ATTACHMENT 2

COOPERATIVE AGREEMENT NO. C-3-2086

BETWEEN

ORANGE COUNTY TRANSPORTATION AUTHORITY

AND

THE CITIES OF HUNTINGTON BEACH AND COSTA MESA

FOR

THE ADAMS AVENUE REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROJECT

THIS COOPERATIVE AGREEMENT (Agreement), is effective this ___ day of _____, 201__ between the Orange County Transportation Authority, 550 South Main Street, P.O. Box 14184, Orange, California 92863-1584, a public corporation of the State of California (hereinafter referred to as "AUTHORITY"), and the Cities of Huntington Beach and Costa Mesa (hereinafter jointly referred to as "PARTICIPATING AGENCIES") each individually known as "Party" and collectively known as the "Parties".

RECITALS:

WHEREAS, the AUTHORITY, in cooperation with the PARTICIPATING AGENCIES, is working together in coordinating traffic signals across multiple jurisdictional boundaries as a part of the Renewed Measure M (M2) Regional Traffic Signal Synchronization Program (Project P) to enhance countywide traffic flow and reduce congestion; and

WHEREAS, the AUTHORITY has completed the competitive 2013 Call for Projects (hereinafter, "2013 CALL") in support of Project P and awarded Project P funds based on the application (hereinafter, "APPLICATION") prepared by the City of Huntington Beach (hereinafter referred to as the "APPLICANT AGENCY") for implementation of signal synchronization of traffic signals along Adams Avenue (hereinafter, "PROJECT"); and

WHEREAS, the PARTICIPATING AGENCIES in their approved APPLICATION have elected to designate the AUTHORITY and the AUTHORITY agrees to act as the implementing agency to carry out the signal synchronization PROJECT; and

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WHEREAS, the PROJECT will include approximately twenty-three (23) traffic signals as identified in the APPLICATION and illustrated in the PROJECT Scope of Work, which is attached and referred to herein as Attachment A; and

WHEREAS, the PROJECT will include elements identified in the APPLICATION including certain hardware, firmware, and/or software upgrades to traffic controllers, traffic telecommunications and intertie systems, central traffic master controllers and associated systems (hereinafter collectively referred to as "TRAFFIC CONTROL ELEMENTS"), which are to be constructed and or installed and implemented as part of the PROJECT as identified in Attachment A; and

WHEREAS, the AUTHORITY agrees to work with PARTICIPATING AGENCIES to coordinate the inclusion of other traffic control elements (OTHER ELEMENTS) that should be installed at the same time as the construction of the PROJECT and are not a part of this Agreement; and

WHEREAS, all costs associated with the inclusion of these OTHER ELEMENTS are the responsibility of the AGENCY owning each and any of those OTHER ELEMENTS during the course of the project; and

WHEREAS, based on Attachment A, the AUTHORITY agrees to implement the PROJECT; and

WHEREAS, the PARTICIPATING AGENCIES, per the M2 Ordinance, agree to provide PROJECT funding in a combined cash match and in-kind services match of Two Hundred, Sixty Thousand, Five Hundred, Ninety-Four dollars ($260,594.00), equivalent to twenty percent (20%) of the PROJECT cost as shown in Attachment B; and

WHEREAS, the AUTHORITY and the PARTICIPATING AGENCIES desire to enter into this Agreement to implement the PROJECT in support of Project P as part of M2; and

WHEREAS, this Cooperative Agreement defines the specific terms, conditions and funding responsibilities between the AUTHORITY and the PARTICIPATING AGENCIES for the implementation of the PROJECT.

WHEREAS, the Orange County Transportation Authority Board of Directors approved funding for the PROJECT and authorized the Chief Executive Officer to negotiate and execute this Agreement on

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April 8, 2013.

WHEREAS, the CITY of Huntington Beach's City Council approved this Agreement on the _____ day of _____, 20_____.

WHEREAS, the CITY of Costa Mesa's City Council approved this Agreement on the _____ day of _____, 20_____.

NOW, THEREFORE, it is mutually understood and agreed by AUTHORITY and the PARTICIPATING AGENCIES as follows:

ARTICLE 1. 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 AUTHORITY and the PARTICIPATING AGENCIES 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. AUTHORITY's failure to insist on any instance(s) of PARTICIPATING AGENCIES' performance of any term(s) or condition(s) of this Agreement shall not be construed as a waiver or relinquishment of AUTHORITY's right to such performance or to future performance of such term(s) or condition(s), and PARTICIPATING AGENCIES' obligation in respect thereto shall continue in full force and effect. Changes to any portion of this Agreement shall not be binding upon AUTHORITY except when specifically confirmed in writing by an authorized representative of AUTHORITY by way of a written amendment to this Agreement and issued in accordance with the provisions of this Agreement.

C. PARTICIPATING AGENCIES' failure to insist on any instance(s) of AUTHORITY's performance of any term(s) or condition(s) of this Agreement shall not be construed as a waiver or relinquishment of PARTICIPATING AGENCIES' right to such performance or to future performance of such term(s) or condition(s), and AUTHORITY's obligation in respect thereto shall continue in full force and effect. Changes to any portion of this Agreement shall not be binding upon PARTICIPATING AGENCIES

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except when specifically confirmed in writing by an authorized representative of PARTICIPATING AGENCIES by way of a written amendment to this Agreement and issued in accordance with the provisions of this Agreement.

ARTICLE 2. SCOPE OF AGREEMENT

This Agreement specifies the roles and responsibilities of the PARTIES as they pertain to the subjects and projects addressed herein. Both AUTHORITY and PARTICIPATING AGENCIES agree that each will cooperate and coordinate with the other in all activities covered by this Agreement and any other supplemental agreements that may be required to facilitate purposes thereof.

ARTICLE 3. RESPONSIBILITIES OF AUTHORITY

AUTHORITY agrees to the following responsibilities for funding of the PROJECT:

A. AUTHORITY shall implement the PROJECT based on the APPLICATION prepared by the APPLICANT AGENCY in accordance with the policies and procedures contained in the CTFP Guidelines.

B. AUTHORITY shall provide oversight in order to maintain inter-jurisdictional traffic signal operational integrity between PROJECT and other existing and new M2 Project P funded projects.

C. AUTHORITY will act as the LEAD AGENCY and provide and file all documentation necessary to acquire a Categorical Exemption from CEQA for PROJECT.

D. AUTHORITY shall perform web-based public outreach activities for the project to communicate major project milestones and results.

E. AUTHORITY shall provide formats, templates, and guidance in reporting requirements as described in Comprehensive Transportation Funding Program (CTFP).

F. AUTHORITY, or agents of AUTHORITY, under this Agreement and upon closeout of PROJECT, may perform a technical and/or field review to ensure that the CTFP Guidelines, policies, and procedures were followed. Such a review may be performed one hundred and eighty (180) days after the PROJECT three-year grant period is complete. If the technical and or field review determines that any of the activities performed are ineligible for CTFP funding, PARTICIPATING AGENCIES must return the amount of funding used to perform the ineligible activity to AUTHORITY.

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G. AUTHORITY shall invoice the PARTICIPATING AGENCIES as identified in the PROJECT 2013 CALL APPLICATION and Attachment B for the dollar cash match at the start of the PROJECT or at a mutually agreed upon time to facilitate any respective AGENCY funding timeframes

H. AUTHORITY shall request updates on the PROJECT as part of semi-annual review process, including documentation of in-kind match conforming to Attachment B and will include the PROJECT in the list of active projects in OCfundTrAcker until completion of the three year grant period. Documents to be provided include, but are not limited to, payroll records, contracts, and purchase orders.

ARTICLE 4. RESPONSIBILITIES OF THE AUTHORITY AS PROJECT LEAD AGENCY

The AUTHORITY as the LEAD AGENCY agrees to the following responsibilities for the implementation of the PROJECT:

A. AUTHORITY shall act as the LEAD AGENCY for the work necessary to manage, procure, and complete the PROJECT as identified in Attachment A.

B. To coordinate outreach with the PARTICIPATING AGENCIES for the PROJECT.

C. To collect manual intersection movement and automated machine traffic counts.

D. To develop new timing plans optimized for signal synchronization.

E. To provide updated timing plans and traffic count data to the PARTICIPATING AGENCIES.

F. To prepare a "Before and After Study" for the PROJECT as described in the Measure M2 Eligibility Guidelines adopted by the AUTHORITY. The "Before and After Study" for the project is considered the equivalent of the required Project Final Report (Measure M2 Ordinance No. 3, Section B.III.9) for the PROJECT. The AUTHORITY shall provide the "Before and After Study" to the PARTICIPATING AGENCIES in draft and final formats for review and comment. AGENCY comments shall be noted in the final study. If specified in original PROJECT APPLICATION, the AUTHORITY shall provide a "Before and After Study" video of a representative portion of PROJECT.

G. To provide Ongoing Monitoring and Maintenance of optimized signal timing after Primary Implementation of the PROJECT is completed and continue until the end of the three year grant period.

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ARTICLE 4. RESPONSIBILITIES OF THE PARTICIPATING AGENCIES

The Participating Agencies agree to the following responsibilities for implementation and funding of the PROJECT:

A. Provide a technical representative to meet and participate as a member of the PROJECT's Traffic Forum.

B. To authorize the AUTHORITY to manage, procure, and implement all aspects of the PROJECT.

C. To participate and support the PROJECT implementation within the timeframe outlined in the APPLICATION and consistent with the CTFP Guidelines adopted by the AUTHORITY.

D. To provide the AUTHORITY all current intersection, local field master, and or central control system timing plans and related data upon request.

E. To provide the local cash match and or documentation for the in-kind services match for the PROJECT in accordance with Attachment B. Failure to provide included local cash match and or evidence of in-kind services match may result in the loss of future participation for competitive funding opportunities

F. PARTICIPATING AGENCIES that have included a dollar match as identified in Attachment B shall provide payment for the dollar match to the AUTHORITY within 30 calendar days of receipt of an invoice.

G. PARTICIPATING AGENCIES that have included an in-kind services match as identified in Attachment B shall provide documentation of conformance as part of the semi-annual review process.

H. To waive all fees associated with any local agency permits that may be required of the OCTA Consultant, sub – consultants, and/or service or equipment providers in the performance of this project.

I. PARTICIPATING AGENCIES shall provide updates to the AUTHORITY on the PROJECT as part of semi-annual review process until completion of the three year PROJECT grant period. Documents to be provided include, but are not limited to, payroll records, contracts, and purchase orders.

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J. PARTICIPATING AGENCIES shall continue Ongoing Monitoring and Maintenance after the three year grant period is complete and continue until the end of the PROJECT per additional Maintenance of Effort as specified in the APPLICATION.

ARTICLE 6. DELEGATED AUTHORITY

The actions required to be taken by PARTICIPATING AGENCIES in the implementation of this Agreement are delegated to their respective City Manager/County Executive Officer, or designee and the actions required to be taken by AUTHORITY in the implementation of this Agreement are delegated to AUTHORITY's Chief Executive Officer or designee.

ARTICLE 7. AUDIT AND INSPECTION

AUTHORITY and PARTICIPATING AGENCIES shall maintain a complete set of records in accordance with generally accepted accounting principles. Upon reasonable notice, PARTICIPATING AGENCIES shall permit the authorized representatives of AUTHORITY to inspect and audit all work, materials, payroll, books, accounts, and other data and records of PARTICIPATING AGENCIES for a period of five (5) years after final Closeout of PROJECT, or until any on-going audit is completed. For purposes of audit, the date of completion of this Agreement shall be the date of AUTHORITY's acceptance of Closeout of Project and Final Report into the OCfundTrAcker System. AUTHORITY shall have the right to reproduce any such books, records, and accounts. The above provision with respect to audits shall extend to and or be included in contracts with PARTICIPATING AGENCIES' contractor.

ARTICLE 8. INDEMNIFICATION

A. To the fullest extent permitted by law, PARTICIPATING AGENCIES' shall defend (at PARTICIPATING AGENCIES' sole cost and expense with legal counsel reasonably acceptable to AUTHORITY), indemnify, protect, and hold harmless AUTHORITY, its officers, directors, employees, and agents (collectively the "Indemnified Parties"), from and against any and all liabilities, actions, suits, claims, demands, losses, costs, judgments, arbitration awards, settlements, damages, demands, orders, penalties, and expenses including legal costs and attorney fees (collectively "Claims"), including but not limited to Claims arising from injuries to or death of persons (PARTICIPATING AGENCIES's employees

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included), for damage to property, including property owned by AUTHORITY, or from any violation of any federal, state, or local law or ordinance, alleged to be caused by the negligent acts, omissions or willful misconduct of PARTICIPATING AGENCIES, its officers, directors, employees or agents in connection with or arising out of the performance of this Agreement.

B. To the fullest extent permitted by law, AUTHORITY shall defend (at AUTHORITY's sole cost and expense with legal counsel reasonably acceptable to PARTICIPATING AGENCIES), indemnify, protect, and hold harmless PARTICIPATING AGENCIES, its officers, directors, employees, and agents (collectively the "Indemnified Parties"), from and against any and all liabilities, actions, suits, claims, demands, losses, costs, judgments, arbitration awards, settlements, damages, demands, orders, penalties, and expenses including legal costs and attorney fees (collectively "Claims"), including but not limited to Claims arising from injuries to or death of persons (AUTHORITY's employees included), for damage to property, including property owned by PARTICIPATING AGENCIES, or from any violation of any federal, state, or local law or ordinance, alleged to be caused by the negligent acts, omissions or willful misconduct of AUTHORITY, its officers, directors, employees or agents in connection with or arising out of the performance of this Agreement.

C. The indemnification and defense obligations of this Agreement shall survive its expiration or termination.

ARTICLE 9. ADDITIONAL PROVISIONS

A. Term of Agreement: This Agreement shall be effective on _____20__, and shall be in full force and effect for 48 months through December 2018.

B. Termination: In the event either Party defaults in the performance of their obligations under this Agreement or breaches any of the provisions of this Agreement, the non-defaulting Party shall have the option to terminate this Agreement upon thirty (30) days' prior written notice to the other party.

C. AUTHORITY and PARTICIPATING AGENCIES shall comply with all applicable federal, state, and local laws, statues, ordinances and regulations of any governmental authority having jurisdiction over the PROJECT.

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D. Legal Authority: AUTHORITY and PARTICIPATING AGENCIES hereto consent that they are authorized to execute this Agreement on behalf of said parties and that, by so executing this agreement, the parties hereto are formally bound to the provisions of this Agreement.

E. 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.

F. 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.

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

J. 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.

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

To HUNTINGTON BEACH:	To COSTA MESA:
City of Huntington Beach	City of Costa Mesa
2000 Main Street Huntington Beach, CA 92648	77 Fair Drive P.O. Box 1200 Costa Mesa, CA 92686
Attention: William Janusz Principal Civil Engineer	Attention: Raja Sethuraman Transportation Services Manager
Tel: 714/374-1628	Tel: 714/754-5032
Email: wjanusz@surfcity-hb.org	Email: raja.sethuraman@costamesaca.gov

To AUTHORITY:
Orange County Transportation Authority
550 South Main Street Orange, CA 92863-1584
Attention: Venita Anderson Senior Contracts Administrator
Tel: 714/560-5427
Email: vanderson@octa.net

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This Agreement shall be made effective upon execution by both parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement No. **C-3-2086** to be executed on the date first above written.

CITY HUNTINGTON BEACH

By: _____
Connie Boardman
Mayor

ORANGE COUNTY TRANSPORTATION AUTHORITY

By: _____
Darrell Johnson
Chief Executive Officer

ATTEST:

By: _____
Joan L. Flynn
City Clerk

APPROVED AS TO FORM:

By: _____
Kennard R. Smart, Jr.
General Counsel

APPROVED AS TO FORM:

By: _____
Jennifer McGrath
City Attorney

APPROVAL RECOMMENDED:

By: _____
Kia Mortazavi
Executive Director, Planning

Dated:_____

Dated:_____

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This Agreement shall be made effective upon execution by both parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement No. **C-3-2086** to be executed on the date first above written.

CITY OF COSTA MESA

By: _____
James M. Righeimer
Mayor

ATTEST:

By: _____
Brenda Green
City Clerk

APPROVED AS TO FORM:

By: _____
Tom Duarte
City Attorney

Dated: 12/18/13

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SCOPE OF WORK

Adams Avenue Corridor

TRAFFIC SIGNAL SYNCHRONIZATION PROJECT

The Orange County Transportation Authority (Authority or OCTA) desires to provide the components necessary to improve and enhance signal timing and synchronization services and operations for all signalized intersections on the Adams Avenue Corridor Traffic Signal Synchronization Project (PROJECT). This Scope of Work (SOW), as Attachment A to the Cooperative Agreement C-3-2086, includes all written text plus tables and maps showing locations for construction, inclusive.

PROJECT DESCRIPTION – GENERAL PROVISIONS

The PROJECT shall be completed in two distinct phases: Primary Implementation and On-going Monitoring and Maintenance, respectively.

The On – Call Traffic Engineering Consultant (CONSULTANT) assigned the Contract Task Order (CTO) for this PROJECT shall complete Primary Implementation phase within one year of Notice to Proceed. Upon acceptance of the Primary Implementation phase by the PARTIES, CONSULTANT shall then commence the Ongoing Monitoring and Maintenance phase. Ongoing Monitoring and Maintenance will have a duration of 24 months. PROJECT Closeout of the total three year PROJECT length shall occur upon receipt of Final Report and acceptance by all PARTIES.

The PROJECT length is five (5) miles and includes twenty-three (23) signalized intersections. The two (2) Orange County participating agencies are the City of Huntington Beach (applicant agency) and the City of Costa Mesa (AGENCIES). The street was proposed for synchronization by the City of Huntington Beach as part of the 2013 Call for Projects for Project P corridors from Renewed Measure M (M2). The term PARTIES shall refer to all participating AGENCIES and OCTA. Caltrans is not a participating agency, but owns intersections on the corridor. All work performed on the PROJECT at Caltrans locations will be considered a PROJECT Contract Line Item. The AGENCIES have designated OCTA to act as LEAD AGENCY for this PROJECT.

Traffic Signals to be synchronized along the corridor are controlled by these AGENCIES. The AGENCIES along the corridor utilize several different types of controllers, including Type 170E, Type 2070, and NEMA TS - 1 or 2, and Advanced Transportation Controller (ATC) each with their own respective firmware or operating systems and characteristics. The respective agencies also interface with these controllers utilizing unique Central Systems and are planning on expanding/extending those systems onto this corridor.

The main goals and objective of this project is to:

- Perform an operations and timing analysis to develop and implement optimized traffic signal synchronization timing, including the development and implementation of timing plans at all signalized intersections;
- Determine and make recommendations for all traffic signal equipment and infrastructure related solely to improve and/or enhance synchronization and overall corridor operational efficiencies; and

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- Upon approval by the owning AGENCY and OCTA, procure, furnish and install all approved infrastructure improvements for PROJECT.

The implementation of the new optimized timing and infrastructure improvements will:

- Provide signal synchronization timing for prevailing traffic patterns;
- Maximize the number of intersections traversed on a green indication vs. those stopped by a red indication;
- Reduce stops, decrease travel times, and reduce overall delay;
- Reduce emissions and Green House Gases (GHG); and
- Provide a continuing foundation for interjurisdictional cooperation in coordination of interactive but autonomous local AGENCY traffic signal systems.

The following specific tasks are required to be performed in the course of providing service for the traffic signal coordination project. Tasks are listed in sequential order for clarity. However, some tasks may run concurrently or commence prior to the order listed.

Task 1: Project Management

Task 1: Project Management is ongoing throughout the duration of the PROJECT. This task includes day-to-day project management, such as meetings, progress reports, tracking of schedules, invoicing, and overall administration of the PROJECT. The project management team, comprised of Authority personnel including internal on – call consulting support firms, and the On–Call Traffic Engineering Consultant (CONSULTANT), acts as an extension of the Authority staff and will act in that capacity at meetings with the respective corridor AGENCIES. The following list is a minimum of what is required of this task:

1. The selected CONSULTANT for PROJECT shall prepare a detailed Project Management Plan (PMP) that includes budget and schedule estimates for all of the tasks described in the SOW, providing specific project milestones for review and approval by the Authority Project Manager (APM), Project Manager III – Regional Modeling/Traffic Operations, or designated representative. These items shall be detailed and include expected meetings, activities (by work task, whether performed by CONSULTANT team or by others), start dates, activity durations, product submittal dates, relationships among work tasks (including critical path items), and a detailed GANT flow chart for the project tasks, and float time. The PMP shall also define the roles of the Project Manager, Project Assistant, and Project Manager's Reporting Contact Person, as well as their corresponding contact information. CONSULTANT shall finalize the report based on comments received from the project sponsor, other involved AGENCIES, and APM and/or Authority staff.

2. CONSULTANT shall lead a two (2) stage Project Kick-Off Meeting with the APM and AGENCY representatives.

    a. The first stage will be to kick-off the project with the APM; establish communication channels and protocols; discuss the SOW, schedule, and budget; gather available information; and obtain a thorough understanding of the goals for the project. Specific topics to discuss include data collection needs, specific Traffic Signal Timing Optimization software programs specified herein, and specific construction items and procurement methodologies, and PROJECT schedule.

b. The second stage of the meeting will be the PROJECT Traffic Forum with the CONSULTANT, APM, and AGENCY representatives that have signalized intersections along the PROJECT. Data collection needs and requirements shall be outlined to the involved AGENCIES. CONSULTANT shall notify each AGENCY of the type of work, and when the work is to be performed within that AGENCY. CONSULTANT shall notify each participating AGENCY any and all documents that need to be produced pertaining to the construction of the facilities and the coordination, including but not limited to: as-built drawings, new Plans, Specifications and Estimates for new construction to be built as part of this project (PS&E), Intersection Timing Charts, Existing Synchro Models, Aerial photos, ADT and TMC data, etc. The APM may assist in this endeavor to facilitate time constraints.

3. CONSULTANT shall lead project meetings as directed by the Authority to include the CONSULTANT staff, APM, and other project related participants. The purpose of these meetings will be to ensure that proper input is being received and included in the work effort by CONSULTANT and the Authority.

   a. CONSULTANT shall prepare agendas, provide status updates, discuss the progress and direction of the work, and provide notes of these meetings as directed by the Authority to all participants. These meetings will also serve to provide feedback between the project development team and CONSULTANT regarding specific issues of the effort, including facilitating the development of measures of effectiveness, construction alternatives and mitigations, and as specified in later tasks.

4. CONSULTANT shall attend and be an active presenter at the Authority-led Traffic Forum (formerly ITS Roundtable), updating the group on the effort, its status, and other items as determined by Authority staff. The Traffic Forum is a semi – annual forum envisioned to further communication and information exchange between the Authority and the local AGENCIES regarding signal coordination and ITS.

5. CONSULTANT shall attend and present at four (4) Board/Committee meetings to summarize the findings. CONSULTANT shall attend and present at other AGENCY committee meetings, and intergovernmental meetings as directed by the Authority. The purpose of these meetings may be to inform attendees about the project, signal synchronization in general, the PROJECT potential strategies, and other relevant information.

   a. At a minimum, a total of 10 meetings (this may be adjusted upon agreement of the PARTIES), 2 Board, 2 Committee, and 6 project team and other meetings shall be used for scheduling and budgeting purposes.

Deliverables – Task 1:
1. Lead a 2 Stage Project Kick-off Meeting and prepare agenda and meeting materials.
2. Detailed Project Management Plan – one per participating party.
3. Monthly progress reports (electronic master and two copies) including status of the work effort and updated schedule. Draft and Final Project Reports.
   a. Consultant shall also submit an informal weekly summary of work performed in text, rich text, or MS Word formats for OCTA internal usage.

b. Monthly progress reports to AGENCIES upon request.

4. Attend Monthly project team meetings and prepare meeting materials, including agenda, action items, graphics, presentation aides, and notes.
5. Electronic versions of all data files as directed by Authority.
6. Graphics and presentation aides required for all meetings.
7. All documents provided in electronic form should be those currently used by OCTA: MS Office 2010 format, and Adobe Acrobat pdf files.
8. All electronic data produced for this project shall be provided on CD-R, Flash Media, DVD-R or similar hardware non-volatile memory device.
9. All correspondence shall include as a recipient the project mailbox at OCTA; AdamsAve.TSSP@octa.net
10. In addition, during the course of the project, SharePoint and FileZilla systems managed by OCTA, may be employed for file transfer, etc.

Task 2: Data Collection

CONSULTANT shall collect the following data necessary to thoroughly understand existing traffic conditions in the study area and be able to develop optimal time-of-day traffic signal coordination plans, if applicable.

1. From the involved AGENCIES and or Authority, CONSULTANT shall collect existing timing charts/sheets, existing coordination plans, traffic as-built drawings, aerial photos, maps, traffic collision data as available, and collision diagrams for the study intersections, if available. CONSULTANT shall also collect any of the shelf plans for construction and all traffic signal coordination/synchronization related Plans, Specifications and Estimates (PS & E) for the corridor. CONSULTANT, if requested by the involved AGENCY, will provide their own staff to review available records/plans and request copies of needed records/plans with minimal disruption to the involved AGENCY.

2. From the involved AGENCIES, CONSULTANT shall collect signal timing and signal priority preferences, including, but not limited to, those related to pedestrian and bicycle timing, phase sequence modifications and preferences, and special operations such as conditional service, coordination preferred phase re – service, and ring – barrier logic, as well as the timing optimization software preference.

3. CONSULTANT shall conduct seven-day 24-hour machine counts along each 1 mile segment of PROJECT. Additionally, CONSULTANT will collect 24-hour vehicle classification counts using a machine at five (5) locations on PROJECT to determine heavy vehicle (truck) percentage information. Data obtained from Saturday and Sunday counts will determine the necessity of weekend signal timing. All count locations will be approved by the PARTIES prior to collection.

4. CONSULTANT shall conduct weekday and weekend peak period turning movement counts (TMC) at each and every one of the PROJECT signalized intersections (see Page A-20, Node Map with Construction Notes), including pedestrian and bicycle counts. No other types of TMC classification shall be necessary. Weekday counts shall be conducted for two hours of each peak period (AM, mid-day, and PM). If a need is determined, after analyzing the seven-day 24-hour machine counts, weekend TMC counts shall be conducted at each and every one of the PROJECT signalized intersections for a single two hour Saturday mid-day peak period. For intersections with more than 2 through lanes in any of the approaches, a minimum of 2 people per intersection is required. Video data collection may be utilized for this function and will negate the personnel requirements.

   a. CONSULTANT, APM, and Local AGENCIES shall determine locations for special video recording of bicycle and pedestrian activity for specific data collection in support of upcoming changes to the CA MUTCD. Video recording and data reduction shall be required at a minimum of 6 locations. Traffic Forum will approve the locations.

b. CONSULTANT and designated sub consulting Traffic Counting Firm shall be cognizant of the fact that queuing of right turn vehicles or left turn vehicles that do not pass the limit line for counting purposes during the count time period shall also be counted as part of the quarter hour period in which they occur. *(This means that if a queue develops that is not served in one cycle and the counting period is ending, the number of un served cars in the queue shall be included in that 15 minute period. It shall not be included in the succeeding 15 minute period).*

c. TMCs that are ≤ 2 years of age, and supplied by an alternate viable source, for an intersection, may be used in lieu of a manual count. Per the CTFP Guidelines and the precepts of the Measure M2 Ordinance, TMC's supplied by a PARTY cannot be used as a credit against match funding requirements.

4. All counts shall be summarized in MS Excel 2010 format. Copies of the raw data count sheets will be provided to each involved AGENCY and APM. (See CTFP Guidelines, page 8 – 14, for ROADS requirements)

Deliverables – Task 2:

1. Report summarizing data collection effort, including intersection turning counts, traffic collision analysis, current traffic signal timing patterns, and drawings of intersection features.
2. Electronic versions of all data files (See CTFP Guidelines, page 8 – 14, for ROADS requirements)
3. Raw video footage of intersections receiving Video Counting to OCTA only.
4. Deliverables of Task 1 and Task 2 to AGENCIES shall be limited to political boundaries.

Task 3: Field Review, Plans Specifications and Estimates, Design Standards and Requirements

1. CONSULTANT shall review the geometric layout, existing traffic signal equipment and signal synchronization related infrastructure, and identify any deficiencies for each intersection and along the whole corridor. The review shall include an assessment of the existing intersection geometry, traffic conditions, and traffic signal control equipment and telemetry/interconnect facilities along the corridor and of each intersection using observation, available as-built plans, consultation with the local AGENCIES, and AGENCY supplied aerial photos. CONSULTANT shall use a standard field form developed by CONSULTANT for this review that accounts for each piece of intersection data required. With permission of the local AGENCIES, CONSULTANT shall inspect the interior of each traffic control cabinet, inspect the telemetry systems and determine their respective condition and make recommendations for equipment upgrades. CONSULTANT is advised that certain infrastructure and equipment upgrades have been identified previously by the AGENCIES and reviewed by the APM and shall be a requirement of this project. These items are identified subsequently within this document.

2. CONSULTANT shall also include an identification of all planned and programmed improvements (widening projects, intersection improvements, etc.) on the study corridor. The identification of these projects should be at minimum a list summarizing all improvements.

3. Key components of the corridor review shall include, at minimum, the following:

    a. Corridor lane configurations and lane widths;
    b. Existing street and lane geometries, curbs, bus turnouts, and medians;
    c. Upcoming improvements to the corridor;
    d. All Traffic Control Devices related to traffic signal operations at all PROJECT intersections, approaches to cross streets, and along PROJECT corridor;
    e. Traffic signal control device information, such as type of device, brand and make, condition of equipment. Intersection Photographic Documentation Log shall be required;
    f. Existing signal operation characteristics – signal phasing, cycle lengths, phase sequence alteration, and protective-permissive, etc.;
    g. Existing controller and telemetry/interconnect equipment, if any;
    h. Existing time-referencing setup, if any;
    i. Existing Central Master Equipment, if any;
    j. Existing Field Master Equipment, if any;
    k. Open each controller cabinet and take digital photos of all equipment inside;
    l. Note any deficiencies of traffic control equipment at each intersection; and
    m. Note the maintenance condition or existence of the traffic signal equipment, controllers and synchronization related infrastructure.

CONSULTANT shall also investigate factors that are expected to affect signal progression including, but not limited to: intersections with high pedestrian or bicyclist volumes; over-saturated intersections; uneven lane distribution; high volumes of trucks and buses; high-volume un-signalized intersections, including interchanges; parking maneuvers; presence and location of bus stops; differing signal timing patterns among AGENCIES; etc.

With the view of assisting, enhancing, and improving the traffic operations along this corridor, CONSULTANT shall identify any deficiencies of the existing traffic signal control and telemetry infrastructure and geometric layout, and provide recommendations towards simple solutions that may be implemented to correct such deficiencies. CONSULTANT shall prepare a report summarizing the findings of the field review.

If deemed necessary by the APM or through request of an AGENCY through the APM, CONSULTANT shall prepare any design construction documents in the form of sketches to full-fledged Plans Specifications and Estimates (PS & E). CONSULTANT shall prepare such plans for use in the construction of the PROJECT per each respective AGENCY's standards. CONSULTANT shall supply such documentation to the APM and the AGENCY owning the affected facility for approval prior to commencing any construction. Construction documents will be used during the course of construction by AGENCY for inspection services. CONSULTANT shall modify documents subject to approved construction completion to owning AGENCY as an As – Built document. Cost for production, reproduction, inspection services, and as – built services are part of the Full Fixed Price of the Contract and/or CTO and no additional compensation shall be allowed, therefore.

CONSULTANT will be required to design, procure, install, construct, and implement all desired components of the PROJECT as described in this document. CONSULTANT shall negotiate with OCTA and AGENCIES at the beginning of PROJECT to determine what actually shall be installed and implemented to maintain budgetary control.

CONSULTANT, if required to install or replace any traffic signal control equipment whether local intersection or central systems, shall perform due diligence in the determination of what types of systems are to be installed. NTCIP compatible systems with Center to Center (C2C) communications ready capability shall be installed. System Telemetry C2C or to intersections from Central or peer to peer shall be Internet Protocol (I.P.) based Ethernet over Copper, Ethernet over Fiber, or hybrid of those two. Serial Communications shall not be allowed. Closed Loop Systems shall not be continued, supplied nor installed without special consideration and approval by OCTA and APM. Sole Source systems or systems that are a linked subset or part of a sole source central system shall not to be installed unless verification of need can be demonstrated to OCTA APM and CAMM Contract Administration per OCTA standards and policies. In the circumstance where a local intersection system controller is a necessary sole source and there is no alternate substitute, the CONSULTANT shall procure the sole source local intersection controller unit. The controller assembly and appurtenances housing the local intersection system controller may be supplied by others.

Deliverables – Task 3:

1. Report documenting:
    a. The field review (including photo logs)
    b. Recommended mitigations to perceived problems
2. Electronic versions of the report and all data files
3. Necessary Construction Documentation

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Task 4: 'Before' Study

CONSULTANT shall conduct a 'Before' field study report representative of the times and days for which synchronization plans will be developed. The report shall identify Measures of Effectiveness (MOE) to evaluate the effects of the synchronization plans. MOE's will likely include traffic flow, travel time, average speed, number of stops per mile, number of intersections traversed on green vs. stopped by red (Greens per Red) *(note: Average Speed, Stops per Mile, and Greens per Red are the new OCTA MOE, Corridor Synchronization Performance Index (CSPI)),* fuel consumption reduction, pollution reduction, and other pertinent items. The CONSULTANT shall include the CSPI as part of the MOEs as they are easily identifiable by lay persons relevant to demonstrating corridor improvements. The identified MOE's shall be compiled for the corridor using the floating car method and from either PTV Vistro 2 or Synchro 8.0 and from Tru-Traffic Version 10.0. At least five (5) runs will be completed in each direction for each of the three weekday timing plans (a.m., midday, and p.m.), and at least five (5) runs will be completed in each direction during the Saturday midday plan. Number of runs shall be consistent for both directions and time periods. Based on engineering judgment and in conjunction with APM approval, CONSULTANT should subdivide the corridor into contiguous segments for the 'Before' and 'After' runs. CONSULTANT shall notify and receive approval from PARTIES on number of runs and contiguous segments to be accomplished.

Project travel-time data shall be collected using the floating car method, a laptop computer, a GPS receiver unit, and Tru-Traffic v 10.0, only.

The report shall address likely optimization strategies for signal synchronization, specifically focusing on how to consider PROJECT optimization: end – to – end vs. coordinated zones. Ideally, the analysis should include the floating car data and data collected as part of Task 2. However draft versions of the report can include previously collected traffic, travel time, or other data, if considered relevant and available. The evaluation report shall provide a very good understanding of traffic patterns on PROJECT throughout the weekdays and throughout the weekend. Tru-Traffic Version 10.0 has the OCTA Corridor Synchronization Performance Index (CSPI) Calculation formulas available for use as well as the calculations for the latest emissions for GHG and other Measures of Effectiveness (MOE). These functions shall be utilized by the CONSULTANT in the draft preliminary, draft final and final reports as specified herein.

It is highly recommended that the following modules be downloaded and installed as part of Tru Traffic prior to the start of the 'Before' Runs:

- OCTA CSPI.urc,
- Emissions using CMEM for Vehicle Category 4 rev2.urc
- FuelConsumption&Emissions_mph.urc,
- CumulativeAvgSpeedLOS_mph.urc

The CONSULTANT shall perform due diligence with regard to existing and proposed timing operations on arterials that intersect with the PROJECT.

CONSULTANT shall prepare a memorandum and present the findings to the Authority outlining the findings of the 'Before' field study. The Authority may request a presentation on the traffic patterns on PROJECT Scope and possible synchronization strategies to address the traffic patterns (optimizing the fill corridor versus optimizing segments identified with natural traffic breaks) to provide direction on the preferred signal timing strategy. Any requested presentation shall include as much of the turning movement, 24-hour machine counts, travel time, earlier city counts, etc. as available. CONSULTANT shall finalize the memorandum based on comments received from the Authority Project Manager and other involved AGENCIES and after incorporating the full set of data collected by CONSULTANT as part of Task 2.

Deliverables – Task 4:

1. A memorandum documenting the results of the 'Before' study is to be distributed to the APM and AGENCIES as a discussion item. More detailed analysis of project results shall be included in Task 8: Project Report.
2. Electronic versions of all data files and memorandum to all PARTIES and AGENCIES.

Task 5: Signal Timing Optimization and Implementation

CONSULTANT shall work with the APM and AGENCIES to develop a model of the study area and calibrate the model based on field observations of existing conditions. Signal synchronization optimization shall be conducted in PTV Vistro 2 and/or Synchro 8.0. The corridor model must be consistent with all aspects and seamlessly interface and interlace with the County Wide Synchro Network as administered by the GIS/ROADS database. The PROJECT shall be developed with PTV Vistro 2 and/or Synchro 8.0 and shall be easily imported and/or exported to and from those programs' respective database. Node or intersection numbering scheme must remain consistent with ROADS. Any modifications, additions, or removal of intersections or roadway segments (nodes or links) must be approved by the Section Manager III – Planning/GIS, Planning and Analysis for OCTA. CONSULTANT shall calibrate the model based on travel time, delay studies, field observations of queue lengths, and saturation flows for heavy movements at key intersections. It is recommended that the CONSULTANT utilize the Bing™ Map feature from PTV Vistro 2 or Synchro 8 in the development of the base layout files. Tru-Traffic Software version 10.0 or latest release should be used, subsequent to initial optimization, to augment and enhance green band throughput (offset, splits, phase rotation); and, to incorporate specific off band coordinated traffic platoons into the corridor operation as required by data analysis and field observations.

The CONSULTANT may use their own numbering scheme for use in Synchro analysis if the volume balancing and other factors becomes an issue with node numbering in regard to OCTA ROADS Database. If the CONSULTANT chooses to use this methodology, the requirement for submittal of the database in the ROADS format is still required. The extra node numbering used for volume balancing nodes and other factors must be removed upon final submittal of the Synchro document that will be incorporated into the ROADS database. These operations will be closely monitored and controlled through the APM and the Section Manager of the GIS department of Planning.

CONSULTANT shall evaluate signal timing and coordination parameters with consideration for the following:

- Optimize coordination timing using:
  - Modified Phase Sequence Rotation
    - Lead/Lead
    - Lead/Lag
    - Lag/Lead
    - Lag/Lag
    - Leading and Lagging the same phase within a given cycle
  - Protected/Permissive operations
    - Phasing will be lead/lead only; or,
    - Flashing Yellow Arrow technique may be employed for lead/lag if controlling/owner AGENCY permits its use
  - Harmonic cycling – double, half, third or other harmonic multiple,
  - Other innovative techniques upon approval of the owning agency and the APM

CONSULTANT will measure the saturation flow rates at key project intersections during one peak hour where the overall intersection volume-to-capacity ratio is greater than or equal to 0.8 as a calibration for the Synchro model.

- Timing parameters which provide adequate splits and corresponding offsets which fully accommodate pedestrians within the split time. CONSULTANT shall take into consideration the pedestrian timing parameters used by the local AGENCY on a case by case basis. Pedestrian Intervals shall be examined and retimed to current adopted standards by each respective AGENCY. CONSULTANT should note that proposed new pedestrian timing standards have been approved at the Federal and State level. AGENCIES must be contacted and provide policy and guidance to the CONSULTANT for calculations regarding these timing intervals.

- Timing parameters which incorporate minimal pedestrian activity to provide the optimum vehicle split and offset timing and accommodate pedestrians using various pedestrian timing adjustment techniques for pedestrian splits during coordination.

- Appropriate cycle lengths consistent with the goals of this effort. Additionally, CONSULTANT shall recommend time-of-day start and stop intervals for the various timing plans based on the identified peaks from the 24-hour machine counts, and field observation.

- CONSULTANT shall prepare, at minimum, a total of three (3) timing plans for a typical weekday which consider the following peak periods: AM PEAK, MID-DAY PEAK, PM PEAK and one (1) timing plan for a typical Saturday for a MID-DAY PEAK. Timing plans should be in both Synchro format and the preferred timing chart format of each local AGENCY.

CONSULTANT shall develop an operational model within SimTraffic. The operational analysis will be used to micro – simulate and analyze specific roadway segments with queuing, spill back, starvation, storage blocking, and other queuing interactions, and to analyze and mitigate the conditions discovered by CONSULTANT and/or APM and AGENCIES in field reviews.

CONSULTANT shall develop optimized signal timings using the results from PTV Vistro 2 and/or Synchro/SimTraffic 8.0, in conjunction with Tru-Traffic version 10.0 or latest released version and recommend any changes to the signal phasing at each signalized intersection that may improve the efficiency of operations. Output of the modeling software shall not be utilized without proper QA/QC. Engineering judgment shall be utilized to determine final operational parameters. The recommended signal timing plans shall be reviewed by the APM and local AGENCY staff.

Time of Day/Day of Week (TOD/DOW) Timing Plan selection schedules shall be developed that reflect actual traffic conditions within contiguous segments or down to the individual intersection as necessary. The CONSULTANT, in cooperation with the APM, and upon concurrence of the Traffic Forum, shall develop a real time traffic responsive operations (TRO) program to facilitate timing plan selection based on data obtained from the project. The program shall select the timing plans relative to volume, occupancy, speed, if available, and directional flows on a 24hour/7 days per week schedule. All forms of detection for all modes of travel may be employed in this endeavor. A library of timing plans shall be developed to facilitate this requirement. A static TOD/DOW schedule shall be developed and set ready as backup in case of detection failures within the TRO program.

Upon approval of the optimized signal timings by the Authority and the cities, the CONSULTANT shall implement, or assist local AGENCIES staff in the implementation of new signal timings either through the central traffic signal system (if available) or direct implementation at the intersection controller units. CONSULTANT shall use existing traffic signal interconnection systems, where they exist, and, as a result of the inter-jurisdictional nature of the project, shall implement time-based signal coordination techniques across signals controlled by different AGENCIES.

As the project will be using time-based signal coordination, the CONSULTANT shall evaluate the current time-referencing of all traffic signal controllers and recommend a corridor-wide strategy to ensure that all traffic signal controllers are on synchronized time clocks linked to a master time source. CONSULTANT shall verify that all Central Master or Local Field Master, and/or Local Controller unit clocks are:

- operating properly and are synchronized;
- and that all clocks are referencing a Coordinated Universal Time (UTC) and the start for all cycle length calculation shall be 12:00AM – Midnight.

CONSULTANT shall fine-tune, or assist local AGENCY staff in the fine-tuning of, the new settings and timings. CONSULTANT shall fine-tune timings in the field and record all changes. Fine-tuning shall be conducted during times and days that are representative of the times and days for which coordination plans were developed.

CONSULTANT shall utilize Tru – Traffic Version 10.0 or later software on a laptop with appropriate GPS device and use the floating car method utilized in the PROJECT 'Before' Study to fine tune the corridor operation and verify integrity of system intersection clocks. Synchronized Video shall be used to compare actual conditions to anticipated conditions dictated by the Tru-Traffic time space diagram so that any anomalies may be corrected prior to 'After' Study tasks. (Note: Synchronized video may be done in defined segments as determined by the Traffic Forum. See Task 6 below.)

Synchronized Video of 'Before' and 'After' runs shall be utilized in the development of presentations to City Council or Committee meetings.

CONSULTANT shall prepare a memorandum detailing the signal timing optimization and implementation, including detail on the Tru-Traffic/OCTA CSPI and other MOE's and PTV Vistro or Synchro/SimTraffic MOE results. CONSULTANT shall finalize the memorandum based on comments received from the PROJECT AGENCY applicant or sponsor, the other involved AGENCIES, and the APM.

Deliverables – Task 5:

1. All optimized and synchronized traffic signal timing plans, including existing corridor conditions and improved corridor conditions.
2. Field implementation of optimized traffic signal plans for existing corridor conditions, including all required fine tuning and Traffic Responsive Operations parameters.
3. Evaluation, recommendation, and installation of a master synchronized time-referencing system.
4. Electronic versions of Files from all Traffic Signal Modeling Software programs used in PROJECT
5. Electronic versions of all other data files and memorandums.

6. Memorandum documenting the signal timing optimization and implementation.
7. Deliverables to PARTIES shall be limited to one to three signalized intersections on each side of respective political boundaries.

Task 6: 'After' Study

The CONSULTANT shall conduct an 'After' field study representative of the times and days for which synchronization plans will be developed. The 'After' study must be conducted in the same manner and contain the same MOE's as the 'Before' study in order to evaluate the improvements of the synchronization plans. MOE's should be compiled for the optimized corridor using the floating car method output in Tru-Traffic and then from Synchro/SimTraffic 8.0 or from PTV Vistro 2. At least five (5) runs will be completed in each direction for each of the three weekday timing plans (a.m., midday, and p.m.), and at least five (5) runs will be completed in each direction during the Saturday midday plan.

Project travel-time data shall be collected using the floating car method, a laptop computer, a GPS receiver unit, and the methodologies and software to match the 'Before' study, exactly.

CONSULTANT shall prepare a memorandum comparing the results of the 'Before' and 'After' field study with reference to the specific MOE's and present the findings to the Board. CONSULTANT shall finalize the memorandum based on comments received from the APM and other involved AGENCIES.

Deliverables – Task 6:
1. Memorandum comparing the results of the 'Before' and 'After' studies, to be distributed to OCTA Board as an item. More detailed analysis of project results to be included in Task 8: project report.
2. Presentation to the Board of the 'Before' and 'After' study comparison.
3. Electronic versions of all data files and memorandum.

Task 7: Synchronization System Construction – Agency Specific

General:
All work and equipment supplied for PROJECT shall comply and be done in accordance with all provisions of 2010 Section 86 of the State of California Standard Specifications as amended herein and the State of California Standard Plans as amended herein or on Construction Plans for PROJECT.

CONSULTANT shall coordinate with each AGENCY of the PROJECT to assess special construction requirements, needs and desires, either known and proposed or previously unforeseen or unknown but necessary to complete the project including:

1. GPS time clocks at Central, Field Master, and Local Intersection Controller Assemblies;
2. The replacement and/or modifications to intersection controller assemblies and/or units;
3. New Central Systems or Modifications or upgrades from closed loop system to central system hardware, firmware, and software,
4. Modifications, additions; or repair of missing or damaged signal synchronization infrastructure and other assets to be determined. (See Exhibit B or Appendices for the matrix for each AGENCY as to what is currently proposed to be constructed. See Task 3: Field Review, Plans Specifications and Estimates, Design Standards and Requirements for allowed systems and sub systems, sole source, and design requirements for all equipment to be installed.); and

Attention is directed to Section 86 – 1.05 CERTIFICATE OF COMPLIANCE.

Section 86 – 1.05 CERTIFICATE OF COMPLIANCE is removed in entirety and replaced with Section 86 – 1.05 WARRANTIES, GUARANTIES and INSTRUCTION SHEETS as follows:

Manufacturers' warranties and guaranties furnished for materials used in the work and instruction sheets and parts lists supplied with materials shall be delivered to the owning AGENCY prior to acceptance of the project. CONSULTANT, sub – consultant, and vendors' of equipment and material on PROJECT shall provide to the owning AGENCY the following Warranties and Guaranties:

a. ONE (1) YEAR GUARANTEE on LABOR and MATERIAL for all equipment furnished, installed, and/or modified
b. THREE (3) YEAR GUARANTEE on Firmware and Software Patches, Fixes, Updates, and Upgrades for
   - Central Systems Control and Communications,
   - Field Master, and Local intersection controller units

Maintenance Contracts or extra fees for these specific tasks and deliverables shall not be allowed nor charged to any PARTY or AGENCY by either the CONSULTANT, his/her Sub – Consultants, and/or vendors/suppliers, either jointly or severally, of the specified systems and related components for this service or task.

Enforcement of Standard Warranties or Guaranties for hardware and software or firmware specified heretofore shall be the sole responsibility of the AGENCY receiving the equipment.

Attention is directed to Section 86 – 8 PAYMENT. Section 86 - 8.01 PAYMENT is included herein in entirety with the following additions:

> Add: All work and equipment supplied and/or necessary for PROJECT, including all labor and insurances, to make PROJECT operate as designed and intended shall be included in the lump sum price for PROJECT. No additional compensation for same shall be allowed, therefore. All work and equipment including labor and insurances for maintaining and operating existing electrical facilities including communications equipment shall be included in the lump sum price for PROJECT. No additional compensation for same shall be allowed, therefore. Electrical energy service costs and regular maintenance costs for PROJECT facilities under construction shall be borne by the owning AGENCY. Maintenance costs for PROJECT facilities caused by damage from public shall be borne by the owning AGENCY. Maintenance costs caused by damage from CONSULTANT or sub – consultants, and/or vendors shall be borne solely by CONSULTANT.

Deliverables – Task 7:

1. Procure and install any and all equipment as specified but within budget for the PROJECT as proposed in the Scope of Work and Attachments or Appendices.
2. Negotiate with APM and AGENCY representatives on alternative procurements or substitutions as deemed necessary during the course of the PROJECT.
3. AS BUILT Plans and Specifications.
4. All WARRANTIES and GUARANTIES as specified

Task 8: Continuing Signal Timing Support

CONSULTANT will provide "on-call" signal timing support services for a period of two years or 24 months following the implementation and fine – tuning of the final signal timing plans, Task 5, to address any future adjustments that may be needed during this period. Depending on the nature of the adjustment, CONSULTANT may accomplish the fine-tuning adjustments remotely from the CONSULTANT's office through the traffic management systems. During this 24-month period CONSULTANT will be prepared to review any project intersection requested by the PARTIES within (24) hours of written notice, including observing and fine-tuning the signal timing.

CONSULTANT will drive the length of the project arterial during all designated corridor synchronization timing plan hours of operation on a monthly basis in order to verify that the synchronization timing is working as designed, and complete any necessary adjustments. Monthly driving times will consist of a full 12-hour weekday and a 4-hour Saturday. CONSULTANT shall notify APM 24 hours prior to commencement of driving periods.

Deliverables – Task 8:

1. 24 months of on-call support and revised signal timing plans and memorandum documenting CONSULTANT recommendations and AGENCY actions
2. Electronic versions of all data files and memorandums.

Task 9: Project Report

At the end of the one (1) year implementation phase of the three (3) year contract period, CONSULTANT shall prepare a Final Report with an executive summary. The report shall provide complete documentation of the project, including, but not limited to, project objectives, project locations, project scope, findings, recommendations, implementation schedule, improvements accomplished, report on the Continued Signal Timing Support per Task 8, and procedures for continuing maintenance, surveillance, and evaluation of the coordinated signal system, work performed, data collected: 'before' and 'after' studies and project benefits achieved in terms of fuel savings, travel time, and other measurable parameters. The report shall document all planned and programmed improvements on the study corridor as well as recommendations for further infrastructure improvements that would likely improve the corridor signal coordination project results. CONSULTANT shall present the final report and results of the project to the Board and city councils as required. The report shall be completed in accordance with the current CTFP Guidelines.

The report shall include for each intersection the lane configurations; signal phasing, turning movement data, and cycle lengths for existing and proposed timings for all peak periods. In addition, in a separate binder, all the traffic signal phase sequences, signal timing plans, and pedestrian timings shall be documented. Finally, the report shall provide recommendations with cost and benefit estimates for future improvements to traffic signal infrastructure (signal controllers, vehicle detection, communications, etc.), intersection capacity (appropriate signal phasing, lane geometrics, and alleviation of physical bottlenecks that curtail arterial capacity), and traffic management strategies. These proposed improvements are beyond the scope of this project but should be useful in determining future enhancements to the corridor.

At the end of the three (3) year contract period, the Consultant shall prepare for OCTA the FINAL REPORT as required by the M2 Ordinance and Chapter 10 of the FY2013 CTFP Guidelines for Fiscal Year 2013. This report is a fill in the form type of report.

Deliverables – Task 9:

1. Draft and Final PROJECT Signal Synchronization Project Report (one electronic master, two hardcopies to Authority, and one hardcopy per AGENCY) and Presentations at the end of the one (1) year Implementation Phase.
2. Final Project Report per Chapter 10 of the FY2013 CTFP Guidelines.

Task 10: Traffic Signal Modeling Software Support

This Section is an optional line item depending on PROJECT costs and savings during the implementation phase.
CONSULTANT, in addition to specific needs of AGENCIES as listed on ***Pages A-19 to A-21*** *shall supply to OCTA or specified AGENCY, if funding is available, any upgrade or new licenses for the following software and manuals:*

Agency Name	Product Name	Quantity	Add License	Upgrade	New
Costa Mesa	PTV Vistro 2	1	No	No	Yes
Huntington Beach	PTV Vistro 2	1	No	No	Yes

Deliverables Task 10:
Software with licenses and manuals as specified

Adams Avenue - List of Intersections

Location	Adams @	Node #	Agency
1	Fairview Street	4514	Costa Mesa
2	Pinecreek Drive	4515	Costa Mesa
3	Harbor Boulevard	4517	Costa Mesa
4	Royal Palm Drive	4516	Costa Mesa
5	Mesa Verde East Drive	4518	Costa Mesa
6	Mesa Verde West Drive/Placentia Avenue	4519	Costa Mesa
7	Albatross Drive.Shantar Drive	4520	Costa Mesa
8	Ranger Lane	4111	Huntington Beach
9	Brookhurst Street	3947	Huntington Beach
10	Target	4112	Huntington Beach
11	Bushard Street	3948	Huntington Beach
12	Magnolia Street	3946	Huntington Beach
13	Newland Street	3945	Huntington Beach
14	Coldwater Lane	3868	Huntington Beach
15	Beach Boulevard	274	Huntington Beach
16	Delaware Street	3943	Huntington Beach
17	Lake Street	3944	Huntington Beach
Location	**Yorktown @**	**Node #**	**Agency**
18	Main Street	3940	Huntington Beach
19	Lake Street	3939	Huntington Beach
20	Delaware Street	3934	Huntington Beach
21	Florida Street	3871	Huntington Beach
22	Beach Boulevard	264	Huntington Beach
23	Newland Street	3935	Huntington Beach

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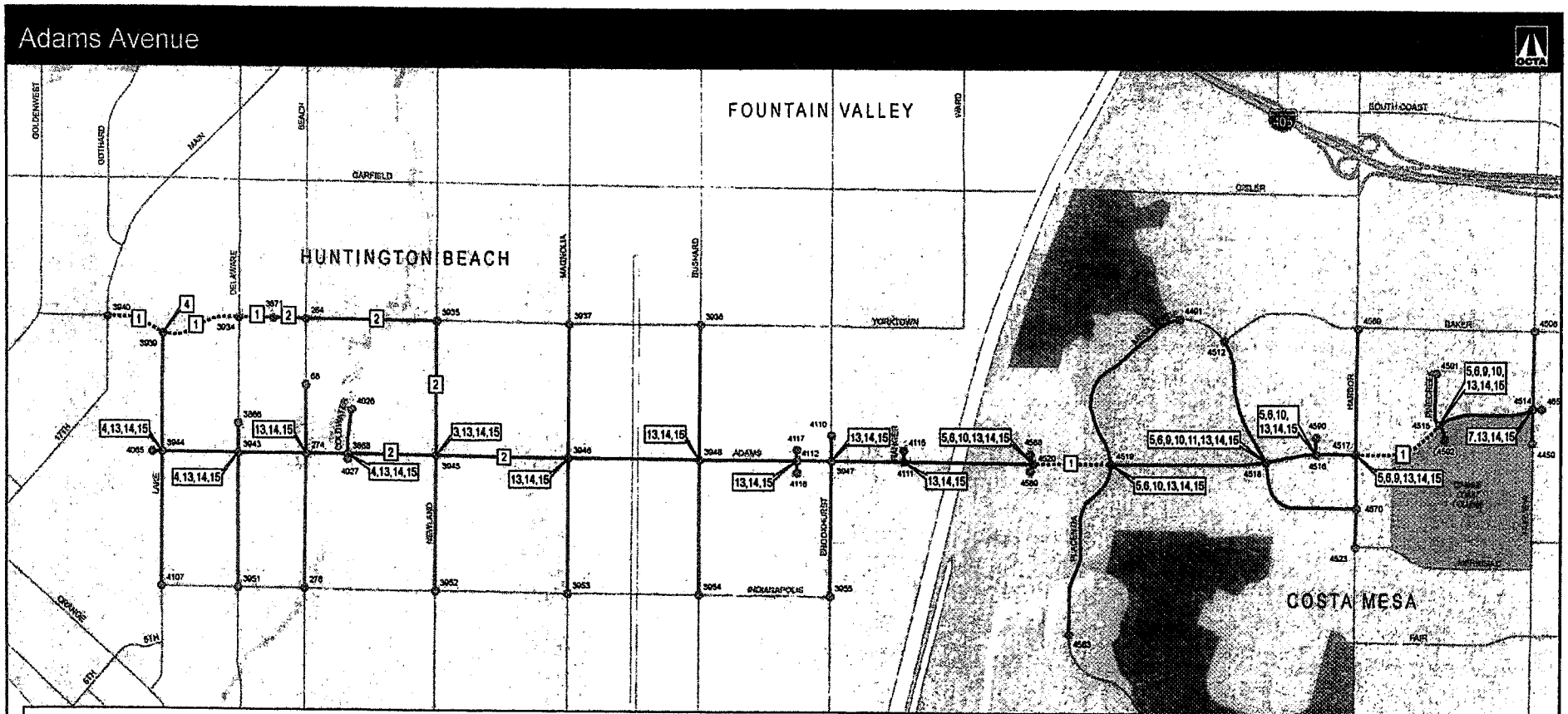

Construction Notes

All Work shall be performed per this Scope of Work and conform to the latest Caltrans State Standard Specifications (Section 86), State Standard Plans and appropriate Local Agency Standards for Traffic Signal and ITS Facilities infrastructure, and miscellaneous construction required as a part of the project. Consultant shall be required to provide full design documents for installation of items specified at the locations specified herein. All facilities installed as new and/or modified shall be required to operate as intended. Any equipment and/or labor required to make systems operational shall be included in the lump sum price for that location and no additional compensation shall be allowed, therefore. Notes 12 – 15 shall be inclusive for all PROJECT intersections including proximity intersections on a corridor intersecting street that are less than or equal to 1500' from the corridor centerline intersection.

- RTSSP Network Intersection
- Intersection on Communication Route
- RTSSP Adams Corridor
- [1] New Fiber Optic Cable
- [2] New Fiber Optic Cable and Conduit

Source: OCTA; ROADS

0 0.25 0.5 Miles

1. Furnish and Install 24 strand SMFO cable per Agency requirements in existing conduit.
2. Furnish and Install new 2" Schedule 80 PVC conduit with 24 strand SMFO cable with Type 5E Pullboxes. Pullboxes shall be maximum 400' on center.
3. Furnish and Install Ethernet Communications Hub
4. Furnish and Install Wireless Encom Telecommunications Radio System with all necessary mounting hardware, Ethernet Card, Antenna, and cable
5. Furnish and Install new systems controller unit per local agency's requirements.
6. Furnish and Install new telemetry interface panel and "D" Cable
7. Furnish and Install new Type P Controller Assembly with all new load switches, relays, flasher, detector amplifiers, telemetry interface panel and "D" cable, and system controller unit to interface with local agency's central system
8. Furnish and Install new Type P Controller Assembly with all new load switches, relays, flasher, detector amplifiers, telemetry interface panel and "D" cable. Reuse existing system controller unit and interface with local agency's central system
9. Furnish and Install new fiber distribution unit, drop cables, and splice enclosure in Controller assembly
10. Furnish and Install No. 5E Pullbox for Interconnect Cabling System
11. Relocate existing Controller Assembly to new location on new foundation. Rewire intersection, complete.
12. Furnish 24 hour 7 day automated Average Daily Traffic Counts at 5 locations; 3 of 5 locations are to have vehicle classification.
13. Furnish 3 – 2 peak hour period weekday and 1 – 4 peak hour period weekend turning movement counts including pedestrians and bicycles for all project intersections.
14. Furnish new optimized traffic signal synchronization/coordination plans for all project intersections for Morning, Mid-Day, Evening and Weekend peak hour periods. Includes Before and After Study and Final Report.
15. Furnish Operations and Monitoring Functions per the Scope of Work for a time period of 2 years from acceptance of Primary Implementation phase (Notes 1 – 14 inclusive).

June 11 2013

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Line Item	Agency	Adams Avenue @	Item Description	Unit	Qty	Unit Price	Total Cost
1	Huntington Beach	@Adams (Coldwater Lane to Magnolia), @Yorktown Ave. (Florida to Newland), @Newland St. (Yorktown to Adams)	Furnish and install conduit	LF	11200	$ 35.00	$392,000.00
2		@Adams (Coldwater Lane to Magnolia), @Yorktown (Main St. to Newland St. incl. entry into City Hall TMC -existing conduit frm Main to Florida), and @Newland Street (Yorktown to Adams)	Furnish and install SMFO Cable	LF	15600	$ 5.50	$ 85,800.00
3		Various locations	Furnish and install pullboxes	EA	55	$ 500.00	$ 27,500.00
4		7 locations	Furnish and install fiber patch panel, Ethernet, splice enclosure	EA	7	$ 5,800.00	$ 40,600.00
5		Newland	Furnish and install Communication hub	EA	1	$30,000.00	$ 30,000.00
6		Yorktown @ Lake	Furnish and install Encom Radio, Ethernet Card, Bracket & Antenna	LS	1	$3,500.00	$ 3,500.00
7		Lake	Furnish and install Encom Radio, Ethernet Card, Bracket & Antenna	LS	1	$3,500.00	$ 3,500.00
8		Delware	Furnish and install Encom Radio, Ethernet Card, Bracket & Antenna	LS	1	$3,500.00	$ 3,500.00
9		Coldwater	Furnish and install Encom Radio, Ethernet Card, Bracket & Antenna	LS	1	$3,500.00	$ 3,500.00

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10	Costa Mesa	Fairview	Furnish and install Type P Cabinet	LS	1	$22,000.00	$ 22,000.00
11		Pinecreek	Furnish and install Type P Cabinet	LS	1	$22,000.00	$ 22,000.00
12			Furnish and install Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution unit and drop cables	LS	1	$8,500.00	$ 8,500.00
13		Harbor	Managed Ethernet switch. Furnish and install Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution units, and drop cables	LS	1	$12,500.00	$ 12,500.00
14		Royal Palm	Furnish and install Type P Cabinet	LS	1	$22,000.00	$ 22,000.00
15			Furnish and install Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution unit and drop cables	LS	1	$8,500.00	$ 8,500.00
16		Mesa Verde East	Cabinet relocation. Furnish and install Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution unit, drop cables	LS	1	$40,500.00	$ 40,500.00
17		Mesa Verde West/Placentia	Furnish and install Type P cabinet, CCTV Camera, Managed Ethernet switch, Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution units, and drop cables	LS	1	$44,500.00	$ 44,500.00
18		Albatross/Shantar	Furnish and install Type P Cabinet	LS	1	$22,000.00	$ 22,000.00
19			Furnish and install Ethernet fiber switch and pigtails, ASC/3 controller, D-Panel, 6E Pullbox, splice enclosure, fiber distribution unit and drop cables	LS	1	$8,500.00	$ 8,500.00
20		(From Pinecreek to Harbor) and (From Shantar to Placentia)	Fiber (SMFO) in existing conduit	LF	3900	$5.00	$ 19,500.00
21	Contingency (10%)			EA	1	$82,040.00	$ 82,040.00
22	Construction Management (12%)			EA	1	$98,448.00	$ 98,448.00
23	System Integration ($30,000 HB, $20,000 in Costa Mesa)			LS	1	$50,000.00	$ 50,000.00

24	Furnish 24 hour, 7 day automated traffic vehicle counts	EA	5	$300.00	$ 1,500.00
25	Furnish 24 hour, 7 day automated traffic vehicle counts with vehicle classification	EA	3	$400.00	$ 1,200.00
26	Furnish 6 hour turning movement counts (3 peaks periods, 2 hours each) for weekday and weekend days for all corridor intersections per scope of work (including Caltrans-owned intersections)	EA	17	$600.00	$ 10,200.00
27	Project Administration	LS	1	$35,000.00	$ 35,000.00
28	Engineering design of all signal system improvements	LS	1	$80,000.00	$ 80,000.00
29	Produce a Before/After Study for the project	EA	1	$16,000.00	$ 16,000.00
30	Develop and implement optimized signal synchronization timing (including Caltrans-owned intersections)	EA	17	$3,723.53	$ 63,300.00
31	Provide ongoing monitoring and maintenance for 2 years immediately following implementation per the scope of work	EA	17	$2,640.00	$ 44,880.00
				Grand Total:	**$1,302,968.00**

All items are inclusive of all necessary labor and material necessary to make system(s) operational as intended.
No additional compensation shall be allowed therefore.

DETAILED LOCAL MATCH COMMITMENT

SECTION 1: AGENCY TOTAL MATCH SUMMARY

Agency	Cash	In-Kind	Total Match
City of Huntington Beach	$ 142,226.52	$39,268.48	$181,495.00
City of Cost Mesa	$ 36,504.25	$42,594.75	$79,099.00
TOTAL	$178,730.77	$81,863.23	$260,594.00

SECTION 2: MATCH BREAKDOWN (CASH VS IN-KIND SERVICES)

A. Cash Match

Agency	Funding Source	Amount of Cash Contribution
City of Huntington Beach		$ 142,226.52
City of Costa Mesa		$ 36,504.25
	TOTAL	$ 178,730.77

B. In-Kind Services

i. Specific Improvements (List items and Cost):

Agency	Improvement	Date of Construction	Expenditure
N/A			$
			$
			$
		TOTAL	$

ii. Staffing Commitment:

Agency	Staff Position	Type of Service to Project	No. of Hours	Fully Burdened Hourly Rate	Total*
City of Huntington Beach	Principal Civil Engineer	Project Administration	100	$141.79	$ 14,179.00
City of Huntington Beach	Crewleader – Electrical	Signal Maintenance	36	$85.73	$ 3,086.28
City of Huntington Beach	Crewleader – Electrical	Construction Mgmt/Inspection	80	$85.73	$ 6,858.40
City of Huntington Beach	Construction Mgmt	Construction Mgmt/Inspection	40	$128.99	$ 5,159.60
City of Huntington Beach	Public Works Inspector	Construction Mgmt/Inspection	120	$83.21	$ 9,985.20
				Total for City of Huntington Beach:	*$39,268.48*
City of Costa Mesa	Project Manager	Project Admin	100	$150	$15,000.00
City of Costa Mesa	Senior Engineer	Construction Mgmt/Inspection	74.5	$151	$11,249.50
City of Costa Mesa	Assistant Engineer	Construction Mgmt/Inspection	80	$104.50	$ 8,360.00
City of Costa Mesa	Public Works Inspector	Construction Mgmt/Inspection	84.5	$94.50	$ 7,985.25
				Total for City of Costa Mesa:	*$42,594.75*
				TOTAL IN-KIND MATCH*:	**$81,863.23**

**Total amount is the required participation by the identified agency. The number of hours and hourly rate will be based on each agency's actual fully burdened billing rates, which must collectively equal the same value of the assigned "Total" dollars. Each agency will be responsible for keeping detailed records of hours worked and description of work. An accounting record of personnel, hours at fully burdened rate is expected to be included with the final submittal. Records will be subject to auditing.*