

**CITY OF COSTA MESA**

CALIFORNIA 92628-1200

P.O. BOX 1200

FROM THE OFFICE OF THE TRANSPORTATION SERVICES MANAGER

December 13, 2004

PB Farradyne
444 S Flower Street, Suite 3700
Los Angeles CA 90071
Att: Jim Curry

SUBJECT: REQUEST FOR PROPOSALS FOR TRAFFIC SYSTEMS INTEGRATION

Dear Consultant:

The City of Costa Mesa is requesting proposals for upgrading the City's central traffic signal control system. The project in general consists of integrating the City's Multisonics VMS traffic signal management computer with the City's tandem Bi-Trans QuickNet System monitoring Caltrans' traffic signals, and establishing interface with the City of Santa Ana Signal System. Secondary project elements include providing a future migration path for advanced NTCIP signal controllers and GUI integration of the City's closed circuit television (CCTV) network. The project's objective is to facilitate management of recurring and non-recurring congestion through consolidation of traffic systems and improved user functionality, and to assist the future implementation of interagency arterial control and incident response management capabilities.

Background

Within the City of Costa Mesa boundaries, 140 signalized intersections operate within the 16 square miles of jurisdictional area. The signal system consists of 115 City maintained traffic signals and 25 Caltrans traffic signals. Directly to the north, the City of Santa Ana controls 252 traffic signals within 27 square miles of City boundary. Between agencies, five major regional roadways and two secondary streets extend across the adjoining five-miles of common border. The north/south arterials linking agencies include Main Street, Bristol Street, Bear Street, Fairview Road and Harbor Boulevard. Two east/west arterials, Sunflower Avenue and McArthur Boulevard, are also shared between agencies. Exhibit A illustrates the subject signal network.

Cumulatively, the level of daily traffic along these seven arterials is significant. Individually, the traffic volumes along Harbor Boulevard, Fairview Road, Bristol Street and McArthur Boulevard are among the highest in the County. Arterial segments to either side of the interagency boundary area are not coordinated. Each agency operates the same type of traffic

77 FAIR DRIVE

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signal control system, the Multisonics Vehicle Management System (VMS). However, VMS interface between agencies lacks full data sharing capability to enable high level signal coordination. Accordingly, traffic progression along the common arterials is deficient and leads to extended motorist delay, congestion, and associated increases in fuel consumption and exhaust emissions. Viewed broadly over time based on the nature of roadways uncoordinated throughout the arterial network, cumulative impacts are significant and encourage the proposed transportation management systems improvements.

Project Definition

The subject project is established to achieve interagency integration of traffic data between signal systems, and provide signal operations staff effective and versatile tools to manage ongoing local and regional traffic issues. The project is structured in three tasks consisting of: 1) the development and integration of expanded front-end software and hardware via a Dynamic Graphics Server (DGS) to the City's existing VMS signal computer system, 2) BiTrans software system interface, and 3) integration intertie with the City of Santa Ana. Exhibit B illustrates the basic system architecture.

The project will establish uniform instrumentation for integrated systems coordination; increase local/regional operational efficiency and mobility; decrease vehicle delay, emissions, energy consumption; and enhance safety. Immediately concluding deployment and interagency integration, the cities of Santa Ana and Costa Mesa will implement various signal coordination plans along the mutually controlled arterials as a separate project.

The proposed improvements in enhanced management capabilities should conform with Caltrans, SCAG and OCTA ITS Regional Architecture and National NTCIP AB3418 standards. Consultants are requested to avoid restrictive or proprietary software applications with this project. The project should conform with National ITS directives for open architecture protocol. Proposed OS or equipment requiring future upgrade or service maintenance fees will not be considered.

Scope of Work

The proposed architecture will use LAN and WAN connections to distribute the data, and allow City of Costa Mesa traffic engineering personnel to view the operations of all systems from a single user interface running on operator workstations. Given the multi-system integration requirements of the project, proposals comprising of joint consultant teams will not be viewed negatively. Additionally, given the complex nature of proprietary legacy signal systems to be integrated, the City will consider alternatives to the proposed scope of work or possibly deferring integration of a component for future work. NTCIP compatibility of other platforms including potential future integration of CCTV, CMS, BBS/UPS status, and VDS is recommended of the proposed software.

The project is "design/build", and all associated hardware and software shall be furnished and fully integrated by the consultant to provide the intended functionality. During project development, submittals of draft software and hardware shall be presented to the City for review and approval prior to deployment. Modifications proposed to software functionality or equipment during the development review process shall be provided by the consultant as requested by the City. Operations manuals and a training session for five staff members should be included within the scope of services following deployment. The following provides a general description of each task:

Task I – VMS 330 Interface:

VMS interface includes installing and integrating new computer hardware and Dynamic Graphics Server (DGS) software with the existing VMS traffic signal control system. The scope entails implementation of a DGS as a graphics front-end to the City's existing Multisonics VMS330 Traffic Signal System. The DGS system interface will allow for signal system information to be collected from the VMS330 and provide the information in a format that is supported by an Advanced Traffic Management System (ATMS) running on operator workstations.

ATMS will serve as a schematic or graphic representation tool that allows the construction of 'management' views of the transportation system in schematic or graphic formats. The ATMS will be adaptable to enable construction of views of the system that are useful to traffic engineering operators and system maintenance personnel. The ATMS views are intended to be constructed using simple graphics tools such as Corel Draw or constructed from imported files via aerial photographs and intersection drawings. The ATMS should allow for system operations personnel to construct system graphics for the display of real-time traffic signal information. The system views are to include area-wide views showing the entire City, focused network portions of the City, extended arterial segments, as well as detailed intersection views displaying the operations and data parameters of single intersections. The ATMS should also allow for users to quickly change views from the various levels directly to intersection displays by selecting an icon on the display. The street network and intersection graphics and schematic links are to be developed as part of integration work for each intersection.

Integration work will provide that the DGS is fully functional with the City's existing VMS traffic control system and remote signal controller locations. One fully functional operator workstation is to be furnished and installed meeting state-of-the-art hardware and software standards complete with a 60" HD freestanding monitor configured within the TOC. The workstation PC will comply with the below Task IV specifications, furnished with the ATMS product, and include the necessary integration to interface the ATMS software with the DGS and traffic control systems. The TOC ATMS architecture shall directly accommodate a future workstation. DGS and ATMS software, intersection graphics, and training will be provided and include full system configuration setup. Final detailed schematics of the hardware and interface configuration shall be prepared.

Graphics displays shall be developed for each of the 125 City signalized intersections, illustrating the full functionality of real time signal operations, including cycle length, split, pedestrian and vehicle activations, and green interval phasing. The ATMS/DGS should

accommodate future County and State scale system operations graphics via regional NTCIP server sources at a future date. In depth training of system operations and functionality, and training of ATMS graphics creation shall be included in the scope of services.

Task II – BiTrans Interface:

This task will develop an interface between the BiTrans QuicNet system and the ATMS/DGS. This interface will allow for real-time data exported by the QuicNet system to the ATMS for display. This work will include the necessary software development, integration and hardware to complete the interface. Graphic displays shall be provided for the 25 Caltrans signalized intersections portraying real time operations, including cycle length, split, pedestrian and vehicle activations, green interval phasing and other operational parameters. The BiTrans GUI should seamlessly be illustrated with the VMS330 data for arterial and network graphic displays within this scope of services.

Task III – City of Santa Ana Intertie:

The work performed under this task includes the necessary integration efforts to allow for signal and potential CCTV data to be exported between the City of Santa Ana and Costa Mesa, so that traffic signal information can be mutually viewed on each operator's workstation using the ATMS. The City of Santa Ana shall be responsible for GUI configuration of Costa Mesa's intersection and network displays as a separate task, however establishing interagency system integration and data sharing shall be by the consultant.

The City of Santa Ana currently uses TransCore's DGS and ATMS Explorer to interface to their VMS 330 Traffic Control system. However, Santa Ana is preparing to implement PB Farradyne's MIST/ATMS by June 2005 and plans to migrate its traffic control system gradually from VMS 330 to MIST in 2006. Similarly, Santa Ana has an interface to Irvine allowing interagency system viewing of the VMS 330 data through WAN using ATM and an interface to Caltrans for exchanging CCTV surveillance. These existing interties are provided using dedicated fiber communication between the agencies. This scope of services will establish a similar connection between the Cities of Santa Ana and Costa Mesa via the use of existing fiber cable between agencies, and include furnishing routers/transmitters/receivers and all associated periphery equipment.

Graphics displays shall be developed for 20 signalized intersections within Santa Ana, illustrating the full functionality of real time operations, including cycle length, split, pedestrian and vehicle activations, and green interval phasing. The Santa Ana GUI data should seamlessly be illustrated with the VMS330 data for arterial and network graphic displays. The consultant shall be responsible for submittal of integration draft work plans to each agency, conduct the necessary meetings, and provide the work, materials and equipment as necessary to achieve the proposed joint traffic systems management sharing capability.

Task IV – Workstation

The consultant shall furnish and install a fully integrated and functional workstation to access the identified systems. For displaying the various ATMS/GUI, 19" flat screen monitor and a 60" HD flat screen monitor with 5' tall free-standing base will be furnished configured within the TOC. The ATMS front-end hardware parameters should be met or exceed 3.0 GHz or

higher Xeon, or P4 processor (Xeon preferred); 2 Gig of RAM; 100 MB minimum of Hard Disk space for data storage; 10,000 rpm Universal Hard Drive (1"); 48x CD-ROM Drive; a UPS with 15 minute run-time minimum; with warranty providing three year next day on site service.

Alternate Scope Tasks:

CCTV Integration: The City manages 13 closed circuit television cameras (CCTV) functioning via Caltrans protocol and controlled by the Javelin Systems "Quic" program. The integration of the CCTV system within subject ATMS/DGS program is proposed as an alternate task to be included at the discretion of the City contingent on budget availability. NTCIP compatibility for other future platforms including possible integration of CMS, BBS/UPS status at field locations, and vehicle detection count stations is recommended of the proposed ATMS/DGS software.

City of Santa Ana Wireless Communications link: A separate fee is requested for establishing a wireless communication link between the Santa Ana and Costa Mesa signal computer systems. This includes transmitters/receivers (potential Ethernet radio mode), antennas, cabling and all periphery equipment required to enable the proposed communications functionality between systems. Direct line of sight exists between each agency building at an approximate distance of 6.2 miles between centers. Estimate 1000' of cable from the Santa Ana TMC to roof, and 250' of cable for Costa Mesa's wireless antenna, with conduit furnished at roofs.

Second Workstation: At the discretion of the City, a second workstation may be included to enable interface with the ATMS/DGS. This computer shall be a fully functional terminal and provide the standard array of PC firmware and software.

Quality Assurance/Quality Control

Quality Control shall be consistently and thoroughly applied throughout project development. Assigned QA/QC staff shall be technically well qualified to conduct the appropriate level of oversight, and demonstrate a concerted and sustained commitment to provide a high quality product.

Project development meetings shall be held bi-monthly as needed. The consultant shall be responsible for preparing meeting agendas, minutes and presentation materials. A Critical Path Method (CMP) schedule, based on activities to support all project milestones and subtasks shall be prepared. The information will be in the form of a bar chart and show a deliverables schedule and other relevant data needed for the control of work, and for City review of the work status and accomplishments occurring each month. A copy of the CMP software program and monthly updates shall be furnished to the City Project Manager. Deliverable deadlines shall be strictly maintained and progress payments shall be withheld until scheduled products are received.

Funding

The project is partially funded through the Orange County Transportation Authority Measure M Program. The project budget limit is \$315,000. Cumulative contract costs shall not exceed this threshold.

Content of Proposal

It is requested that the following be submitted with your proposal:

- A narrative understanding of the project, any suggestions you might have to expedite the project or special concerns. Identify all tasks necessary to meet the intended project objective and achieve project completion within the proposal.
- A detailed schedule indicating stages of work and time frames.
- An organization chart and staffing plan identifying personnel who will perform work on this project, a brief resume on each individual (two pages max per person) and recent projects they have worked on of similar type. Identify the project manager with a detailed resume, and the individual authorized to negotiate the contract on behalf of the consulting firm.
- A listing of similar ATMS projects that your firm has completed within the last five years. Information should include a description of integration work and software implemented, year completed, cost, and agency/client name along with the agency contact person.
- Detailed itemized cost list of equipment provided and reference specifications.
- Comply with all Professional Services Agreement requirements (see attached agreement).
- Not required, however useful for reference, a CD illustrating the proposed front-end signal operating software & graphic displays. Audio/Video demonstrations of the proposed ATMS/DGS software may be requested during proposal review for consultant's presentation to the City.
- Submittal of **Three (3)** duplicate proposals is requested.

Fee Schedule

The fee schedule should show the hourly cost of personnel per task under each phase, with a total not-to-exceed amount for the project. The consultant's cost proposal for the prime and subcontractors work should itemize all cost components including labor base rate, other direct costs, overhead, and fees in compliance with the described scope, and include all associated work required to achieve the project objective. It is requested that the fee, including meetings, reproduction, materials, and associated project expenses be itemized per the following General Fee Schedule outline:

General Fee Schedule

Task I:	ATMS/DGS Software & VMS Integration: 115 City Intersection Graphics & 15 Network/Arterial layouts:	\$ _____ \$ _____
Task II.	Bi Trans Software & Integration: 25 Caltrans Intersection Graphics:	\$ _____ \$ _____
Task III.	Santa Ana Software & Integration: 20 Santa Ana Intersection Graphics: Joint Agency Fiber Communications:	\$ _____ \$ _____ \$ _____
Task IV.	Workstation & 60" Monitor, Fully Integrated Functional	\$ _____
	CORE PROJECT SUBTOTAL:	\$ _____
Alternate Scope Tasks –		
	CCTV Integration:	\$ _____
	Santa Ana Wireless Com. Link:	\$ _____
	Second Workstation, Integrated	\$ _____

Note: Originals of all design exhibits, field notes, data and calculations, correspondence, reports, electronic files, system configuration layouts, etc., will be turned over to the City upon completion of work. Ten percent (10%) of the total contract fee will be withheld until final project documents are submitted to the City.

Contract Changes

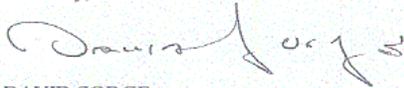
Any change in the scope of work resulting in a contract increase or decrease in fee shall be approved by the City in writing prior to commencement of any change in work. No fee adjustment will be allowed unless said prior approval is authorized exclusively in writing by the City, without exception.

Right to Reject all Proposals

The City of Costa Mesa reserves the right to reject any or all proposals submitted, and no representation is made hereby that any contract will be awarded pursuant to this request for proposal, or otherwise. All costs incurred in the preparation of the proposal, in the submission of additional information, and/or in any other aspect of a proposal prior to the award of a written contract will be borne by respondent. The City will provide only the staff assistance and documentation specifically referred to herein and will not be responsible for any other cost or obligation of any kind that may be incurred by a respondent. All proposals submitted to the City of Costa Mesa in response to this request for proposals shall become the property of the City.

Enclosed is the City of Costa Mesa professional services standard agreement and sample certificate of insurance for reference in preparing the proposal. The minimum insurance and endorsement requirements are stated within the enclosed documents. Should your firm be interested in submitting a proposal for this project, please forward to the City of Costa Mesa, Transportation Services Division, 4th floor City Hall, on or before 5:00 p.m. January 28, 2005. If additional information is required, please contact me at (714) 754-5183, or email at: ddsorge@ci.costa-mesa.ca.us.

Sincerely,



DAVID SORGE
PROJECT MANAGER

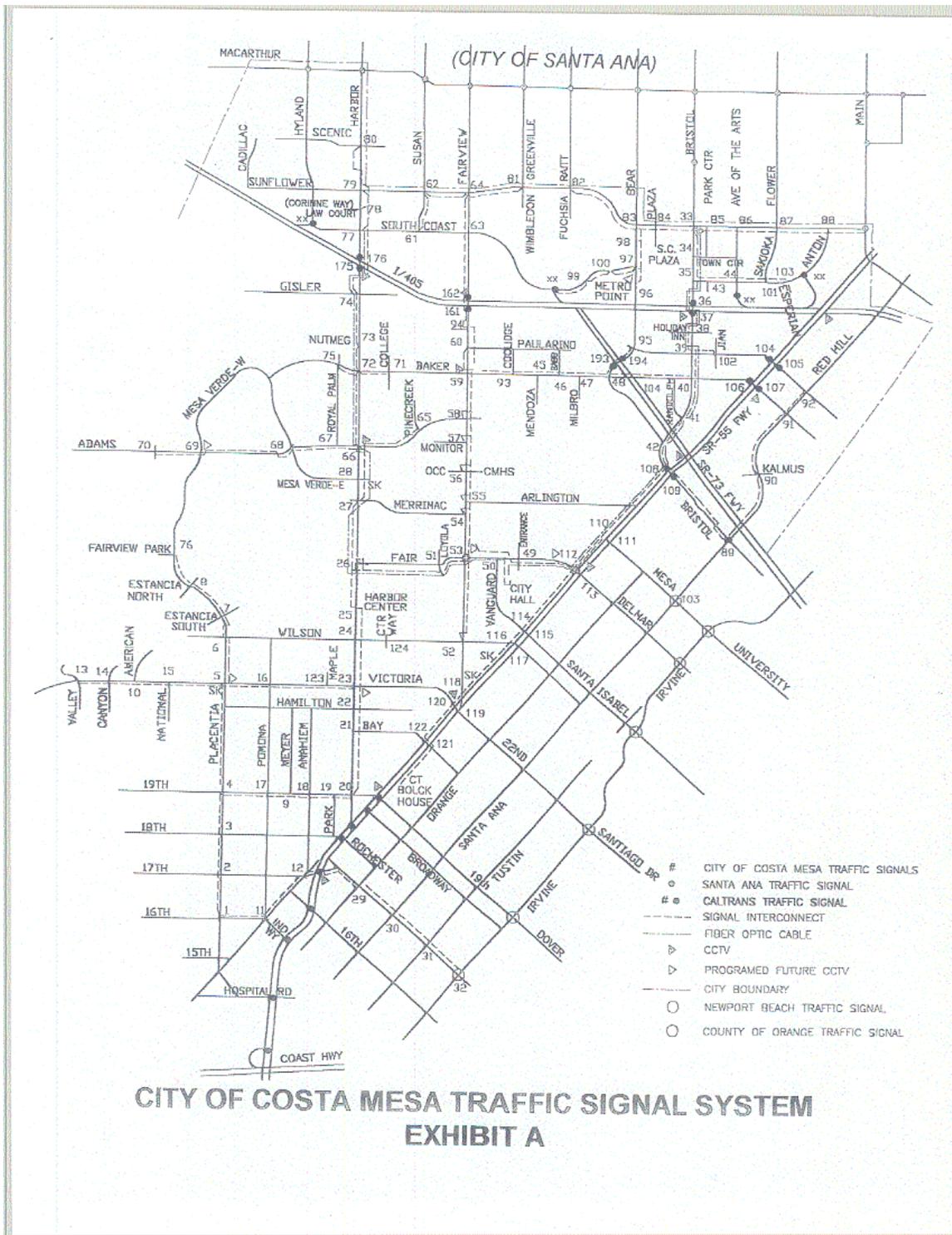
Attachments: Exhibit A – Signal Network
 Exhibit B – General System Architecture
 City Standard Agreement
 Certificate of Insurance Forms

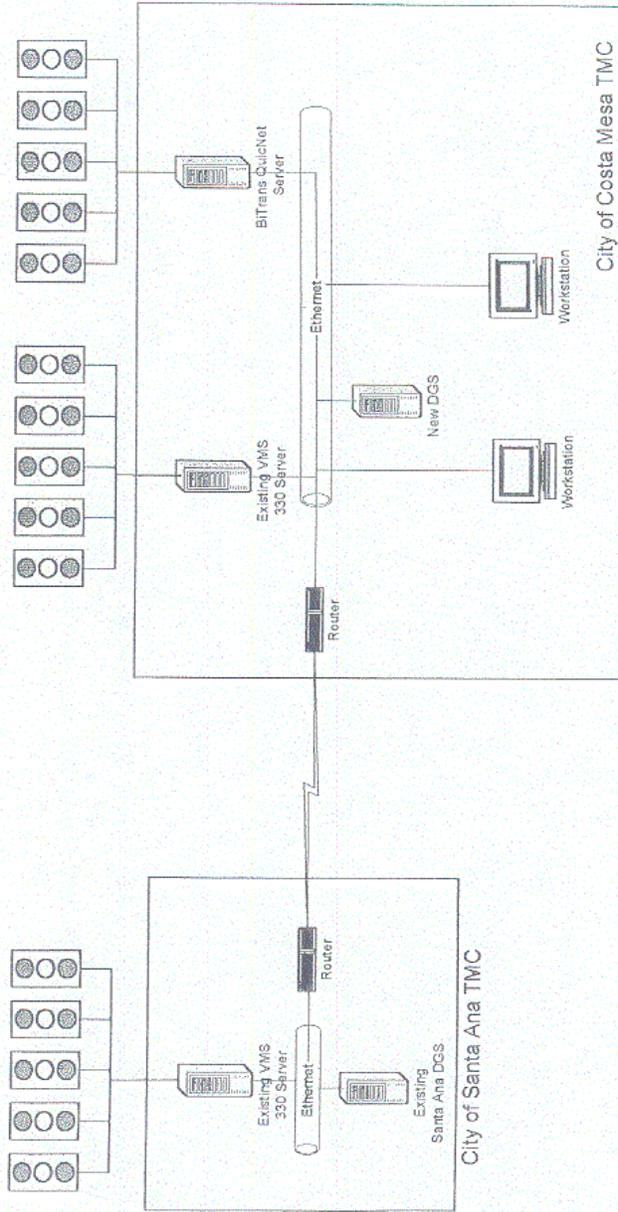
cc:

William Morris
Public Services Director

Peter Naghavi
Transportation Services Manager

TC Sutaria
City of Santa Ana
20 Civic Center Plaza
Santa Ana, CA 92702





**City of Costa Mesa
TOC Architecture**

EXHIBIT B