Appendix A,
Scope of Work

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0.0 Background and Summary

The AVL system MTC SAFE will be to replacing serves primarily as a fleet management tool which:

- Tracks vehicles and makes a record when drivers violate scheduling rules and/or leave beat boundaries.
- Provides for real-time viewing of vehicle location and activities via a map-based interface.
- Provides authorized users with simple tabular data on the assists tow drivers provide.
- Allows for text communication through the in-vehicle data unit (Ranger) from CHP and MTC SAFE to the tow operators.

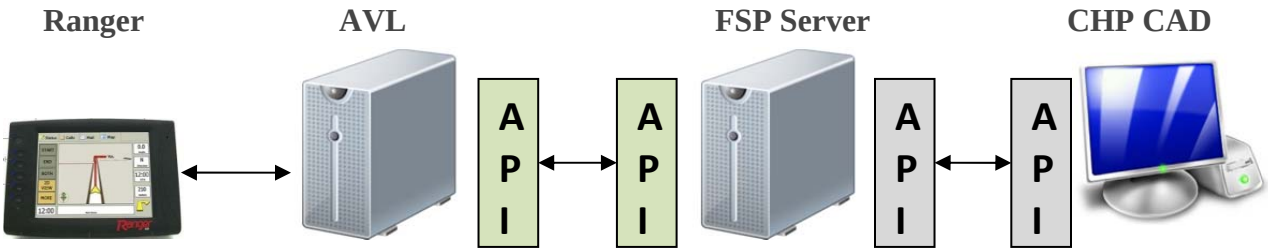
The current system is integrated with the CHP CAD system. CHP dispatchers are able to track FSP vehicles, change a vehicle's work status and send messages to drivers through an in-vehicle data unit. When drivers are unable to log-on to or input certain information in to the AVL they do so 'by voice' over their CHP radio and this information is entered in to AVL via the CAD. These capabilities, along with the radio system allow CHP personnel to cooperate with and supervise FSP drivers in the field while providing some redundancy in case of Ranger failure.

The desired AVL system shall have these current AVL capabilities as well as additional tools to organize and transmit data. MTC SAFE, however, seeks to reduce its ownership of in-vehicle equipment by procuring a system that transmits information through the internet. The new system shall thus allow tow operators to send and receive AVL information through an application running on commercial off the shelf (COTS) tablets purchased by tow contractors. These mobile devices will connect via WiFi to the internet through in-vehicle hardware. The Contractor will provide this hardware, which shall have the GPS functionality used by the AVL system.

MTC SAFE also seeks to more closely integrate financial, personnel and asset management functions into the AVL tool. Currently program administrators use disparate paper, database and spreadsheet systems to manage many aspects of the FSP program. The new system would consolidate many of these functions, along with traditional AVL features, in to a single software program and store all that information in one relational database. The intent is to increase program efficiency and make data more accessible to FSP Partners, tow contractors and consultants.

There are different options for the AVL system's modernization due to the basic configuration of the current network. Below is a simple network map of the FSP system that shows how the current in-vehicle data units (Rangers) connect to the FSP Server and to the CHP CAD. The diagram also shows the major system components and application programming interfaces

(APIs). More detailed information on the FSP database as well the physical network and its components is available in *Appendix A, 5.0* FSP Systems. There is also additional information on the APIs in *Appendix A, 6.0* System Interface.



The new system must replace the current functions of the in-vehicle units (Rangers) and the current AVL. The FSP server currently hosts the database that stores information produced by the AVL and CAD systems. The new system could take two general forms:

1) A system that interfaces with the existing FSP Server and stores information in that server.
2) A system that absorbs the functions of the FSP Server and interfaces with the CHP CAD.

Either alternative may be acceptable but be advised that the hardware and software of the existing FSP server is aging and will need to be updated in the near future. Proposers should carefully consider the scope of work they bid for, indicate which configuration they have chosen and clearly describe the envisioned network. It is acceptable to submit both alternatives in a bid but these two proposals must be clearly described and delineated.

The form provided in *Appendix A, 3.0* Requirements Compliance Table lists and describes the system requirements. This form, which the Proposer must complete and submit, also indicates when requirements must be delivered and if they are mandatory. Some features will be phased in after the AVL system has been deployed and others may be delivered via task order. The Core (mandatory) features must be delivered as per the guidelines in *Appendix A, 2.0* Project Schedule.

The Proposer should follow the instructions in Section VII. Form of Proposal, H. 'Cost Proposal' regarding the submission of budget materials. The figures submitted in *Appendix A, 4.0* Project Budget Form should be consistent with the figures submitted within the budget documents provided in *Appendix B,* Cost and Price Analysis Form.

Appendix A, 1.0: Tasks and Deliverables

This section describes the obligations of the Contractor and the deliverables required at each stage of the project. Further information on AVL system features is provided in *Appendix A, 3.0* Requirements Compliance Table. Neither the deliverables below nor the sequence of their delivery can be changed without written approval by MTC SAFE. *Appendix A, 2.0* Project Schedule provides guidance on deadlines and milestones.

Phase I System Generation

- **Project Planning and Management**

  The Contractor shall appoint a Project Manager as the primary contact for MTC SAFE throughout the course of the Project. The Project Manager shall be responsible for supervising all project phases. During the Phases I and II, the Project Manager shall be available for all key project development meetings and conference calls. Any change in Project Manager shall be communicated in writing and will be subject to approval by MTC SAFE. There shall be, at a minimum, bi-weekly project meetings in the initial project phases that, at the discretion of MTC SAFE, may later be reduced to monthly meetings.

  The Contractor shall develop a Project Management Plan that shall elaborate on and finalize the description of tasks in the staffing section of the Work Plan included in the bid. This Plan shall include a finalized project schedule that meets the conditions laid out in *Appendix A*, 2.0 Project Schedule and Payments.

  The Plan shall document Project Manager obligations including, at a minimum, coordination of all contract work and deliverables, meetings to update MTC SAFE on work progress, and steps to ensure quality control.

  Deliverables: Project Management Plan

- **System Analysis**

  The Contractor shall write a Requirements Analysis Report to describe in detail how the requirements included in the bid shall be met in the proposed system. This Report should finalize and elaborate upon the discussion of these requirements in the Contractor's application. Details on the system's requirements may be found in *Appendix A 3.0* Requirements Compliance Table.

Upon MTC SAFE's review and acceptance of the Requirements Analysis Report, the Contractor shall develop a System Implementation Plan (SIP) that provides strategies for project execution. The Plan shall include, at minimum, project scheduling, resource allocation, telecommunication system modifications, high-level testing/verification procedures and projected milestones to verify that the requirements will be met. The SIP shall also include strategies to maintain the continuity of operations during the transition from the existing FSP AVL system through the final installations in Phase II.

Deliverables: Requirements Analysis Report, System Implementation Plan.

- **System Development**

Upon delivery, review and acceptance of the System Implementation Plan, the Contractor shall develop a System Design Report to describe the specific technical manner in which the requirements shall be met. The Contractor shall initiate and develop the System Design Report, with involvement by the FSP systems integration contractor, to include specific knowledge regarding the current data system. The System Design Report shall include System Architecture and Interface Control Documents for the new FSP Server or specifications on the replacement for the FSP Server and Interface Control Documents for the CHP CAD.

Upon MTC SAFE review and approval of the System Design Report, the Contractor shall develop an Acceptance Test Plan. The Plan shall describe procedures for verifying the requirements throughout the development of the project and criteria used for each requirement. The Acceptance Test Plan shall describe high-level testing procedures for the test AVL system and detailed testing procedures for the baseline AVL system.

Deliverables: System Design Report, Acceptance Test Plan

- **System Integration and Test**

Upon MTC SAFE review and acceptance of the Acceptance Test Plans the Contractor shall develop a test AVL system. The test AVL system shall be a live production system that shall include, at minimum:

  - The AVL application with all features listed as Core and baseline (as described in *Appendix A* 3.0 Requirements Compliance Table) as well as any additional features MTC SAFE and the Contractor have agreed on, in a beta version;
  - The hardware or software necessary for MTC-SAFE, CHP and Caltrans to use the AVL as specified in the System Design Report;
  - Functioning WiFi/GPS Units for 3 FSP trucks.
  - A live interface to communicate to the CHP CAD, either directly or via the FSP Server

The Contractor will install (3) WiFi GPS Units in an Initial Test Fleet of three (3) functioning FSP vehicles to be selected by MTC SAFE.

The Contractor shall also deliver a draft version of the AVL User Guide (as described in *Appendix A,* 3.0 Requirements Compliance Table) simultaneously with the test AVL system.

Following the deployment of the test AVL system, the Contractor and MTC SAFE will jointly conduct testing, as per the Acceptance Test Plan, to validate and verify that the requirements are met. Any deficiencies found in the test AVL system through testing shall be addressed prior to MTC SAFE acceptance and progression to Phase II.

Deliverables: Test AVL system, draft AVL User Guide, Initial Test fleet installation.

[The Proposer should keep the existing AVL system in use as long as possible until the transition to the new system, at the end of Phase II, while still connecting the test AVL system to the CAD. MTC SAFE expects that, at a minimum, the existing AVL system will be operational through Phase I. This is a challenge that should be discussed in the Proposer's Work Plan.]

Phase II System Delivery

- **System Installation**

The Contractor shall either install the new baseline AVL system or update the test AVL system to address any deficiencies found during previous testing.

The Contractor shall deliver and install ten (10) WiFi/GPS units in ten (10) working FSP vehicles (the Final Test Fleet) selected by MTC SAFE. MTC SAFE or its representatives shall be present during an installation of each type to observe proper installation / removal / maintenance procedures.

Following the initial installations, the Contractor shall conduct steps to further validate and verify the System per the Acceptance Test Plan.

Deliverables: Baseline AVL system, Final Test Fleet installation

- **Acceptance Testing**

Following the Contractor's installation and validation, MTC SAFE shall conduct further acceptance testing of the baseline AVL system in accordance with the Acceptance Test Plan. The Contractor shall record the results of the acceptance tests, including possible errors or requirements omissions, in the System Verification Report. The Contractor shall conduct steps to rectify possible errors and omissions within thirty (30) days. The Baseline AVL system will be considered complete when it has met all requirements during acceptance testing, as determined by MTC SAFE.

Deliverables: Final Acceptance and System Verification Report

- **Training**

The Contractor shall draft a Training Plan to train FSP Partners and consultants on the use, installation, removal, and maintenance of the AVL system, including the WiFi and GPS Units. The Plan shall include instruction on how to install, remove and maintain the in-vehicle equipment. The Final AVL user guide, reflecting any changes resulting from the acceptance testing, shall be delivered with the Training Plan. Upon review and final acceptance by MTC SAFE of the Training Plan and AVL User Guide four training classes shall be held on AVL functions; two of the classes shall be for FSP Partner staff, one for in-vehicle maintenance providers and one for the systems integrator.

Deliverables: Training Plan, Final AVL User Guide and Training classes

- **Final Vehicle Installation**

Upon MTC SAFE's approval of the training component the Contractor shall deliver the WiFi/GPS Unit equipment necessary for connecting the balance of the 120 trucks (including the Initial and Final Test Fleets) to the in-vehicle equipment installer.

The Contractor shall provide up to 15 hours a week of temporary support for MTC SAFE staff, CHP and the In-Vehicle Equipment contractors during normal business hours, Pacific Standard Time to assist with the installation of the WiFi/GPS Units and any issues arising the full operation of the AVL system. The temporary support shall encompass the transition from the previous AVL system to the Contractor's system as per the transition scenarios in the System Implementation Plan (SIP). This temporary support will continue for a month after all the in-vehicle hardware has been installed and the deliverables approved by the MTC SAFE Project Manager.

Deliverables: Final WiFi/GPS Unit Delivery, Installation Support

<u>Phase III</u> System Upgrades

- **Automatic Upgrades**
  After the AVL system has been operational and, in the judgment of MTC SAFE, functions within acceptable parameters the Contractor will upgrade the AVL system to incorporate the Core, non-baseline features in the *Appendix A, 3.0* Requirements Compliance Table as well as any other features agreed upon by MTC SAFE and the Contractor.

  Deliverables: Non-Baseline Features

- **Task Orders**

  Future improvements not included in the bid may be added later by task orders, under conditions specified in the contract.

  Deliverables: TBD

Phase IV Operation and Maintenance

- **Ongoing Support**

  Following the end of the System Installation Support the Contractor shall provide ongoing support during normal business hours (Pacific Standard Time) on WiFi GPS Unit installation/ removal / maintenance inquiries, software updates, and repairs on returned WiFi/GPS Unit's during and beyond the warranty period.

  The Contractor shall also provide ongoing support during normal business hours, Pacific Standard Time on the operation and maintenance of the AVL system.

  As part of this support the Project Manager shall be available for four hours per month to assist MTC SAFE with routine operations and maintenance, with additional hours billed on a task order basis.

  Additionally, Contractor shall provide software and/or firmware updates to the AVL and the WiFi/GPS Units to maintain compatibility with mobile devices on the market as per the requirements in *Appendix A, 3.0* Requirements Compliance Table.

  Deliverables: On-Call Technical Support, Software Compatibility Upgrades

Appendix A, 2.0: Project Schedule

The schedule for the delivery of the project deliverables, below, may be changed by the Contractor but the Phase II training classes (as well as earlier deliverables) must be complete before May 31, 2015. Installation and on-call support must be ready to support a complete transition of the FSP fleet by MTC SAFE's installer by June 1, 2015. Changes to the sequence of project deliverables listed below will require written approval from MTC SAFE.

All project deliverables must be reviewed and approved by MTC SAFE before proceeding to the next task, unless MTC SAFE gives explicit written approval. The Contractor's detailed schedule (included in the bid's Work Plan and later the System Implementation Plan) should explicitly demarcate and allow for sufficient time for MTC SAFE review.

Phase I and II occur consecutively followed by Phase III and IV, which are concurrent.

Phase I - System Generation		
Stage	*Deliverable*	*Delivery Period*
Contract Approval	*N/A*	March 2014
Project Planning and Management	Final Project Management Plan	April 2014
System Analysis	Requirements Analysis Report	May 2014
	System Implementation Plan	June 2014
System Development	System Design Report	August 2014
	Acceptance Test Plan	September 2014
System Integration and Test	Draft AVL User Guide	December 2014
	Test AVL system	December 2014
	Initial Test Fleet Installation	December 2014
Phase II - System Delivery		

Stage	*Deliverable*	*Delivery Period*
System Installation	Baseline AVL system	February 2015
	Final Test Fleet Installation	February 2015
Acceptance Testing	Final Acceptance and System Verification Report	March 2015
Training	Training Plan	April 2015
	Final AVL User Guide	April 2015
	Training Classes	May 2015
Final Vehicle Installation	Final WiFi/GPS Unit Delivery	June 2015
	Installation Support	June-August 2015

Phase III - System Upgrades ***(Concurrent with Phase IV)***

Stage	*Deliverable*	*Delivery Period*
Automatic Upgrades	Non-Baseline Features	October 2015 - January 2016
Task Orders	*TBD*	January 2016 -July 2020

Phase IV - Support and Maintenance ***(Concurrent with Phase III)***

Stage	*Deliverable*	*Delivery Period*
Ongoing Support	On-Call Technical Support	September 2015-July 2020
	Software Compatibility Upgrades	September 2015-July 2020

Appendix A, 3.0: Requirements Compliance Table

The Compliance Table form below will be specifically incorporated into the final contract with the Contractor, with possible minor edits. The requirements are not a comprehensive listing of details necessary for the final system implementation. It would be the Contractor's responsibility to provide, design, and implement the AVL and, optionally, the FSP replacement system such that it will fulfill the agreed upon requirements. The Contractor is required to provide all software licenses required for a functional system installation, including operating systems and application software.

System requirements are presented in tabular form in the Requirements Compliance Table. Proposers must use the Table's spreadsheet version in their proposals by filling in information on the system. Proposals that do not include the Compliance Table will be considered non-responsive. Proposers may find the spreadsheet on MTC's web site at http://procurements.mtc.ca.gov/.

The Compliance Table contains a row for each requirement. MTC SAFE has provided these requirements and has left space for Proposers to elaborate and/or clarify their understanding of these requirements and information on their proposal. Proposers should consider their answers carefully, as they will be incorporated into the final contract and used to evaluate final system performance for acceptance.

Column descriptions are as follows:

Column 1: No. – The requirement identification number.

Column 2: Requirement – The requirement text and/or description of the requested function or feature.

Column 3: Core (Y/N) – Whether or not the requirement is mandatory and must be included for bid to be considered responsive.

Column 4: Baseline (Y/N) – A baseline requirement, if included in the bid, must be delivered in Phase II of the project development, as described in Appendix A, 2.0 Project Schedule. Non-baseline requirements in the bid are delivered after Phase II (see matrix below for further explanation).

Requirement Types

	Core	**Non-Core**
Baseline	The requirement must be included in the bid and delivered in Phase II.	The requirement need *not* be included in the bid, but if it is, it will be delivered in Phase II.
Non-Baseline	The requirement must be included in the bid and delivered in Phase III.	The requirement need *not* be included in the bid. It may be delivered in Phase III or later by task order.

Column 5: Compliance (full, partial, none) – The responses are defined as follows:

Full: Proposer's currently available product completely meets the requirement. All features or functions identified with a "Full" response will be presumed to be available in release-quality at time of proposal submission and the Proposer shall be prepared to demonstrate the feature during the selection process.

Partial: Proposer's currently available product does not completely meet the requirement but the currently available product provides partial fulfillment of the requirement as stated. Where a Proposer answers "Partial", the Proposer must provide a comment describing which element or elements of the requirement are met by the currently available product and which are not. The Proposer may provide additional information describing alternative methods or customization that is required in order to fully comply with all elements of the stated requirement or with the intent of the requirement.

None: The Proposer must answer "None" if its current product does not contain any of the requested functionality. Answering "None" does *not* imply that the Proposer cannot or will not meet the requirement through further development or customization. Where a Proposer answers "None", the Proposer must provide a comment in Column 6 describing the customization necessary to fulfill the requirement or an alternative method which may be used to accomplish the intent of the requirement.

The Proposer should list 'None' if it is intending to use another firm's product or products to satisfy the requirement. In this case the Proposer should also list the

company, brand names and appropriate information (model numbers etc.) of all such products.

Blank (no response): A blank or non-answer is equivalent to indicating that the Proposer does not include the proposed feature in the bid. Bids with a non-answer for a Core requirement will be considered non-responsive.

Column 6: Explanation - The comments should be used to enhance the MTC's understanding of how the Proposer intends to meet the requirement or the intent of the requirement. Proposer should indicate in the comments if the subject feature requires any other optional component in order to be implemented.

The Proposer may indicate the cost of providing each requirement or, if that requirement is clearly ancillary to another, indicate the cost and number of the primary requirement that encompasses it.

Proposer must provide comments to qualify "Partial" or "None" answers and to document any assumptions made when responding.

Requirements can be met with or without the need for custom programming. Items requiring significant customization or development specifically for the MTC SAFE AVL system should be so noted in the comments and delineated in the Cost and Price Analysis Form in Appendix B. Also, when customization is required to meet a requirement, the Proposer should describe the customization in detail.

The Proposer must use the Table but may attach an additional page to further describe the customization, so long as it is clearly organized and labeled with the proper requirement numbers.

Outline of Requirements Compliance Table

1.1	**Functional Requirements**
1.1.1	**In-Vehicle WiFi/GPS Unit**
1.1.2	**Fleet Management Tools**
1.1.2.1	Map Interface
1.1.2.2	GPS Functionality
1.1.2.3	Real-Time Fleet Management
1.1.2.4	Stored Fleet Information
1.1.2.4.2	*Vehicle Location Information*
1.1.2.4.3	*Non-Locational Vehicle Information*
1.1.2.5	Scheduling and Violations
1.1.3	**Personnel Management Tools**
1.1.4	**Asset Management Tools**
1.1.5	**Reporting and Data Analysis Tools**
1.1.6	**AVL Field Application**
1.1.6.3	FSP Driver Interface
1.1.7	**General Requirements**
1.1.8	**Security**
1.2	**Non-Functional Requirements**
1.2.1	**Performance**
1.2.2	**Training Requirements**
1.2.3	**Equipment and Installation**
1.2.4	**Support and Maintenance**

Requirements Compliance Table

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1	**Functional Requirements**				
1.1.1	***In-Vehicle WiFi/GPS Unit***				
1.1.1.1	Wireless Connectivity: The WiFi/GPS Unit used in the AVL system shall be able to transmit and receive data communications over commercial 4G or 3G networks at speeds sufficient to fulfill the system requirements and ensure functional operational communication between CHP personnel and tow drivers.	Y	Y		
1.1.1.2	GPS: The WiFi/GPS Unit shall include an embedded Global Positioning System (GPS) device or GPS device resistant to tampering.	Y	Y		
1.1.1.2.1	Tracking functionality should be automatically activated when the truck is turned on and shall persist on the power from a connection to the vehicle's battery for at least 30 minutes after the vehicle is no longer running.	Y	Y		
1.1.1.3	WiFi Connectivity: The WiFi/GPS Unit shall be able to connect via WiFi with a range of commercial off the shelf tablet or smartphone devices that shall host the tow truck driver’s interface to the system.	Y	Y		
1.1.1.4	Time-out: The device shall stop drawing power from the truck's battery at a pre-defined time and/or an interval after the vehicle is no longer running, to avoid draining the truck's battery.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2	***Fleet Management Tools***				
1.1.2.1	*Map Interface*				
1.1.2.1.1	Map Interface: The system must include a web-based map interface to the AVL tool.	Y	Y		
1.1.2.1.2	The interface shall visually indicate traffic congestion levels on the freeways and highways in real-time, a layer users should be able to toggle on and off.	N	Y		
1.1.2.1.3	The interface shall offer standard map navigation functions common in GIS applications (zoom, pan, scale)	Y	Y		
1.1.2.1.4	The interface shall include standard map display features (streets, street names, highways/freeways, scale, distance, landmarks and features, topography, satellite pictures, etc).	Y	Y		
1.1.2.1.5	The interface shall allow authorized users to add, toggle and edit additional layers on the map, provided by MTC SAFE, to highlight features such as callboxes, vehicle drop sites, radio repeaters and tow contractor yards.	Y	Y		
1.1.2.2	*GPS Functionality*				
1.1.2.2.1	Polling Rate: The GPS functionality shall be able to update vehicle location at a frequency of 5 seconds. The user shall be able to set and adjust a baseline polling rate as well as specify a polling rate for a single vehicle or group of vehicles.	Y	Y		
1.1.2.2.2	The AVL system shall attempt to establish contact with a device if there has been no communication after 5 minutes. Non-responses shall raise an alarm (see 1.1.2.3.3).	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.3	*Real-Time Fleet Management*				
1.1.2.3.1	AVL Vehicle Icons: The system should display all active vehicles as simple icons on the map interface. At the appropriate scale the icon should show the following information, prioritized in the following order: 1. Assigned Beat Number 2. Vehicle Number 3. Real Time Work Status (color-coding is OK) 4. The amount of time the vehicle has been stationary 5. Direction of travel (with an arrow)	Y	Y		
1.1.2.3.1.1	Upon clicking or hovering over an AVL Vehicle icon with a cursor further information on the vehicle shall be displayed including: 1. Location (XY coordinated, roadway, and nearest exit) 2. Speed 3. Driver Name 4. Time of the Last Update 5. Tow Contractor 6. Call-Sign 7. Shortcuts to information on recent assists made (see 1.1.2.4.3.1)	Y	Y		
1.1.2.3.1.2	Real-Time Assist Information: Users in real-time fleet management mode shall be able to click through from the vehicle icon to all of the information listed in the 'Assist Tracking Table' for all assists within the vehicle's shift.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.3.2	Vehicle Following: Authorized users shall be able to activate a setting to follow a particular vehicle or group of vehicles which would keep the vehicle icons centered in the screen and increase the GPS polling rate of those vehicles.	N	Y		
1.1.2.3.3	Alarms and Real Time Fleet Management: When in the real time fleet management mode there shall be visual and/or audible alarms to flag potential violations. Alarms can be triggered by: * Movement outside of beat borders after travel duration and/or distance specified by an authorized user. * Driver actions (e.g., log-ons, status changes) outside of the beat schedule and/or program rules. * Lack of vehicle movement, after a specified duration * Lack of information from GPS device, after a specified duration * Speeding	Y	Y		
1.1.2.3.3.1	Authorized administrative users should be able to set the parameters for fleet alarms based on the schedule in 1.1.2.5.1 and the beat boundaries in 1.1.2.5.2.	Y	Y		
1.1.2.3.2	Text Messaging: Authorized system users shall be able to communicate with drivers via generic or custom text messages. Some of these messages will prompt a driver response in the form of either a Yes or No, Receipt Acknowledged or numerical response.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.3.4	Real-Time AVL Integration with CHP CAD: The system shall connect to the CHP CAD or the FSP Server as to enable two way communications between all the connected systems. The objective is operational integration with the CAD system. Personnel working through the CAD shall have the ability to: * Track vehicles' location and status * Confirm and/or change driver statuses * Send text messages to drivers, including assignments to incidents that pre-load in the incident report screen. * Approve overtime requests (see Appendix A, 6.0 for further requirements)	Y	Y		
1.1.2.4	*Stored Fleet Information*				
1.1.2.4.1	Data Storage: Information shall be archived for at least three years with two years of that information online and easily retrievable. The AVL must be able to visualize vehicle location information for events occurring at least as late as 6 months prior.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.4.2	*Vehicle Location Information*				
1.1.2.4.2.1	Users should be able to generate a detailed visualization of the path of a vehicle or vehicles over time through the map interface by searching and filtering the following variables: 1. Time and date (if not occurring in real-time) 2. Beat Number 3. Work Status 4. Vehicle number 5. Contractor 6. Driver 7. WiFi/GPS unit number 8. Call-Sign/Shift Used The image should illustrate the work status(es), basic assist information (see 1.1.2.4.3) and time stamp along a path through color, iconography and/or an additional menu activated when the cursor hovers over that point on the path.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.4.2.2	The system, using the same search parameters as in 1.1.2.4.2.1, shall be able to generate a table of vehicle location information (with rows representing times at an adjustable interval as low as 15 seconds) that includes the following columns: 1. Date 2. Time 3. Beat 4. FSP Truck Number 5. Driver Name and Number 6. Contractor 7. Call-Sign and Shift 8. Route (Freeway) and Direction of Travel 9. Nearby Ramp 10. Latitude 11. Longitude	Y	Y		
1.1.2.4.2.3	The system shall have a playback feature that allows users to play, pause and accelerate animation of the path of a single vehicle or a group of vehicles over a user-specified time period.	N	N		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.4.3	*Non-Locational Vehicle Information*				
1.1.2.4.3.1	Assist Tracking Table: Authorized users shall be able to view the data concerning an assist in tabular format, including the: 1. Unique ID of Assist 2. Dates/times the driver entered the incident scene 3. Dates/times the driver left the incident scene 4. Latitude and Longitude of the incident 5. Driver ID and Name 6. Contractor ID and Name 7. Beat Number 8. Call Sign Driver Used 9. FSP Truck Number 10. Assist Activity Codes 11. Odometer reading at start of incident 12. Route (Freeway) and Direction of Travel 13. Nearby Ramp 14. Highway Code (Location of Assist on Road) 15. (Push Made/Tow Made/No Push or Tow Made) 16. Assisted Vehicle Type, License Plate Number, State 17. CHP Log and Authorization Numbers 18. Driver's Notes 19. Start and End Time of that Beat Shift 20. Starting and Beginning Mileage of that Beat Shift	Y	Y		
1.1.2.4.3.1.1	Manual Input of Assist Data: Authorized system users shall be able to enter the assist information generated by the backup paper DSR forms (see Appendix A, 7.0). There shall be features to prevent duplicative incident data entry.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.4.3.2	Status Tracking Table: The system shall maintain an archive of the status information that a driver indicates during his or her shift. The different statuses (which are not always mutually exclusive) are listed below along with any CHP code used to describe them: 1. In Service (10-8) 2. Out of Service (10-7) 3. Off Duty (10-10) 4. En Route to Incident 5. Arrived at [Incident] Scene (10-97) 6. [Incident] Assignment Complete (10-98) 7. On Break	Y	Y		
1.1.2.4.3.2.1	The Status Tracking Table shall include the following information with regard to vehicle's status information: 1. Status' Unique ID 2. Start Time 3. Location at Start 4. End Time 5. Location at End 6. Driver 7. Call-sign/Shift 8. Vehicle Number 9. Contractor Number 10. Facilities Travelled Through During Status 11. In Beat/Out of Beat/Both 12. Time spent out of Beat 13. Unique IDs of Assists Made 14. Shortcut to a visualization of the locations travelled while the vehicle was in a particular status in the map interface.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.5	*Scheduling and Violations*				
1.1.2.5.1	Scheduling: The scheduling tool shall: * Allow users to view and modify the beat schedule for truck hours of service. * Allow users to approve temporary schedule changes with a specified and automatic expiration. * Allow for holiday hours of service and variations by day and seasons. * Record the base number of hours a contractor theoretically provides service (information to be used by the Invoicing feature in 1.1.2.5.4)	Y	Y		
1.1.2.5.1.1	The schedule table shall list, by beat, the associated: 1. Beat Number 2. Contractor serving the beat 3. Number of Trucks serving the beat 4. Call Signs 5. Shift 6. County 7. Routes Patrolled 8. Beat Limits 9. Beat Length 10. Start and End Dates of Beat Contract 11. Weekday Hours for AM, Midday and PM Shifts 12. Holiday Hours? 13. Weekend Beat Hours 14. Number of Trucks by Type (tow, pickup, midday, flatbed, backup) 15. Back-Up Beats (Contractors) 16. Beat Partners 17. Exceptions to Normal Schedule 18. Notes	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.5.2	Schedule and Boundary Adherence Tracking: Authorized users shall be able to draw and modify beat boundaries through the map interface. These boundaries shall sync with the official schedule to enable time-based geofencing to generate notices for the fleet management alarms and violations table (described in 1.1.2.3.3 and 1.1.2.5.3).	Y	Y		
1.1.2.5.2.1	The selected applicant shall draw the initial beat boundaries for the system, in accordance with the instructions provided by MTC SAFE.	Y	Y		
1.1.2.5.3	Violations Table: The violations database shall be the central repository for all FSP violations that result in a fine. For further information on the types of violations please see Appendix A, 8.0.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.5.3.1	The Violations Table shall indicate the violation's: 1. Time/Date 2. Location (if applicable) 3. Duration (if applicable) 4. Rules Broken (see Appendix A, 8.0) 5. Penalty* 6. Contractor 7. Driver (if applicable) 8. Vehicle Status at Time of violation 9. Vehicle Number (if applicable) 10. Beat (if applicable) 11. Call Sign Used (if applicable) 12. Investigating Officer (if applicable)* 13. Notes (if applicable)* 14. (If applicable) A shortcut to a visual record, through the map interface, of the vehicle's location through time before, during and after the violation similar to that specified in 1.1.2.4.2.1. This feature is intended to allow the MTC SAFE fleet manager to quickly determine if a violation has in fact occurred. *See Appendix A, 8.0 for further information	Y	Y		
1.1.2.5.3.2	Authorized users shall be able to manually input and modify information in the Violations Table	Y	Y		
1.1.2.5.3.3	Authorized users shall be able to flag and sort violations in the table as either false positives or genuine violations. The time and date of the last modification shall be recorded in the database, as shall the modifying user. Unexamined violation notices shall be marked as unopened in a new violations inbox.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.2.5.4	Invoicing: The system shall auto-populate monthly invoices (see Appendix A 7.0 FSP Documents) for the tow contractors based on data in the official beat schedule and violations database. An authorized user shall be able to manually modify these invoices and save them on the system.	Y	N		
1.1.2.5.4.1	The invoicing system shall automatically generate payment invoices based on an inputted hourly rate tied to the particular tow contract and average monthly diesel price. The invoice function should autopopulate the actual hours worked (including back-up service and overtime). The system should also autopopulate and factor in fines for validated violations.	Y	N		
1.1.2.5.4.2	Users of the invoicing system shall be able to manually edit all information in an invoice.	Y	N		
1.1.2.5.4.3	There shall be a special feature to track overtime to service (which is approved in real time by CHP) by contractor, beat and driver within the invoicing system.	Y	N		
1.1.3	***Personnel Management Tools***				
1.1.3.1	Tow Contractor Table: Authorized system users shall be able to modify and/or view a table that includes tow contractor information including: 1. Contractor ID Number 2. Beat assignments 3. Back-Up Beat Assignments 4. Past beat assignments (with date ranges) 5. Period of current contract 6. Number and list of FSP drivers employed 7. Number and list of FSP trucks 8. Key Personnel with titles and contact information 9. Office Phone and Fax Numbers 10. Office Address(es) 11. Recent Commendations and Awards	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.3.2	1. Driver Table: Authorized users shall be able to modify and/or view a table of FSP driver information including but not limited to: 1. Employing Tow Contractor 2. Driver Number 3. Previous Employment with FSP Tow Contractors 4. Training Completion Date 5. Violations (type and date) 6. Date of Birth 7. License Number The information record should stay with the driver even if they work for another FSP tow contractor.	Y	Y		
1.1.3.2.1	The driver table should automatically update to reflect a violation that the driver has committed and that has been validated by a user of the Violations Table in 1.1.2.5.3.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.3.3	Trouble Ticket System: The trouble ticket system will be used by the FSP Partners, tow contractors and maintenance providers. Users shall be able to (depending on their authorization): * Submit an online request for assistance with the FSP system and equipment * Request back-up service and track back-up services request tickets * Browse through such 'trouble tickets' and comment on them * Update ticket status (resolved; unresolved; resolved- pending with notes) * Receive notification and/or copies of certain types of trouble tickets via email * Receive email reminders of unresolved or resolved-pending tickets *Search past tickets The Trouble Ticket system shall save information from validated back-up service requests for auto-population in to the Invoicing Feature (1.1.2.5.4) so that contractor's hours are deducted or added according to service provided. See Appendix A, 7.0 for the Hot Fax, Mechanical Failure and Backup Request forms, as a reference.	Y	N		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.4	***Asset Management Tools***				
1.1.4.1	Vehicle Table: Authorized system users shall be able to view and modify a database that includes a list of authorized FSP vehicle information including: 1. Vehicle Number 2. Tow contractor 3. Designated Beats 4. Type of vehicle (tow, pickup, flatbed, backup) 5. Current and past WiFi/GPS Units 6. VIN Number 7. License Plate Number 8. Vehicle Make 9. Vehicle Model 10. Vehicle Year 11. Date of Certification	Y	Y		
1.1.4.2	WiFi/GPS Unit Table: Authorized system users shall be able to modify and/or view a database that includes: 1. WiFi/GPS Unit Unique ID 2. IP Address (if applicable) 3. Wireless provider's IDs and access information 4. Current vehicle occupied (or location information) 5. Vehicles occupied (or other location) with dates 6. Date and location of all past (de)installations 7. Installer’s Notes 8. Past maintenance and repair information 9. Version of Operating System 10. Dates of recent Operating System upgrades	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.4.3	Miscellaneous Equipment and Apparel Database: Authorized system users shall preferably be able to modify and/or view an online tool that: * Enables tow contractors to request equipment and apparel * Records the assignment of such items to tow contractors * Notes item availability and flags shortages The FSP equipment managed includes: 1. Patches 2. Hats 3. Out of Service Magnets 4. Vests 5. 4-22 forms 6. DSR Forms 7. Survey Cards 8. Brochures 9. T- Shirts	Y	N		
1.1.4.3.1	The equipment system shall allow authorized users to request automatic email updates.	N	N		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.5	***Reporting and Data Analysis Tools***				
1.1.5.1	Data Manipulation/Visualization: The system shall have tools to provide summary statistics of tabular data.	Y	Y		
1.1.5.1.1	The system shall have tools to visualize tabular data in charts or graphics.	N	N		
1.1.5.2	Report Generation: There shall be an interface to generate and transmit standard and/or customized reports on all tabular information to system users either on a one-time or periodic basis. Examples of these reports may include: * Periodic reports to tow contractors with their listed violations and summary statistics on their reported assists. * Periodic reports to authorized users with summary statistics and visualizations of system-wide assist information. * Periodic reports to authorized users with information on violations and inspections, by contractor.	Y	N		
1.1.6	***AVL Field Application***				
1.1.6.1	Operating System: The field application used to access the AVL will preferably be able to run on recent versions of both the Android OS and Apple iOS and on at least on one of these two platforms.	Y	Y		
1.1.6.2	Store and Forward: The field application(s) must have the ability to store all data until its transmission is confirmed by the AVL.	Y	Y		
1.1.6.2.1	The application shall also store data on the tow contractor provided device in a readable, protected file format, including the DSR form (see Appendix A, 6.0 FSP Documents).	N	N		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.6.3	*FSP Driver Interface*				
1.1.6.3.1	Driver Screen: At a minimum the driver interface must include: * An initial sign-on screen (see 1.1.6.3.1.1 for Authentication) * Easily accessible buttons to toggle the vehicle's work status ("On Break" or "En Route"). * A feature to respond to text dispatches with numerical or Y/N answers. *An incident reporting feature containing the information included in the Daily Shift Record (see Appendix A, 7.0, FSP Documents) in order to transmit assist data.	Y	Y		
1.1.6.3.1.1	Authentication: The initial sign on screen of the driver interface shall request information to approve the log-on and properly classify information in the AVL. This information is listed below along with the requirement number for the database table in which it is contained: tow contractor number (1.1.3.1), vehicle number (1.1.4.1), driver number (1.1.3.2), CHP Area number (1.1.2.5.1.1), CHP Beat number (1.1.2.5.1.1) , the number assigned to the shift they work (1.1.2.5.1.1) and the odometer reading (no authentication necessary). Attempts to log on that include information which is inaccurate or inconsistent with that in the database shall be denied. In addition a log-on should not authenticate if the device is connecting to the internet through any other means than through the WiFi/GPS Unit that matches the vehicle identified (information available in 1.1.4.1).	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.6.3.2	Minimum Screen Size: The driver interface shall not be designed for use on standard-sized smartphones. The minimum screen size supported shall have a seven inch diagonal.	N	Y		
1.1.6.3.3	System Feedback: The driver application shall: * Inform drivers of the time they have remaining for breaks when they change their status to 'On Break,' * Confirm the system's receipt, non-receipt and/or confirmation of messages, log-on/off requests, incident reports, overtime requests and status changes. *Authorized users must have the ability to change system settings to eliminate feedback mechanisms deemed unnecessary and/or distracting for drivers.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.7	***General Requirements***				
1.1.7.1	Unified Database: All of the information in the tables shall be stored in a single relational database. Changes made to one table should be reflected in other tables where that information is repeated.	Y	Y		
1.1.7.2	Central Portal: All of the databases and functions shall be accessible through a central web-based portal.	Y	Y		
1.1.7.3	Table Features: Tabular information shall be: * Searchable * Sortable * Filterable * Modifiable (if the user has the appropriate authorization)	Y	Y		
1.1.7.3.1	Where database information is repeated in multiple tables, users shall be able to navigate between different tables and records within the portal through the use of links within the table.	N	N		
1.1.7.3.2	There shall be advanced search functions for efficient querying designed for each table.	Y	Y		
1.1.7.4	Administrator Tracking: Authorized users shall be able to track the data other users input in to the system and when entries occur (via timestamps on communications or a similar method).	N	N		
1.1.7.5	Archiving and Reset: All database information should be archived daily or twice daily with an option to reset the system to an earlier state should there be corruption or deletion of data.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.7.6	Export Feature: Tabular data in the portal shall preferably include a feature that allows for the exporting of the document as a Microsoft Excel or PDF file.	N	N		
1.1.7.7	File-sharing: There shall be an application integrated with the AVL that allows authorized users to share files/folders and allow read and write access to certain users.	N	N		
1.1.7.8	All features intended for desktop use shall also usable through the web browsers of a tablet with a screen diagonal of 7 inches or larger.	Y	Y		
1.1.7.9	Alert and Diagnostic Function: There shall be a tool or tools able to carry out the following functions: * Assess the integrity of a WiFi/GPS Unit or of a particular system application * Alert authorized users of large-scale problems automatically (including a system-wide shutdown) * Enable users to assess system-wide integrity * Enable authorized users to quickly ascertain where in the system repair or further troubleshooting is required.	Y	Y		
1.1.7.9.1	Information Gaps: Tables will note when data is missing and, if known, indicate why (eg - transmission issues, software problem, equipment failure). Also see the Diagnostic feature in 1.1.7.9.	N	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.1.8	***Security***				
1.1.8.1	Internet Control: Authorized users shall be able to limit driver's access to the internet and online data through the in-vehicle WiFi network. Preferably authorized users could monitor online communications over these WiFi connections to protect against inappropriate use.	Y	Y		
1.1.8.2	Device Control: Authorized users shall be able to locate, deactivate and delete data on contractor-owned mobile devices designated for running the field application in tow vehicles to prevent security breaches if the devices are reported to be lost, stolen or misused. It is acceptable if this control is achieved through another application but it must be included in the bid and tested with the AVL system.	Y	Y		
1.1.8.3	Customizable Access Privileges: MTC SAFE, as the system administrator, shall be able to assign and edit read/write privileges for different parts of the system to users whose access is authenticated via user name and password.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.2	***Non-Functional Requirements***				
1.2.1	***Performance***				
1.2.1.1	Safety: The selected Contractor shall design the system with the safety of mobile users and motorists as a priority. The selected Contractor shall clearly explain in the AVL User Guide how mobile users shall or shall not operate its applications and equipment.	Y	Y		
1.2.1.2	Reliability: All system functions provided by the selected Contractor shall have both an operational availability and accuracy of no less than 99.5% during FSP operating hours when there are no external communication or equipment issues. The Contractor will be expected to maintain the software systems to ensure this and correct any system functions not performing to this standard as soon as possible.	Y	Y		
1.2.1.3	Personal Data Security: The database will contain personal information on both the motorists assisted and FSP drivers. Security measures to protect private information shall be consistent with the privacy policies of MTC SAFE (see IX. General Conditions, Item G, Personally Identifiable Information) as well as industry best practices.	Y	Y		
1.2.1.4	Future VoIP Compatibility: The system should be such that MTC SAFE could in the future install a working VoIP system through the in-vehicle WiFi, to serve as a backup to the radio system	N	Y		
1.2.1.5	System Availability: The system provided by the selected Contractor shall operate 24 hours a day, seven days a week.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.2.2	***Training Requirements***				
1.2.2.1	Training Courses: The selected Contractor shall provide training that addresses the needs of all users of the AVL system, including the tow drivers, tow contractors, FSP partners, and in-vehicle equipment installer and data contractor). Elements to be included in the training include: * A demonstration and written instructions of an installation, removal and use- case scenario-based maintenance procedures for WiFi/GPS Units in a flatbed, pickup and tow truck as well as lists of the equipment needed; * The use of the field interfaces; * The installation, use and maintenance of the AVL system, including basic and advanced features, report generation, and technical support request procedures etc; * Technical (software/hardware) troubleshooting procedures geared toward the installer and data contractors.	Y	Y		
1.2.2.2	AVL User Guide: The training courses shall be complimented with an AVL User Guide. This document shall be a manual or manuals encompassing all aspects of the systems in the bid and include: * A separate description of the administrator functions in the software program * A description of how to conduct program management functions in the event of system failure (e.g., backup paper systems) * A guide designed to help FSP Partner staff and consultants troubleshoot the AVL system *A separate manual for the field application targeted at tow operators * A codebook describing the fields in all of the tables in the new AVL and/or FSP server's database	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.2.3	***Equipment and Installation***				
1.2.3.1	Contractor shall provide 120 WiFI/GPS Units and all equipment needed to mount the Units in the two test fleets.		Y		
1.2.3.2	Ruggedness: The WiFi/GPS Unit and camera shall meet either MIL STD 810F or MIL STD 810G specifications. Preference will be given to units that have been tested according to the aforementioned standards for sand and dust, vibration, acoustic noise, humidity or shock.	Y	Y		
1.2.3.3	Equipment Condition: Units shall be delivered new, following standard testing procedures to assure proper working order.	Y	Y		
1.2.3.4	Compliance: Equipment intended for use within a vehicle shall operate in compliance with all applicable federal, state and local government statutes and regulations pertaining to electrically operated equipment and in- vehicle electronic devices.	Y	Y		

No.	Requirement	Core (Y/N)	Baseline (Y/N)	Compliance (full, partial, none)	Explanation (required for partial or no compliance)
1.2.4	***Support and Maintenance***				
1.2.4.1	Hardware Responsibility: After testing is complete WiFi/GPS units shall be installed, removed, and maintained by another firm. However failed WiFi/GPS units and accompanying equipment (modems, wires etc) shall be repaired/replaced by the selected applicant if initial repairs are unsuccessful. The Contractor shall be responsible for making sure there are at least 110 units in good working order and available for immediate use by FSP trucks until the end of the 5-year maintenance period unless MTC SAFE determines that the installer has not followed the written procedures provided in the Training Class.	Y	Y		
1.2.4.1.1	Items sent to the selected applicant shall be repaired and returned within 7 working days. In case of a delay, the selected applicant shall update MTC SAFE on the item's status.	Y	Y		
1.2.4.2	On-Call Installation and System Support: The selected Contractor shall be ready to provide support to FSP Partners and contractors on problems with the installation or operation of the AVL system within normal business hours and return calls within day or within the next few hours of the next business day. This support shall be maintained following the installation of the system as noted in Appendix A, 2.0 Project Schedule.	Y	Y		

1.2.4.3	Software Updates: All AVL software may be updated on an as-needed basis as determined by MTC SAFE via the task order process. The mobile WiFi/GPS software firmware and the AVL application shall be updated remotely via the commercial data network. The selected Contractor is obligated to make sure that mobile applications remain compatible with reasonably recent, functional versions of mobile devices' operating systems.	Y	Y		

Appendix A 4.0: Project Budget Form

The form below is available in spreadsheet form on the MTC website at: http://procurements.mtc.ca.gov/. *This spreadsheet contains active formulas not visible in a static format. Proposers must download this form, complete it according to the instructions below and include it in their submission.*

The Proposer should estimate the costs they will incur for each deliverable and add in any expected fees or profit. The sums of these estimates will indicate the bid amounts for both the development and maintenance of the system. Proposers should carefully consider the information entered in the Project Budget spreadsheet and make sure it is consistent with the information provided in the Cost and Price Analysis Form in Appendix B.

The Proposer should attribute the expected costs of developing and testing the test AVL system that are not properly attributable to earlier project deliverables to the 'Test AVL System' deliverable below. The expected cost of updating the Test AVL system after such testing should be attributed to the 'Baseline AVL System' deliverable.

MTC SAFE will make an initial payment of 15% of estimated total project development costs (Phases I, II and III) upon the approval of the contract. For Phases I and II, MTC SAFE will make a milestone payment equaling 85% of a project stage's estimated costs to the Contractor after reviewing and accepting all the deliverables in that stage. For Phase III, MTC SAFE will make a milestone payment of 85% of a deliverable's estimated cost after reviewing and accepting that deliverable, as defined in the table below. For Phase IV maintenance and support costs will be reimbursed annually. The cost estimates referred to are those in the Contractor's proposal.

Contractor Input Required

Initial Payment	$0

Phase I - System Generation

Stage	*Deliverables*	*Cost*	*Milestone Payment*
Project Planning and Management	Final Project Management Plan		$0
System Analysis	Requirements Analysis Report		$0
	System Implementation Plan		
System Development	System Design Report		$0
	Acceptance Test Plan		
System Integration and Test	Test AVL system		$0
	Initial Test Fleet Installation		
	Total Cost:	$0	

Phase II - System Delivery

Stage	*Deliverables*	*Cost*	*Milestone Payment*
System Installation	Baseline AVL system		$0
	Final Test Fleet Installation		
Acceptance Testing	Final Acceptance and System Verification Report		$0
Training	Training Plan		$0
	Final AVL User Guide		
	Training Classes		
Final Vehicle Installation	Final WiFi/GPS Unit Delivery		$0
	Installation Support (2-3 months)		
	Total Cost:	$0	

Phase III - System Upgrades *(Concurrent with Phase IV)*

Stage	*Deliverables*	*Cost*	*Milestone Payment*
Automatic Upgrades	All Non-Baseline Features	*$0*	see below
	Invoicing Features		$0
	Trouble Ticket Module		$0
	Equipment and Apparel Database		$0
	Reporting Features		$0
	All Remaining Non-Baseline Features		$0

Total Development	$0	Phases I, II and III Costs

Phase IV - Support and Maintenance *(Concurrent with Phase III)*

Stage	*Cost*	*Cost*	*Milestone Payment*
Ongoing Support	On-Call Technical Support (60 months)		Annual Payment of $0
	Software Compatibility Upgrades (60 months)		

Total Maintenance	$0	Phase IV Costs only
Total Bid	**$0**	Phases I - IV Costs

Task Orders

There will be a fixed task order budget of $100,000. Contractor shall provide a listing of all potential key personnel positions and corresponding fully loaded hourly rates for the purpose of developing pricing for future task orders. Contractor may only add positions to this table after notification and receipt of written approval from MTC SAFE. Proposer shall indicate in the spreadsheet (represented below):

1) The name, role and fully loaded hourly rates of the key personnel on the project team, information which will be included in the contract; and

2) The Proposer's price including shipping and handling, to deliver one (1) WiFi/GPS Unit and the cost of the components to mount and secure the WiFi/GPS Unit in an FSP truck.

Direct Labor Costs

Please list all key project personnel in descending order according to their fully loaded hourly rate.

Employee Name	**Fully Loaded Hourly Rate***	**Employee Title and Role**

*The hourly rates listed include all applicable surcharges such as taxes, insurance and fringe benefits as well as indirect costs, overhead and profit allowance, materials and supplies.

Equipment Costs

Cost of WiFi/GPS Unit	
Cost of Single Mounting System	

Appendix A 5.0: FSP Systems

FSP Network Schematic

The network diagram below shows the current network infrastructure and supporting components of the MTC SAFE FSP System. This diagram shows the portion of the system currently housed at the CHP facilities in Vallejo, CA. MTC SAFE is currently discussing a hardware upgrade which will include updating the various elements shown in this diagram. The nature of this upgrade will be based in part on the selected bidder's proposed system configuration.
Each component in the above diagram is discussed below. Specific details on each component will be provided, as needed, to the selected bidder based on the proposed system architecture.

Frame Relay/Cellular Network (Sprint)
The Frame Relay/Cellular Network is the communications link from the MTC SAFE FSP servers to the field units. This network is currently provided by Sprint.

Internet (AT&T)
Outside Internet access is currently provided by AT&T. Internet access is currently used by FSP contractors for remote system administration and management as well as by MTC SAFE staff as needed for Internet access.

Cisco 2811 Router (AVL)
The Cisco 2811 Router (AVL) connects the internal FSP network to the Frame Relay/Cellular Network and supports all vehicle MDC (Ranger) and laptop data communications.

Cisco 2811 Router (MTC/Caltrans)
The Cisco 2811 Router (MTC/Caltrans) extends the FSP inside network to MTC/Caltrans in Oakland. This provides the interconnection to the MTC AVL workstations and FSP servers as well as Internet access.

Cisco 2621 Router
The Cisco 2621 Router connects the internal FSP network to the AT&T Internet circuit. This supports are necessary network traffic to and from the public Internet.

Cisco 560E PIX Firewall
The Cisco PIX firewall provides network security and VPN access between the FSP internal network and the outside Internet. Internet access is provided via VPN connectivity to allow remote access to FSP contractors for the purpose of systems and network administration/support/testing. The firewall has the necessary routing, translation rules, and VPN access configuration to support these activities.

Cisco 2960G Switch

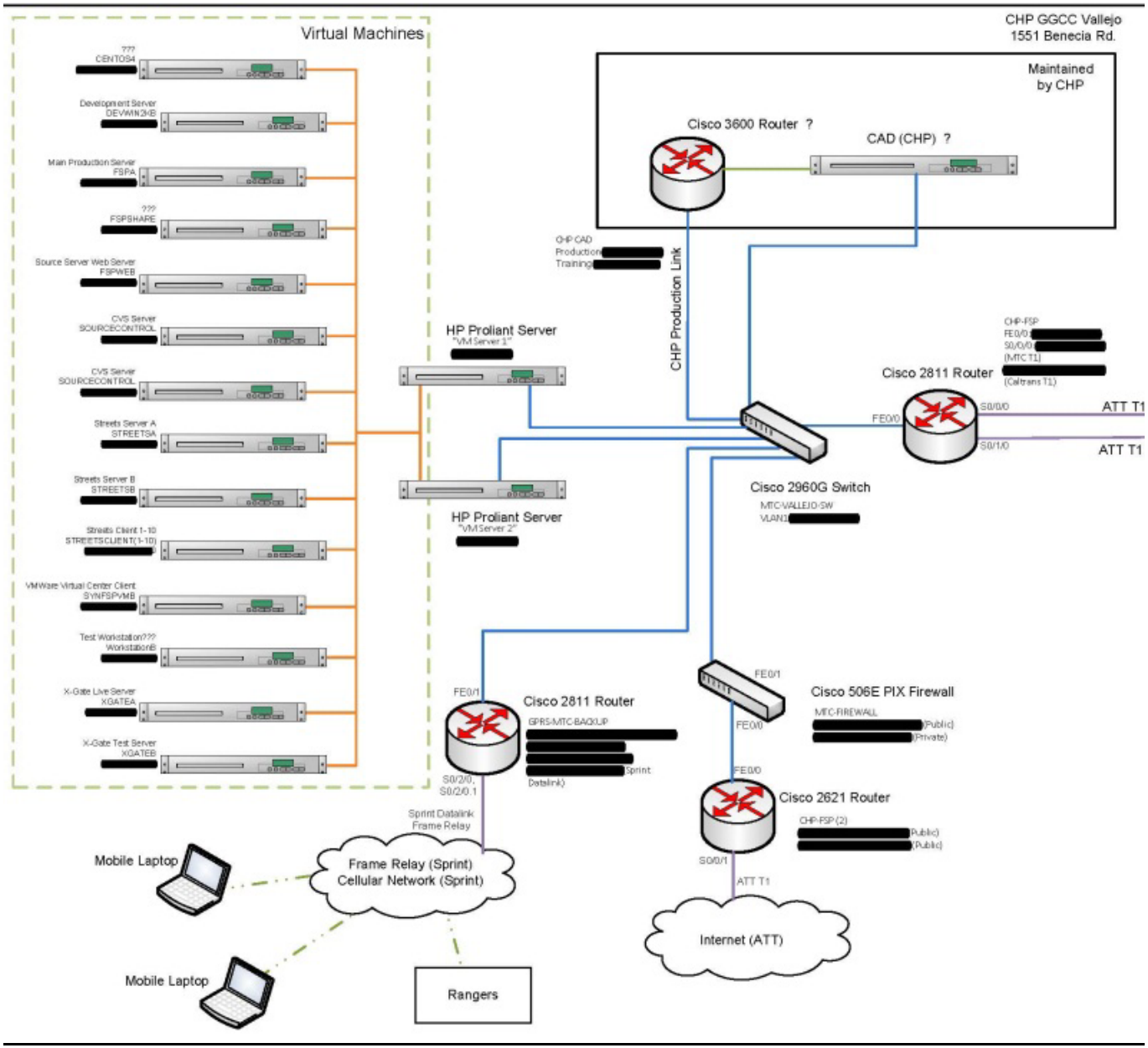
The Cisco 2960G switch is used to link the various network segments together for use by the FSP system (outside Internet, AVL data network, CHP CAD, and MTC/Caltrans).

CHP CAD

CHP provides network components supporting the connectivity between the MTC SAFE FSP system and the CHP CAD system. These components consist of a firewall, router, and relay server. Connected to those elements are the CHP CAD test and production systems.

FSP Virtual Hosts and Virtual Machines

The MTC SAFE FSP servers run as virtual machines hosted by two VM hosts running VMWare. The virtual machines provide a production environment as well as a test environment and are used by both the FSP software and the AVL software. Virtual machines are also used in the current configuration to provide client machines on which the AVL user interface software is run. These client machines are accessed by both CHP and Caltrans staff.

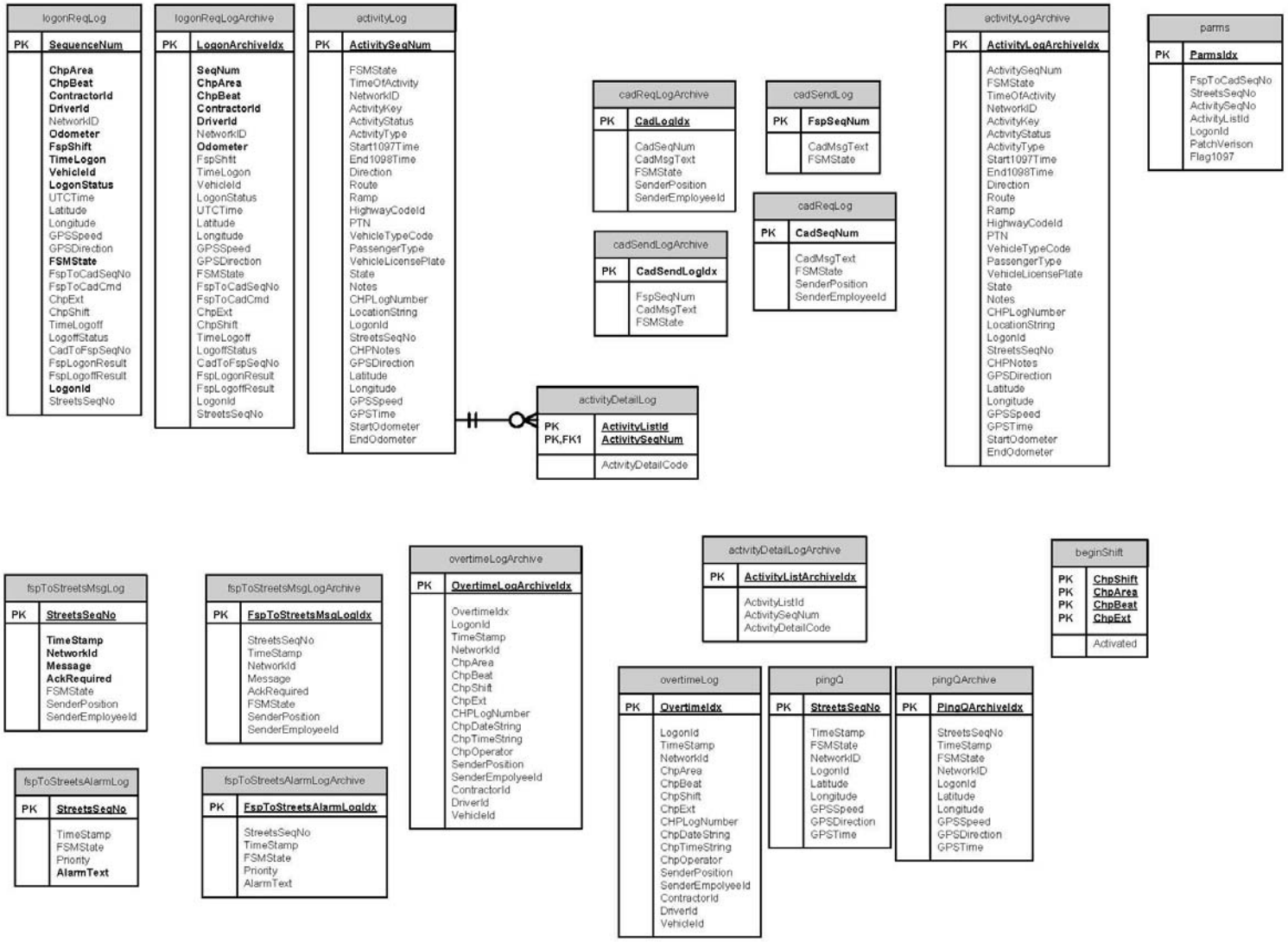

Virtual Machines
???
CENTOS4
Development Server
DEVWIN2KB
Main Production Server
FSPA
???
FSPSHARE
Source Server Web Server
FSPWEB
CVS Server
SOURCECONTROL
CVS Server
SOURCECONTROL
Streets Server A
STREETSA
Streets Server B
STREETSB
Streets Client 1-10
STREETSCLIENT(1-10)
VMWare Virtual Center Client
SYNFSPVMB
Test Workstation???
WorkstationB
X-Gate Live Server
XGATEA
X-Gate Test Server
XGATEB
HP Proliant Server
"VM Server 1"
HP Proliant Server
"VM Server 2"
CHP GGCC Vallejo
1551 Benecia Rd.
Maintained
by CHP
Cisco 3600 Router ?
CAD (CHP) ?
CHP CAD
Production
Training
CHP Production Link
CHP-FSP
FE0/0
S0/0/0
(MTC T1)
(Caltrans T1)
Cisco 2811 Router
FE0/0
S0/0/0
S0/1/0
ATT T1
ATT T1
Cisco 2960G Switch
MTC-VALLEJO-SW
VLAN1
FE0/1
Cisco 2811 Router
GPRS-MTC-BACKUP
Sprint
Datalink)
S0/2/0,
S0/2/0.1
FE0/1
FE0/0
Cisco 506E PIX Firewall
MTC-FIREWALL
(Public)
(Private)
FE0/0
Cisco 2621 Router
CHP-FSP (2)
(Public)
(Public)
S0/0/1
ATT T1
Sprint Datalink
Frame Relay
Mobile Laptop
Frame Relay (Sprint)
Cellular Network (Sprint)
Mobile Laptop
Rangers
Internet (ATT)

FSP Database Schema

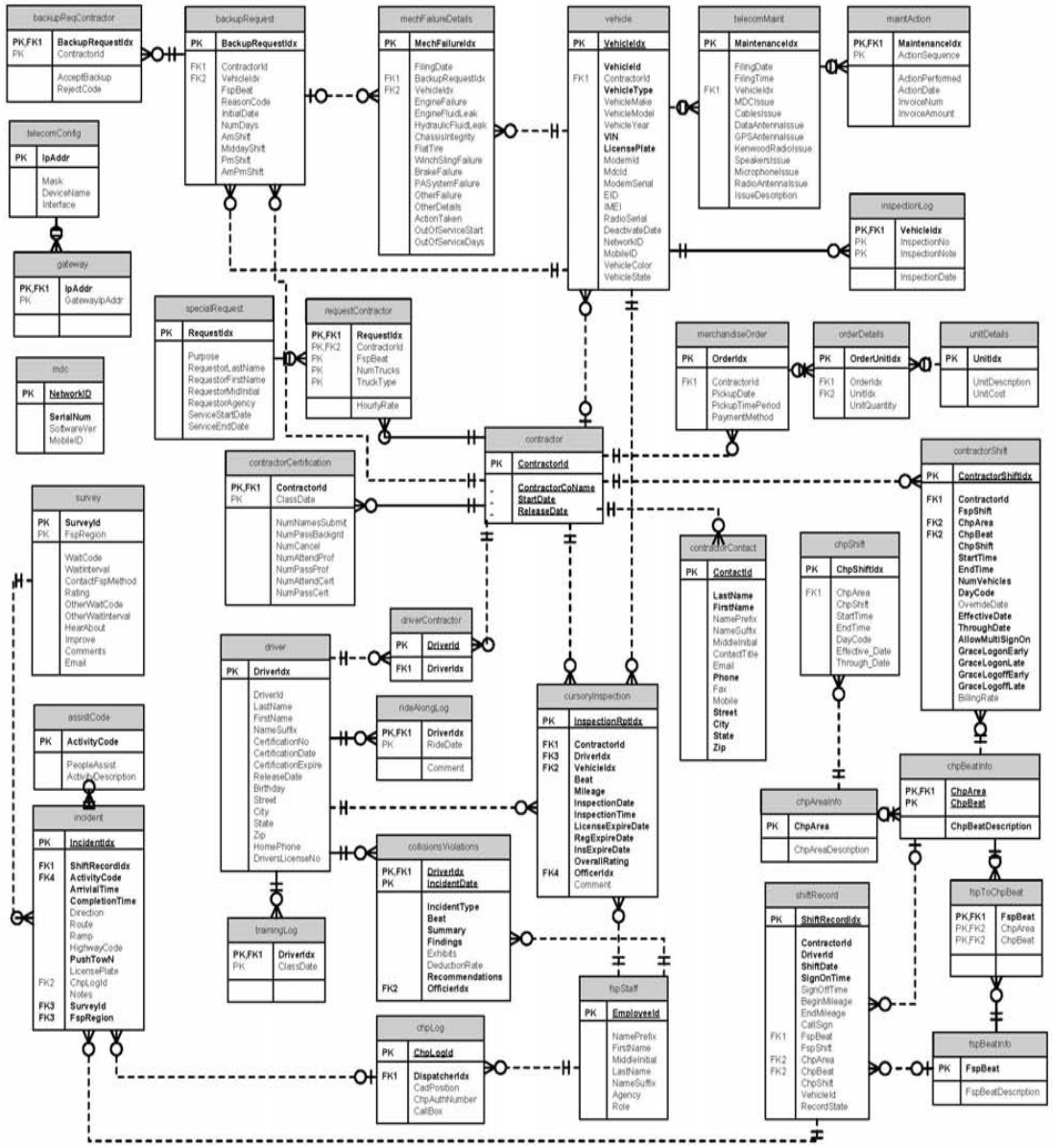
The following two pages provide a high-level design of the current FSP database structure. The tables used by the FSP, their content, and associated relationships are depicted in these diagrams.

The intent of providing this schema is to let the Contractor see the information currently being maintained at a high-level to possibly give them additional context for their bid. These drawings are being provided for informational purposes only and do not represent any requirements associated with the Contractor's database structure or elements required for the implementation of the AVL system or for the full replacement FSP system. Additional details will be provided, as needed, to the Contractor.

FSP Database Schema (Entity-Relation Diagram)



FSP Database Schema (Entity-Relation Diagram)



Appendix A 6.0: System Interface

The document below addresses the interface between the current AVL provider and the FSP Server. It does not address the CAD-FSP Server interface – although it describes some activity originating with the CAD. MTC SAFE has attempted to ensure that this document describes the interface accurately. There may, however, be slight differences between the actual interfaces and the description below.

This document is not intended to comprehensively document all the integration functionality required. This memo is provided only to generally describe the baseline functionality that must be maintained and to introduce the Proposer the protocols of the interface. The CAD-FSP interface is distinct from what is provided below although all messages from the CAD to the AVL must pass through the FSP Server.

MTC SAFE FSP

Task Order 8

AVL Interface Definition Document

V1.0

September 2013

Prepared by:

ICx Transportation Group

Revision History

Date	Version	Author	Notes
9/25/2013	V1.0	A. Cady/D. Kingery	Initial Release

Preface

This document provides a high-level description of the current communications interface between the FSP server and the AVL subsystem. Specific message protocol details are not provided due to their proprietary nature. The Contractor will be required to develop and deliver and interface that implements the messages discussed in this document if the Contractor chooses to integrate with the existing FSP Server instead of directly integrating with the CHP CAD system.

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1 Introduction

This document specifies the interface between the FSP subsystem and an AVL (Automatic Vehicle Location) subsystem, which are two components of the overall FSP software system.

1.1 Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document.

	Acronyms and Abbreviations
API	Application Programming Interface
AVL	Automatic Vehicle Location
CAD	Computer Assisted Dispatch
CHP	California Highway Patrol
FSP	Freeway Service Patrol
MTC	Metropolitan Transportation Commission for the San Francisco Bay Area
RPC	Remote Procedure Call

1.2 System Architecture

The FSP system as a whole currently consists of three major subsystems: an AVL (automated vehicle location) subsystem, the CAD (computer assisted dispatch) system operated by CHP, and an FSP subsystem.

The AVL subsystem shall communicate with the existing MTC SAFE CAD/FSP system through a bidirectional messaging Application Programming Interface (API). This document specifies the functional API interface. The specific mode of communication is not specified – it may be a raw socket interface, a web service, or some other type of RPC channel. The channel type must support custom data types, method calls, events, and custom exceptions. The existing system uses the TcpChannel implementation of the Microsoft .NET Remoting framework.

The following diagram shows the main components of the FSP system. The blocks labeled “API” are the interface specified in this document.

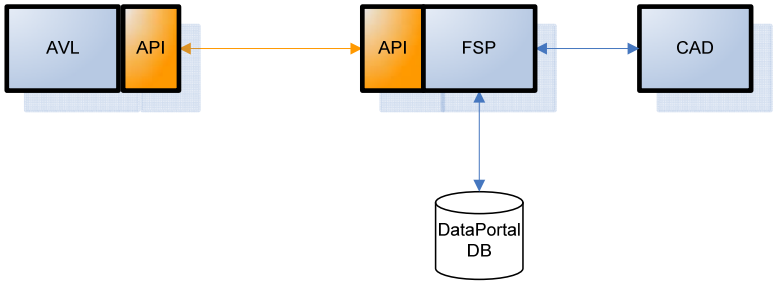

Figure 1-1 System Architecture

The three subsystems are described below.

1.2.1 AVL Subsystem

The AVL subsystem provides vehicle location services, using mobile devices connected to a cellular telephone network, GPS location tracking, and a management system.

1.2.2 CHP CAD Subsystem

The CHP CAD subsystems provide the dispatch and field communications functions for the FSP drivers. This subsystem is maintained by CHP.

1.2.3 FSP Subsystem

The FSP subsystem, which is currently in service, provides a middle layer of software service that includes configuration, transaction history storage, and state management, for the FSP vehicle fleet, as well as brokering communications between the AVL subsystem and the CAD dispatch system.

2 Messages

The following sections describe the messaging scenarios used between the existing FSP and AVL subsystems. If the decision is made to replace the AVL subsystem only, and keep the current FSP subsystem, then the new AVL subsystem will be required to support this messaging protocol. In the existing system, this messaging is implemented using a set of remote method calls and events, using a TCP implementation of the Microsoft .NET Remoting framework.

For most of these scenarios, there will also be communications taking place between the FSP and CAD subsystems. If the existing FSP subsystem is retained, these communications will not be visible to the AVL system.

2.1 Logon

Logon messages are used to communicate information associated with drivers signing on at the start of their shift.

The workflow of a logon is as follows:

1. Driver presses the “Logon” button on the mobile device
2. FSP receives a LogonRequest message from the AVL system
3. FSP sends the LogonResponse message to complete the logon

2.2 Logoff

Logoff messages are used to communicate information associated with drivers signing off at the end of their shift. It is also possible for the FSP to initiate a logoff even if it was not requested by the driver. Note that logoff requests are always approved (they are never rejected by the AVL system or the FSP). The workflow of a standard logoff is as follows:

2.2.1 Driver-Initiated Logoff

1. Driver initiates logoff from the mobile device
2. FSP receives a LogoffRequest message from the AVL system
3. FSP sends the LogoffResponse message to accept or reject the logoff
4. AVL system sends a logoff accept/reject message to mobile device.

2.2.2 FSP-Initiated Logoff

1. FSP initiates logoff by sending the SendLogoff message
2. AVL system sends a logoff confirmation to the mobile device
3. FSP receives SendLogoffComplete message from the AVL system

2.3 Text Messaging

Text messaging provides a means of sending mail messages from the CAD to a driver's mobile device. In the current system, text messages can only be sent **to** a mobile unit (the mobile unit cannot send a text message to the CAD). The workflow of standard text messaging is as follows:

1. FSP sends the SendTextMessage message to initiate the sending of a text message
2. The AVL system sends the text message to the mobile device
3. FSP receives a SendTextMessageComplete message from the AVL system
4. If a driver acknowledgement was requested, the FSP will receive a TextMessageAck message from the AVL system (when the driver acknowledges the message).

2.4 Dispatch Activities

The primary function of the FSP system is to manage and track dispatch of service vehicles to incidents. For the purposes of the FSP/AVL interface, communications for dispatch are handled through the following set of messages.

The normal workflow for an activity dispatch would be:

1. A dispatch assignment is made, initiated either from the central dispatch operator via the CAD system, or by the field unit itself.
2. If the dispatch came from CAD, the driver acknowledges the dispatch assignment
3. When the driver arrives on scene, he or she presses an ON SCENE button on the mobile device. This is communicated to the FSP and CAD subsystems
4. The driver provides service, and enters additional information about the incident on the mobile device
5. On completion of service, the driver sends the detail information to the FSP system and returns to available status.

The following sections describe in further detail the workflow for these specific cases.

2.4.1 Driver Initiated Activity

1. A driver presses the “On Scene” button on the mobile device to indicate the creation of a new activity.
2. FSP receives a NewActivity message from the AVL system
3. FSP sends SendUpdateActivity message to assign the new activity a Log Number (and perhaps additional information)
4. FSP receives a SendUpdateActivityComplete message from the AVL system
5. A driver enters additional information about the activity and presses the “Send” button
6. FSP receives an UpdateActivity message from the AVL system with the new information

2.4.2 CAD Initiated Activity

1. FSP sends SendNewActivity message to send a newly created activity to a mobile unit
2. FSP receives a SendNewActivityComplete message from the AVL system
3. FSP will receive an UpdateActivity message when an activity is updated by the driver on mobile device
4. FSP may send the SendUpdateActivity message if it wishes to update the activity (if it does, FSP will receive a SendUpdateActivityComplete message)

2.4.3 New Activity Timeout

When the mobile device receives a dispatch assignment from FSP it will display the Dispatch Assignment Accept screen until the dispatch has been accepted, or a timer has expired. If the timer expires, the mobile device will send a New Activity Timeout message to the AVL system and display a Dispatch Assignment Timeout message to the driver.

If the AVL system receives a timeout message from the mobile device, it will send a SendNewActivityComplete message to FSP with a timeout status.

2.4.4 CAD-Initiated Activity Cancel

FSP can cancel a dispatch assignment on the mobile device by sending a CancelActivity message to the AVL system. When an activity has been cancelled, it will be removed from the mobile device.

2.5 Vehicle Status

Vehicle status messages allow the mobile device and FSP to receive and update the current status of a vehicle. The flow of a vehicle update is as follows:

2.5.1 Driver-Initiated Vehicle Status Update

1. A driver updates his status on Ranger
2. FSP receives a VehicleStatusRequest message from the AVL system
3. FSP sends the VehicleStatusResponse message to accept or reject the status update

2.5.2 CAD-Initiated Vehicle Status Update

1. FSP initiates a status update by sending the SendVehicleStatus message
2. The AVL system sends the vehicle status update to the mobile device
3. FSP receives a SendVehicleStatusComplete event from the AVL system

2.6 Vehicle Ping

Pinging is a useful tool that allows the FSP to determine if a particular vehicle is online and in coverage. The flow of a vehicle pinging is as follows:

1. FSP initiates a vehicle ping by sending the SendVehiclePing message
2. FSP receives a VehiclePingResponse message from the AVL system.

2.7 Overtime Approval

Drivers have the ability to request overtime by making a radio call to the dispatch center. If overtime is approved, the FSP can use an overtime approval message to relay the approval information to the Ranger. The flow of an overtime approval is as follows:

1. FSP grants overtime approval by sending the SendOvertimeApproval message
2. FSP receives a SendOvertimeApprovalComplete message from the AVL system

2.8 Alarm

The API provides a method for the FSP to trigger an alarm in the AVL system. The FSP initiates an alarm by sending the SendAlarm message to the AVL system.

Appendix A, 7.0: FSP Documents

This section of the Appendix contains program documents that are meant to inform the Proposer about certain program management functions that will be included in the procured system. These documents are for reference purposes and are ancillary to the Requirements Compliance Table. MTC SAFE reserves the right to change its forms and administrative processes at any time. The following documents are included:

FSP Implementation Plan (IPlan)
A schedule and description of FSP tow truck service, by beat.

Daily Shift Records (DSR)
A paper record of the assists a tow truck driver makes over the course of a shift. The DSR is used as a back-up system currently.

Tow Contract Invoice and Adjustment Sheets
MTC SAFE staff use the invoice sheet to calculate the base monthly payment to tow contractor. The adjustment sheet notes adjustments to those payments for fines, merchandise purchases and changes to schedule service.

Hot Fax Form
Tow contractors submit a Hot Fax when in-vehicle equipment malfunctions. A copy goes to MTC SAFE as well as the agency's wireless communications contractor.

Mechanical Failure Form
Tow contractors are required to send the following form to MTC SAFE and CHP when an FSP vehicle has a mechanical problem that will take the vehicle out of service.

Back-up Request Forms
All beats have primary and back-up trucks assigned to them, often belonging to different companies. Tow contractors are required to send this back-up service request form when their vehicle cannot provide service to its beat.

BAY AREA FREEWAY SERVICE PATROL PROGRAM - IMPLEMENTATION PLAN

Effective July 2013

BEAT ID	CONTRACTOR	LOCATION COUNTY	LOCATION ROUTE	BEAT LIMITS	CALTRANS ONE WAY LENGTH (IN MILES)	START DATE	ENDING DATE	WEEKDAYS AM SHIFT	WEEKDAYS MIDDAY SHIFT	WEEKDAYS PM SHIFT	SUNDAY PM SHIFT	# OF TOW TRUCKS	# OF PICKUP TRUCKS	# OF MIDDAY TOW TRUCKS	# OF FLATBED TRUCKS	# OF BACKUP TRUCK	NOTES	BEAT ID
1	Ken Betts	ALA	980	Interstate 580 to Interstate 880	2.03	7/29/13	7/30/17	07:00-10:00		15:00-19:30		2					b	1
		ALA	880	7th Street to Jackson Street	2.04													
		ALA	24	Interstate 580 to Contra Costa County Line	4.39													
		CC	24	Contra Costa County Line to Oak Hill Road	6.25													
		CC/ALA	*13*	*State Route 24 to Redwood Avenue*	(4.23)												e	
2	Redhill Towing	ALA	80	Powell Street to Contra Costa County Line	4.25	7/28/13	7/30/17	06:00-10:00	10:00-15:00	15:00-19:00	12:30-19:00	2	1	1		1	a, b, c g	2
		CC	80	Alameda County Line to San Pablo Dam Road	4.34													
		ALA/CC	580	Interstate 80 to Western Drive/Pt. Molate	6.01													
3	Myers Towing	ALA	880	Alvarado-Niles Road to State Route 238	7.66	6/27/11	6/26/15	06:00-10:00	10:00-15:00	15:00-19:00	12:30-19:00	2				1	a,b,c	3
		ALA	92	Interstate 880 to Clawiter Road	1.91													
4	Palace Garage	ALA	880	Broadway to State Route 238	10.55	7/29/13	7/30/17	06:00-10:00	10:00-15:00	15:00-19:00		2		1			a, b	4
		ALA	238	Interstate 880 to Interstate 580	2.11													
5	American Tow	CC	680	Stone Valley Road to Marina Vista Road	13.89	7/5/11	7/4/15	06:00-09:00		15:00-18:30 (M-Th); 14:00-18:30 (F)		2	1			1	b	5
		CC	24	Oak Hill Road U/C to Interstate 680	2.87													
6	Atlas Tow	SM	101	Millbrae Ave to SF City Limit	8.10	7/8/13	7/9/17	06:00-10:00	10:00-15:00	15:00-19:00		2		1		1	a, b	6
7	Atlas Tow	SM	92	Interstate 101 to Foster City Boulevard	6.00	7/8/13	7/9/17	06:00-10:00		15:00-19:00		1	1				b	7
		SM	101	State Route 92 to Millbrae Ave.	1.40													
8	Lima Towing	SCL	101	Blossom Hill Road to Ellis Street	18.40	7/8/13	7/9/17	06:00-10:00		15:00-19:00		3	1			1	b	8
		SCL	237	Highway 101 to Lawrence Expressway	2.12													
9	Campbell's Towing	SCL	280	Interstate 680/Highway 101 to Foothill Exp.	11.45	6/11/11	6/10/15	06:00-10:00		15:00-19:00		3				1	b	9
		SCL	87	State Route 85 to Hwy. 101	9.22													
10	B&A Body Works & Towing	SCL-SM	101	Ellis Street to State Route 92	17.44	6/11/11	6/10/15	06:00-10:00		15:00-19:00		1	1		1		b	10
		SCL	85	Junction Route 101 to El Camino Real	0.93													
11	B&A Body Works & Towing	SF	101	Cesar Chavez to San Mateo Co. Line	2.92	6/13/11	6/12/15	06:00-10:00	10:00-15:00	15:00-19:00	11:30-18:00	2					a, b,c	11
		SF	280	San Mateo Co. Line to Highway 101	4.34													
		SM	101	Harney Way to San Francisco Co. Line	0.41													
	(Bridge Tow Coverage)	*SF*	*280*	*Highway 101/Interstate 280 Interchange to Sixth Street*	(3.20)												e	
	(Bridge Tow Coverage)	*SF*	*80*	*Cesar Chavez to Interstate 80/Fourth Street*	(1.50)												e	
12	American Tow	CC	80	San Pablo Dam Road to Cummings Skyway	8.39	7/11/13	7/16/17	06:00-10:00		15:00-19:00		2					b	12
13	Bill's Towing	MRN	101	Alexander to Junction Route 37	19.50	6/27/11	6/26/15	06:00-10:00		14:30-18:30	13:30-18:30	3					b, c, d	13
		MRN	580	Highway 101 to Interstate 580 San Quentin	2.40													
14	Myers Towing	ALA	880	Mowry Avenue to Alvarado Niles Road	5.84	7/25/13	7/30/17	06:30-09:30		15:00-19:00		2					b	14
		ALA	84	Thornton Avenue to Interstate 880	2.26													
15	Yarbrough Bros. Towing	SON	101	East Washington to River Road	20.40	7/2/11	7/1/15	06:30-9:30		15:30-18:30		1			1			15
16	Lima Towing & Transportation	SCL	17	Junction Route 9 to Summit Road	7.07	7/11/11	7/10/15	06:30-9:30		15:30-18:30	See separate schedule	1					f	16
17	Sierra Hart	SOL	12	Interstate 80 to Napa Co. Line	2.95	7/25/11	7/24/15	06:00-10:00		15:00 -19:00	8:00-16:30 Sat. & Sun.	2					g	17
		NAP	12	Napa Co. Line to Sonoma Co. Line	11.60													
		NAP	29	State Route 37 to Oakville Cross Road	24.00													
		SON	12	Sonoma Co. Line to Junction 116	4.90													
		NAP	29	Oakville Cross Road to State Route 128	1.80													
18	Myers Towing	SCL	880	Junction Route 237 to Alameda County Line	2.08	7/11/13	7/9/17	06:30-10:30		15:00-19:00		2					b	18
		ALA	880	SCL County Line to Mowry Avenue	7.18													
19	Campbell's Towing	SCL	880	Junction Route 237 to Junction Route 17	8.42	7/8/13	7/9/17	06:00-09:00		15:00-19:00		2	1				b	19
		SCL	17	Junction Interstate 880 to Junction Route 9	6.88													
		SCL	237	Junction Interstate 880 to Lawrence Expressway	4.70													
20	B&A Body Works & Towing	SM	280	Geneva/Ocean Avenueto Interstate 380	8.18	7/11/11	7/10/15	06:30-9:30		15:00-18:00		1					b	20
		SM	380	Interstate 280 to Highway 101	1.67													
21	Myers Towing	ALA	680	Scott Creek to Alcosta Boulevard	21.35	7/11/13	7/9/17	06:30-09:30		15:00-19:00		2	1			1	b	21
22	Save Tow	ALA	580	Vasco Road to Santa Rita	8.25	7/25/11	7/24/15	05:30-9:30		15:30-19:00 (M-Th); 15:30-20:00 (F)	12:30-19:00	2	1				b, c, d	22
		ALA	580	Grant Line Road to Vasco Road	8.23													
23	Campbell's Towing	SCL/ALA	680	Highway 101 to Scott Creek Road	10.17	7/11/13	7/9/17	06:30-09:30		16:00-19:00		2					b	23
24	Sierra Hart	SOL	680	Interstate 80 to Junction 780	14.30	7/23/11	7/22/15	06:00-9:00		15:30-18:30 (M-Th); 14:00-19:00 (F)		1						24
		SOL	780	Junction 680 to Junction 80	6.42													
25	American Tow	CC	4	Hillcrest Avenue to Interstate 680	16.10	7/18/13	7/16/17	05:30-09:30		15:30-19:00		3	1				b	25
		CC	242	State Route 4 to Interstate 680	3.60													
		CC	*4*	*Alhambra Ave to Interstate 680*	(3.10)												e	
26	Palace Garage	ALA	580	Harrison Street/Oakland Avenue to Junction Route 238	13.47	7/18/13	7/16/17	06:30-09:30		15:30-18:30		2					b	26
		ALA	*13*	*Redwood Avenue to Interstate 580*	(1.00)												e	
27	K & S Towing	ALA	580	Santa Rita Road to Junction 238	12.86	6/27/11	6/26/15	06:00-9:30		15:30-18:30	12:30-19:00	2	1				b,c	27
28	Redhill Towing	MRN/SON	101	State Route 37 to East Washington Blvd.	13.10	7/18/13	7/16/17	06:00-09:00		15:00-19:00		2				1	b	28
29	Sierra Hart	SOL	80	Magazine Street to Abernathy Road	14.04	7/11/11	7/10/15	06:00-9:00		15:30-18:30 (M-Th); 14:30-19:00 (F)	12:30-19:00	2				1	b, c, d	29
30	Action Towing & Road Service	SM	92	State Route 1 to Highway 280	8.03	7/23/11	7/22/15	06:00-9:30		15:30-18:30		2					b	30
		SM	280	Interstate 380 to Vist Point Exit (Lake Road) +1.37mi	10.20													
		SM	92	Interstate 280 to Highway 101	4.83													
32	Bob's Towing	SCL	85	El Camino Real to Cottle Road	19.78	7/18/13	7/16/17	05:30-09:00		15:30-19:00		2					b	32
33	Campbell's Towing	SCL-SM	280	SR 92 to SR 85	20.10	7/5/11	7/4/14	06:00-9:00		15:30-18:30		2					b	33
34	Roadrunner Tow	SOL	80	Abernathy Road to I-505 Vaca Valley Road	12.54	7/11/11	7/10/15	06:00-9:00		15:30-18:30 (M-	12:30-19:00	2					b, c, d	34
35	K & S Towing	CC	680	Alcosta Boulevard to Stone Valley Road	10.36	7/9/11	7/8/15	06:00-9:00		15:00-18:30		1					b	35
37	Roadrunner Tow	SOL	80	Junction I-505 to Richards Blvd.	16.40	7/25/11	7/24/15	06:00-9:00		15:30-18:30 (M-	12:30-19:00	2					b, c, d	37

Notes:

a	Weekday midday service shall consist of one FSP tow truck.
b	Refer to the Holiday Schedule. If a holiday falls on a Monday, regular Sunday Service is cancelled.
c	Sunday service shall consist of one FSP tow truck, except for Beats 13, 22, 29, 34 & 37.
d	Sunday Service: two trucks, hours vary by beat, see Sunday PMshift hours.
e	Coverage is provided on this segment intermittently or on an as needed basis.
f	Refer to Beats 16 weekend service schedule.
g	Sat/Sun service shall consist of two FSP tow trucks.

Freeway Service Patrol Daily Shift Record

37737

Driver Information

Date: __ __ / __ __ / __ __

Driver ID: __ __ - __ __ __

Beat Number: __ __ __

Truck Number: __ __

Call Sign: __ __ __ - __ __ __ __

Shift Information

10-8: __ __ : __ __

10-10: __ __ : __ __

Begin Mileage: __ __ __ __ __ __

End Mileage: __ __ __ __ __ __

Driver Signature:

Activ. code	10-97 (Military Time)	10-98 (Military Time)	Dir.	Route	Ramp	Hwy. Code	P/T/N	Veh. Type	Veh. Lic. Plate,State	CHP Log #	CHP Auth. #	Notes
	:	:					P T N					
	: :	: :					P T N					
	:	:					P T N					
	: :	: :					P T N					
	:	:					P T N					
	: :	: :					P T N					
	:	:					P T N					
	: :	: :					P T N					

37737

Activity Codes

People Type Assist		Non-People Type Assist	
11 Flat Tire	15 Mechanical Problem	04 Unable To Locate	24 Abandoned Vehicle
12 Out Of Gas	29 Assist FSP Beat Partner		
16 Other	25 In-lane Hazard		
13 Overheat	48 Provided Transportation	18 Refused FSP Service	27 Drive-off
14 Dead Battery	83 Traffic Collision	22 Cancelled Assignment	28 Help Enroute

Highway Codes

1 In-lane 2 Right Shoulder 3 Left Shoulder 4 On-ramp/Off-ramp

Vehicle Types

1 Auto/Van 2 Pickup 3 Truck More Than 1 Ton 4 Truck Less Than 1 Ton 5 Motorcycle 6 Big Rig

Driver's Notes

Please use start time to identify notes with the incident.

Bay Area FSP Tow Invoice — September 2013

Beat 0 — contract begin/end dates: 7/29/13-7/30/17 — **Invoice**

Specific Beat Data:
Trucks
Weekday
Shift
Midday

Contractor:	Contractor Name
Address:	1234 Street Name
	City, State, Zip

MTC Contract #

Shift	0	0	Sundays	0
Saturday Shift	0	0	Holidays - Regular	0
Sunday Shift	0	0	Holidays - Augmented	0
Holiday-Regular	0	12		
Holiday-Augmented	0	0		
Rate		**$63.89**		

	Rate	Hours	Cost
Weekday	$63.89	300	$19,167.00
Midday	$63.89	0	$0.00
Saturday	$63.89	0	$0.00
Sunday	$63.89	0	$0.00
Holiday	$63.89	12	$766.68
	Subtotal	**312**	**$19,933.68**

Additions	$0.00
Deductions	$0.00
TOTAL INVOICE	**$19,933.68**

Bay Area FSP Adjustment Sheet

for the month of **Sep. 13**

Beat 0

to be distributed

Additions

#	Date	Action	Hours	Rate	Cost
			Total Additions		**$0.00**

Deductions

#	Date	Action	Hours	Rate	Cost
			Total Deductions		**$0.00**

HOT FAX

Service request for in-vehicle telecommunications equipment

FAX TO

Fax to both contacts

Absolute Wireless, attn: XXXXX: 510-XXX-XXXX

MTC SAFE, attn: Project Manager: 510-XXX-XXXX

FROM

Contractor		Contact Name	
Contact #		Driver Name & ID Number	
Date		Time	
FSP Vehicle #			

SERVICE REQUESTED

Type

Data:
- ☐ MDC/Ranger
- ☐ Cables
- ☐ Data Antenna

Voice:
- ☐ Kenwood Radio Unit
- ☐ Speaker(s)
- ☐ Microphone
- ☐ Radio Antenna

Description of Problem:

STAFF USE ONLY

Scheduled Date	
Scheduled Time	
Technician	
Problem	
Solution	

When Absolute has completed a maintenance request, attach this Hot Fax to the work order form and mail to Project Manager.

MECHANICAL FAILURE FORM

Fax this form to CHP and MTC SAFE **WITHIN FORTY-EIGHT (48) HOURS** of when the back-up service was requested.

FAX TO
Fax to both contacts

MTC SAFE, attn: Fleet Manager 510-XXX-XXXX

CHP, attn: FSP Analyst: 707-XXX-XXXX

FROM

Contractor _____ Date: _____

Truck # _____ Truck model _____

BACKUP INFO

Nature of problem
(Check one or more)

- ☐ Engine failure
- ☐ Engine fluid leak
- ☐ Hydraulic fluid leak
- ☐ Chassis integrity Flat
- ☐ tire
- ☐ Winch/sling failure
- ☐ Brake failure
- ☐ PA system failure
- ☐ Other_____

Action to be taken by contractor _____

Estimated # of days truck out of service _____

Starting Date # of day

UPDATE ON BACKUP

o Truck back in service

Date truck back in service _____

Truck back in service _____

BACK-UP REQUEST FORM

Request for FSP Back-up Service. If your vehicle is out of service due to damage and/or mechanical failure, complete and fax this form both to CHP and MTC SAFE

FAX TO

MTC SAFE, attn: Fleet Manager 510-XXX-XXXX

CHP, attn: FSP Analyst 707-XXX-XXX

FROM

Contractor: _____ Date: _____

Beat #: _____ Truck #: _____

BACK-UP INFO

Reason for back-up service[1]: A* B C D E

**You MUST complete a Mechanical Failure Form and fax it to MTC SAFE*

Initial **date** of request _____ **Time** confirmed: _____ # of days _____

Shift(s) back-up service needed: AM Shift | Midday shift | PM shift | AM/PM shifts

To obtain back-up service, begin by contacting the primary back-up contractor. If the primary back-up contractor is unavailable, contact the secondary back-up contractor. Continue to proceed down the list of back-up contractors until back-up service is obtained. Use the table below to document contractors who were not able to provide back-up service and notify both CHP and MTC SAFE of the back-up contractor whom will be providing back-up service for your beat.

Contractor	Accepted	Rejected	Reason for rejection[2]
1.	☐	☐	A B C D E
2.	☐	☐	A B C D E
3.	☐	☐	A B C D E
4.	☐	☐	

[1]REASON FOR BACK-UP SERVICE

A- Regular Truck down due to mechanical failure.
B- Regular truck was involved in an accident
C- Regular truck has a flat tire
D- Lack of drivers
E- Taken out of service by CHP

[2]REASON FOR REJECTION

A- Back-up already in use
B- Back-up down due to mechanical failure
C- Back-up down due to involvement in an accident
D- Lack of drivers
E- Back-up taken out of service by CHP

Submitted by

Appendix A 8.0: FSP Violations

The list below is provided to highlight specific violations of interest and to give the Proposer context on FSP program policies.

MTC SAFE reserves the right to change FSP rules and its requirements for the violations tables of the new system. The contracts between MTC SAFE and its tow contractor list other conditions not listed below; MTC SAFE may seek to incorporate the enforcement of these rules in to the AVL system constructed by the Contractor.

Information in Appendix A, 3.0 Requirements Compliance Table 1.1.2.5.3.1 marked with an '*' is meant to be manually entered by an authorized user. All other fields shall be auto-populated *if* those violations are automatically detected by the fleet management tools.

The Contractor's AVL system should automatically detect violations numbered 19, 39, 42, 46, 47 and 49 in the list below.

Violations in the Standard Operating Procedures (SOP) Manual

(Revised in October 2012)

1) Sleeping (or giving the appearance of sleeping) while in or around an FSP vehicle during FSP hours. (**Major**)

2) Using poor judgment. (**Minor to Decertification**)
Any act or violation of FSP policy that is deemed to be egregious, negligent, intentional or malicious in nature can result in the following penalties.

3) Leaving a motorist stranded at a drop location without a phone, shelter, or other help en route. (**Minor to Major**)

5) Inappropriate display of FSP placards decals and/or inappropriate use of FSP uniforms (**Minor**)

6) Inappropriate behavior (**Minor to Major)**
These examples are not all inclusive: rudeness, vulgarity, unsafe driving or other inappropriate behavior towards motorist, officers, dispatchers, or other tow operators.

7) Selling found items (**Flagrant**)

8) Providing false information/lying to CHP, MTC, Caltrans or employer. (**Major**)

9) Falsifying FSP documents (**Major**)

10) Contractor not in possession of required paperwork (i.e. completed pre-inspection forms for all FSP trucks for the previous 30 days and FSP personnel file folder containing required documentation) (**Minor**)

11) Contractor failing to complete and submit all required FSP paperwork to Caltrans, CHP, and/or MTC as specified in the SOP (**Minor**)

12) Uniform/Grooming Violations (**Minor**)

13) Equipment Violation (**Minor**)
Examples of minor equipment violations include but not limited to: insufficient supplies (flashlight, fuel, water, flares, etc.), dirty truck, and/or missing equipment.

14) Equipment Violation (**Major**)
Includes, but not limited to, equipment that is safety related and/or violates the California Vehicle Code when it is not serviceable and/or missing (i.e. worn tires, expired or missing fire extinguisher, cracked windshield, etc.).

15) Failure to notify CHP dispatch of a truck breakdown, truck not in service, and/or the use of a backup truck **(Major)**

16) Failure to notify an FSP supervisor or CHP dispatch of any FSP involved traffic collision or operational damage during FSP hours (**Major to Decertification**)

17) Preventable Traffic Collision (**Minor to Decertification**)

18) Use of Cellular Device during FSP hours (**Minor**)

19) Late sign-on or early sign-off (via AVL Fleet Manager or Supervisor). Violation will be applied to operator not on beat for up to one (1) hour of the shift. See Violation #46 for offenses over one hour. (**Minor**)

20) Failure to distribute FSP issued business card and brochure (**Minor**)

21) Failure to advise dispatch when transporting a female. Operator may move to a safer location such as the shoulder before advising dispatch or if unable to contact dispatch, may contact shop via shop radio and have shop dispatcher telephone CHP dispatcher with information. (**Minor**)

22) Improper radio traffic (**Minor**)

23) Safety violations (may include no safety chains, standing between vehicles, not protecting motorists and misuse of equipment) (**Major**)

24) Solicitation or referrals (**Flagrant**)

25) Using FSP vehicles (including backup truck) for other than FSP service during FSP hours. (**Flagrant**)

26) Use of FSP vehicles (including backup truck) for other than FSP service during non-FSP hours. See exception in Chapter 6, Section 2. (**Flagrant)**

27) Operating a vehicle with a suspended or expired driver's license (**Major**)

28) Unauthorized storage of an FSP vehicle (**Major**)

29) FSP operator causing damage or failing to report any property damage and the damages are the result of unacceptable/unreasonable towing practices. (**Major**)

30) Non-certified FSP operator performing FSP duties (**Flagrant**)

31) Retaining gratuities or tips (**Flagrant**)

32) Insubordination (**Major**)

33) Operator failing or refusing a substance abuse test (**Flagrant**)

34) Operator under influence of drugs and/or alcohol while on duty (**Flagrant**)

35) Operator having an odor of an alcoholic beverage but not under the influence (**Major**)

36) Operator failing to complete and submit required FSP paperwork (**Minor**)

37) Operator failing to replace/repair deficiencies noted on pre-operation inspection sheet (**Minor**)

38) Unauthorized refueling of an FSP vehicle (**Minor**)

39) Failing to use and/or follow correct procedures regarding Ranger use (e.g., Log on, Log off, incomplete logs) (**Minor**)

40) Towing a vehicle to other than a designated drop location without permission of an FSP supervisor (**Minor**)

41) Substandard performance. This applies to operators and contractors who compile a history of various offenses which, individually, could be considered minor, but taken as a whole indicate a more serious problem. (**Major**)

42) Operator going in service, via voice or Ranger, while not on their assigned beat (**Major**)

43) Operator intentionally becomes involved in the apprehension of suspect(s), enforcement contact(s), and/or pursuit(s). Not applicable when acting under the directions of a police officer. (**Major**)

44) Operator missing quarterly training without reasonable justification or notification to the FSP unit. (**Major**)

45) Failure to provide a backup truck within the required response time or without reasonable justification. (**Major**)

46) Failure to meet service obligation on contracted beats (defined as over one hour out of service), as indicated in the RFQBI and Implementation Plan. (**Major**)

47) An FSP operator not on or leaving the beat during FSP hours without authorization, as established via AVL system (**Major**)

48) Tampering, damaging, or modifying any FSP telecommunications equipment (unplugging wires, obstructing or removing equipment, etc). (**Major**)

49) Violations of break policy

Drivers are allowed the following:

- One break of up to 15 minutes on weekdays (paid)
- Two breaks of up to 15 minutes during holidays and weekends (paid)
- One unpaid lunch break during weekends and holidays if the operator is working a consecutive shift of over six hours
- Unscheduled restroom breaks, within reason

Drivers shall not:

- Take breaks at the same time as an FSP driver patrolling the same beat at the same time
- Take breaks in the first or last 30 minutes of a shift
- Take breaks on freeways, on/off ramps or further than ½ miles from the beat

50) Operator not in possession of California Driver's License, DL-64 and DL-51 (**Major**)

51) Illegitimate use of backup service (such as routine maintenance, lack of operators, etc.) (**Major**)

52) Failure to respond to CHP/MTC SAFE/Caltrans within the 2 hour period specified in the RFQBI (**Minor**)

Appendix A: Definition of Terms

Assist - An assist can be help provided to a motorist who has been involved in an incident (a breakdown or collision,) the clearing of debris or the tagging of abandoned vehicles. Assists are predefined and coded for the tow operator to enter into the Ranger.

AVL – An automatic vehicle locator system, used here to describe the entire electronic system described in this document.

Beat –A predefined freeway segment or segments where one or more FSP trucks patrols during a Shift.

Call Sign - A five to eight-digit designator to identify a unit while in service. The Call Sign is assigned by CHP. The call sign for units comprises the AREA and BEAT and is written as follows AREA-BEAT, e.g., "625-70". The call sign for a tow truck may change when the truck is back in service for the next shift.

CHP CAD – CHP's Computer Aided Dispatch (CAD) system is the agency's voice and data communications system for officers in the field. FSP drivers are connected to the CAD through their in-vehicle data units.

Drop Site - A CHP-designated safe location off of the freeway where a disabled vehicle is towed to await further assistance.

FSP Partners – The partnering agencies in the Bay Area FSP program: The Metropolitan Transportation Commission Service Authority on Freeways and Expressways (MTC SAFE), California Highway Patrol (CHP) Golden Gate (301) and the California Department of Transportation (Caltrans) District 4.

Ranger – The commercial name of the current in-vehicle unit used by FSP to transmit and receive data from the AVL.

Shift - A predefined time block, usually between 6-10 a.m., 10-3 p.m., 3-7 p.m. weekdays or 1-7 p.m. weekends/holidays, during which a truck patrols a beat.

Status – Here used to describe an FSP vehicle's work status as indicated through their Ranger or via radio to CHP dispatchers (eg – on [incident scene, on break, off duty).

Tow Contractor - Selected through a competitive bid process, a Tow Contractor provides FSP services for a 4-year contract within an assigned beat.

WiFi/GPS Unit – This is here used as a generic term referring to the in-vehicle device or devices which will provide wireless, WiFi and GPS functions within the new AVL system.