Systems Engineering Review Form (SERF) for
I-99 Corridor Commercial Vehicle Operations Project

BACKGROUND INFORMATION

Project Objectives:

The proposed I-99 Corridor Commercial Vehicle Operations (CVO) Integration Project will establish a communication backbone between the cities along the corridor and Caltrans to exchange data and to support the deployment of a complete traveler information system, geared primarily toward commercial vehicles but also supporting passenger vehicles, on the I-99 corridor. The CVO ATIS will offer an Internet-based CVO traveler information system that will provide commercial vehicle dispatchers and drivers with the real-time information on congestion, incidents, weather, and routing that is necessary for safe, effective routing and dispatching. The objectives of this system are to enhance the safety and efficiency of motor carrier operations and to reduce traffic congestion by providing information that will improve carrier routing and dispatching. The proposed project will create a working platform for the CVO industry and agencies to work cooperatively together.

Background:

The project consists of the following parts:

- A system integration (communication backbone between all the I-99 cities and Caltrans District 77) component.
- A Commercial vehicle traveler information component.
- Two or more arterial Dynamic Message Signs (DMS), that would be integrated with the California AMBER Alert program and will meet the FHWA AMBER Program requirements.
- A communication backbone deployment within the Los Diegos County portion of the project.

Three other projects will also contribute substantially to the success of the project:

- A field element communication backbone deployment within the City of Beautiful Parks. Its resources will be utilized by this project to expand the communication backbone.
- A separate system integration project, which will provide a software interface between Beautiful Park’s traffic signal control system and the Los Diegos County Information Exchange System (IES) to allow the data exchange.
- An Advanced Traveler Information System for the Port of Long Boats (POLB). This project, which is being led by POLB, will disseminate information about travel conditions in the Port, with more features envisioned in future phases.

Preliminary Planning:

Significant preliminary planning for this project and substantial work had been done on related projects. The above projects relate to each other in the following manner. The communication backbone provided under this project will connect to the County communication backbone and to the Beautiful Parks...
communication backbone. Filling in this “gap” will allow the corridor cities and Caltrans D99 to be physically connected.

This interconnectivity will allow the exchange of traffic management and traveler information between the connected agencies. The implementation of the IES project will allow data exchange with connected agencies beyond the project area. For instance, the POLB project will have a connection to the IES allowing information to be shared with the agencies in this project. The importance of that is in the impact that the I-99 could have on the operations of the ports and vice versa. The same rationale applies to Caltrans District 77’s connection to the IES and the data that become available.

The connection will also provide an alternate (backup) means of communication between Caltrans Districts 77 and 88.

The commercial vehicle traveler information will leverage off the above investment and build on this interconnectivity to collect data from all the participating agencies and the trucking industry to provide an Internet service for use by the truckers and the general public. More detail about this part of the project can be found below in the project description.

The Dynamic Message Signs will build on the above project components (communications backbone, data exchange and traveler information) to provide en-route information to the general public and commercial vehicles, and will be used as part of the California AMBER Alert program.

**Description in TIP:**

“I-99 Corridor Commercial Vehicle Operations (CVO) Integration Project will establish a communication backbone between the I-99 CPA cities and Caltrans to exchange data and to support the deployment of a complete traveler information system, geared primarily toward commercial vehicles but also supporting passenger vehicles, on the I-99 corridor – $999,999.95”

**Description in the Regional ITS Architecture:**

Due to the cross-county nature of this project, and the wider, regional benefits anticipated from its deployment, the I-99 CVO ATIS project is supported by the Western California Regional ITS Architecture. The following are the specific descriptions as they appear in the April 2005 version. Verbiage that is taken directly from the referenced document is in italics, citations to the Regional Architecture appear in brackets.
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1. Identification of portions of the Regional ITS Architecture being implemented:

See description above.

NEED: 5.1.3 Commercial Vehicle Operations / Goods Movement [page 5-1]

US/ MP: 5.2 User Services [page 5-2]

[Excerpt from] Table 5.2: Regional ITS Operational Concepts [page 5-10]

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<th>Organization</th>
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<td>Make real-time traffic conditions at the port available to commercial vehicle disseminators</td>
<td>POLB and Local Jurisdictions</td>
<td>• Disseminate conditions (queue backup, etc.) for the ports to commercial vehicle operators</td>
</tr>
<tr>
<td>Fleet Administration</td>
<td></td>
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<td>• Maintain communications infrastructure for information dissemination</td>
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2. Identification of Participating Agencies roles and responsibilities:

The City of Beautiful Parks will serve as the lead agency on this project, in partnership with the I-99 Cities Corridor Powers Authority (I-99 CPA) and Los Diegos County Department of Public Works. This project will build on the existing partnership, the I-99 CPA, an organization that was formed to represent the cities along the I-99 corridor that will be affected by the impending freeway-widening project. The I-99 CVO Integration project provides for a multi-agency partnership that includes:

- Cities of Beautiful Parks, Uptown, and Santa Bonita Springs (members of the I-99 CPA);
- California Department of Transportation (Caltrans) District 77;
- Los Diegos County Metropolitan Transportation Authority (MTA); and
- The Port of Long Boats (POLB)

We will define detailed roles and responsibilities in the Concept of Operations step.

3. Requirements Definitions:

We will identify detailed requirements during the project definition phase.
4. **Analysis of alternative system configurations and technology options to meet requirements:**

Our initial investigations indicated that the project budget will constrain our options to aerial fiber connections similar to what has been deployed in the region. The web server will be industry standard, but the web site content will be driven by user needs that will be established as part of the project. DMS installation will be arterial type DMS consistent with others already deployed in the region.

5. **Procurement options:**

The City of Beautiful Parks will lead the project and hire a contractor for implementation, plus a System Engineer for project definition, design and acceptance testing. The City believes that most components will be “off the shelf” with some software development required for the CVO ATIS web site, and plans to use fixed-price contract(s) for system implementation, and probably time & materials for the Systems Engineer.

6. **Identification of applicable ITS standards and testing procedures:**

A brief Standards Plan report will be submitted within the first two months, for approval by Caltrans and FHWA. A detailed standards plan report will be prepared and submitted to the FHWA Division Office upon completion of the detail design stage by 12 months following notice to proceed.

7. **Procedures and resources necessary for operations and management of the system:**

The CVO ATIS will be based at the City of Beautiful Parks, and the City is committing to operations and maintenance of the CVO ATIS web service for at least the next 99 years. Full details regarding procedures and resources needed for O&M will be developed during the project definition.