle schools are found adjacent to Fairview Rd throughout the corridor.

Fairview Rd carries daily traffic volumes of over 37,000 vehicles in most segments, reaching 48,000 between Baker St. and Adams Ave, and exceeding 60,000 near the I-405 freeway. Morning and afternoon peak traffic flow more predominantly northbound. South of I-405, morning peak shows a significant amount of traffic flowing southbound from the I-405 freeway off-ramps towards Orange Coast College and Costa Mesa High school. PM peak traffic is very heavy in the northbound direction, with increasing congestion as Fairview Rd approaches freeway ramps at I-405 and SR-22.

To help Costa Mesa and Santa Ana evaluate the current traffic operations along this corridor, we have conducted travel time runs in each direction during the AM and PM peak periods on 02/02/2011, using GPS and TS/PP software to record travel times, delays, average speed, stops, etc. Table 4.2 shows the results in terms of Corridor Synchronization Performance Index (CSPI) for this corridor.

Table 4.2 – CSPI for Fairview St – Existing Conditions on 02/02/2012

SANTA ANA					
AM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	1.89	1.74	20	53.2	F
Fairview SB	2.21	1.49	24.2	63.6	D
PM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	1.38	2.38	16.1	43	F
Fairview SB	3.21	1.03	25	78.1	C
COSTA MESA					
AM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	2.80	1.60	17.1	57.2	F
Fairview SB	3.11	1.44	23.8	71.8	C
PM PEAK	**Green/Red**	**Stops per mile**	**Average Speed**	**CSPI**	**CSPI Grade**
Fairview NB	2.09	2.15	19.4	54.4	F
Fairview SB	2.46	1.83	21.8	60	D

CSPI grading scale:
90-109 = A
80-89 = B
70-79 = C
60-69 = D
<59 = F

From Table 4.2, it can be seen that Fairview Street operates at the CSPI grades "C" to "F" during AM and PM peaks. If ADVANTEC is awarded this project, we will conduct the official 'before' study by performing at least 5 floating car runs in each direction. **We are confident that, upon implementation and fine-tuning of improved signal timings, the CSPI along this corridor will be improved to mostly "A" in both directions and all time periods, as demonstrated by all our other TLSP projects (see Table 2.2 in Section 2).**

Appendix A shows the project corridor and its key traffic characteristics.

Based on our observations of the corridor and discussions with the local agencies, the following are some technical considerations and resolutions that will lead to success of this project:

Freeway interchange influence: – Fairview Rd. provides access to three freeways: SR-55, I-405 and SR-22. Special consideration should be given to areas close to freeway access to avoid congestion that would block the arterial through lanes or back-up onto the freeway. The heavy directional flow of traffic during the peak hours can cause excessive queuing on or off the freeway ramps resulting in backup on the surface street. For these segments, ADVANTEC will use SimTraffic micro-simulation to analyze and ensure smooth synchronization in both directions, and to simulate the impact of ramp metering operations on queue spillback.

Congested Locations:– ADVANTEC identified a congested or heavily traveled segment of Fairview Rd between Civic Center Dr. and Westminster/17th St. in Santa Ana. During afternoon peak traffic, northbound drivers trying to reach SR-22 freeway have to merge from three to two lanes after passing Civic Center Dr. In addition, traffic signal timing at Westminster/17th St gives preference to east/west direction. This combination of reduced lanes and lower timing causes traffic to back up, making drivers experience a two to three signal cycles delay . ADVANTEC will analyze critical locations and recommend special signal coordination programs, such as higher cycles for over-saturated conditions.

Including intersections within ¼ mile:– While synchronizing the traffic signals along Fairview Rd, it is important to maintain cross street traffic coordination, especially for those heavily travelled intersections within ¼ mile from Fairview Rd. **In this project, ADVANTEC will include, as a value-added service, heavily travelled intersections within ¼ mile from Fairview Rd. into the SYNCHRO model, and develop optimized signal timings for them as well.** This will ensure that the cities maintain east-west coordination of major arterials crossing Fairview Rd, an added benefit to the travelers. A total of 11 intersections will be added, as follows:-

Fair Dr	&	Vanguard Way	Edinger Ave	&	Sullivan St
Baker St	&	Coolidge Ave	McFadden Ave	&	Sullivan St
Sunflower Ave	&	Greenville St	McFadden Ave	&	Mohawk Dr
MacArthur Blvd	&	Greenville St	1st St	&	Sullivan St
Segerstrom Ave	&	Greenville St	Garden Grove Blvd	&	Haster St
Warner Ave	&	Greenville St			

APPENDIX B shows the location of major (and heavily travelled) signalized intersections within a ¼ of a mile from Fairview Rd.

Need to maintain cross-street coordination: – The project has an expressed objective to maintain network wide coordination. The City of Santa Ana has indicated to us that they have implemented synchronization plans along seven of the cross-arterials, and that they would like to maintain these plans. ADVANTEC will consult all agencies involved, and build a consensus on how the existing coordination plans will be preserved or modified to achieve a mutually beneficial solution. Table 4.3 shows current cycle lengths along Fairview Rd.

Table 4.3 Current Cycle Lengths Along Fairview Rd

Agency	AM	MD	PM
Costa Mesa (north)	130	110	110
Costa Mesa (south)	95	95	95
Santa Ana	130	120	130
Caltrans (SR-22)	80	80	80
Caltrans (I-405)	60	60	60

Crossing TLSP/BRT corridors:– Fairview Rd crosses the Westminster/17th St BRT corridor. It also crosses two upcoming OCTA Project P corridors: Warner Ave and MacArthur Blvd. The existing E/W coordination for these corridors needs to be taken into consideration while developing new synchronized timing parameters for Fairview Rd. Any changes to the offsets and splits at the intersections of these corridors with Fairview Rd would upset E/W coordination. However, slight changes could be necessary to maintain even traffic flow in all directions. ADVANTEC will work with other TLSP Project Teams to achieve a mutually acceptable solution. **APPENDIX C** shows Fairview Rd and crossing TLSP/BRT corridors.

Pedestrian Activity:– Pedestrian traffic is an important factor on Fairview Street, due to the many schools located near the corridor. ADVANTEC identified significant pedestrian activity at 12 of the 31 intersection along Fairview Rd. Overall, in the development of signal coordination, we have to manage the competing interests of providing continuous flow of traffic on the main street, providing adequate time for pedestrians to cross the street, and minimizing the wait time for side street traffic. ADVANTEC will analyze pedestrian counts at these intersections, and our timing plans will ensure that the pedestrian splits (walk + flashing don't walk time) are completely covered within the vehicle splits time so that coordination can still be maintained along the corridor.

Need for Special Plans and Traffic Responsive Operations: – Land uses that can cause off-peak traffic surges include schools, churches, and shopping centers. This results in inadequate amounts of green time for side streets during these periods and associated cycle failures. ADVANTEC has developed and successfully implemented special timing plans pinpointing the effects of traffic surge associated with special events, e.g. Knott's Berry Farm's Halloween period as part of the OCTA TLSP Beach Boulevard project. ADVANTEC will evaluate the use of Traffic Responsive Operations for traffic signals adjacent to these special land uses. Traffic Responsive can better manage sudden peaks in traffic caused by incidents or special events.

Green-house gases (GHG) Emissions Calculation – GHG emissions has become a major concern of our society, and in particular to OCTA. In this project, ADVANTEC will provide an analysis of the impact of the optimized signal timing on GHG emissions. ADVANTEC has recently conducted a GHG emission analysis comparing synchronization of Beach Blvd with and without the newly adopted bicycle minimum times, which showed an increase of 40,000 lbs of emission per year when the bicycle clearance timing is used.

New CA-MUTCD Bicycle Directive - With the new California Manual on Uniform Traffic Control Devices (CA-MUTCD), Section 4D.105 (CA), some agencies are implementing the new minimum

green times based on the new guidelines. it is a "standard" and is mandatory when more than 50% of the detection is replaced, it is worthwhile to understand the impacts to the existing timing parameters (e.g. minimum green). As a ***value-added service***, ADVANTEC will calculate and summarize in a table showing the potential increase in minimum greens for all 42 intersections (including ints within ¼ mile) within this project for each agencies' reference at no additional cost. With this information, local agencies may choose to implement these changes now or at any time in the future.

4.4 Scope of Work

The following scope of work expands upon the tasks outlined in the Request for Proposal (RFP). It illustrates our familiarity with this type of projects.

Task 1 – Project Management

ADVANTEC will prepare a detailed project management plan that provides specific project milestones for review and approval by the City of Costa Mesa, and all stakeholders. We will conduct a Project Kick-Off Meeting with Costa Mesa and Santa Ana, as well as monthly progress meetings with the Cities' Project Managers. In addition, we will also establish periodic meetings with project stakeholders to keep them apprised of the project's progress and to address key issues. ADVANTEC will prepare all meeting materials, including agendas, action items, graphics, presentation aides, and notes.

ADVANTEC's PM and/or Project Director will attend and be an active presenter at OCTA's ITS Roundtable, Costa Mesa and Santa Ana City Council meetings, or other inter-governmental meetings.

Task 2 - Data Collection

ADVANTEC will gather the following information from each of the local agencies:- Existing timing sheets, including coordination plans; As-built drawings, Aerial photos and maps; All planned or programmed roadway improvements; Signal timing and priority parameters, including pedestrian and bicycle timing, leading and lagging left-turn phasing, and conditional service, as well as the timing optimization software preference; Identification of critical intersections and intersections with heavy pedestrian crossings.

For the required traffic counts, our preliminary recommendations for number of locations are summarized as follows:

- 7-day 24-hour counts: 15 locations
- 7-day 24-hour vehicle classification: 4 locations
- Weekday peak periods turning movement counts: 31 locations + 11 locations at ¼ mile
- Weekend peak periods turning movement counts: 42 locations

ADVANTEC will also assist City's PM and local agencies to determine 6 locations for video recording of bicycle and pedestrian activity. Video and summary data will be provided to OCTA in DVD format.

Task 3 – Field Review

ADVANTEC will, at the beginning of the project, conduct field review of all the signalized intersections within the project limits. During the field review, we will gather pertinent data/information, such as:

- Roadway geometry and lane configurations.
- Lengths of turn pockets
- Existing signal phasing and timing
- Speed limits
- Major sources/sinks of traffic generators
- Condition of existing traffic signal equipment

ADVANTEC will identify deficiencies of the existing traffic signal control and telemetry infrastructure, and will provide recommendations to correct such deficiencies. A report will be prepared containing all data collected during field review, including photos, summary of all planned and programmed improvements, and summary of existing deficiencies and recommended solutions.

Task 4 – Corridor 'Before' Study

ADVANTEC will conduct a 'before' field study, using a "floating car" survey. ADVANTEC will use a GPS receiver and Tru-Traffic software (version 9) to collect the data. Five floating car runs in each direction along the entire corridor will be performed during the AM, Midday, PM and weekend peak periods. Results of the survey will be used to evaluate travel time, delay, and number of stops (measures of effectiveness). ADVANTEC will prepare a memorandum that documents the results of the "Before Study" and the MOEs.

Task 5 – Signal Timing Optimization and Implementation (including hardware implementation)

Using SYNCHRO, the following parameters will be used to develop a model of the network:

- Existing geometry of network, including distance between intersections, number of lanes and positive or negative grade percentages for each approach at each intersection, turn prohibitions, etc.
- AM, Mid-day, PM, and weekend peak turning movements at every intersection;
- Existing phasing at each intersection, including any special treatment such as lead-lag phasing;
- Existing green splits, offsets, and cycle lengths;
- Synchro node numbering will comply with OCTA's ROADS database.

After the existing conditions model is set up and approved by all agencies involved, ADVANTEC will optimize the signal timings parameters, such as cycle lengths, splits, offsets. Special attention will be given to intersections that operate at poor levels of service (LOS D or worse) to identify possible improvements. Special techniques may be adopted such as:

- Lead-lead versus lead-lag phasing
- Half-cycle or other realistic harmonic cycle lengths for lightly traveled intersections, or double cycle lengths for heavily traveled intersections
- System breaks with different cycle lengths

Once developed, the SYNCHRO model results and database will be provided to the Cities, and Caltrans for review. Upon review of the optimized signal timing by the agencies, a meeting will be conducted to discuss any comments. We will incorporate such comments into the signal timing plans, and resubmit to the all agencies.

Upon final approval of the optimized signal timing parameters, ADVANTEC will prepare signal timing plans in the local cities' and Caltrans' format. These timing sheets or plans will be forwarded to the respective agencies for approval. Upon receipt of any necessary corrections,

the final timing sheet or plans will be prepared and delivered to each respective agency. They will bear the stamp and signature of our Project Manager, a Registered Professional Traffic Engineer. The formats of the signal timing sheets for the different agencies are:

- City of Costa Mesa– Econolite ASC/3 format
- City of Santa Ana - Econolite ASC/3 format for Model 2070 controllers
- Caltrans – TSCP firmware format for Model 2070 controllers

ADVANTEC will implement, or assist the Cities staff to implement the new signal timings. In addition, ADVANTEC will thoroughly check the results of the timing plans in the field during implementation to ensure that the signals are operating properly, and as intended, and ADVANTEC will provide extensive field monitoring and fine-tuning of the signal timing.

It is our understanding that Caltrans' staff will install the new 2070 controller units and implement the new timings. ADVANTEC will prepare all the final timing sheets in the approved TSCP firmware format for Caltrans to implement..

The following are our scope for the procurement and installation of all field elements for this project:

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION IN CITY OF COSTA MESA

Controller and Cabinet upgrades – City of Costa Mesa has requested the upgrade of 12 traffic signal controllers to new ASC/3, and replacement of two Controller Cabinets. Econolite will supply and install the new controllers and two TS2 Type 2 Type P38 cabinets.

Fiber Optic System

City of Costa Mesa has requested the installation of Fiber Switches, Fiber Splice enclosures, Fiber Distribution Units, Drop Cables, 6E Pullboxes at 12 intersections. The City also requested the installation of 7,000 feet of Single Mode Fiber Optic cable. Crosstown will furnish and install all Fiber system equipment, cable, and pull boxes.

CCTV cameras and transmission

City of Costa Mesa has requested the installation of three CCTV units, and required video encoder/decoder systems. Crosstown will furnish and install the CCTV units and video transmission

Signal Modification

City of Costa Mesa has requested the design and installation of a right turn overlap for northbound right turn traffic at Fairview Rd & Baker. ADVANTEC has done a preliminary estimate of equipment needed for the overlap:

- 600 feet of 5-conductor traffic signal cable
- One SV-1-T with bronze mount, with 5-section 12 inch LED indications, with back plate and full circle visors, for the Main pole,
- One TV-2-T with bronze mount, with a 3-section 12 inch Arrow LED indications, and a 5-section 12 inch LED indications, with back plate and full circle visors for the 10 foot 1-A pole.

ADVANTEC will perform the design of any necessary elements, such as traffic signal modification for addition of right turn overlap, and design of plans for installation of controllers, pull-boxes and Fiber-Optic equipment. Crosstown will install the right turn overlap equipment. ADVANTEC will also supervise the installation of all equipment.

ADVANTEC will prepare plans for installation of all hardware upgrades, and will also prepare a traffic signal modification plan for the installation of Northbound Right Turn Overlap at Baker St. For that purpose, a field review of existing equipment will be performed at all intersections.

To accurately depict the new signal and communication equipment on the Project Records Drawings, we will ensure that the following fundamental design-base items are shown on our plans: conduit runs, pull boxes locations, and other traffic signal equipment locations. For each design plan, a separate detail showing the interior conditions of the signal cabinet will be included for use to evaluate the capacity of the cabinet to receive the new equipment. For instance, we will evaluate the need for installing new shelves and/or racks.

ADVANTEC will use the services of Crosstown to verify the conditions of all existing Fiber Optic Cable strands to identify any breakages or loss of signal.

After verifying existing field conditions, installation plans and traffic signal modification plans will be developed and submitted to Costa Mesa at 'draft' and 'final' submittals. Plans will be modified to reflect City comments.

If the Field Review analysis does not uncover any issues or deficiencies, then ADVANTEC will start hardware procurement at same time as plan design, helping to expedite the project.

ADVANTEC will prepare traffic control plans, as necessary to accommodate the installation of signal hardware upgrade. ADVANTEC will also advise the City on how to maintain traffic flow during cabinet replacement and Fiber installation.

The work on the Synchronization tasks of the project will start at the same time as the hardware design, and run in parallel to it. Preliminary tasks, such as field review, traffic counts, Before Study, and Base Synchro Model development can start soon after project kick-off.

ADVANTEC will use Econolite and Crosstown to furnish and install hardware items. Fiber Optics cable and equipment installation will be scheduled to occur first. ADVANTEC will make sure that existing signal controllers are maintained on-line during Fiber Optics system installation. Fiber Optics system will be configured and tested prior to acceptance by City.

New Controllers will be programmed in the field and at MIST System, prior to installation. ADVANTEC will make sure that new controllers are programmed with existing basic timing, at time of turn-on.

Installation of Right Turn Overlap at Baker St. may require the traffic signal to be turned-off, and STOP signs put at all approaches. Field review will determine if conduits have enough space to allow slipping of new conductor cables. If existing conductors need to be removed, ADVANTEC will recommend best strategy to accomplish work with the least amount of disruption to traffic.

ADVANTEC will inspect all field installation work on a daily basis.

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION IN CITY OF SANTA ANA

Wireless Broadband System

City of Santa Ana has requested the installation of wireless Broadband Antenna and radio units at eight locations, as well as six Ethernet switches. Crosstown will furnish and install this equipment.

Ethernet over Copper

City of Santa Ana has requested the installation of Ethernet extenders for IP over Copper, single and 4-port units, at six locations. Crosstown will furnish and install Ethernet extenders.

CCTV cameras and video transmission

City of Santa Ana has requested the installation of two CCTV units, and video encoding/decoding units at three locations. Crosstown will furnish and install the CCTV equipment.

Bluetooth Travel Time Monitoring System

City of Santa Ana has requested the installation of a Bluetooth Travel Time/Speed monitoring system at 4 locations. ADVANTEC has identified two potential Bluetooth speed monitoring system for City of Santa Ana's consideration – Econolite's BlueTOAD and Traffax BluFax. Since this project is the first of 3 projects to implement Bluetooth speed monitoring for City of Santa Ana, the vendor selected for this project is likely to be retained for the other two projects. Therefore, **ADVANTEC wants to allow the City of Santa Ana the flexibility of picking the Bluetooth vendor after this project is awarded to us** – we have kept both of their proposals into this proposal. Upon award of project, ADVANTEC will schedule demos from each of these vendors, and discuss with City staff to arrive at the best Bluetooth system for Santa Ana. The selected vendor will furnish and install the bluetooth system, including development of graphical display for Santa Ana to place on city's website.

Prior to start the procurement of hardware for the City of Santa Ana, ADVANTEC will perform a field review of existing communication infrastructure at all intersections. ADVANTEC will use the services of Crosstown to perform line-of-sight evaluations for all wireless Broadband antenna locations, and also to verify the conditions of all existing Fiber Optic strands, and Copper Cable pairs to identify any breakages or loss of signal.

ADVANTEC will conduct a feasibility evaluation study to verify that the existing infrastructure is compatible and has the capability to interface with the new communication equipment and deliver the desired communication performance. The purpose of conducting both the testing and feasibility evaluation steps is not only to validate the agencies' original equipment upgrade wish-list, but to ensure that the right equipment is ultimately ordered for deployment.

If the Field Review analysis and Feasibility Evaluation do not uncover any issues or deficiencies, then ADVANTEC will start hardware procurement. Crosstown will be responsible for furnishing and installing all wireless broadband devices, Ethernet switches and extenders, and CCTV equipment. ADVANTEC will inspect all field installation work.

Installation of communication devices will be schedule in such a manner as to maintain signals online, or reduce downtime to just a few hours, instead of days. CCTV and Bluetooth devices will be installed after communication is set up at their respective deployment locations.

SCOPE OF SERVICES FOR HARDWARE IMPLEMENTATION FOR CALTRANS

Controller upgrade

Caltrans has requested the upgrade to new Type 2070E controllers, upgrade to Type 170E Master controller for the I-405 ramps, as well as for SR-22 ramps. Caltrans will install Type 2070E and Type 170E controllers, with respective Model 6A Comm Modem, and Model 400 Comm Modem, and C2 Connector Cable.

GPS Time-Source Unit

Caltrans would also like GPS time-source units installed at the Master controller of both I-405 and SR-22 freeways, in order to maintain time-based coordination with the adjacent signals owned by the local agencies. Crosstown will install the GPS units.

Caltrans Permit Processing

To expedite the procurement process, ADVANTEC will apply for Caltrans encroachment permit at the onset of the project, eliminating any issues with Caltrans schedules and deadlines. For any work within Caltrans' right-of-way (e.g. GPS installations), ADVANTEC will obtain Caltrans' encroachment permit. We will fill out the encroachment permit application form and submit the application to Caltrans District 12 permit section. Any comments received from Caltrans will be properly addressed, until the encroachment permit is approved and issued.

Task 6 – Corridor 'After' Study

ADVANTEC will conduct an 'after' field study following the same procedures as described in the Before Study, and the requirements set forth in the RFP. ADVANTEC will provide a synchronized video with the 'before' and 'after' travel time runs to augment the study, and will use the video for presentation to Cities' officials. The synchronized video is taken inside the car during the 'After Runs', and is played concurrently with an animation on the time-space diagram that represents the position of the car. This will facilitate ease of understanding of the time-space diagram by elected officials and lay-persons.

Task 7 – Project Report

ADVANTEC will prepare a Final Timings and Evaluation Technical Report with an executive summary following the requirements set forth in the RFP.

Task 8 – Continuing Signal Timing Support

ADVANTEC will provide continuing signal timing support and monitoring for a period of three (3) years after completion of the signal timing implementation, following the requirements set forth in the RFP.

Besides, we guarantee at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service to Cities at no additional cost.

5. PROJECT ENHANCEMENTS AND TECHNICAL INNOVATIONS

Throughout this proposal, we have identified a number of innovative ideas and value-added services to help ensure success for this project, as follows:

- Addition of intersections along major (heavily travelled) cross streets within ¼ mile to the corridor be added into the SYNCHRO network for optimization, and the optimized timing plans will be provided to the cities for implementation. This will provide some level of cross street platoon arrival for accurate signal synchronization. For many cities, major cross street traffic is as important as the corridor itself. A total of 11 intersections are added, making a total of 42 intersections to be synchronized for this project.
- Review traffic responsive operation at intersections adjacent to special land uses to respond to non-peak period traffic surges.
- Development of school timing plans for intersections adjacent to schools.
- Apply special timing techniques, such as left-turn re-servicing within a cycle, wherever deemed appropriate.

- Develop timing plans for any planned construction activities during fine tuning or monitoring periods to facilitate signal synchronization during and after construction.
- Calculate new minimum greens for all intersections per the new CA-MUTCD bicycle directive. Evaluate use of new Caltrans directive for bike minimum greens for application in this corridor.
- Calculate greenhouse gas emissions before and after synchronization, and also estimate greenhouse gas emissions if the new CA-MUTCD bicycle directive were applied.
- Guaranteed at least 10% improvement in reducing stops and delays along the corridor in the peak direction in both AM and PM peak periods. If this is not achieved, we will provide an additional 3 months of signal timing monitoring and fine-tuning service at no additional cost.

6. PROJECT SCHEDULE

Our project schedule is presented below. This schedule is shortened to 9 months, assuming a start date of mid-March, we would complete this project by mid-December, before the holidays. This will allow the cities to have improved signal synchronization for holiday traffic. The following is a brief schedule of the overall project, a detailed task by task schedule is provided in **Appendix G.**

PROPOSED SCHEDULE

Costa Mesa / Santa Ana	2012										
Fairview Traffic Signal Coordination	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	til Oct 2015
Project Kick-off meeting	▼	12-Mar									
Task 1 - Project Management											
Task 2 - Data Collection				15-Apr							
Task 3 - Field Review				15-Apr							
Task 4 - Corridor ' Before' Study				15-Apr							
Task 5 - Timing Optimization and Implementation									23-Oct		
Task 6 - Corridor ' After' Study										20-Nov	
Task 7 - Project Report										▼	4-Dec
Task 8 - 3 yrs Continuing Signal Timing Support											

EXHIBIT B

FEE SCHEDULE

City of Costa Mesa
Fairview Rd Coordination Project
PRICING FORM FOR FAIRVIEW RD COORDINATION PROJECT TLSP

Consultant: ADVANTEC CONSULTING ENGINEERS

Prime/ Sub (initials)	Staffing (Position)	Unit of Measure	1. Project Management	2. Data Collection	3. Field Review	4. Corridor "Before" Study	5. Signal Timing Optimization Implementation	5b. Design+Plans Costa Mesa	5c. Hardware+ Const.Mgmt Costa Mesa	5d. Hardware+ Const.Mgmt Santa Ana	6. Corridor "After" Study	7. Project Report	8. 3 Year Monitoring	TOTAL HOURS	Hourly Rate	TOTAL PRICE
			TASK													
ACE	Project Director	Hour	36				20					10		66	$ 235.35	$ 15,533
ACE	Project Manager	Hour	150	10	10	10	80	10	10	10	10	20	75	395	$ 211.82	$ 83,669
ACE	Engineer	Hour		30	40	20	240	150	80	40	20	60	150	830	$ 115.32	$ 95,716
ACE	Senior Technician	Hour		30	40		120		180	72			120	562	$ 90.98	$ 51,131
ACE	Technician	Hour				40		180	210		40			470	$ 58.74	$ 27,608
ACE	Administrative Support	Hour	80									20		100	$ 52.21	$ 5,221
	STAFFING SUB-TOTAL		266	70	90	70	460	340	480	122	70	110	345	2423		$ 278,877
			$ 44,422	$ 8,307	$ 10,370	$ 6,774	$ 60,247	$ 29,989	$ 40,056	$ 13,282	$ 6,774	$ 14,553	$ 44,102			

	Non-Staffing Resources	Unit of Measure	UNITS BY TASK											TOTAL UNITS	UNIT RATE	
	Traffic Counts															
PTDS	7-day 24-hour Average Daily Traffic (ADT) counts	# of Locs.		$ 5,985										30	$ 199.50	$ 5,985.00
PTDS	24-hr Vehicle Classification counts	# of Locs.		$ 456										4	$ 114.00	$ 456.00
PTDS	4 hour video recording	# of Locs.		$ 1,719										6	$ 286.50	$ 1,719.00
	City of Costa Mesa															
Econolite	Furnish and Install Controllers ASC/3	each							$ 36,900					10	$ 3,690.00	$ 36,900.00
Crosstown	Furnish and Install Fiber Switch	each							$ 23,018					12	$ 1,918.15	$ 23,017.80
Econolite	Furnish and Install D-Panel	each							$ 4,950					10	$ 495.00	$ 4,950.00
Crosstown	Furnish and Install 6E Pullbox and concrete work	each							$ 17,993					12	$ 1,499.45	$ 17,993.40
Crosstown	Furnish and Install Splice enclosure	each							$ 14,532					12	$ 1,211.00	$ 14,532.00
Crosstown	Furnish and Install Fiber Distribution Unit	each							$ 13,239					12	$ 1,103.25	$ 13,239.00
Crosstown	Furnish and Install Drop Cable	each							$ 3,047					12	$ 253.88	$ 3,046.50
Crosstown	Furnish and InstallCCTV hardware(at Sunflower,at South Coast, at Wilson)	each							$ 33,355					3	$ 11,118.25	$ 33,354.75
Crosstown	Funish and Install SMFO cable	Linear Ft.							$ 13,517					7000	$ 1.93	$ 13,517.00
Econolite	Funish and Install complete Type P cabinet	each							$ 40,464					2	$ 20,232.00	$ 40,464.00
Crosstown	Design and Install NB right turn overlap	LS							$ 9,749					1	$ 9,749.25	$ 9,749.25
Caltrans	Funish and Install 2070 Controller	each							$ 3,034					2	$ 1,516.96	$ 3,033.92
Caltrans	Furnish and Install 170E-Field Master controller	each							$ 1,028					1	$ 1,027.86	$ 1,027.86
Caltrans	Furnish and Install Model 6A Comm Modem (2070 controller)	each							$ 735					2	$ 367.54	$ 735.08
Caltrans	Furnish and Install C2 Connector Cable	each							$ 156					3	$ 52.02	$ 156.06
Caltrans	Furnish and Install Model 400 Comm Modem (170E controller)	each							$ 107					1	$ 107.31	$ 107.31
Crosstown	Furnish and Install GPS unit (I-405 and SR-22)	each							$ 1,645					1	$ 1,645.25	$ 1,645.25
ADVANTEC	Synchro 8.0 Studio	each							$ 5,000					1	$ 5,000.00	$ 5,000.00
	City of Santa Ana															
Crosstown	Furnish and Install Wireless Broadband Antenna and 4.9 GHz radio unit	each								$ 38,216				8	$ 4,777.00	$ 38,216.00
Crosstown	Furnish and Install Ethernet switch - hardened managed switch	each								$ 8,535				6	$ 1,422.50	$ 8,535.00
Crosstown	Furnish and Install Ethernet extenders for IP over Copper (sets of 2)	each								$ 4,613				6	$ 768.75	$ 4,612.50
Crosstown	Furnish and Install Ethernet extender for IP over Copper - 4 port	each								$ 1,423				1	$ 1,422.50	$ 1,422.50
Crosstown	Furnish and Install Outdoor CAT-5 cable, from cabinet to CCTV splice cabinet	each								$ 338				1	$ 337.75	$ 337.75
Crosstown	Furnish and Install CCTV cameras - Cohu Helios 3920 HD	each								$ 17,172				2	$ 8,586.13	$ 17,172.25
Crosstown	Furnish and Install Cohu Encoder	each								$ 6,509				3	$ 2,169.50	$ 6,508.50
Crosstown	Furnish and Install Cohu Decoder Rack Slot Card	each								$ 6,024				3	$ 2,007.88	$ 6,023.63
Econolite	Furnish and Install Bluetooth Travel Time System (Central + 4 units)	LS								$ 54,400				1	$ 54,400.00	$ 54,400.00
Caltrans	Funish and Install 2070 Controller	each								$ 3,034				2	$ 1,516.96	$ 3,033.92
Caltrans	Furnish and Install 170E-Field Master controller	each								$ 1,028				1	$ 1,027.86	$ 1,027.86
Caltrans	Furnish and Install Model 6A Comm Modem (2070 controller)	each								$ 735				2	$ 367.54	$ 735.08
Caltrans	Furnish and Install C2 Connector Cable	each								$ 156				3	$ 52.02	$ 156.06
Caltrans	Furnish and Install Model 400 Comm Modem (170E controller)	each								$ 107				1	$ 107.31	$ 107.31
Crosstown	Furnish and Install GPS unit (I-405 and SR-22)	each								$ 1,645				1	$ 1,645.25	$ 1,645.25
ADVANTEC	Synchro 8.0 Studio	each								$ 5,000				1	$ 5,000.00	$ 5,000.00
																$ -
	NON-STAFFING SUB-TOTAL															$ 379,563
			$ 44,422	$ 16,457	$ 10,370	$ 6,774	$ 60,247	$ 29,989	$ 262,528	$ 162,219	$ 6,774	$ 14,553	$ 44,102		TOTAL	$ 658,440
			Task 1	Task 2	Task 3	Task 4	Task 5 Total $ 514,976				Task 6	Task 7	Task 8			

L.S. = Lump Sum

ADDITIVE WORK

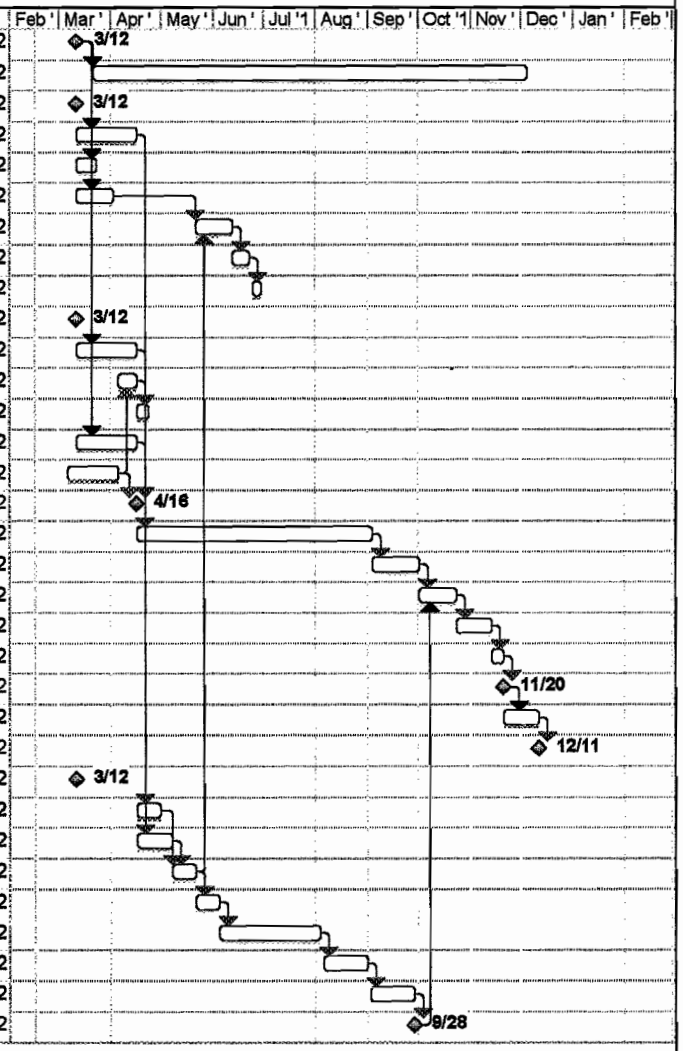
	Non-Staffing Resources	Unit of Measure	UNITS BY TASK											TOTAL UNITS	UNIT RATE	
	Traffic Counts at Intersections															$ -
PTDS	Turn Movement Counts - Weekday w/ peds+bike (AM+MD+PM, 6 hrs)	# of I/S						$ 8,862						31	$ 286.50	$ 8,882
PTDS	Turn Movement Counts - Weekend w/ peds+bike (Saturday MD, 2hr)	# of I/S						$ 3,922						31	$ 126.50	$ 3,922
	Total -Combined Weekday + Weekend	# of I/S												31	$ 413.00	$ 12,803
	Install 3" Conduit															
Crosstown	Furnish and Install 3" conduit (Wilson to Newport, to Victoria)	Linear Ft.						$ 36,000						1200	$ 30.00	$ 36,000.00
																$ -
																$ -
																$ -
																$ -
	NON-STAFFING SUB-TOTAL															

EXHIBIT C

PROJECT SCHEDULE

Costa Mesa / Santa Ana
Fairview Traffic Signal Coordination Project

ID	Task Name	Start	Finish
1	**Project Kick-off Meeting**	Mon 3/12/12	Mon 3/12/12
2	Task 1.0 - PDT Meetings and Permits Application	Thu 3/22/12	Tue 12/4/12
3	**Project PS&E Preparation**	Mon 3/12/12	Mon 3/12/12
4	Task 2.0 - Existing Infrastructure Field Review	Mon 3/12/12	Mon 4/16/12
5	Task 2.1 - Utility Coordination	Mon 3/12/12	Fri 3/23/12
6	Task 2.2 - Base Plan Preparation - Traffic Control and System Improvement	Mon 3/12/12	Mon 4/2/12
7	Task 2.3 - 80% PS&E Preparation	Tue 5/22/12	Tue 6/12/12
8	Task 2.4 - 90% PS&E Preparation	Wed 6/13/12	Fri 6/22/12
9	Task 2.5 - Final PS&E Preparation	Mon 6/25/12	Fri 6/29/12
10	**Corridor Synchronization**	Mon 3/12/12	Mon 3/12/12
11	Task 3.0 - Traffic Operations Field Review	Mon 3/12/12	Mon 4/16/12
12	Task 3.1 - Data Collection - Traffic Counts	Fri 4/6/12	Mon 4/16/12
13	Task 3.2 - Prepare Field Review Report	Tue 4/17/12	Mon 4/23/12
14	Task 3.3 - "Before" Study	Mon 3/12/12	Mon 4/16/12
15	<<2012 Spring Break "Mid-March to Early April">>	Wed 3/7/12	Thu 4/5/12
16	Task 3.4 - Submit "Before" Study Results	Mon 4/16/12	Mon 4/16/12
17	Task 3.5 - Synchro Modeling & Timing Optimization	Tue 4/17/12	Mon 9/3/12
18	Task 3.6 - Prepare Timing Sheets	Tue 9/4/12	Mon 10/1/12
19	Task 3.7 - Initial Implementation	Tue 10/2/12	Tue 10/23/12
20	Task 3.8 - Observation and Fine-tuning	Wed 10/24/12	Tue 11/13/12
21	Task 3.9 - "After" Study	Wed 11/14/12	Tue 11/20/12
22	Task 3.10 - Submit "After" Study results	Tue 11/20/12	Tue 11/20/12
23	Task 3.11 - Prepare project report	Wed 11/21/12	Tue 12/11/12
24	Task 3.12 - Submit "Final" report	Tue 12/11/12	Tue 12/11/12
25	**Hardware Upgrade**	Mon 3/12/12	Mon 3/12/12
26	Task 4.0 - Hardware Compatibility Evaluation	Tue 4/17/12	Mon 4/30/12
27	Task 4.1 - Existing Infrastructure Testing	Tue 4/17/12	Mon 5/7/12
28	Task 4.2 - Finetune Hardware Procurement Strategy	Tue 5/8/12	Mon 5/21/12
29	Task 4.3 - Confirm System Upgrade Quotation	Tue 5/22/12	Mon 6/4/12
30	Task 4.4 - System Ordering and Fabrication	Tue 6/5/12	Fri 8/3/12
31	Task 4.5 - System Installation	Mon 8/6/12	Fri 8/31/12
32	Task 4.6 - System Field Testing and Trouble-shooting	Mon 9/3/12	Fri 9/28/12
33	Task 4.7 - Hardware Upgrade "Substantial Completion"	Fri 9/28/12	Fri 9/28/12



45

EXHIBIT D

CITY COUNCIL POLICY 100-5

SUBJECT	POLICY NUMBER	EFFECTIVE DATE	PAGE
DRUG-FREE WORKPLACE	100-5	8-8-89	1 of 3

BACKGROUND

Under the Federal Drug-Free Workplace Act of 1988, passed as part of omnibus drug legislation enacted November 18, 1988, contractors and grantees of Federal funds must certify that they will provide drug-free workplaces. At the present time, the City of Costa Mesa, as a sub-grantee of Federal funds under a variety of programs, is required to abide by this Act. The City Council has expressed its support of the national effort to eradicate drug abuse through the creation of a Substance Abuse Committee, institution of a City-wide D.A.R.E. program in all local schools and other activities in support of a drug-free community. This policy is intended to extend that effort to contractors and grantees of the City of Costa Mesa in the elimination of dangerous drugs in the workplace.

PURPOSE

It is the purpose of this Policy to:

1. Clearly state the City of Costa Mesa's commitment to a drug-free society.

2. Set forth guidelines to ensure that public, private, and nonprofit organizations receiving funds from the City of Costa Mesa share the commitment to a drug-free workplace.

POLICY

The City Manager, under direction by the City Council, shall take the necessary steps to see that the following provisions are included in all contracts and agreements entered into by the City of Costa Mesa involving the disbursement of funds.

1. Contractor or Sub-grantee hereby certifies that it will provide a drug-free workplace by:

    a. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in Contractor's and/or sub-grantee's workplace, specifically the job site or location included in this contract, and specifying the actions that will be taken against the employees for violation of such prohibition;

b. Establishing a Drug-Free Awareness Program to inform employees about:

1. The dangers of drug abuse in the workplace;

2. Contractor's and/or sub-grantee's policy of maintaining a drug-free workplace;

3. Any available drug counseling, rehabilitation and employee assistance programs; and

4. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

c. Making it a requirement that each employee to be engaged in the performance of the contract be given a copy of the statement required by subparagraph A;

d. Notifying the employee in the statement required by subparagraph 1 A that, as a condition of employment under the contract, the employee will:

1. Abide by the terms of the statement; and

2. Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction;

e. Notifying the City of Costa Mesa within ten (10) days after receiving notice under subparagraph 1 D 2 from an employee or otherwise receiving the actual notice of such conviction;

f. Taking one of the following actions within thirty (30) days of receiving notice under subparagraph 1 D 2 with respect to an employee who is so convicted:

1. Taking appropriate personnel action against such an employee, up to and including termination; or

2. Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health agency, law enforcement, or other appropriate agency;

g. Making a good faith effort to maintain a drug-free workplace through implementation of subparagraphs 1 A through 1 F, inclusive.

2. Contractor and/or sub-grantee shall be deemed to be in violation of this Policy if the City of Costa Mesa determines that:

   a. Contractor and/or sub-grantee has made a false certification under paragraph 1 above;

   b. Contractor and/or sub-grantee has violated the certification by failing to carry out the requirements of subparagraphs 1 A through 1 G above;

   c. Such number of employees of Contractor and/or sub-grantee have been convicted of violations of criminal drug statutes for violations occurring in the workplace as to indicate that the contractor and/or sub-grantee has failed to make a good faith effort to provide a drug-free workplace.

3. Should any contractor and/or sub-grantee be deemed to be in violation of this Policy pursuant to the provisions of 2 A, B, and C, a suspension, termination or debarment proceeding subject to applicable Federal, State, and local laws shall be conducted. Upon issuance of any final decision under this section requiring debarment of a contractor and/or sub-grantee, the contractor and/or sub-grantee shall be ineligible for award of any contract, agreement or grant from the City of Costa Mesa for a period specified in the decision, not to exceed five (5) years. Upon issuance of any final decision recommending against debarment of the contractor and/or sub-grantee, the contractor and/or sub-grantee shall be eligible for compensation as provided by law.

BUDGET ADJUSTMENT AUTHORIZATION

Unit	Department	Division	Serial Number
CITY	Public Services	Transportation	12-018

Type of Transaction

- ☒ Revenue Estimate
  - ☒ Estimate Increase
  - ☐ Estimate Decrease
- ☒ Source
  - ☐ From Existing Budget Appropriations
  - ☒ From Donations, Fees, or Grants
  - ☒ From Unappropriated Fund Balance

- ☒ Expenditure Appropriation
  - ☐ Intra-Departmental Transfer
  - ☐ Inter-Departmental Transfer
  - ☐ Project-To-Project Transfer
  - ☒ Appropriation Increase
  - ☐ Appropriation Decrease

Reason for Request:

To Increase revenue and appropriations for Measure M2 grant and Air Quality Management District (AQMD) funds for Fairview Traffic Signal Synchronization Project, as recommended to City Council on May 1, 2012.

Unit	Account	Name	Fund	Organization	Program	Project/Grant	Increase	Decrease
CITY	500000	Fairview Traffic Signal Synchronization	415	19300	30112	370034	$620,000	-
CITY	430312	Measure M2 Regional Grant	415	19300	30112	-	620,000	-
CITY	500000	Fairview Traffic Signal Synchronization	203	19300	30112	370034	38,440	-
CITY	340295	Unreserved undesignated fund balance	203	90000	50240	-	-	38,440
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Department Authorization:

Department Director

4-24-12
Date

Budget Verification:

The above information has been reviewed, is complete and accurate, and the appropriations and/or unappropriated funds are sufficient to support the request.

☒ Yes ☐ No

Budget and Research Officer

Date

Recommendation: ☒ Approval ☐ Disapproval

Reasons For Disapproval:

Director of Finance

Date

City Manager Action:

☐ Approved ☐ Disapproved ☐ Not Required

City Manager

Date

City Council Action:

☐ Approved ☐ Disapproved ☐ Not Required

Date

ATTACHMENT 3