

INTERLOCAL AGREEMENT

This Agreement, made and entered into the 22<sup>nd</sup> day of June, 2009, by and between the STATE OF NEVADA, acting by and through its Department of Transportation, hereinafter called the DEPARTMENT, and the Regional Transportation Commission of Southern Nevada, hereinafter called the RTC.

WITNESSETH:

WHEREAS, an Interlocal Agreement is defined as an agreement by public agencies to "obtain a service" from another public agency; and

WHEREAS, pursuant to the provisions contained in Chapter 408 of the Nevada Revised Statutes, the Director of the DEPARTMENT may enter into agreements necessary to carry out the provisions of the Chapter; and

WHEREAS, NRS 277.180 authorizes any one or more public agencies to contract with any one or more other public agencies to perform any governmental service, activity or undertaking which any of the public agencies entering into the agreement is authorized by law to perform and refers to such as an Interlocal Contract, hereinafter called an Agreement; and

WHEREAS, the DEPARTMENT agreed, as a party and signatory to Agreement No. P610-05-016, to provide the necessary funding for the freeway management system (FMS) component of the FAST System and the central operations building referred to as the Traffic Management Center (TMC), located at 4615 West Sunset Road, in the County of Clark, State of Nevada; and

WHEREAS, it is acknowledged that the operation, maintenance, staffing and resources of the FMS and arterial management system (AMS) portions of FAST will necessarily overlap; and

WHEREAS, the purpose of this Agreement is to succeed the existing FMS Funding Interlocal Agreement, No. P610-05-016, dated July 1, 2005 and terminating June 30, 2009; and

WHEREAS, the services of the RTC will be of benefit to the DEPARTMENT and to the citizens of and visitors to the State of Nevada; and

WHEREAS, the RTC is willing and able to perform the services described herein, and willing to operate and maintain the FMS in a manner acceptable to the DEPARTMENT as described in Attachment "A",

NOW, THEREFORE, in consideration of the premises and of the mutual covenants herein contained, it is agreed as follows:

ARTICLE I – DEFINITIONS

1. Operational Expense – The administrative and general costs associated with operating and managing the entire FAST System.

2. FMS Component – FMS staff, field devices, software, and equipment dedicated to operations and maintenance of Intelligent Transportation Systems (ITS) for the controlled access freeways within the DEPARTMENT District 1 boundaries.

#### ARTICLE II – RTC AGREES

1. To provide the DEPARTMENT with services identified in Attachment “A” – FY 2010 and 2011 FMS work plan. This work plan is subject to extension and/or adjustment for the FY 2012 and 2013 biennium, as mutually agreed upon by RTC and the DEPARTMENT.

2. The “lump sum” method of compensation shall be used for the RTC’s services. RTC agrees to keep separate budget accounts for AMS and FMS services, and shall manage the FMS budget to match the available funding from the DEPARTMENT.

3. The total cost of the services by the RTC is estimated to be One Million, Nine Hundred Eighteen Thousand, Seven Hundred and Fifty and No/100 Dollars (\$1,918,750.00) annually for FY 2010 and 2011. This total may be adjusted in FY 2012 and 2013 as a result of an amended budget ceiling provided by the DEPARTMENT.

4. The RTC shall submit a signed invoice quarterly for all services rendered along with one copy of substantiating documentation. The invoice must be submitted on the RTC’s stationary using the DEPARTMENT’s format or submitted on the DEPARTMENT’s standard invoice form. RTC agrees to the DEPARTMENT’s use of its normal accounting procedure in the payment of the invoices submitted.

5. The RTC shall submit to the DEPARTMENT at the end of each fiscal year (July 1<sup>st</sup> – June 30<sup>th</sup>) an annual reporting of budgeted costs versus actual expenses. This will be used to determine the costs for the next agreement and the total amount will have to be renegotiated within the State’s executive budget process.

6. The RTC shall not obtain any additional third party services or outsource any of FAST’s FMS operational services included in, but not limited to, Attachment “A” without written consent from the DEPARTMENT.

7. The DEPARTMENT reserves the right to inspect and approve the services performed before payment is made to the RTC.

8. The total cost of services for this Agreement is the negotiated amount identified in Article II, Paragraph 3 and is based upon the RTC’s estimated annual costs for providing the complete package of FMS services included in Attachment “A”.

9. To operate and maintain the FMS in a manner acceptable to the DEPARTMENT as called out in Attachment “A”.

#### ARTICLE III - DEPARTMENT AGREES

1. The DEPARTMENT recognizes and acknowledges that there are certain Operational Expenses incurred by the RTC, as the Administrator of FAST, in providing support services to the FAST System as it relates to the FMS portion of the system. The DEPARTMENT agrees that a proportional share of these Operational Expenses costs should be covered by the FMS budget. Included in the total expenses of the One Million, Nine Hundred Eighteen Thousand, Seven Hundred and Fifty and No/100 Dollars (\$1,918,750.00) budget is

Seventy Thousand and No/100 Dollars (\$70,000.00) for the DEPARTMENT'S shared cost of the AMS, which is based on the staffing ratio (FMS ÷ [FMS+AMS]) times the AMS Operational Expenses.

2. The RTC shall submit to the DEPARTMENT at the end of each fiscal year (July 1<sup>st</sup> – June 30<sup>th</sup>) an annual reporting of budgeted costs versus actual expenses. This will be used to determine the costs for the next agreement and the total amount will have to be renegotiated within the State's executive budget process.

3. The budget process for determining the funding requirements for each fiscal year shall commence with the DEPARTMENT providing to the RTC its proposed needs for FMS operations improvements prior to October 31, of the second year of the two year budget cycle.

4. The DEPARTMENT may request additional work associated with the operation of the FAST FMS outside of the services identified in Attachment "A". This additional work shall be negotiated and agreed upon by both parties to this agreement.

5. Entering into and implementation of this agreement by the DEPARTMENT is subject to the receipt of federal and/or state funds, as applicable to carry out the provisions of this agreement in full. The DEPARTMENT agrees to use its best efforts to maintain adequate funding pursuant to this agreement to fully compensate the RTC for operational costs of the FMS. If the DEPARTMENT fails to receive adequate funding to satisfy its financial obligations pursuant to this agreement, the DEPARTMENT may terminate or reduce its participation in FMS operations upon giving one hundred and eighty (180) days written notice to the RTC.

#### ARTICLE IV - IT IS MUTUALLY AGREED

1. This Agreement shall not become effective until and unless approved by appropriate official action of the governing body of each party.

2. The term of this Agreement shall be from the date first written above through and including the 30<sup>th</sup> day of June 2013. If a new agreement has not been executed by June 30<sup>th</sup>, 2013, the Agreement shall automatically be extended annually for one year intervals unless either party submits a request in writing to the other party at a minimum of one hundred eighty (180) days prior to the current Agreement expiration date that the agreement be renegotiated or terminated. This agreement may be terminated by mutual consent of both parties or unilaterally by either party without cause.

3. In the event of the termination of this agreement, the DEPARTMENT and RTC may enter into an agreement for RTC's continued use of the TMC, central system software, communications and operations facilities, computing resources, and networking hardware used for the FMS or the AMS operations that have been acquired with DEPARTMENT funds

4. All notices or other communications required or permitted to be given under this Agreement shall be in writing and shall be deemed to have been duly given if delivered personally in hand, by telephonic facsimile with simultaneous regular mail, or mailed certified mail, return receipt requested, postage prepaid on the date posted, and addressed to the other party at the address set forth below:

FOR DEPARTMENT: Susan Martinovich, P.E. Director  
Attn: Rudy Malfabon, Deputy Director, South  
Nevada Department of Transportation  
123 E. Washington Ave.  
Las Vegas, NV 89101  
Phone: (702) 385-6511  
E-mail: rmalfabon@dot.state.nv.us

FOR RTC: Jacob Snow, General Manager  
Attn: Glenn Grayson, Director of FAST  
RTC of Southern Nevada  
600 S. Grand Central Parkway, Suite 350  
Las Vegas, NV 89106-4512  
Phone: (702) 702-432-5306  
702-432-5302 – fax  
E-mail: graysong@rtcsonv.com

5. Each party agrees to keep and maintain under generally accepted accounting principles, full, true and complete records and documents (written, electronic, computer related or otherwise) pertaining to this agreement. Such information shall be available at any reasonable time for inspection, examination, review, auditing and copying. Such records and documentation shall be retained for three (3) years after final payment is made.

6. Failure of either party to perform any obligation of this Agreement shall be deemed a breach. Except as otherwise provided for by law or this Agreement, the rights and remedies of the parties shall not be exclusive and are in addition to any other rights and remedies provided by law or equity, including but not limited to actual damages, and to a prevailing party's reasonable attorney's fees and costs.

7. The parties do not waive and intend to assert available NRS Chapter 41 liability limitations in all cases. Agreement liability of both parties shall not be subject to punitive damages. Actual damages for any state breach shall never exceed the amount of funds which have been appropriated for payment under this Agreement, but not yet paid, for the fiscal year budget in existence at the time of the breach.

8. Neither party shall be deemed to be in violation of this Agreement if it is prevented from performing any of its obligations hereunder due to strikes, failure of public transportation, civil or military authority, act of public enemy, accidents, fires, explosions, or acts of God, including without limitations, earthquakes, floods, winds or storms. In such an event, the intervening cause must not be through the fault of the party asserting such an excuse, and the excused party is obligated to promptly perform in accordance with the terms of the Agreement after the intervening cause ceases.

9. To the fullest extent of NRS Chapter 41 liability limitations, each party shall indemnify, hold harmless and defend, not excluding the other's right to participate, the other from and against all liability, claims, actions, damages, losses, and expenses, including but not limited to reasonable attorney's fees and costs, arising out of any alleged negligent or willful acts or omissions of the party, its officers, employees and agents. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity, which would otherwise exist as to any party or person, described herein. This indemnification obligation is conditioned upon service of written notice to the other party within 30 days of the indemnified party's notice of actual or pending claim or cause of action. The indemnifying party

shall not be liable for reimbursement of any attorney's fees and costs incurred by the indemnified party due to said party exercising its right to participate with legal counsel.

10. The parties are associated with each other only for the purposes and to the extent set forth in this Agreement. Each party is and shall be a public agency separate and distinct from the other party and shall have the right to supervise, manage, operate, control and direct performance of the details incident to its duties under this Agreement. Nothing contained in this Agreement shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee or principal-agent, or to otherwise create any liability for one agency whatsoever with respect to the indebtedness, liabilities, and obligations of the other agency or any other party.

11. Failure to declare a breach or the actual waiver of any particular breach of the Agreement or its material or nonmaterial terms by either party shall not operate as a waiver by such party of any of its rights or remedies as to any other breach.

12. The illegality or invalidity of any provision or portion of this Agreement shall not affect the validity of the remainder of the Agreement and this Agreement shall be construed as if such provision did not exist. The unenforceability of such provision or provisions shall not be held to render any other provision or provisions of this Agreement unenforceable.

13. Neither party shall assign, transfer or delegate any rights, obligations or duties under this Agreement without the prior written consent of the other party.

14. All or any property presently owned by either party shall remain in such possession upon termination of this Agreement. This Agreement does not allow the transfer of property between the parties.

15. Pursuant to NRS Chapter 239.010, information or documents may be open to public inspection and copying. The parties will have the duty to disclose unless a particular record is confidential by law or a common law balancing of interests.

16. Each party shall keep confidential all information, in whatever form, produced, prepared, observed or received by that party to the extent that such information is confidential by law or otherwise required by this Agreement.

17. The parties hereto represent and warrant that the person executing this Agreement on behalf of each party has full power and authority to enter into this Agreement and that the parties are authorized by law to perform the services set forth herein.

18. This Agreement and the rights and obligations of the parties hereto shall be governed by, and construed according to, the laws of the State of Nevada. The parties consent to the exclusive jurisdiction of the Nevada state district courts for enforcement of this Agreement.

19. It is specifically agreed between the parties executing this Agreement that it is not intended by any of the provisions of any part of this Agreement to create in the public or any member thereof a third party beneficiary status hereunder, or to authorize anyone not a party to this Agreement to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this Agreement.

20. This Agreement constitutes the entire agreement of the parties and such is intended as a complete and exclusive statement of the promises, representations, negotiations, discussions, and other agreements that may have been made in connection with the subject matter hereof. Unless an integrated attachment to this Agreement specifically displays a mutual intent to amend a particular part of this Agreement, general conflicts in language between any such attachment and this Agreement shall be construed consistent with the terms of this Agreement. Unless otherwise expressly authorized by the terms of this Agreement, no modification or amendment to this Agreement shall be binding upon the parties unless the same is in writing and signed by the respective parties hereto and approved by the Attorney General.

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year first above written.

Regional Transportation Commission  
of Southern Nevada

State of Nevada, acting by and  
through its DEPARTMENT OF  
TRANSPORTATION

Lawrence L. Brown III

Susan Martinovich  
Susan Martinovich, Director

Lawrence L Brown

For  
Approved/as to Legality & Form:

Name (Print)

Chairman

[Signature]  
Deputy Attorney General

Title (Print)

Approved as to Form:

[Signature]  
Attorney

DUPLICATE ORIGINAL

Attachment "A"

## FAST 2010 – 2011 FMS Scope of Services

This document provides a two-year (FY 2010–2011) scope of services that will identify the prescribed functions to be undertaken by RTC's FAST division for the ongoing operation and maintenance of the freeway management system (FMS) component of the Freeway and Arterial System of Transportation (FAST). This scope of services shall be in effect from July 1, 2009 through June 30, 2011. Upon the completion of the first year of the budget cycle (July 1, 2009 - June 30, 2010), the DEPARTMENT and RTC will meet to review the performance of the FMS and discuss any changes or new enhancements to the system for inclusion in the scope of services for the next two-year budget cycle (July 1, 2011 – June 30, 2013). If the DEPARTMENT and RTC agree not to make any changes to the FMS, this FY 2010–2011 scope of services shall remain in effect through the next two-year budget cycle. If either party wants to make changes to the scope of services, a request in writing must be submitted to the other party a minimum of 180 days prior to the beginning of next two-year budget cycle (January 1<sup>st</sup>, 2010). At the DEPARTMENT's initiative, these scope of services for FAST's operation and maintenance of the FMS may be updated as new policies, procedures, devices, or features are added to the system.

This scope of services defines roles and responsibilities of FMS staff for operations and maintenance including monitoring, surveillance, incident detection, providing information to motorists, incident clearance, restoring network capacity, performance monitoring and reporting. These functions are represented by specific objectives aimed at minimizing recurring and non-recurring congestion, improving overall incident management, and maintaining a consistency in travel speeds and times on the freeways (hereafter referred to as 'reliability'). Listed below are the goals and objectives for the FY 2010–2011 scope of services to improve safety, efficiency, and reliability of the freeway system:

<b>GOALS</b>	<b>OBJECTIVES</b>
<b>IMPROVE SAFETY</b>	<ul style="list-style-type: none"><li>• Reduce accident rates and severity</li><li>• Improve incident management</li><li>• Improve assistance to stranded motorists</li></ul>
<b>IMPROVE EFFICIENCY</b>	<ul style="list-style-type: none"><li>• Minimize recurring traffic congestion</li><li>• Reduce vehicle delay due to construction and event traffic</li><li>• Improve incident management</li></ul>
<b>IMPROVE RELIABILITY</b>	<ul style="list-style-type: none"><li>• Improve consistency of travel speeds and travel times</li><li>• Improve incident management</li><li>• Increase monitoring of freeway conditions</li><li>• Provide information to motorists</li></ul>

### TASK 1 - FREEWAY SYSTEM OPERATIONS

FAST shall provide the following staff positions to operate the Freeway Management System elements from the control room (CR) at the Traffic Management Center (TMC):

- Provide FMS control room operators for seven-days-a-week operations.
- Provide supervision for control room operators
- Provide maintenance technicians to meet preventative and routine maintenance requirements
- Provide supervision of maintenance technicians

- Provide System Administration to manage the complete life cycle of vendor and in-house software projects, application systems design, development, and maintenance.

## **Task 1.1 - Provide FMS Operators**

The role of the FMS operator stationed in the CR is to maintain the safe and efficient flow of traffic on the freeway system by minimizing adverse impacts due to both planned and unplanned events by providing the timely delivery of freeway status information to motorists on the freeway as well as those vehicles en-route or planning to enter the freeway system. This is accomplished by using available technology in conjunction with a well-trained staff that is committed to excellence service and performance. FAST shall provide requested levels of staffing to perform the duties of an FMS Operator. Responsibilities of FMS operators shall as a minimum consist of the following activities:

- Answer telephones and direct calls to appropriate personnel in TMC or take action as part of operator traffic management duties
- Receive calls, log, and generate work orders for FMS problems
- Monitor and respond to DEPARTMENT personnel on the DEPARTMENT radio frequency whenever the DEPARTMENT dispatcher is absent from the CR
- Monitor NHP activities for traffic incidents
- Monitor and respond accordingly to detector data to identify potential traffic incidents
- Monitor video images and respond accordingly to observed irregularities (i.e., accidents, debris spills, abandoned or disabled vehicles, etc.)
- Coordinate with NHP and the DEPARTMENT regarding traffic incidents
- Using radio, telephone, and alphanumeric pagers, communicate with DEPARTMENT maintenance, engineering, Community Relations, and IMT personnel regarding traffic, road and weather conditions
- Use cameras to verify and confirm traffic incidents reported by others
- Provide en-route traveler information and use FMS software to post messages on dynamic message signs, trailblazer signs and highway advisory radio (if control is available in the CR)
- Provide pre-trip information by monitoring the DEPARTMENT 511 System and Web Site and verifying that information is up to date
- Use software to monitor and adjust ramp meter timing
- Input and manage various databases as assigned including Archived Data Service to ensure data is being properly updated
- Monitor all field devices to verify they are operating properly and communicating with the central software
- Other related duties of a similar nature

## **Task 1.2 - Provide supervision for FMS Operators**

FAST shall provide a senior / lead technician that will be responsible for day-to-day FMS operations, including developing, implementing, and updating FMS operating procedures. The updating of procedures will be performed in cooperation with DEPARTMENT and FAST FMS personnel. General goals shall be to analyze, train and implement procedures that will improve upon the following operational activities:

- Oversee and schedule work assignments for FMS operators
- Tracking and management of DEPARTMENT construction and maintenance activities and



how they can impact traffic on the freeway network.

- Special events traffic management (i.e., sporting events)
- Improvement of TMC support for operations and monitoring of roads in areas that are not currently instrumented with FMS elements
- Analyze and implement measures to more efficiently utilize the system (i.e. CCTV and freeway flow detector stations) to identify, locate and respond to incidents (i.e., accidents, abandoned vehicles, debris spills, and motorist assists) along the freeway and other instrumented roads
- Identify opportunities to work with the Nevada Highway Patrol (NHP) personnel to improve incident response and coordination.
- Analyze and implement reporting processes to track system measures of effectiveness
- Operator training

FAST shall provide TMC control room operations oversight by the senior / lead technician with frequent coordination and interaction with the DEPARTMENT and NHP personnel. This senior / lead technician may participate in monthly coordination meetings with the DEPARTMENT at the TMC.

### **Task 1.3 - Provide Maintenance Staff for FMS Operations**

FAST shall provide staff that is responsible for journey-level maintenance and repairs required in the FMS maintenance task identified in this plan. Maintenance staff is responsible but not limited the following activities:

- Provides expert level assistance and lead direction of assigned staff on a shift, project or assignment.
- Installs, inspects, maintains, repairs and monitors traffic communications equipment systems/networks.
- Troubleshoots and resolves communications/video equipment failures and/or malfunctions.
- Designs, selects, modifies and/or adapts equipment or procedures to specific project requirements.
- Plans sequence of testing and calibration procedures for instruments and equipment, according to blueprints, schematics, technical manuals, and other specifications.
- Disassembles instruments and equipment, using hand tools, and inspects components for defects; aligns, repairs, replaces, and balances component parts and circuitry; reassembles and calibrates instruments and equipment.
- Provides and maintains reports and records of work performed as required.
- Reviews construction plans and specifications, and performs inspections of new construction projects/equipment.
- Maintains inventory of parts and supplies; orders materials as needed.
- Operates a variety of office equipment, to include computers and associated software.
- Provides information and assistance to internal and external customers as required.

## **Task 1.4 - Provide Supervision of Maintenance Staff for FMS Operations**

FAST shall provide a senior / lead technician for staff responsible for maintenance and repairs required in the FMS maintenance task identified in this plan. FMS maintenance staff is responsible for, but not limited the following:

- Supervise FMS maintenance activities
- Installs, inspects, maintains, repairs and monitors traffic communications equipment systems/networks.
- Troubleshoots and resolves communications/video equipment failures and/or malfunctions.
- Designs, selects, modifies and/or adapts equipment or procedures to specific project requirements.
- Plans sequence of testing and calibration procedures for instruments and equipment, according to blueprints, schematics, technical manuals, and other specifications.
- Disassembles instruments and equipment, using hand tools, and inspects components for defects.
- Aligns, repairs, replaces, and balances component parts and circuitry.
- Reassembles and calibrates instruments and equipment.
- Provides and maintains reports and records of work performed as required.
- Reviews construction plans and specifications, and performs inspections of new construction projects/equipment.
- Maintains inventory of parts and supplies.
- Orders materials as needed.
- Operates a variety of office equipment, to include computers and associated software.

## **Task 1.5 - Provide System Administration of FMS**

FAST shall provide System Administration that will monitor and manage the FMS software and communications network. System Administration shall include monitoring the system software on a daily basis to ensure that the software is functioning properly including updating system databases, updating operator displays, and controlling field devices. System administration shall also include monitoring the FMS field devices and communications network. This shall include verifying the devices are functioning properly and system is communicating with all of the field devices. If device or communication failures are identified, System Administration shall accomplish initial troubleshooting from the TMC to attempt to bring the device back online. If the device cannot be brought online from the TMC, System Administration shall result in creation of a work order to initiate repairs. System Administration includes, but is not limited to the following:

- Determination of development project goals and requirements.
- Coordination with senior staff, providing a single point of contact between vendor and contractor, external agencies and FAST.
- Developing systems software from prescribed specifications: defines, programs, tests, debugs, and installs components and subcomponents of operating and support systems.
- Authorizing of payments to vendors.
- Configuring of mechanisms for measurement of IT system performance and efficiency for capacity planning.
- Specifying, coordinating, installing and maintaining enterprise software packages.
- Provision of network documentation, training, and guidance to users and other IT staff.

- Software and database management, design and implementation.
- Interfacing with project staff and users to ensure customer service and communication.
- Managing activities of contracted vendors in relation to systems software operations.
- A resource for technical assistance in regard to system operational issues.
- Researching, as appropriate to keep current on new IT and communications network products, methods, and techniques.

## **Task 2.0 – Develop Incident Management Plans**

FAST shall develop Incident Management (IM) Plans for up to 14 major incidents. The incidents will be in each direction along 7 separate freeway segments. For each incident the plan shall be developed based on Peak Hour traffic conditions. The FMS Incident Management plan shall be coordinated with the Traffic Incident Management (TIM) program for Southern Nevada. The Incident Management Plan shall highlight the different response activities to be performed including:

- Incident Location
- Planned Arterial Diversion Routes
- Freeway Dynamic Message Signs to be used with suggested message
- Trailblazer Signs to be activated with suggested message
- Ramp Meters to be used and metering rates
- A list of CCTV resources in the vicinity of the incident, expected end of queue and exit ramps
- State and Local agency personnel to be contacted

FMS operators shall coordinate with AMS staff regarding expected arterial diversion routes. FAST shall develop a “Plan” sheet for each incident detailing the actions to be performed and submit to the DEPARTMENT for review and comment. Upon receipt of comments, FAST shall finalize the plan. Once complete, FAST shall work with the Operations staff to load planned sign messages and ramp meter plans into the system software for future use. The development of the plans shall be based on an engineering review of traffic volumes in the incident area. Detailed modeling or analysis to develop estimated queue lengths or delay are not included as part of this task.

## **Task 2.1 - System Engineering**

FAST shall review and update ramp metering plans used as part of the FMS. This shall include reviewing the current operations including metering rates, ramp queues and freeway performance. The ramp metering analysis shall be performed for individual freeway segments including:

- I-15 SB from I-515 to I-215 (6 Ramp Meters)
- I-15 NB from I-215 to I-515 (6 Ramp Meters)
- I-15 SB from Craig to I-515 (4 Ramp Meters)
- I-15 NB from I-515 to Craig (3 Ramp Meters)
- I-515 SB from I-15 to Charleston (1 Ramp Meter)
- I-515 NB from Eastern to I-15 (3 Ramp Meters)
- US 95 SB from Craig Rd to I-15 (10 Ramp Meters)
- US 95 NB from I-15 to Craig Rd (8 Ramp Meters)

FAST review shall be based on freeway travel time studies, visual analysis of ramp queues, and other observations. Detailed simulation modeling of the freeway and ramp performance are not included as part of this work scope.

For each of the eight segments FAST shall conduct travel time studies during the AM and PM peak periods. The travel time studies will be performed for five separate days on each segment. FAST shall be equipped with a GPS-based receiver to record the conditions of each trip for subsequent analysis. For each segment FAST shall develop a speed profile of the trip during each peak period. The speed profile shall show the speed along the segment for each run and note locations of any incidents or other disruptions to traffic. The speed profiles produced from these manually-collected travel time runs shall be compared to automatically collected data from the segments' freeway flow detector stations.

At the time that the travel time studies are being conducted, FAST operators shall also be monitoring the extent of queues that are forming on ramps that have metering active. This queue monitoring shall be performed from the Traffic Management Center using the CCTV cameras. For those ramps that do not have CCTV coverage, FAST shall make periodic observations during the peak periods. For any locations where the ramp queues extend onto the arterial network, FAST shall review the queues, and their impact on the arterials street system, with RTC personnel.

Based on the travel time studies and ramp queues, FAST shall make recommendations to the DEPARTMENT regarding the adjustment of the metering rates and shall implement the strategy mutually agreed upon. These recommendations shall factor in locations where queues need to be closely managed to limit impacts to the surface street network, while attempting to maintain an acceptable flow on the surface street network.

## **Task 2.2 - Performance Monitoring**

FAST shall work with the DEPARTMENT to develop a performance monitoring program that identifies improvements or deficiencies in the physical freeway system, and provides input to the planning and design of future improvements to the facility.

### **Task 2.3 – Utility Locates**

FAST shall perform locating services for the FMS infrastructure. This shall include all underground infrastructures, including fiber optic cable, service conductors and device conductors. These services shall be performed in accordance with local locating standards and performed on as-needed basis. FAST shall log all locate requests including date of request, locations, and date services were performed.

### TASK 3.0 - Operate FMS Devices

FAST shall operate the following FMS devices:

#### (All Pilot Corridor Projects Combined = Existing ITS)

Type of Device	Number of Devices
Dynamic Message Signs	21
CCTV Cameras	24
Freeway Flow Detectors	48
Ramp Meters	18
Trailblazer Signs	130
<b>TOTAL</b>	<b>241</b>

#### (US 95 Corridor – Activation in Summer 2009)

Type of Device	Number of Devices
Dynamic Message Signs	8
CCTV Cameras	22
Freeway Flow Detectors	30
Ramp Meters	16
Trailblazer Signs	0
<b>TOTAL</b>	<b>76</b>

#### (I-15 North Design-Build Corridor – Activation in FY10)

Type of Device	Number of Devices
Dynamic Message Signs	2
CCTV Cameras	5
Freeway Flow Detectors	20
Ramp Meters	6
Trailblazer Signs	0
<b>TOTAL</b>	<b>33</b>

**Total Projected Number of FMS Devices to be Operated in FY10  
(Pilot Corridor & US 95 & I-15 North Design-Build)**

Type of Device	Number of Devices
Dynamic Message Signs	31
CCTV Cameras	51
Freeway Flow Detectors	98
Ramp Meters	40
Trailblazer Signs	130
<b>TOTAL</b>	<b>350</b>

**Task 3.1 - FAST FMS Hours of Operation**

The TMC Control Room shall nominally be manned so that the FMS remains operational 24-hours a day, seven days per week with the exceptions and clarifications shown in the table below. This coverage may be reduced for specific holidays as mutually agreed upon with the DEPARTMENT. The required number of operators may be increased or decreased based on agreed upon operational hours for the holidays or special events listed below. FAST shall provide operations staff to report as follows:

Days	Hours	Number of Operators
Monday – Friday <sup>1</sup>	18-hour <sup>1</sup> Coverage <sup>2</sup>	normal CR & field contingent
Saturday & Sunday	11-hour <sup>1</sup> Coverage <sup>2</sup>	normal weekend CR contingent = 1
New Years Day	Midnight - 5AM	4 (including 2 field techs)
Martin Luther King Day	none	0 <sup>4</sup>
Presidents Day	none	0 <sup>4</sup>
Memorial Day <sup>3</sup>	8 AM – 7PM	normal weekend CR contingent
Fourth of July <sup>3</sup>	8 AM – 7PM	normal weekend CR contingent
Labor Day <sup>3</sup>	8 AM – 7PM	normal weekend CR contingent
Nevada Day	none	0 <sup>4</sup>
Veterans Day	none	0 <sup>4</sup>
Thanksgiving	none	0 <sup>4</sup>
Christmas Day	none	0 <sup>4</sup>
New Years Eve	8AM - Midnight	4 (including 2 field techs)
NASCAR Special Event	normal day hours	normal weekday contingent
Other Special Events	normal day hours	normal contingent

Table Notes:

1. FAST staff comes on duty starting at 5AM on weekdays, and 8AM on weekends. Currently, coverage ends at 11PM every evening. The current full duty schedule and shift assignment is available for the DEPARTMENT's inspection and comment upon request; this coverage concept will be changed in FY10; RTC will implement a 4-day / 10-hour schedule, and this will result in a revised coverage schedule. Instead of the 2-person weekend coverage extending to 11PM, it will be a single technician whose shift ends at 7PM (11 hours) FMS maintenance would still cover all 5 weekdays via an overlapping schedule (Mon-Thu, and Tue-Fri).
2. The DEPARTMENT plans to cover the graveyard shift with its own maintenance division employees every

- night. FAST will provide continuous training to these DEPARTMENT employees sufficient for them to operate all anticipated features of the FMS that will be needed during this overnight shift.
3. These 3 holidays, selected only because of their anticipated much-higher-than-normal tourist visitor influx traffic volume, are proposed to have FAST staff on duty in the Control Room. No field staff will be scheduled to work these holidays.
  4. The DEPARTMENT's dispatch employee stationed in the CR will have the capability and authority to operate the FMS during these holidays when FAST staff is not on duty.

## Task 4.0 FAST FMS Maintenance Plan

FAST shall provide not only routine remedial maintenance (addressed in Task 1.3), but also preventative maintenance (PM) services for the DEPARTMENT's FMS devices and the communications network. These tasks include, but are not limited to: troubleshooting, testing, calibrating, and configuring FMS equipment. No later than August 31, 2009, FAST shall develop and submit to the DEPARTMENT for approval a detailed schedule for accomplishing the PM work under this agreement. The PM plan consists of regularly scheduled activities to be conducted by FAST maintenance staff that will nominally include two service visits per device during a twelve (12) month period. Visits to each device shall be scheduled as close as practical to 180 days apart but no closer than 120 days apart. Before the preventive maintenance services can begin, FAST shall prepare and submit to the DEPARTMENT for approval a detailed PM plan for every category of FMS device. The FAST-proposed PM plan shall be developed taking into account the manufacturer's recommended PM requirements. FAST shall also develop a PM plan from scratch for devices that do not have manufacturer's recommended PM requirements.

The FMS PM schedule will account for the following number of devices and service visits:

Preventive Maintenance: Types of Devices	Number of Devices	Number of PM Services in a 12 month period
DMS	35	35
CCTV	46	0
Ramp Meters	30	30
Trailblazer Signs	126	126
Sum	237	191

NEMA and ATMS Type 334 cabinets. These cabinets may serve CCTV, TMS, ramp meters, or DMS. This PM does not include device programming, troubleshooting, calibration, or configuration of devices or controllers. This item also does not include any cabinets containing communication system hubs. Activities to be performed shall include:

- Replace filter
- Vacuum the interior of cabinet
- Check and tighten all electrical connections
- Check and tighten cabinet mounting bolts if required
- Inspect the cabinet for any physical damage and report any deficiencies
- Check heating, cooling fan and cabinet light and report any and all deficiencies

- Measure the voltage at the cabinet site
- Inspect duct seal and repair if required
- Inspect silicone bead around cabinet base and repair if required
- Lubricate hinges and locks
- Inspect lock and report deficiencies
- Clear brush and debris around cabinet within 5-feet. Trim grass within 3" height
- Straighten and tighten up all wiring and fiber
- Remove graffiti from the exterior of the cabinet with a cleaning product
- Repaint cabinets if required
- Replace FAST decals as needed
- Check all connections at meter base, disconnect and circuit breakers
- Check Logbook for condition and replace if necessary
- Complete inventory and preventive maintenance forms
- Take date-stamped digital photos of both interiors and all four exterior sides
- Report any and all defects to appropriate DEPARTMENT personnel
- Verify full operation before performing maintenance and upon completion of work

### **Closed Circuit Cameras (CCTV)**

Because the DEPARTMENT's CCTVs are relatively young, a PM program for this category of ITS device will be deferred as a budget-reducing measure for the first biennium period of this agreement.

Non-PM: In the case of catastrophic damage to a CCTV installation, FAST will effect the repair or restoration, potentially using the services of FAST's on-call maintenance contract, and will cover these repair activities in the FMS base budget.

### **Dynamic Message Signs (DMS) – Freeway**

- Inside sign housing:
  - Replace filter
  - Replace all incandescent message panel lamps
  - Relamp interior housing cabinet lighting
  - Clean the interior of the sign window (front panel)
  - Repair / replace any damage cause by gunshots or thrown objects
  - Check and tighten all electrical connections
  - Check heating and cooling fan and report any and all deficiencies
  - Measure voltage at the distribution panel and disconnect at the base of the structure
  - Lubricate hinges and locks
  - Inspect lock and report deficiencies
  - Straighten and tighten up all wiring and fiber
  - Complete preventative maintenance form
  - Report any and all defects to appropriate DEPARTMENT personnel
  - Verify full operation before performing maintenance and upon completion of work

Non-PM: In the case of catastrophic damage to any major component of a DMS (namely, the DMS sign box, controller cabinet, pole, or electrical service), the cost will likely be *very* substantial. The DEPARTMENT will handle these types of restorations as a DEPARTMENT -managed project that is completely isolated from FAST's FMS services.



## **Trailblazer Signs**

- Replace filter
- Check and tighten all electrical connections
- Check heating and cooling fan and report any and all deficiencies
- Clean exterior of sign window (front panel)
- Measure voltage at the distribution panel
- Lubricate hinges and locks
- Inspect lock and report deficiencies
- Straighten and tighten up all wiring
- Complete inventory and preventative maintenance forms
- Report any and all defects to appropriate DEPARTMENT personnel
- Verify full operation before performing maintenance and upon completion of work

**Non-PM:** In the case of catastrophic damage to a TBS, FAST will effect the repair or restoration, potentially using the services of FAST's on-call maintenance contract, and will cover these repair activities in the FMS budget. However, FAST will look to the DEPARTMENT to replenish FAST's stock of TBS units with its separate budget, or as an augmentation to the DEPARTMENT stipend to the FMS budget.

## **Ramp Meters (see Cabinets for work in cabinet)**

- Review condition of signing and striping. Note any missing or deficient signing and striping for repair/replacement.
- Clean all signal displays
- Check condition of signal housings and displays
- Lubricate hinges
- Verify all terminations in signal housing
- Complete inventory and preventative maintenance forms
- Report any and all defects to appropriate DEPARTMENT personnel
- Verify full operation before performing maintenance and upon completion of work

**Non-PM:** In the case of catastrophic damage to any major component of a ramp meter (such as the controller cabinet, signal pole, or electrical service), FAST will effect the repair or restoration, potentially using the services of FAST's on-call maintenance contract, and will cover these repair activities in the FMS budget. However, FAST may ask the DEPARTMENT to supply replacements for these major-cost-items with its separate budget, or as an augmentation to the DEPARTMENT stipend to the FMS budget.

## **Freeway Flow Detectors (FFD)**

FFDs will be visited once annually for PM. These activities will be undertaken by FAST FMS Maintenance staff members. Each PM visit shall include volume count comparisons (hand tally of all lanes combined versus the sum of the FFD's lane-by-lane result), to assure that the FFD is properly aligned and calibrated so as to successfully capture all vehicles (+/- 0.5%).

## **Fiber Optic Plant**

Fiber optic cabling typically needs no PM attention.

## Communications Hubs

Only two of the ~dozen hubs are FAST property. However, because of all hubs' strategic importance to both the AMS and FMS systems, these hubs are already well cared for; FAST has a thorough and effective PM process for this vital ITS component. A combination of FAST FMS and AMS maintenance staff will continue to directly conduct all needed maintenance of the communication hubs. We will increase the frequency of these PM activities from once- to twice-yearly. FAST does contract out the servicing of the air conditioner systems at these hubs. FAST will develop a written PM program for these hubs and submit to the DEPARTMENT for review and concurrence.

Hub #5 (the old LVACTS building site) is a special case. The DEPARTMENT owns that property and therefore maintains all aspects of the building environment. FAST will maintain and improve the hub equipment and communications connections within that building within the existing FAST budget. This hub is considered more of an AMS hub, so its maintenance expenses are normally charged to the AMS budget.

Non-PM: In the case of catastrophic damage to a communications hub (cabinet, pole, microwave system, or electronic components - - such as in the event of a fire or lightning strike), FAST will attempt to effect the repairs within the FMS budget using FAST staff or perhaps contracted specialists in some instances. If the cost of these repairs is not relatively minor, FAST may ask the DEPARTMENT to share 50% of the cost as an extraordinary, unanticipated expense. This could be done either by an augmentation to the FMS budget stipend, or paid directly by the DEPARTMENT.

## TMC-Located Equipment

FAST will perform PM on vital components of the DEPARTMENT's ITS within the TMC facility, including the video wall, server farm, and the computer network. All of these maintenance activities will be covered either by the FMS budget, or a combination of FMS and AMS budget, and they are occurring now using the existing FAST workforce. The building infrastructure, furnishings and telephone system are maintained by the landlord (DEPARTMENT) separately from the PM mentioned here.

Non-PM: In the event that a costly TMC facility ITS component (for example, all or part of the video wall or video switching system) requires a major replacement or upgrade, RTC and the DEPARTMENT will jointly negotiate if/how that cost should be shared, and how the upgrade will be accomplished.

**FAST shall supply all consumable supplies necessary for performing the routine maintenance of the above ITS components, including, but not limited to:**

- Items supplied by Contractor where required:
- Duct seal
- Silicone sealant
- Lubrication spray and grease
- Cleaning products to remove graffiti
- Towels and wipes other cleaning tools as necessary
- Light bulbs for cabinets and sign housings
- All necessary hand tools and testing equipment

## Task 5.0 – Quarterly and Annual Reports

FAST shall prepare quarterly status reports in a format approved by the DEPARTMENT. A more detailed annual report shall be prepared at the end of the State's fiscal year which runs July 1st - June 30th. Quarterly reports shall detail activities that were performed during the previous quarter including the following:

- **Maintenance Report** – Reporting of maintenance activities undertaken by FAST staff on the DEPARTMENT's ITS.
- **Incident Management Report** – Reporting of incidents (planned and unplanned), FMS strategies implemented, coordination efforts, etc.
- **FMS System Performance and Reliability Report** – Provides a failure rate for system performance and Reliability.
- **FMS Equipment Replacement Report (End of life cycle)**– Provides a recommended action plan for the scheduled replacement of all DEPARTMENT-owned ITS elements based on age and/or repair frequency.
- **Performance Measures Report** – Identifies improvements or deficiencies in the physical freeway system, and provides input to the planning and design of future improvements to the facility.

### 5.1 Maintenance Report

FAST shall make available to the DEPARTMENT quarterly and annual reports for maintenance activities conducted by FAST FMS maintenance personnel. This report will be submitted along with the quarterly invoice for FMS operations and maintenance. FAST shall maintain complete and accurate records acceptable to, and approved by, the DEPARTMENT for all work relating to FMS maintenance activities. FAST shall keep a documented log of each and every device location, preventative and routine maintenance activities, repair logs, parts replacement, special notes, recommendations and equipment's warranty records (if available).

Device records at a minimum shall include but not be limited to the following:

- **Maintenance Report** – Identifies preventative, routine, and on-demand maintenance activities that were performed during the previous quarter
- Device Location
- Date and time of failure
- Description of failure or issue
- Report of failure source
- Technicians responding
- Site conditions noted i.e. weather, accident, fire, etc.
- Actions taken (successful or otherwise)
- Date and time of resolution
- Spare parts used: type, model, serial and control number
- Photo documentation (digital only)
- Replaced parts: type, model, serial and control number
- Action for replaced parts i.e. in-house repair, return to factory
- On-demand maintenance
- General notes

## **5.2 Incident Management Report**

FAST shall provide an Incident Management report to assess their performance in managing traffic incidents effectively and safely. This will provide a method to assess gaps and needs in existing multi-agency regional and statewide efforts to mitigate congestion caused by traffic incidents. This process provides a medium for enhanced communication between TIM stakeholders to identify specific areas or activities by which the multi-agency management of traffic incidents can be improved.

## **5.3 FMS Performance & Reliability Report**

The performance rating of the FMS is primarily based on how effective the system is in achieving its primary objective of optimizing freeway capacity through active FMS strategies. However, in order for the FMS system to function in a reliable manner, its individual components must also meet certain levels of reliability. RTC shall report the 'up time' of each category of ITS component on a monthly basis.

## **5.4 FMS Equipment Replacement Report (End of life cycle)**

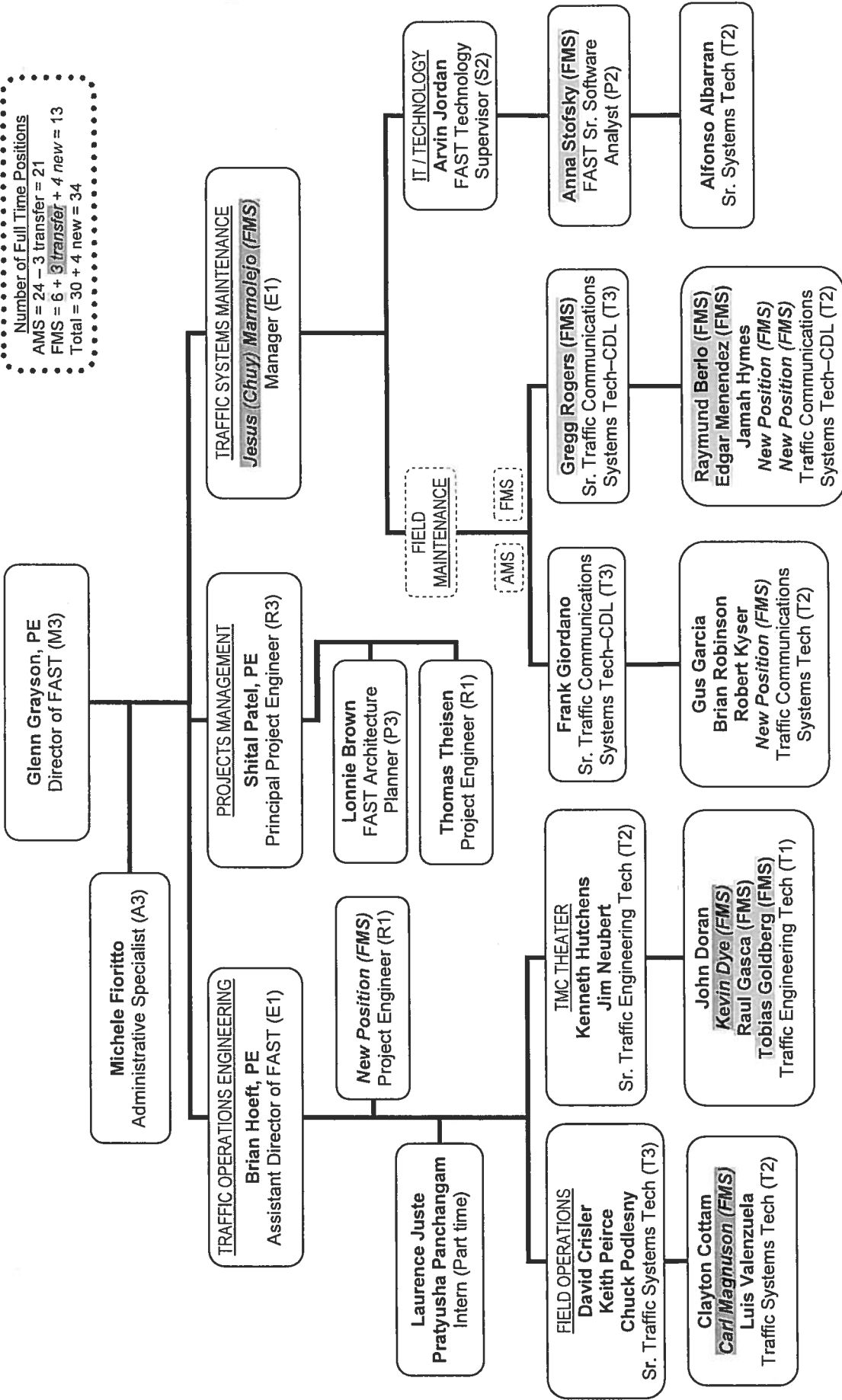
This report will identify key FMS elements that will need to be replaced under separate contracts in the next 20 years for (at a minimum): existing DMS and new DMS installed in the next five years; all existing copper-wiring; all existing controllers and; all existing node equipment.

## **5.5 Performance Measures Report**

This report provides freeway performance measurement statistical information to determine if the freeway system is meeting the objectives of effectively serving the traveling public for system reliability. This report will need to provide the following:

- 1) Measurements used to characterize freeway performance;
- 2) Data collection and analysis methods
- 3) Historical data for comparison purposes
- 4) Identifies improvements or deficiencies in the physical freeway system, and provides input to the planning and design of future improvements to the facility.

- Number of Full Time Positions
- AMS = 24 - 3 transfer = 21
- FMS = 6 + 3 transfer + 4 new = 13
- Total = 30 + 4 new = 34



**FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION**