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San Gabriel Valley Traffic Forum ATMS Improvement Project

Concept-of-Operations (Deliverable 2.3.1.2)

Final

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SAN GABRIEL VALLEY TRAFFIC FORUM

Concept-of-Operations (Deliverable 2.3.1.2)

FINAL

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1. INTRODUCTION

1.1 PROJECT OVERVIEW

1.1.1 LA County Traffic Forums

A key element of the Los Angeles County Metropolitan Transportation Authority's (MTA) planning process is the Long Range Transportation Plan (LRTP). The LRTP proactively defines the transportation network vision, objectives, needs, and challenges over a 25-year period for Los Angeles County. A key component of the LRTP is the Traffic System Management (TSM) program that defines the MTA's support for Intelligent Transportation Systems (ITS) improvements on Regional arterials to improve traffic flow and enhance arterial capacity in a cost-effective way where roadway widening is not possible. The TSM Program consists of four (4) Tiers (levels) of improvement:

- Tier 1 – Conventional traffic engineering improvements
- Complete time-based coordination (TBC) traffic signal synchronization along major arterials
- Functional intersection improvements to upgrade each signal to current standards
- Installation of full traffic actuation and detection
- Tier 2 – Transit preferential treatment and Bus Signal Priority (BSP) systems
- Tier 3 – Computerized Advanced Traffic Management Systems (ATMS)
- Provide Corridor-level control and monitoring capabilities
- Implement Traffic Control System (TCS) and Traffic Management Center (TMC) in centralized location
- Install communications to traffic signals
- Tier 4 – ITS improvements
- Multi-Agency system integration
- Establish Countywide Information Exchange Network (IEN) workstations at each affected Agency
- Establish Sub-Regional TMCs
- Implement advanced communications technology
- Deploy other advanced ITS elements (e.g., CCTV, HAR, HAT, CMS, etc.)

There are five (5) Regional Traffic Forums participating in the MTA TSM program:

- San Gabriel Valley Signal Synchronization Operation and Maintenance Pilot Project
- I-210 Corridor
- 10 Local Agencies
- Gateway Cities Signal Synchronization and Bus Speed Improvements Project
- I-105 Corridor
- I-5 Telegraph Road Corridor
- I-710 Corridor
- 26 Local Agencies

- South Bay Regional Traffic Forum
- Parts II & III
- 18 Local Agencies
- Pomona Valley Forum/Route 60 Corridor
- Fairplex Traffic Management Plan
- 7 Local Agencies
- San Gabriel Valley Traffic Forum
- I-210 & I-10 Corridors
- 24 Local Agencies

The Traffic Forums are administered by the Los Angeles County Department of Public Works (County), who assumed the lead role of the TSM Program in 1993.

1.1.2 San Gabriel Valley Traffic Forum

The goal of the San Gabriel Valley Traffic Forum (SGVTF) is to design, develop, and deploy an ATMS specifically tailored to each Agency's operations in the area so that traffic signals can be synchronized and ITS systems integrated across jurisdictional boundaries. The SGVTF project focuses on the specific needs of each Agency to manage its ATMS and recommends improvements to field infrastructure (e.g., controllers, detection systems, communications, etc.) and centralized TCSs and/or TMCs to meet those requirements. When the SGVTF is successfully completed, each of the Agencies responsible for traffic signal operations will have full access to an ATMS that monitors and controls the traffic signals within its jurisdiction. In addition, Agencies will be able to synchronize its signals and exchange traffic information in real-time with neighboring Agencies. This will allow the Agencies to respond to recurrent and non-recurrent congestion in a coordinated fashion across jurisdictional boundaries.

The SGVTF project area ranges from Cities bordering the CA SR 110 and I-710 freeways to the west, I-210 freeway to the north, CA SR 57 freeway to the east, and the CA SR 60 freeway to the south. It encompasses 24 municipalities as well as unincorporated portions of LA County. The traffic signals in the Region are operated by many of the individual Agencies, County, and Caltrans District 7.

1.1.3 Countywide Information Exchange Network (IEN)

Developed by the County, the Countywide Information Exchange Network (IEN) is the integrated system framework that connects all of the individual Agency's ATMSs into a Regional network to support the operational goals identified above. The Countywide IEN supports traffic signal operations in three (3) levels:

- Local Level
- Comprises day-to-day traffic signal operations and maintenance (O&M) activities carried out by the individual Agency
- Includes activities such as signal timings, equipment monitoring, response to local traffic conditions and events, etc.

- Corridor Level
- Supports inter-Agency coordination and joint signal operations within the particular Traffic Forum (or Sub-Region)
- Includes activities such as signal coordination across jurisdictional boundaries, monitoring and exchange of local traffic data throughout the Corridor, joint response to traffic conditions, incidents, and events that affect more than one jurisdiction, etc.
- Regional Level
- Permits arterials of Regional significance to be monitored, managed, and controlled as a single entity
- Supports multi-Agency, cross-Corridor data exchange permitting a Countywide response to traffic conditions and major events
- Facilitates communications between systems/Agencies not part of a Traffic Forum (e.g., Caltrans, LADOT, etc.).

The SGVTF assumes the availability of the Countywide IEN at the Corridor and Regional levels. Therefore, the SGVTF project is focused on the selection of ATMSs and the integration of those systems to the Countywide IEN at the Local level. The eventual ATMS design for the SGVTF will take into account the interface to the IEN and its requirements at the Local level and encompass the following six (6) core components:

- ATMS and/or TCS (Individual Agency)
- Detection and Surveillance
- TMC and/or W/S Layouts (ATMS and/or IEN)
- Communications Network
- SGVTF Participation/Coordination (City-specific and/or SGVTF-Regional integration)
- Operations & Maintenance (O&M)

The Countywide IEN comprises the series of computer servers, communications, networks, graphical user interface (GUI) displays, etc. integrated for the collection/transfer of data to support Corridor and Regional functions throughout LA County.

1.2 PURPOSE OF DOCUMENT

This document represents Deliverable 2.3.1.2 – Concept-of-Operations of the SGVTF’s Task 2 – Preliminary/Conceptual Design. This document presents the following information for the SGVTF:

- Identifies the mission of the SGVTF
- Presents an overview of the IEN components to be implemented
- Defines the Levels at which Agencies can operate its traffic system
- Maps the Agencies in the SGVTF to Levels
- Describes the various roles and responsibilities each Level (and thus each Agency mapped to that Level) will need to perform

In this task, the day-to-day and periodic traffic management activities are described by operational level, thus allowing an Agency to identify what activities it will need to perform to support its traffic management needs from both Local and Regional perspectives.

2. CONCEPT-OF-OPERATIONS

2.1 PURPOSE

The Concept-of-Operations (ConOps) document describes how the various ITS components deployed throughout the Corridor will be utilized, both by other systems and more importantly, by people and organizations. The SGVTF ConOps will focus on what tasks need to be done by whom to support collaborative traffic management in the SGV.

2.2 APPROACH/METHODOLOGY

This ConOps was developed from information derived from multiple sources; including previous SGVTF project deliverables, deliverables from other Traffic Forums and/or IEN projects, as well as Agency interviews, and discussions with subject-area experts.

In addition, “Day-in-the-Life” exercises were performed with Agencies representing implementation Levels 2A and 2B. These exercises fulfilled dual purposes: to get a better understanding of how Agencies perform their normal day-to-day operations and to help validate some of the forward-looking operations described herein in support of the SGVTF mission.

2.3 SGVTF CONOPS MISSION/VISION

A mission statement is easy to develop but often difficult to obtain concurrence on from all Stakeholders. It defines, at a high-level, why something is to be done and is then agreed upon by all those that participate in the execution of the endeavor. The mission of the SGVTF’s participating Agencies (with respect to traffic and incident management activities) is:

“To seamlessly manage, coordinate, and optimize the timing and operation of traffic signals, other ITS devices, and incident management activities along LA County arterials in the San Gabriel Valley in a reliable and safe manner in order to provide as efficient a trip for the traveling public (our customer) as possible. Inter-Agency cooperation will be a governing principal required to accomplish this goal.”

The IEN and this ConOps are important tools participating Agencies can use to support this mission.

2.4 IEN/COMPONENTS

As described in the document introduction, the IEN will be a key component of the SGVTF ATMS implementation. The SGVTF will implement two of the IEN Operational Levels: Local and Sub-Regional/Corridor. The primary tool utilized to support Local-level IEN is the IEN workstation (W/S) and will be housed at that Agency’s IEN Local City Control Site (LCCS). An IEN W/S is a PC connected to the IEN network with the IEN GUI installed. It is generally used by a local Agency to monitor traffic conditions and operations in its jurisdiction (passive management) as well as those in neighboring jurisdictions.

For Agencies that are more active in managing their traffic operations, the IEN LCCS will also house an ATMS W/S with an additional program/interface, called the Command Data Interface (CDI). The CDI allows the ATMS to send information to the IEN and conversely, to receive data from the IEN.

At the Corridor level, an IEN Corridor Server manages the data transfer and communications between the various IEN W/Ss and ATMS/CDIs and serves as the connection/gateway to the IEN Regional Server.

2.5 SYSTEM OPERATIONS

Regardless of size, every Agency performs a variety of tasks related to traffic and incident management. Obviously, Agencies with fewer signals, traffic issues, staff, etc. will generally perform fewer and/or less complex activities. Also, as the level of cooperation/collaboration between Agencies increases, understanding what is expected of each Agency becomes increasingly important.

This section seeks to describe the Operators (Agency Roles) and what tasks need to be performed (Agency Responsibilities).

2.5.1 Operators (Roles)

Three Agency roles or “Levels” have been defined (Levels 1 – 3) as well as a planning-related level (Region Coordinator) for the implementation of the ATMS based upon the level of interaction an Agency will have in managing its traffic operations:

Level 1

- Agency does NOT operate its traffic signals
- Agency wants to be “Agency B” on another Agency’s ATMS
- Another Agency operates its traffic signals (e.g., LA County DPW)
- Provided with an IEN W/S to monitor traffic signals & incident management activities
- No separate ATMS W/S provided

Level 2A

- Agency passively manages its traffic signals
- Establish initial signal timings, monitor system status daily, etc.
- Typically operate on an exception basis & occasionally peak periods
- Agency wants to be “Agency B” on another Agency’s ATMS
- Provided with an IEN W/S to monitor traffic signals & incident management activities [Regional view]
- Separate ATMS W/S connected to “host” Agency’s ATMS [Local view]

Level 2B

- Agency actively manages & operates its own ATMS
 - Actively manage ATMS during exceptions & peak periods
 - Passively manage ATMS during off-peak
- Agency may operate some other ITS devices (small amount)
- Agency may “host” another Agency’s traffic signals
- Houses an IEN LCCS to manage traffic signals & incident management activities
 - IEN W/S [Regional view]
 - ATMS W/S [Local view]
 - CDI between the ATMS & IEN

Level 3

- Agency actively manages its own ATMS & other ITS devices (large amount)
 - Typically AM peak thru PM peak operations
 - May support 24/7 operations
- Agency may operate other Agencies’ traffic signals (Level 1)
- Agency may “host” other Agencies’ traffic signals (Level 2A)
- Agency will have a TMC from which to operate its ATMS, the IEN, & other ITS devices
- Houses an IEN LCCS to manage ATMS & incident management activities
 - IEN W/S (Regional view)
 - ATMS W/S (Local view)
 - CDI between the ATMS & IEN

Regional Coordinator (RC)

- Coordinates traffic control activities across a specified Region (multiple Corridors/Traffic Forums)
- Manages the tools and processes used in Regional and Corridor traffic and incident management activities
- Has typical traffic and incident management duties

Each Agency has been mapped to one of these Levels based upon the types of traffic and incident management functions and operations the Agency *are proposed to be* performing following the ATMS implementation and not what is being done today. The following table presents the Agency/Level mapping for the SGVTF.

SGVTF Agency/Level Mapping

LEVEL 1	LEVEL 2A	LEVEL 2B	LEVEL 3	RC
Bradbury San Marino Sierra Madre MTA* Foothill Transit* Montebello Transit* *Transit operators – no traffic operations	Baldwin Park Duarte El Monte Glendora La Puente Monrovia South El Monte Temple City	Alhambra Arcadia Azusa Covina Irwindale Montebello Monterrey Park Rosemead San Dimas San Gabriel South Pasadena West Covina	Caltrans LACODPW Pasadena	LACODPW

Note that transit operators have been categorized as Level 1 Agencies since they do not have any traffic-related operations and may be provided with an IEN W/S to monitor Regional traffic operations/conditions.

2.5.2 Tasks (Responsibilities) Overview

Every Agency performs a variety of tasks to manage and operate its traffic management systems. The tasks described in the sections that follow will be generally new to most SGV Agencies due to the implementation of an ATMS and/or an IEN W/S to develop a multi-jurisdictional approach to traffic and incident management.

In addition to these new tasks, there is a set of Baseline tasks that are performed currently by many SGV Agencies. These “Baseline” tasks are presented in Appendix C and are included in this document for traceability of requirements in subsequent deliverables.

Each Agency may not actually perform all of the tasks identified in the tables that follow nor all of the Baseline tasks. When an Agency is determining what activities it needs to perform to fulfill its duties, it must fully consider the ramifications of performing or not performing these tasks.

All of the tasks described below involve Agency-operated equipment or systems, with the exception of the tasks discussed under “Agency Coordination”.

For each Agency Level described above, the tasks have been grouped into the following categories:

Task Categories

TASK CATEGORY	DESCRIPTION
TMC/Facility	These tasks involve the operation and management of the Traffic Management Center/Facility or W/S area. These tasks will also include <i>intra</i> -Agency activities and management (e.g., incident management, coordination with maintenance, etc.)
Signal Control	These tasks involve the operation and management of the Agency’s traffic signal system. This includes the TCS or signal system and roadside controllers. Other roadside equipment tasks are discussed in subsequent sections.

Detection and Surveillance	These tasks involve the operations and management of an Agency's vehicle detection and traffic surveillance systems (e.g., loops, Video Imaging Detection [VID], Closed Circuit Television [CCTV], etc.).
Communications System	These tasks involve the operations and management of the traffic management-related communications system(s). This includes all roadside communications as well as the infrastructure back to the TMC (land line and/or wireless).
Traveler Information Systems (TIS)	These tasks describe activities related to managing and operating Agency-operated traveler information systems (e.g., Changeable Message System [CMS], Highway Advisory Radio [HAR], websites, etc.). <i>Please note that implementation of TIS is not in the scope of this project. TIS tasks are included here since the implementation of an ATMS can facilitate the use of TIS for those Agencies choosing to do so (and the IEN supports some TIS applications). The time estimates provided below, do not include any additional TIS-related tasks.</i>
Agency Coordination	These tasks involve how Agencies will interoperate and share (co-operate and control) other Agency's equipment, resources, and data.

Further, for each task category, the tasks are presented by the following functional groupings:

Functional Groupings

FUNCTIONAL GROUPING	DESCRIPTION
Administrative	The tasks listed in this section involve developing policies and procedures and are often performed on an infrequent or as-needed basis. In addition, these tasks also include activities that support the traffic operations and incident management activities of the local Agencies.
Operational	These tasks involve the day-to-day (or periodic) traffic/incident management and system operations, and will be performed by all Agencies with traffic operations responsibilities.

The Task IDs given with each task description in the tables that follow are to facilitate traceability during upcoming project tasks. They also provide a convenient means to refer to the tasks. The same Task ID is used to describe those tasks that are the same for each Level.

Note that some of the tasks to be performed by different Level Agencies are similar in function but will be performed at differing levels of service or with a different system. Because of the similarities in the task, the base Task ID has been kept the same, but will also include a parenthetic description of how the activity varies from other instances of that task. For example, all Agencies will monitor traffic operations to some extent (TMC-O2). However, Level 1 Agencies [TMC-O2 (L1)] will monitor traffic operations infrequently while Level 3 Agencies [TMC-O2 (L3)] will typically manage traffic operations from the AM peak through the PM peaks.

2.5.3 Level 1 Agency Tasks

As described above, Level 1 Agencies generally do not actively manage its traffic control devices directly and typically do not possess any other ITS devices. These Agencies will have another Agency host/operate and manage their traffic operations. (This does not apply to the transit Agencies, which have no traffic-related operations.) Level 1 Agencies will be provided an IEN W/S to monitor traffic operations in their jurisdiction and other adjacent jurisdictions.

Even though another Agency is operating the traffic signal system, there are still tasks that need to be performed by Level 1 Agencies since they are ultimately responsible for the system, part of the SGVTF, and have an IEN W/S. Most of the tasks will be administrative and infrequent. Level 1 Agencies will probably not require more than one (1) hour/week performing the following tasks during typical operations.

The following Agencies will operate at Level 1:

- San Marino
- MTA (view only)
- Foothill Transit (view only)
- Montebello Transit (view only)

Note that the Cities of Bradbury and Sierra Madre have no traffic signals within their jurisdictions and therefore do not need an IEN W/S at this time.

2.5.3.1 LCCS Tasks

LCCS tasks are activities that pertain to the operation of the IEN W/S location and the W/S itself. In addition, the LCCS tasks include management and planning tasks related to the intra-jurisdictional traffic operations. Even though the location will generally be an engineer’s desk for Level 1 Agencies, there is a core set of activities that need to be performed due to the Regional aspects (Corridor-wide) of the system(s).

LCCS Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-A1	Coordinate the implementation and maintenance of the IEN.
TMC-A2	Attend IEN training as needed.
TMC-A3	Ensure LCCS systems/equipment are secure.
Operational	
TMC-O1	Monitor IEN workstation performance (e.g., workstation operating and presenting live data, etc.), contacting the RC if problems are noted.
TMC-O2 (L1)	Monitor traffic operations as needed/desired using the IEN workstation. In general, Level 1 Agencies will refer issues to their ATMS hosting Agency.
TMC-O3 (Agency B)	Ensure that the IEN is updated to reflect changes to the ITS inventory.

2.5.3.2 Signal Control Tasks

Since another Agency is operating the traffic signal equipment, Level 1 Agencies will perform minimal or high-level signal control tasks.

Signal Control Tasks

TASK ID	DESCRIPTION
Operational	
SIG-O1 (L1)	Check that signal system components are communicating with the IEN and are functioning properly, taking corrective actions as needed. For Level 1 Agencies, this task will be performed infrequently and issues will be referred to the ATMS hosting Agency.

2.5.3.3 Detection and Surveillance Tasks

Since another Agency is operating the traffic signal equipment, Level 1 Agencies will perform minimal or high-level detection and surveillance tasks.

Detection and Surveillance Tasks

TASK ID	DESCRIPTION
Operational	
DET-O1 (L1)	Check that detection and surveillance system components are communicating with the IEN and functioning properly, taking corrective actions as needed. For Level 1 Agencies, this task will be performed infrequently and issues will be referred to the ATMS hosting Agency.

2.5.3.4 Communications (Traffic Systems) Tasks

Since another Agency is operating the traffic signal equipment, Level 1 Agencies will perform minimal or high-level Communications tasks.

Communications Tasks

TASK ID	DESCRIPTION
Operational	
COM-O1 (L1)	Check that communications system components are connected to the IEN and functioning properly, taking corrective actions as needed. For Level 1 Agencies, this task will be performed infrequently and issues will be referred to the ATMS hosting Agency.

2.5.3.5 Traveler Information Systems Tasks

There are no TIS tasks for Level 1 Agencies.

2.5.3.6 Agency Coordination Tasks

Level 1 Agencies need to perform the following tasks related to Corridor-wide traffic and incident management.

Agency Coordination Tasks

TASK ID	DESCRIPTION
Administrative	
SGV-A1	Work with other SGVTF Agencies to develop Standard Operating Procedures.
SGV-A2	Notify other Agencies and/or the RC of any upcoming planned events that may affect them.

2.5.4 Level 2A Agency Tasks

In general, Level 2A Agencies passively manage their own traffic signal operations during exceptions and sometimes at peak periods (e.g., AM/PM rushes, etc.), otherwise the system is managed/hosted by another Agency. Level 2A Agencies will also take a more active role in the planning of their traffic operations than a Level 1 Agency. Level 2A Agencies will be provided systems for their LCCS (an IEN workstation and a ATMS workstation [connected to the hosting Agency’s ATMS]) to monitor/manage traffic and incident management operations, Locally and Regionally.

Even though another Agency is principally operating the traffic signal system, there are still tasks that need to be performed by Level 2A Agencies since they are ultimately responsible for the system, part of the SGVTF, and have the IEN and ATMS workstations. Level 2A Agencies will probably not require more than five (5) hours/week performing these tasks during typical operations.

The following Agencies will operate at Level 2A:

- Baldwin Park
- Duarte
- El Monte
- Glendora
- La Puente
- Monrovia
- South El Monte
- Temple City

2.5.4.1 LCCS Tasks

LCCS tasks are activities that pertain to the operation of the IEN and ATMS workstation location and the workstations themselves. Even though the location will generally be at an engineer’s desk for Level 2A Agencies, there is a core set of activities that need to be performed due to the Regional aspects (Corridor-wide) of the system(s). In addition, the LCCS tasks include management and planning tasks related to the intra-jurisdictional traffic operations.

The primary changes between Level 1 and Level 2A Agencies with these tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

LCCS Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-A1	Coordinate the implementation and maintenance of the IEN.
TMC-A2	Attend IEN training as needed.
TMC-A3	Ensure LCCS systems/equipment are secure.
TMC-A4	Coordinate the implementation and maintenance of the TCS.
TMC-A5	Attend TCS training as needed.
TMC-A6 (L2A)	Coordinate the development of scenario response plans for the TCS with the hosting Agency.

TASK ID	DESCRIPTION
Operational	
TMC-O1	Monitor IEN workstation performance (e.g., workstation operating and presenting live data, etc.), contacting the RC if problems are noted.
TMC-O2 (L2A)	Monitor local traffic operations and perform local incident management (e.g., implement scenarios, change signal timing plan, etc.) as needed. Level 2A Agencies will normally refer issues to their ATMS hosting Agency.
TMC-O3 (Agency B)	Ensure that the IEN is updated to reflect changes to the ITS inventory.
TMC-O4 (Agency B)	Ensure that the TCS is updated to reflect changes to the ITS inventory.
TMC-O5 (Agency B)	Monitor TCS performance taking corrective actions, as needed (e.g., workstation operating and presenting live data, etc.). In general, L2A Agencies will contact their ATMS hosting Agency.

2.5.4.2 Signal Control Tasks

In addition to the added task described below, the primary changes between Level 1 and Level 2A Agencies with Signal Control tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Signal Control Tasks

TASK ID	DESCRIPTION
Operational	
SIG-O1 (L2A)	Check that signal system components are communicating with the TCS and IEN and are functioning properly, taking corrective actions as needed. For Level 2A Agencies, this task will be performed as needed and issues will normally be referred to the ATMS hosting Agency.

2.5.4.3 Detection and Surveillance Tasks

The primary changes between Level 1 and Level 2A Agencies with Detection and Surveillance tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Detection and Surveillance Tasks

TASK ID	DESCRIPTION
Operational	
DET-O1 (L2A)	Check that detection and surveillance system components are communicating with the TCS and IEN and functioning properly, taking corrective actions as needed. For Level 2A Agencies, this task will be performed as needed and issues will normally be referred to the ATMS hosting Agency.

2.5.4.4 Communications (Traffic Systems) Tasks

The primary changes between Level 1 and Level 2A Agencies with Communications tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Communications Tasks

TASK ID	DESCRIPTION
Operational	
COM-O1 (L2A)	Check that communications system components are connected to the TCS and IEN and functioning properly, taking corrective actions as needed. For Level 2A Agencies, this task will be performed as needed and issues will normally be referred to the ATMS hosting Agency.

2.5.4.5 Traveler Information Systems Tasks

A few Level 2A Agencies may have some TIS (e.g., CMS, website, etc.) implemented (either existing ones or implemented outside of the SGV ATMS project) and will have some associated tasks, although the tasks may actually be performed by the ATMS hosting Agency.

TIS Tasks

TASK ID	DESCRIPTION
Operational	
TIS-O1 (L2A)	Check that TIS system components are communicating with the TCS and IEN and functioning properly, taking corrective actions as needed. For Level 2A Agencies, this task will be performed as needed and issues will normally be referred to the ATMS hosting Agency.

2.5.4.6 Agency Coordination Tasks

Level 2A Agencies need to perform the following tasks related to Corridor-wide traffic and incident management. The primary changes between Level 1 and Level 2A Agencies with Agency Coordination tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Agency Coordination Tasks

TASK ID	DESCRIPTION
Administrative	
SGV-A1	Work with other SGVTF Agencies to develop Standard Operating Procedures.
SGV-A2	Notify other Agencies and/or the RC of any upcoming planned events that may affect them.
SGV-A3	Notify other Agencies and/or the RC of any infrastructure changes.

2.5.5 Level 2B Agency Tasks

In general, Level 2B Agencies actively manage and operate their own traffic control signals during peak periods (e.g., AM/PM rushes, etc.), passively operate their TCS between peak periods, and may also operate a small number of other ITS devices (e.g., CCTV, CMS, HAR, etc.). During typical non-business hours (6PM to 6AM), these Agencies may also have another Agency manage their traffic control systems. Level 2B Agencies will be provided systems for their LCCS (an IEN W/S and a ATMS W/S) to manage and coordinate traffic and incident management operations. Level 2B Agencies will probably require a minimum of 20 hours/week performing these tasks during typical operations.

The following Agencies will operate at Level 2B:

- Alhambra
- Arcadia
- Azusa
- Covina
- Irwindale
- Montebello
- Monterey Park
- Rosemead
- San Dimas
- San Gabriel
- South Pasadena
- West Covina

2.5.5.1 LCCS Tasks

LCCS tasks are activities that pertain to the operation of the LCCS and of the LCCS systems, and there is a core set of activities that need to be performed due to the Regional aspects (Corridor-wide) of the system(s). In addition, the LCCS tasks include management and planning tasks related to intra-jurisdictional traffic operations.

Since Level 2B Agencies actively manage their traffic signal systems, they will be performing tasks similar to Levels 1 and 2A, but in more depth and frequency. Also, since a TCS is a component of the LCCS the Agency will be provided, there are additional tasks that Level 2B Agencies must perform.

LCCS Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-A1	Coordinate the implementation and maintenance of the IEN.
TMC-A2	Attend IEN training as needed.
TMC-A3	Ensure LCCS systems/equipment are secure.
TMC-A4 (Host)	Coordinate the implementation and maintenance of the TCS workstation with the vendor. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-A5 (Host)	Coordinate the training of existing and new staff on the TCS with the vendor. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.

TASK ID	DESCRIPTION
TMC-A6 (Host)	Develop automated scenario response plans. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-A7 (Host)	Develop and maintain geo-data (e.g., Agency boundaries, locations of ITS equipment, etc.). This is a baseline task for Agencies that already have a TCS. This task may also include data for ATMS hosted Agencies.
Operational	
TMC-O1	Monitor IEN workstation performance (e.g., workstation operating and presenting live data, etc.), contacting the RC if problems are noted.
TMC-O2 (L2B)	Monitor traffic operations and perform incident management during peak periods and as needed.
TMC-O3 (Host)	Update the IEN to reflect changes to the ITS inventory. This may also include support of ATMS hosted Agencies.
TMC-O4 (Host)	Update the TCS to reflect changes to the ITS inventory. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-O5 (Host)	Monitor TCS performance taking corrective actions, as needed (e.g., workstation operating and presenting live data, etc.).
TMC-O6 (Host)	Perform "Agency B" TCS and IEN activities per applicable Agency operations and maintenance agreements (i.e., perform tasks described herein for ATMS hosted Agencies).
TMC-O7 (Host)	Perform traffic operations and incident management for "Agency B" per applicable Agency operations and maintenance agreements.

2.5.5.2 Signal Control Tasks

The primary changes between Level 2A and Level 2B Agencies with Signal Control tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Signal Control Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-A1 (Host)	Develop, maintain, and perform periodic reviews of local signal timing plans for hosted Agencies.
SIG-A2 (Host)	Develop construction plans for new traffic signal or controller installations or repairs for ATMS hosted Agencies.
Operational	
SIG-O1 (Host)	Check that signal system components are communicating with the TCS and IEN and are functioning properly, taking corrective actions as needed. For Level 2B Agencies, this task will be performed during peak periods and as needed. This is a baseline task for Agencies that already have a TCS.
SIG-O2	Implement local signal timing plans.

TASK ID	DESCRIPTION
SIG-O3 (Host)	Check that "Agency B" signal components are communicating with the TCS and IEN and are functioning properly, as applicable, taking corrective actions as needed.
SIG-O4 (Host)	Implement "Agency B" signal timing plans.

2.5.5.3 Detection and Surveillance Tasks

The primary changes between Level 2A and Level 2B Agencies with Detection and Surveillance tasks are the level of involvement with the tasks and frequency that the Agency will perform them. Level 2B Agencies may also have CCTV implemented and may have some additional associated tasks.

Detection and Surveillance Tasks

TASK ID	DESCRIPTION
Operational	
DET-O1 (L2B)	Check that detection and surveillance system components are communicating with the IEN and TCS, and functioning properly, taking corrective actions as needed. For Level 2B Agencies, this task will be performed during peak periods and as needed. This is a baseline task for Agencies that already have a TCS.
DET-O2 (Host)	Check that "Agency B" detection components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.5.4 Communications (Traffic Systems) Tasks

The primary changes between Level 2A and Level 2B Agencies with Communications tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Communications Tasks

TASK ID	DESCRIPTION
Operational	
COM-O1 (L2B)	Check that communications system components are communicating with the IEN and TCS, and functioning properly, taking corrective actions as needed. For Level 2B Agencies, this task will be performed during peak periods and as needed. This is a baseline task for Agencies that already have a TCS.
COM-O2 (Host)	Check that "Agency B" communications components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.5.5 Traveler Information Systems Tasks

Level 2B Agencies may have TIS components (e.g., CMS, website, etc.) implemented (either existing ones or implemented outside of the SGV ATMS project) and may therefore have some associated tasks.

TIS Tasks

TASK ID	DESCRIPTION
Operational	
TIS-O1 (L2B)	Check that TIS system components are communicating with the IEN and TCS, and functioning properly, taking corrective actions as needed. For Level 2B Agencies, this task will be performed during peak periods and as needed. This is a baseline task for Agencies that already have a TCS.
TIS-O2 (Host)	Check that "Agency B" TIS components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.5.6 Agency Coordination Tasks

Level 2B Agencies need to perform the following tasks related to Corridor-wide traffic and incident management. The primary changes between Level 2A and Level 2B Agencies with Agency Coordination tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Agency Coordination Tasks

TASK ID	DESCRIPTION
Administrative	
SGV-A1	Work with other SGVTF Agencies to develop Standard Operating Procedures.
SGV-A2	Notify other Agencies and/or the RC of any upcoming planned events that may affect them.
SGV-A3	Notify other Agencies and/or the RC of any infrastructure changes.
SGV-A4 (Host)	Develop and update operating agreement(s) with hosted Agencies (i.e., "Agency B").

2.5.6 Level 3 Agency Tasks

Level 3 Agencies actively manage their own traffic signal operations between the AM and PM peaks, at a minimum, and may operate 24/7. Level 3 Agencies are likely to operate a large number of other ITS devices (e.g., CCTV, CMS, HAR, etc.) and may also host/operate other Agencies’ signal systems. Level 3 Agencies will probably require a minimum of 40 hours/week performing these tasks during typical operations.

The following Agencies will operate at Level 3:

- Caltrans
- LA County DPW
- Pasadena

2.5.6.1 LCCS Tasks

LCCS tasks are activities that pertain to the operation of the LCCS and of the LCCS systems, and there is a core set of activities that need to be performed due to the Regional aspects (Corridor-wide) of the system(s). In addition, the LCCS tasks include management and planning tasks related to the intra-jurisdictional traffic operations.

Since Level 3 Agencies actively manage their traffic signal systems, they will be performing tasks similar to Levels 1 and 2, but in more depth and frequency. Also, since a TCS is a component of the LCCS, there are additional tasks that Level 3 Agencies must perform.

LCCS Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-A1	Coordinate the implementation and maintenance of the IEN.
TMC-A2	Attend IEN training as needed.
TMC-A3	Ensure LCCS systems/equipment are secure.
TMC-A4 (Host)	Coordinate the implementation and maintenance of the TCS workstation with the vendor. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-A5 (Host)	Coordinate the training of existing and new staff on the TCS with the vendor. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-A6 (Host)	Develop automated scenario response plans. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-A7 (Host)	Develop and maintain geo-data (e.g., Agency boundaries, locations of ITS equipment, etc.). This is a baseline task for Agencies that already have a TCS. This task may also include data for ATMS hosted Agencies.

TASK ID	DESCRIPTION
Operational	
TMC-O1	Monitor IEN workstation performance (e.g., workstation operating and presenting live data, etc.), contacting the RC if problems are noted.
TMC-O2 (L3)	Monitor traffic operations and perform incident management during operating hours and as needed.
TMC-O3 (Host)	Update the IEN to reflect changes to the ITS inventory. This may also include support of ATMS hosted Agencies.
TMC-O4 (Host)	Update the TCS to reflect changes to the ITS inventory. This is a baseline task for Agencies that already have a TCS. This may also include support of ATMS hosted Agencies.
TMC-O5 (Host)	Monitor TCS performance taking corrective actions, as needed (e.g., workstation operating and presenting live data, etc.).
TMC-O6 (Host)	Perform "Agency B" TCS and IEN activities per applicable Agency operations and maintenance agreements (i.e., perform tasks described herein for ATMS hosted Agencies).
TMC-O7 (Host)	Perform traffic operations and incident management for "Agency B" per applicable Agency operations and maintenance agreements.

2.5.6.2 Signal Control Tasks

The primary changes between Level 2B and Level 3 Agencies with Signal Control tasks are the level of involvement with the tasks and frequency that the Agency will perform them. In addition, there may be additional tasks since a Level 3 Agency may be hosting other Agencies' traffic operations.

Signal Control Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-A1 (Host)	Develop, maintain, and perform periodic reviews of local signal timing plans for ATMS hosted Agencies.
SIG-A2 (Host)	Develop construction plans for new traffic signal or controller installations or repairs for ATMS hosted Agencies.
Operational	
SIG-O1 (L3)	Check that signal system components are communicating with the TCS and IEN and are functioning properly, taking corrective actions as needed. For Level 3 Agencies, this task will be performed during operating hours and as needed. This is a baseline task for Agencies that already have a TCS.
SIG-O2	Implement local signal timing plans.
SIG-O3 (Host)	Check that "Agency B" signal components are communicating with the TCS and IEN and are functioning properly, as applicable, taking corrective actions as needed.
SIG-O4 (Host)	Implement "Agency B" signal timing plans.

2.5.6.3 Detection and Surveillance Tasks

The primary changes between Level 2 and Level 3 Agencies with Detection and Surveillance tasks are the level of involvement with the tasks and frequency that the Agency will perform them. Level 3 Agencies may also have CCTV implemented and may have some additional associated tasks. In addition, there may be additional tasks since a Level 3 Agency may be hosting/operating other Agencies' traffic operations.

Detection and Surveillance Tasks

TASK ID	DESCRIPTION
Operational	
DET-O1 (L3)	Check that detection and surveillance system components are communicating with the IEN and TCS and functioning properly, taking corrective actions as needed. For Level 3 Agencies, this task will be performed during operating hours and as needed. This is a baseline task for Agencies that already have a TCS.
DET-O2 (Host)	Check that "Agency B" detection components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.6.4 Communications (Traffic Systems) Tasks

The primary changes between Level 2B and Level 3 Agencies with Communications tasks are the level of involvement with the tasks, and frequency that the Agency will perform them.

Communications Tasks

TASK ID	DESCRIPTION
Operational	
COM-O1 (L3)	Check that communications system components are communicating to the IEN and TCS and functioning properly, taking corrective actions as needed. For Level 3 Agencies, this task will be performed during operating hours and as needed. This is a baseline task for Agencies that already have a TCS.
COM-O2 (Host)	Check that "Agency B" communications components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.6.5 Traveler Information Systems Tasks

Level 3 Agencies will probably have TIS components (e.g., CMS, website, etc.) implemented (either existing ones or implemented outside of the SGV ATMS project) and will therefore have tasks associated with them.

TIS Tasks

TASK ID	DESCRIPTION
Operational	
TIS-O1 (L3)	Check that TIS system components are communicating with the IEN and TCS and functioning properly, taking corrective actions as needed. For Level 3 Agencies, this task will be performed during operating hours and as needed. This is a baseline task for Agencies that already have a TCS.
TIS-O2 (Host)	Check that "Agency B" TIS components are communicating with the IEN and TCS, and are functioning properly, as applicable, taking corrective actions as needed.

2.5.6.6 Agency Coordination Tasks

Level 3 Agencies need to perform the following tasks related to Corridor-wide traffic and incident management. The primary changes between Level 2B and Level 3 Agencies with Agency Coordination tasks are the level of involvement with the tasks and frequency that the Agency will perform them.

Agency Coordination Tasks

TASK ID	DESCRIPTION
Administrative	
SGV-A1	Work with other SGVTF Agencies to develop Standard Operating Procedures.
SGV-A2	Notify other Agencies and/or the RC of any upcoming planned events that may affect them.
SGV-A3	Notify other Agencies and/or the RC of any infrastructure changes.
SGV-A4 (Host)	Develop and update operating agreement(s) with ATMS hosted Agencies (i.e., "Agency B").

2.5.7 Regional Coordinator (RC) Tasks

The main role of the RC in this context is to facilitate and ensure that Agency Coordination tasks are accomplished, and to develop the policies that the individual Agencies will need to implement. Also, since the RC is responsible for the overall management of the IEN and will be housing at least some of the server and networking components, the Agency in this role must perform related project and system management tasks.

Regional Coordinator Tasks

TASK ID	DESCRIPTION
RC-1	Coordinate SGVTF traffic and incident management collaboration between SGVTF Agencies (Sub-Regionally).
RC-2	Coordinate SGVTF traffic and incident management collaboration between Traffic Forums (Regionally).

2.6 REGIONAL TRAFFIC MANAGEMENT OVERVIEW

Exhibit 2.1 depicts the overall Regional Concept-of-Operations for traffic and incident management for the SGVTF. The following is a high-level outline of how the Agencies will contribute to Regional traffic and incident management using the task categories defined above.

TMC/LCCS Facility

- Each Agency will have an area defined to monitor and manage their traffic system and those of other Agencies of interest. For Level 1 and 2A Agencies, this might be an engineer's desk. Level 2B Agencies may have a separate room, while Level 3 Agencies will probably have a full-fledged TMC.
- Access to the area (regardless of size) will be restricted as per the (to be developed) Regional Traffic Operations (IEN) Security Plan.
- The facility will be used as the primary point of contact for the public and other Agencies for traffic related issues (e.g., phone inquiries and problem reports, etc.).
- Personnel with the appropriate privileges can monitor or manage their local Agency ITS components/systems (depending upon Agency Level) as well as monitor other Agency's traffic conditions via the IEN.
- Agencies that host other Agencies' traffic systems can manage all ITS components from a single workstation housed in its LCCS.
- All related documentation will be accessible to this location (e.g., IEN and ATMS user and systems manuals, OMPs, etc.).

Signal Control

- Traffic engineers will ensure that the traffic signal equipment in their purview (be it that Agency's equipment or "Agency B's") are communicating and functioning properly and take corrective measures, if needed. This will occur quite frequently (multiple times daily) for Level 3 Agencies, less so for Level 2B and 2A Agencies (twice a day), and infrequently for Level 1 (2 or 3 times a week).
- Traffic engineers will establish signal timings, modify them on an as-needed basis (per information obtained by the TCS and/or IEN), and develop policies to re-visit/update them on a periodic basis.

Detection and Surveillance

- Inductive loops are the predominant detection tool, but the use of VIDs is increasing in the Region.
- Traffic engineers will ensure that the detection and surveillance equipment in their purview (be it that Agency's equipment or "Agency B's") are communicating and functioning properly and take corrective measures, if needed. This will occur quite frequently (multiple times daily) for Level 3 Agencies, less so for Level 2B and 2A Agencies (twice a day), and infrequently for Level 1 (2 or 3 times a week).
- Agencies that operate CCTV have developed an Image Usage Plan that defines who can view and/or operate the CCTV cameras (e.g., other Agencies, law enforcement, etc.) and how the images can be used (e.g., law enforcement, internet, etc.).

- Via the IEN, Agency TCS information and/or operations will be shared throughout the SGVTF, as well as Countywide.

Communications

- Traffic engineers will ensure that the communications systems/equipment in their purview (be it that Agency's equipment or "Agency B's") are connected and functioning properly and take corrective measures, if needed. This will occur quite frequently (multiple times daily) for Level 3 Agencies, less so for Level 2B and 2A Agencies (twice a day), and infrequently for Level 1 (2 or 3 times a week).

Traveler Information Systems

- Traffic engineers will ensure that the TIS equipment in their purview are communicating and functioning properly and take corrective measures, if needed. This will occur quite frequently (multiple times daily) for Level 3 Agencies but less so for Level 2B and 2A Agencies (twice a day or as needed). Level 1 Agencies do not operate TIS.
- Via the IEN, Agency TIS messages and/or control capabilities will be shared throughout the SGVTF, as well as Countywide.

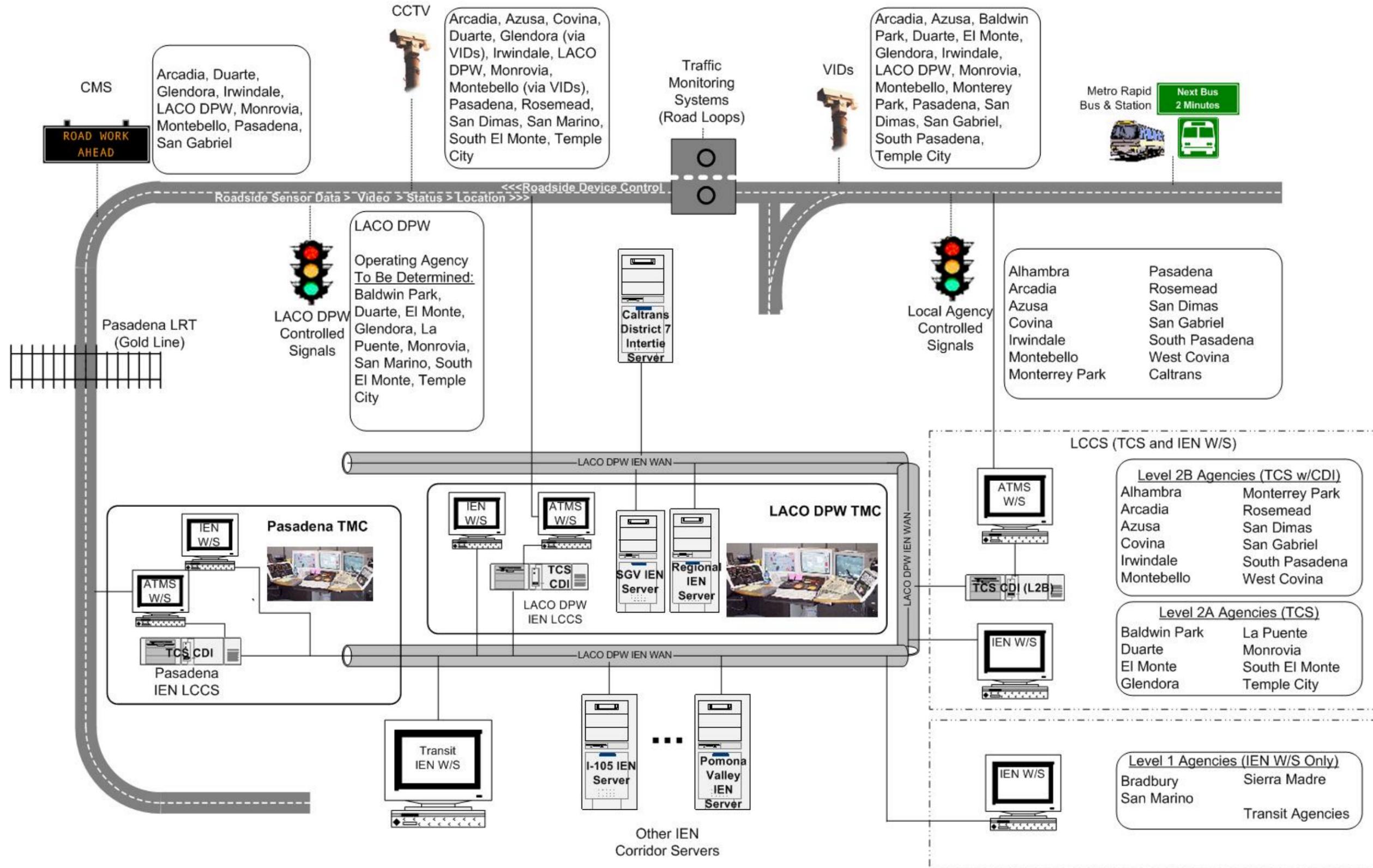
Agency Coordination

- Agency agreements are in place allowing the sharing and distribution of traffic and incident management information throughout the Region.
- Every Agency's signal system, detection, and TIS status, as well as any CCTV images are distributed and can be displayed on any IEN workstation .

2.7 CONOPS MAINTENANCE

The ConOps, like other systems documentation (Corridor-wide traffic operations is a system of sorts) needs to be updated to reflect changes over time. For example, the documentation should be updated as Agencies change Levels to reflect new staffing or funding levels, or tasks should be added, deleted, or clarified as Agencies perform them and resolve issues that may arise.

Exhibit 2.1 - SGVTF Concept-of-Operations



APPENDIX A – ACRONYMS/DEFINITIONS

The following acronyms and terms are used within this and other SGV Traffic Forum project documents:

Acronyms and Terms

ACRONYM/TERM	DEFINITION
ATMS	Advanced Transportation Management System
Caltrans	State of California Department of Transportation
CCTV	Closed Circuit Television
CDI	Command/Data interface. Software that implements a bi-directional interface between a TCS and the IEN.
CMS	Changeable Message Sign. Fixed and mobile roadside signs that display informational messages (used synonymously with Variable Message Sign and Dynamic Message Sign).
DMS	Dynamic Message Sign (see CMS)
EDP	Early Deployment Project. A (relatively small-scale) project warranting initiating/completing prior to the completion of the Traffic Forum due to its high ROI or required to accomplish the goals of the Forum. (For the East SGV Traffic Signal Synchronization Project, the EDP was a Countywide intranet [on the IEN WAN] that disseminates I-210 traffic conditions from Caltrans and SGV IEN-related documentation to participating Agencies).
FMS	Freeway Management System. A system to operate and manage freeway ramp meters and other ITS roadside devices on the freeway.
IEN	Information Exchange Network. Infrastructure (e.g., communications network, standards, software, etc.) to facilitate the exchange of real-time arterial traffic data/commands between participating jurisdictions' TCSs and support incident management activities/information between Agency operators.
IEN Workstation	A workstation connected to the IEN that allows inter-jurisdictional monitoring and control of traffic data/signals and the exchange of incident information.
ISP	Information Service Provider. A company or system that (re) distributes data taken from one or more sources. This data may be raw or processed.
ITS	Intelligent Transportation System(s)
LACO DPW	Los Angeles County Department of Public Works
LADOT	(City of) Los Angeles Department of Transportation
LCCS	Local City Control Site. An area at each Agency that houses its IEN workstation and, depending upon the Agency Level, a TCS workstation allowing inter-jurisdictional monitoring and control of traffic data/signals.
MOU	Memorandum of Understanding
MPO	Metropolitan area Planning Organization
MTA	(Los Angeles County) Metropolitan Transportation Authority – Transit Agency and MPO for Los Angeles County
NIST	National Institute of Standards and Technology

ACRONYM/TERM	DEFINITION
OMP	Operations Management Plan. A document that describes the traffic and incident management policies and procedures (e.g., when to use certain TIS devices, escalation management process/personnel, etc.) at a local, Corridor or Regional level.
RC	Regional Coordinator
RTCB	Real Time Clock Broadcast
SGV	San Gabriel Valley
SGVPP	SGV Pilot Project. Proof-of-concept implementation of the IEN in the SGV.
SGVTF	SGV Traffic Forum
Signal System	Roadside equipment to control/manage (one or more) intersection traffic signals. (See TCS for centralized control.)
TCS	Traffic Control System. A centralized system to control/manage (at least some) intersection traffic signals in the network. (See Signal System for non-centralized control.)
TMC	Traffic (or Transportation) Management Center
USDOT	United States Department of Transportation
WAN	Wide Area Network
W/S	Workstation, usually a desktop computer.
WWV	National Institute of Standards and Technology time broadcast used to ensure traffic signal controllers are synchronized.
VDS	Vehicle Detection System
VIDs	Video Imaging Detection. Video camera-based roadside equipment system for vehicle detection and metrics.
VMS	Variable Message Sign (see CMS)

APPENDIX B - "DAY-IN-THE-LIFE" AGENCY SUMMARIES

"Day-in-the-Life" exercises were planned for Agencies representing implementation Levels 2A, 2B, and 3. These exercises were to fulfill dual purposes: to get a better understanding of how Agencies perform their normal day-to-day operations and also to help validate some of the forward-looking operations described herein in support of the SGVTF mission.

Unfortunately, when it came time to conduct these exercises, we were not able to do so with the Level 3 Agency. We were, however, able to conduct them with the Level 2A and 2B Agencies. The results from these exercises have been represented in the body of the preceding ConOps document.

The following are summaries of the findings for these "Day-in-the-Life" exercises.

“DAY-IN-THE-LIFE” SUMMARY – LEVEL 2A AGENCY

Item	Existing Conditions	Planned Operations
Monitoring Of Field Equipment	Monthly inspection by contractor (takes about 1.5 weeks)	Same as existing, but will check as needed if a complaint is received (public or PD)
Traffic and Incident Monitoring/Management	Not done	Same as existing
Traffic Engineering	Timing plans reevaluated after triennial traffic count	Same as existing
Intra-Agency Coordination	<ul style="list-style-type: none"> • Field equipment maintenance is managed by another Dept. • PD may provide problem notification 	Same as existing
Inter-Agency Coordination	<ul style="list-style-type: none"> • LACO for issues with synchronized arterials • Caltrans for issues at freeway intersections 	Same as existing
Public Interface	1 to 2 inquiries per month	Same as existing
Staffing	1 + 1 day/week Traffic Engineer	Same as existing
Availability of Caltrans' Signal Data		Not very important
How IEN Would Change Time Usage		<ul style="list-style-type: none"> • Automated problem notifications (e.g., email, etc.) would assist fixing equipment more efficiently • Monthly inspections would still occur
How IEN Workstation Would Change Existing Processes		<ul style="list-style-type: none"> • None, the IEN would mostly be another source of problem identification • Would prefer a single monitor for regular and IEN systems (e.g., A/B switch)
Who Would Use IEN Workstation		<ul style="list-style-type: none"> • Maintenance Supervisor and Traffic Engineer • Weekly

“DAY-IN-THE-LIFE” SUMMARY – LEVEL 2B AGENCY

Item	Existing Conditions	Planned Operations
Monitoring Of Field Equipment	<ul style="list-style-type: none"> • 90 minutes in field daily (4 days per week) • May miss peak period issues as reported by PD or public • Monthly PM at every intersection by contractor 	<ul style="list-style-type: none"> • Time in field should be about the same, but more efficient • More easily observe peak period issues • PM – same as existing
Traffic and Incident Monitoring/Management	Not done	Same as existing
Traffic Engineering	<ul style="list-style-type: none"> • Most signal timing issues are on LACO-managed arterials and issues are referred to LACO • New signalization studies performed (in-house) as needed (3 intersections identified in need of funding) 	Same as existing
Intra-Agency Coordination	<ul style="list-style-type: none"> • Field equipment maintenance performed by contractor • PD may provide problem notification (up to 3/day) • Street Maintenance often reports issues w/safety lights 	<ul style="list-style-type: none"> • Same as existing • May consider taking some maintenance in-house
Inter-Agency Coordination	<ul style="list-style-type: none"> • LACO for issues with synchronized arterials • Caltrans for issues at freeway intersections • About 1 hr/week 	Same as existing
Public Interface	1 to 2 inquiries per month	Same as existing
Staffing	1	Same as existing
Availability of Caltrans' Signal Data	Yes, to help manage issues resulting from highway construction or incidents	Same as existing
How TCS Would Change Time Usage		<ul style="list-style-type: none"> • Automated problem notifications (e.g., email, morning reports, etc.) would assist identifying issues and fixing equipment more efficiently • More easily identify coordination issues • Monthly inspections would still occur

Item	Existing Conditions	Planned Operations
How TCS Workstation Would Change Existing Processes		<ul style="list-style-type: none"> • TCS would be a major source of problem identification and potential resolution • Would change timing plans during college and holiday events
Who Would Use TCS Workstation		<ul style="list-style-type: none"> • Center of mini-TMC • Primarily Traffic Engineer, but available to anyone in TMC (e.g., maintenance contractor, etc.)
How IEN Workstation Would Change Existing Processes		<ul style="list-style-type: none"> • Unsure if or how utilized

APPENDIX C – BASELINE TASKS

The tasks presented in Sections 2.5.3 through 2.5.6 describe activities that are new or enhanced to most SGV Agencies due to the introduction and implementation of an ATMS and/or IEN workstation and the Regional perspective to traffic and incident management. In addition to those tasks, there are also “baseline” tasks that most Agencies perform to some degree. (In some cases, an Agency may have “farmed-out” the specific task(s) to a consultant or another Agency to perform, but that Agency is still ultimately responsible for the successful execution of the task.)

Some of these baseline tasks are described below in order to present a more complete picture of all of the tasks that Agencies at the various levels perform as well as to support forthcoming project deliverables.

In some cases, Level 2B and Level 3 tasks may appear in both sections of this document. This is due to the fact that these tasks are new to some of the Agencies but are baseline to others (i.e., they are already operating an LCCS).

The presentation format of these tasks is the same as in the prior sections, except for the addition of a “B” in the Task ID: the tasks are presented by Agency Level and grouped functionally within each level, and by operational and administrative activities. Please refer to Section 2.5.2 for a more complete description of the organization of the tasks descriptions.

The following table shows the mapping of SGV Agencies to their operational level. Section 2.5 provides an explanation of the various levels and how Agencies were mapped to them.

SGVTF Agency/Level Mapping

LEVEL 1	LEVEL 2A	LEVEL 2B	LEVEL 3	RC
Bradbury San Marino Sierra Madre	Baldwin Park Duarte El Monte Glendora La Puente Monrovia South El Monte Temple City	Alhambra Arcadia Azusa Covina Irwindale Montebello Monterrey Park Rosemead San Dimas San Gabriel South Pasadena West Covina	Caltrans LACODPW Pasadena	LACODPW

C.1 STANDARD OPERATING PROCEDURES

All Agencies, regardless of their operational level, would benefit by developing a local traffic and incident management Standard Operating Procedures (SOP) document (sometimes called an Operations Management Plan [OMP]), if they don't already have one. At a minimum, this document contains contact information, describes how the Agency plans to operate and manage their traffic signals, perform incident management, etc. within the Agency's borders.

For Level 1 and 2A Agency's, this document will be fairly minor due to their limited traffic operations. The document will often be merely referrals to the Agency operating their traffic signals (and will need to be developed with the ATMS hosting Agency). The document for Level 2B and 3 Agencies will normally be more complex due to the increased interaction with their traffic systems, potentially more ITS devices deployed, and the possibility of hosting another Agency's traffic system.

In addition to the local SOP/OMP, a Corridor-wide (Sub-Regional) version could also be developed to support the goals of inter-Agency traffic and incident management. All levels of Agencies should participate in its development even though smaller Agencies will have only a minor, yet important, role to play.

There are several benefits to creating these documents, including:

- Reduced training time– new staff can be brought up to speed more efficiently.
- Support for Agency Agreements – these documents can be the foundation for creating Agency agreements (for either hosting or back-ups) and creates a common understanding of what is expected.
- Emergency Operations – documented escalation procedures and contacts can be of great value during emergencies, and can be taken or copies stored off site.

As with all systems documentation, these documents need to be kept up-to-date for them to be of continuing use. Each Agency will need to periodically update the information in their SOP/OMP as conditions warrant (e.g., staff or contact changes, new devices or systems, etc.).

C.2 LEVEL 1 AGENCY BASELINE TASKS

LCCS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-B-A1	Develop/document and maintain ITS inventory.
TMC-B-A2	As part of the annual budget process, evaluate traffic and incident management-related staffing needs and recommend additional resources as appropriate.
Operational	
TMC-B-O1	Handle calls/inquiries from citizens, other departments, other Agencies, the media, and other external entities.

Signal Control Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-B-A1 (Agency B)	Coordinate development of construction plans for new traffic signal or controller installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

Detection and Surveillance Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
DET-B-A1 (Agency B)	Coordinate development of construction plans for new detection and surveillance system installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

Communications Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
COM-B-A1 (Agency B)	Coordinate development of construction plans for new communications system installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

C.3 LEVEL 2A AGENCY BASELINE TASKS

LCCS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-B-A1	Develop/document and maintain ITS inventory.
TMC-B-A2	As part of the annual budget process, evaluate traffic and incident management-related staffing needs and recommend additional resources as appropriate.
Operational	
TMC-B-O1	Handle calls/inquiries from citizens, other departments, other Agencies, the media, and other external entities.

Signal Control Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-B-A1 (Agency B)	Coordinate development of construction plans for new traffic signal or controller installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.
SIG-B-A2 (L2A)	Coordinate development and review of local signal timing plans in conjunction with consultants and/or the Agency hosting/managing the traffic system.

Detection and Surveillance Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
DET-B-A1 (Agency B)	Coordinate development of construction plans for new detection and surveillance system installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

Communications Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
COM-B-A1 (Agency B)	Coordinate development of construction plans for new communications system installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

TIS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TIS-B-A1 (Agency B)	Coordinate development of construction plans for new TIS system installations or repairs with consultants and/or the Agency that hosts/operates its traffic system.

C.4 LEVEL 2B AGENCY BASELINE TASKS

LCCS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-B-A1	Develop/document and maintain ITS inventory.
TMC-B-A2	As part of the annual budget process, evaluate traffic and incident management-related staffing needs and recommend additional resources as appropriate.
Operational	
TMC-B-O1	Handle calls/inquiries from citizens, other departments, other Agencies, the media, and other external entities.

Signal Control Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-B-A1	Develop construction plans for new traffic signal or controller installations or repairs.
SIG-B-A2	Develop, maintain, and perform periodic reviews of local signal timing plans.
Operational	
SIG-B-O1	Implement local signal timing plans.

Detection and Surveillance Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
DET-B-A1	Develop construction plans for new detection and surveillance system installations or repairs.

Communications Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
COM-B-A1	Develop construction plans for new communications system installations or repairs.

TIS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TIS-B-A1	Develop construction plans for new TIS system installations or repairs.
Operational	
TIS-B-O1	Update TIS components to reflect current conditions as per SOP.

C.5 LEVEL 3 AGENCY BASELINE TASKS

LCCS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TMC-B-A1	Develop/document and maintain ITS inventory.
TMC-B-A2	As part of the annual budget process, evaluate traffic and incident management-related staffing needs and recommend additional resources as appropriate.
Operational	
TMC-B-O1	Handle calls/inquiries from citizens, other departments, other Agencies, the media, and other external entities.
TMC-B-O2	Utilize LCCS systems and tools to monitor and control local traffic operations during operating periods.
TMC-B-O3	Monitor TCS communications and performance taking corrective actions as needed

Signal Control Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
SIG-B-A1	Develop construction plans for new traffic signal or controller installations or repairs
SIG-B-A2	Develop, maintain, and perform periodic reviews of local signal timing plans.
Operational	
SIG-B-O1	Implement local signal timing plans.

Detection and Surveillance Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
DET-B-A1	Develop construction plans for new detection and surveillance system installations or repairs.

Communications Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
COM-B-A1	Develop construction plans for new communications system installations or repairs.

TIS Baseline Tasks

TASK ID	DESCRIPTION
Administrative	
TIS-B-A1	Develop construction plans for new TIS system installations or repairs.
Operational	
TIS-B-O1	Update TIS components to reflect current conditions as per SOP.

C.6 REGIONAL COORDINATOR BASELINE TASKS

Regional Coordinator Baseline Tasks

TASK ID	DESCRIPTION
RC-B-1	Develop and implement corridor/arterial synchronization plans.
RC-B-2	Develop and manage the IEN bug reporting/tracking and enhancement request processes with the consultant.
RC-B-3	Coordinate the maintenance and upgrades of the IEN Corridor Servers and other IEN-related equipment and systems with the consultant.
RC-B-4	Coordinate the development and deployment of IEN training to various Agency personnel with the consultant.
RC-B-5	Develop and maintain extra-Corridor geodata (geographic data that participating Agencies will not produce as part of their deployments).
RC-B-6	Coordinate activities/plans between Traffic Forums and other Agencies.
RC-B-7	Handle calls/inquiries from citizens, other departments, other Agencies, the media, and other external entities relating to Regional or Corridor specific issues.

C.7 TASKS/AGENCY LEVEL COMPARISON

The following table presents a comparison of all of the tasks to be performed, including baseline tasks, for all Agency Levels. The matrix presents all of the activities required by Agencies at all of the Levels in a single snapshot and can be quite useful if an Agency is considering changing its role in their traffic and incident management (i.e., moving to a new Level). Shaded cells represent tasks an Agency will perform to some extent.

Note that the level of effort expended on a task will vary by Agency Level (and probably by Agencies within the same Level). For example, all Agencies will perform task TMC-O2 (monitor traffic operations). However, a Level 1 Agency performing TMC-O2 will only be using the equipment on an occasional basis, a Level 2B Agency may do so during peak periods, while a Level 3 Agency may have one or more full-time staff actively managing their (and other Agency's) system(s).

All Tasks/Agency Levels Matrix

TASK ID & SUMMARY DESCRIPTION	LEVEL 1	LEVEL 2A	LEVEL 2B	LEVEL 3
TMC-B-A1: Maintain ITS Inventory				
TMC-B-A2: Review staffing needs				
TMC-A1: Coordinate IEN implementation and maintenance				
TMC-A2: Attend IEN training				
TMC-A3: Provide for LCCS security				
TMC-A4 Coordinate TCS implementation and maintenance				
TMC-A5: Attend TCS training				
TMC-A6: Develop scenario response plans				
TMC-A7: Develop and maintain geo-data				
TMC-B-O1: Handle calls and inquiries				
TMC-B-O2: Monitor traffic operations from LCCS				
TMC-B-O3: Monitor TCS communications				
TMC-O1: Monitor IEN performance				
TMC-O2: Monitor traffic operations				
TMC-O3: Update IEN with ITS inventory changes				
TMC-O4: Update TCS with ITS inventory changes				
TMC-O5: Monitor TCS operations				

TASK ID & SUMMARY DESCRIPTION	LEVEL 1	LEVEL 2A	LEVEL 2B	LEVEL 3
TMC-O6: Perform TCS and IEN activities for Agency B				
TMC-O7: Perform traffic operations for Agency B				
SIG-B-A1: Develop construction plans for signals and/or controllers				
SIG-B-A2: Maintain local signal timing plans				
SIG-A1: Develop/maintain/review Agency B signal timing plans for ATMS hosted Agencies				
SIG-A2: Develop signal/controller construction plans for ATMS hosted Agencies				
SIG-B-O1: Implement local signal timing plans				
SIG-O1: Ensure signal system components are communicating with the LCCS systems				
SIG-O2: Implement local signal timing plans				
SIG-O3: Ensure Agency B signal system components are communicating with the LCCS systems				
SIG-O4: Implement Agency B signal timing plans				
DET-B-A1: Develop construction plans for detection and surveillance equipment				
DET-O1: Ensure detection and surveillance system components are communicating with the LCCS systems				
DET-O2: Ensure Agency B detection and surveillance system components are communicating with the LCCS systems				
COM-B-A1: Develop construction plans for communications equipment				
COM-O1: Ensure communications system components are communicating with the LCCS systems				
COM-O2: Ensure Agency B communications system components are communicating with the LCCS systems				

TASK ID & SUMMARY DESCRIPTION	LEVEL 1	LEVEL 2A	LEVEL 2B	LEVEL 3
TIS-B-A1: Develop construction plans for TIS equipment				
TIS-B-O1: Update TIS components as needed				
TIS-O1: Ensure TIS system components are communicating with the LCCS systems				
TIS-O2: Ensure Agency B TIS system components are communicating with the LCCS systems				
SGV-A1: Work with SGVTF Agencies to develop Sub-Regional Standard Operating Procedures				
SGV-A2: Notify other Agencies about planned events				
SGV-A3: Notify other Agencies about infrastructure changes				
SGV-A4: Develop and maintain needed operating agreements				